NEW MEXICO STATE UNIVERSITY BOARD OF REGENTS
SPECIAL MEETING
October 16, 2023 at 3:00 PM

The online meeting will be Webcast at the following address: https://regents.nmsu.edu/regent-meetings/

Regents of New Mexico State University
Chair Ammu Devasthali, Vice Chair Christopher T. Saucedo, Secretary/Treasurer Garrett Moseley, Dina Chacón-Reitzel, Deborah Romero

Non-Voting Advisory Members - ASNMSU President Citlalli Benitez, Faculty Senate Chair Gaylene Fasenko, Ph.D., Employee Council Chair Susanne Berger

University Officials - Interim President Jay Gogue, Ph.D., Provost Alan Shoho, Ed.D., Interim General Counsel Scott Field, J.D.

AGENDA

A. **Call to Order**, *Chairwoman Ammu Devasthali*

B. **Approval of the Agenda**, *Chairwoman Ammu Devasthali*

C. **Consent Items,** *Chairwoman Ammu Devasthali*

   1. **El Paso Electric Utility Easement,** *Special Assistant to the President Scott Eschenbrenner*

D. **Action Items**, *Chairwoman Ammu Devasthali*

   1. **Organizational Communication & Leadership – Master of Arts (Online),** *Communication Studies Department Head Greg Armfield*
   2. **Geographic Information Science and Technology - Master of Science,** *Geography & Environmental Studies Department Head Michaela Buenemann*
   3. **Food Science - Doctor of Philosophy,** *Family and Consumer Sciences Department Head Efren Delgado*

E. **Informational Items**

   1. **None**

F. **Adjournment,** *Chairwoman Ammu Devasthali*

Board of Regents Meeting
Meeting Date: October 16, 2023
Agenda Item Cover Page

Agenda Item # C-1

☐ Action Item
☒ Consent Item
☐ Informational Item

Presented By: Scott Eschenbrenner
Special Assistant to the President

Agenda Item:

El Paso Electric Utility Easement.

Requested Action of the Board of Regents:

Approval of a new electric easement adjacent to Pan Am Plaza Shopping Center for the proposed Starbucks.

Executive Summary:

Real Estate is seeking your approval for a perpetual easement between the Board of Regents of New Mexico State University and the El Paso Electric Company (EPE). This easement is for a 12' wide underground electric line and a 12' x 18' pad mount transformer that will supply power to the proposed Starbucks on Triviz Drive. This a parcel of land that Aggie Development Inc. ground leased to Plata Partners, LLC on February 7, 2022 and is adjacent to Pan Am Plaza Shopping Center. Plata Partners has recently started construction and will require the service.

References:

DN067351 - NMSU EASEMENT.pdf

Prior Approvals:

Regents Real Estate Committee approval via email vote on October 10, 2023.

EASEMENT

STATE OF NEW MEXICO
COUNTY OF DONA ANA

Work Request: DN067351

For one dollar ($1.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, **THE REGENTS OF NEW MEXICO STATE UNIVERSITY**, hereinafter called Grantor, grants unto El Paso Electric Company, hereinafter called Grantee, its successors and assigns, whose address is P.O. Box 982, El Paso, Texas 79960, the perpetual right, privilege, authority and easement to enter and erect, construct, operate, remove, inspect, access, and maintain a line of poles at any time with any and all necessary cables, lines, wires, crossarms, guys, and anchors, for an above ground electric distribution and/or transmission system together with an underground electric distribution system, including transformers (conventional or padmount), ducts, conductors, conduits, fixtures, pullboxes, manholes, handholes, service facilities transformers, vaults and any other usual appurtenances, pertaining thereto, together with the overhang of service wires, with the right of access, ingress, and egress, thereto for the installation, construction, operation, inspection, repair, maintenance, replacement, renewal or removal thereof, for the distribution and/or transmission of electricity, for any and all purposes, including communications, for which same is or may hereafter be used, over, upon and along the following described premises and the adjoining roads, streets and highways, in the county named above, to wit:

A portion of **LOTS 36 THROUGH 48, BLOCK 73, COLLEGE PARK ADDITION, SECTION 21, T.23S, R.2E, N.M.P.M., DONA ANA COUNTY, NEW MEXICO, AS MORE FULLY DESCRIBED IN THE REAL PROPERTY RECORDS OF THE CLERK OF DONA ANA COUNTY IN THE STATE OF NEW MEXICO WITH INSTRUMENT NUMBER 698095,** as shown on the attached Exhibit A and made a part hereof,

with the right to trim any trees and flora along and around said lines and electrical equipment so as to keep the lines and electrical equipment cleared, the right to erect and set the necessary brace poles, anchors and guy wires, and to do anything proper and necessary to operate and maintain same.

The authority granted herein includes the right to permit the attachment of the cables of any other company.

Buildings and structures of a permanent nature, including but not limited to fences, boundary walls, walkways and landscaping that obstruct access to or safe operational clearances from Grantee's electrical equipment; will not be built on or over the easement, or under any overhead electric lines, except with the prior written consent of Grantee.

At Grantor's request, Grantee agrees to terminate, if at the time of the request, the Easement has been not been in use for at least six consecutive months.

This Easement is effective upon the date it is executed by Grantor as stated in the Acknowledgement of Grantor's execution.

THE REGENTS OF NEW MEXICO STATE UNIVERSITY

By: _____
Name: _____
Title: _____

THE STATE OF _____
COUNTY OF _____

This instrument was acknowledged before me on this _____ day of _____, 20___

by _____, _____of
NAME TITLE
_____ who stated that (s)he executed same for the purpose
COMPANY NAME
and consideration therein expressed and in the capacity therein stated.

_____
Notary Public in and for
the State of ____

Commission Expires:

GRANTEE

EL PASO ELECTRIC COMPANY

By: _____
Name: Aurea D. Garcia
Title: Supervisor – Land Management

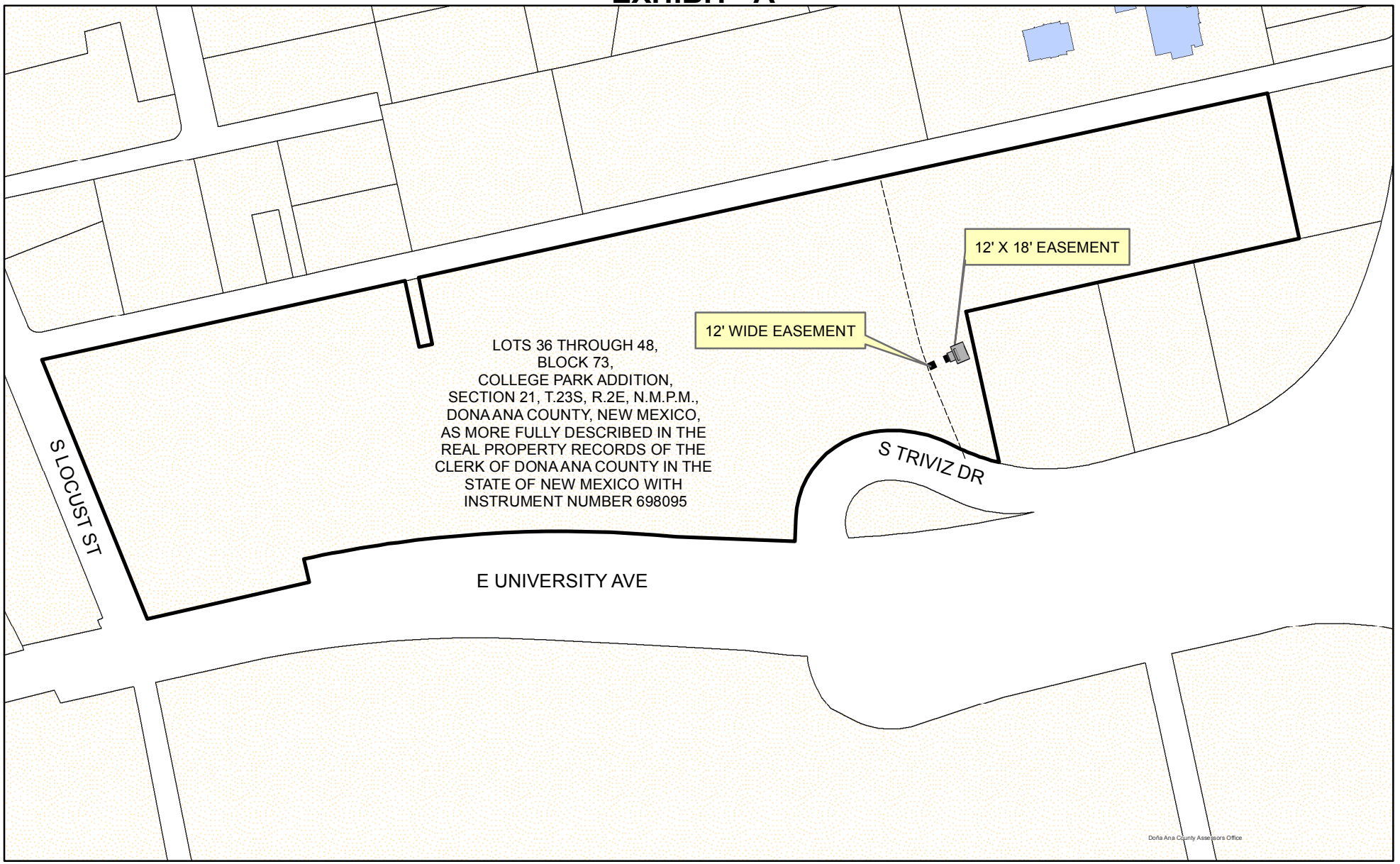
THE STATE OF TEXAS §
COUNTY OF EL PASO §

This instrument was acknowledged before me on this _____ day of _____, 20___
by Aurea D. Garcia, Supervisor – Land Management of El Paso Electric Company who stated that (s)he executed same for the purpose and consideration therein expressed and in the capacity therein stated.

_____
Notary Public in and for
the State of Texas

Commission Expires:

EXHIBIT "A"



N

NOT TO SCALE

LEGEND (NOT ALL SYMBOLS APPLY)

- PADMOUNT TRANSFORMER
- ANCHOR EASEMENT
- SWITCH GEAR (SW)
- UNDERGROUND EASEMENT
- OVERHEAD EASEMENT
- OVERHEAD/UNDERGROUND EASEMENT
- EXISTING POWERLINE

The Electric Company

EL PASO ELECTRIC

WORK ORDER(S): DN067351

DATE: 10/5/2023

Board of Regents Meeting **Agenda Item # D-1**
Meeting Date: October 16, 2023
Agenda Item Cover Page

☒ Action Item
☐ Consent Item
☐ Informational Item

Presented By: **Greg Armfield**
Department Head
Communication Studies

Agenda Item: Organizational Communication & Leadership – Master of Arts (Online)

Requested Action of the Board of Regents: Approval of the Organizational Communication & Leadership – Master of Arts (Online) program as presented.

Executive Summary

The master's degree in organizational communication and leadership is designed to equip students to develop effective leadership and communication skills in individual, group, team, and organizational contexts for professionals who work in organizations of any type (private, government, non-profit). The program will help students master effective leadership and communication skills in a time of dynamic change in global business, diversity, technology, and digital skills.

References

See attached proposal and presentation.

Prior Approvals

October 12, 2023 –Regents Student Success Committee
(a complete list of prior approvals is available in the attached materials)

MA ORGANIZATIONAL COMMUNICATION AND LEADERSHIP

Greg G. Armfield, Ph.D.
Department Head
College of Arts & Sciences | Department of Communication Studies

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College of Arts and Sciences
Communication Studies

comm.nmsu.edu

MA Organizational Communication and Leadership

- The master's degree in organizational communication and leadership is designed to equip students to develop effective leadership and communication skills in individual, group, team, and organizational contexts for professionals who work in organizations of any type (private, government, non-profit).
- The program will help students master effective leadership and communication skills in a time of dynamic change in global business, diversity, technology, and digital skills.

MA Organizational Communication and Leadership

Learning Outcomes:

- Equip students with effective leadership skills in individual, team, and organizational contexts for professionals who work in any organization (private, government, non-profit).
- Enhance leadership skills to prepare leaders to work effectively in today's dynamic, changing, global, and diverse business environment.
- Enhance analytical and problem-solving skills through written and verbal, and nonverbal communication.
- Enhance written, verbal, and nonverbal communication skills.

Past Decision by NMHED

The decision to not approve the program at this time is based on a couple of factors that should be taken into strong consideration when revaluating the proposal for future review by NMHEAC. One of the ***main concerns of the proposal was the program title*** *itself. Members of the* ***committee and I did not feel that the curriculum was consistent with a title of "Organizational Leadership."*** *Consideration of* ***a new title*** *that better reflects the "****Organizational Communication****" focused curriculum would be beneficial. Alternatively, the proposal could be* ***revised with a greater emphasis on "Leadership"*** *if the current proposed title were to remain.*

MA Organizational Communication and Leadership

- Multidisciplinary: Provides students with diverse learning across academic disciplines, approaches, and theoretical backgrounds.
- Required course: Leadership, Organizational Communication, Strategic Communication, and Change/Diffusion/Innovation
- Electives: Ethics, Comm. Tech., Interpersonal Comm., Nonverbal Comm., Family Comm.

- 36 Credit hours
  - 21 Credits in COMM required
  - Ends in 6 credits MA Project (COMM 598/5994) or a Capstone Case Study.

- Students can package other graduate concentrations such as:
  - 915 – Analysis and Decision-Making
- All Courses 8-week Asynchronous except Internship and Ethics

Courses

Required

- COMM 5530/470: Leadership Communication
- COMM 5230/557: Strategic Communication
- COMM 5510/570: Organizational Communication
- COMM 5550/578: Case Studies in Leadership Communication
- COMM 5560/579: Ethics and Diversity in Leadership Communication
- COMM 5994/598: MA Project (6 credits)
- AXED 5110 Management of Change, Diffusion, and Adoption of Innovations

21 COMM credits required, 15 elective credits (COMM or otherwise)

Electives

- COMM 5630/562: Family Communication
- COMM 5640/565: Nonverbal Communication
- COMM 5710/576: Communication and Culture
- COMM 5610/583: Interpersonal Communication
- COMM 5998/595: Internship
- AXED 5320 Risk and Crisis Comm.
- BA 545: Business Ethics
- IE 537 Large Scale Systems Engineering
- IE 563 Topics in Engineering Administration

MA Organizational Communication and Leadership

- The proposed Master's of Organizational Communication and Leadership degree does not overlap with any existing master’s degree program offered in the state of New Mexico.
  - The UNM has an undergraduate concentration in organizational leadership but does not have a graduate program.
  - New Mexico Highlands University has a Bachelor’s degree in Organizational Leadership and Public Safety but does not have a graduate program.
  - New Mexico Institute of Mining and Technology, Eastern New Mexico University, and Northern New Mexico College do not have an organizational communication or leadership programs of any type.
- UTEP has a Master's of Arts in Leadership Studies, focusing on public administration, communication, community engagement.

LEADS 2025 Alignment

- Goal 1: Enhance Student Success & Social Mobility: Enrollment Growth.
  - Enrollment Growth. The program was developed to meet the increasing demand for organizational communication and leadership degrees nationwide per Gray Associate's data.
  - The program will be attractive to organizational professionals employed in all organizational types who see NMSU as a viable academic option due to the fully online option of this program.

LEADS 2025 Alignment

- Goal 3: Amplify Outreach & Extension: Community Engagement.
  - The Organizational Communication and Leadership program is designed to meet the needs of professionals working in a variety of industries. It is anticipated students from the state and broader region will enroll in the program thus having a positive impact on local businesses and communities. Moreover, as part of their capstone experience, students will engage in an experiential learning project that could provide an immediate positive impact on their current employer.

LEADS 2025 Alignment

- Goal 4: Build a Robust University System: Diversity and Inclusion:
  - The Organizational Communication and Leadership MA program will provide a wealth of expertise to broaden student understanding of diversity and inclusion from theoretical and applied perspectives.

    We anticipate students will enroll in the Organizational Communication and Leadership program for personal enrichment and upskilling of their competencies. This skill development will spill over to support community organizations, businesses, and non-profits in the region.

LEADS 2025 Alignment

- The State of New Mexico has a high need for an online MA to meet community and regional leadership needs.
- Our multidisciplinary approach extends beyond Communication by including graduate courses from multiple colleges, providing students with diverse learning across academic disciplines, approaches, and theoretical backgrounds. It also has the ability to be paired with a variety of concentrations and minors.
- The learning objectives identified above emphasize practical applied, organizational communication, and leadership skills to help organizational professionals advance their theoretical and applied knowledge of communication and leadership. The core learning objectives center around organizational leadership skills germane to the needs of global organizations in the 21st century.
- Finally, This MA addresses the NMSU Land Grant Mission to improve organizational skills, business development, and effectiveness in the state of New Mexico and the surrounding region.

MA Organizational Communication and Leadership

Student Type	Year 1	Year 2	Year 3	Year 4	Year 5
New Students	6	10	10	15	15
Continuing Students	0	4	7	7	10
Graduates	0	4	6	6	11

Annual Retention Rate Target (66%)
Target 100% Graduation Rate (60%)
Target Job Placement Rate (75%)

MA Organizational Communication and Leadership

Letters of Support:

- Senior Vice-President Cision Insights (Strategic Communication and Consulting Firm)
- West Texas District Manager, Texas Veterans Commission
- Chief Growth Officer, Heart Mind Strategies (Strategic Communication and Consulting Firm)
- Employee Wellness Officer, YMCA Lubbock Texas
- Community Engagement Manager, Tresco Inc.
- Several Local Nonprofits (Jardin de los Ninos, National Young Farmers Coalition, Texas Methodist Foundation, El Paso District of the United Methodist Church

Contact Information

Greg G. Armfield, Ph.D.

Professor and Department Head

Department of Communication Studies

College of Arts and Sciences

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NM STATE

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Communication Studies

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MA Organizational Communication and Leadership

Highlights:

- 36 credit hour multidisciplinary MA ending in a capstone (6 credits of MA project).
- Required courses in Leadership, Organizational Communication, and Strategic Communication
  - 21 credits in COMM credits required.
  - 15 credits of electives.
    - Allows for several electives outside of COMM.
      - Decision Making, Innovation, Analysis, and Business Ethics
    - Analysis and Decision-Making concentration (915)
- All courses are 8-weeks, online, and asynchronous through NMSU-Global

916: ORGANIZATIONAL COMMUNICATION AND LEADERSHIP - MASTER OF ARTS (ONLINE)

In Workflow

1. Student Records Office - Programs (gdmart@nmsu.edu)
2. AS Academic Dean (jlakey@nmsu.edu)
3. Graduate Dean (phame@nmsu.edu; cflinch@nmsu.edu)
4. UPAC - Chair (jlakey@nmsu.edu)
5. Provost (sstovall@nmsu.edu)
6. President (leslie86@nmsu.edu)
7. Board of Regents (cavotta@nmsu.edu)
8. Graduate School - Council of Deans (phame@nmsu.edu; cflinch@nmsu.edu)
9. Student Records Office - HED (gdmart@nmsu.edu)
10. Student Records Office - CIP (gdmart@nmsu.edu)
11. UO HLC (UO HLC@nmsu.edu)
12. Student Records Office (gdmart@nmsu.edu)

Approval Path

1. Thu, 09 Sep 2021 14:16:46 GMT
   Kori Plank (krkeyes): Rollback to Initiator
2. Wed, 06 Oct 2021 17:04:49 GMT
   Kori Plank (krkeyes): Rollback to Initiator
3. Wed, 22 Jun 2022 21:50:33 GMT
   Carol Flinchbaugh (cflinch): Rollback to Initiator
4. Fri, 24 Jun 2022 22:36:03 GMT
   Carol Flinchbaugh (cflinch): Approved for Graduate Dean
5. Mon, 18 Jul 2022 17:47:23 GMT
   Kori Plank (krkeyes): Approved for Student Records Office - Programs
6. Mon, 25 Jul 2022 21:23:25 GMT
   Joe Lakey (jlakey): Approved for AS Academic Dean
7. Tue, 26 Jul 2022 18:23:09 GMT
   Carol Flinchbaugh (cflinch): Approved for Graduate Dean
8. Mon, 29 Aug 2022 16:37:34 GMT
   Joe Lakey (jlakey): Approved for UPAC - Chair
9. Thu, 01 Sep 2022 02:27:19 GMT
   David Smith (davsmith): Approved for Provost
10. Mon, 12 Sep 2022 18:22:40 GMT
    Lydia Duran (lbduran): Approved for President
11. Thu, 15 Sep 2022 17:50:31 GMT
    Adam Cavotta (cavotta): Approved for Board of Regents
12. Wed, 05 Oct 2022 20:45:39 GMT
    Carol Flinchbaugh (cflinch): Approved for Graduate School - Council of Deans
13. Mon, 21 Nov 2022 20:42:58 GMT
    Kori Plank (krkeyes): Approved for Student Records Office - HED
14. Mon, 21 Nov 2022 20:46:32 GMT
    Kori Plank (krkeyes): Rollback to Student Records Office - HED for NM Board of Finance
15. Tue, 22 Nov 2022 16:50:37 GMT
    Kori Plank (krkeyes): Rollback to Initiator
16. Tue, 07 Mar 2023 13:49:04 GMT
    Kori Plank (krkeyes): Approved for Student Records Office - Programs
17. Thu, 20 Apr 2023 22:48:17 GMT
    Joe Lakey (jlakey): Rollback to Initiator
18. Mon, 03 Jul 2023 21:24:20 GMT
    Gabrielle Martinez (gdmart): Approved for Student Records Office - Programs
19. Mon, 10 Jul 2023 16:59:53 GMT
    Joe Lakey (jlakey): Approved for AS Academic Dean
20. Mon, 10 Jul 2023 18:35:24 GMT
    Carol Flinchbaugh (cflinch): Rollback to Initiator

21. Mon, 10 Jul 2023 21:46:42 GMT
    Gabrielle Martinez (gdmart): Approved for Student Records Office - Programs
22. Tue, 11 Jul 2023 03:28:53 GMT
    Joe Lakey (jlakey): Approved for AS Academic Dean
23. Tue, 11 Jul 2023 19:23:47 GMT
    Carol Flinchbaugh (cflinch): Approved for Graduate Dean
24. Fri, 18 Aug 2023 17:08:37 GMT
    Joe Lakey (jlakey): Approved for UPAC - Chair
25. Thu, 07 Sep 2023 16:38:21 GMT
    Shelly Stovall (sstovall): Approved for Provost
26. Mon, 18 Sep 2023 21:29:16 GMT
    Lydia Duran (lbduran): Approved for President

New Program Proposal

Date Submitted: Mon, 10 Jul 2023 21:06:26 GMT

Viewing: 916 : Organizational Communication and Leadership - Master of Arts (Online)

Last edit: Mon, 10 Jul 2023 21:06:23 GMT

Changes proposed by: Greg Armfield (armfield)

Submission Information

The Degree Type will factor into the level and the submissions that must occur for HED and HLC.
• Community College Types: Applied Associate Degree, Associate Degree, Certificate, Concentration
• Main Campus Undergrad Types: Bachelor's Degree, Concentration, Minor
• Main Campus Graduate Types: Master's Degree, Doctoral Degree, Certificate, Concentration, Minor

Degree Type

Master's Degree

The Degree Title dropdown has all existing degree titles in Banner, if you do not see the one you are looking for you will select "Other" then in the New Degree Title box you will type out the official title of the degree (as you would want it to appear on a students record, transcript, and/or diploma).

Degree Title

Master of Arts

Academic Level

Graduate

The Catalog Title will be what is displayed in the catalog page. The standard format is Major (Concentration) - Degree Title. (I.e., Mathematics (Secondary Education) - Bachelor of Science. Note: If there is no concentration you would just list the Major - Degree.

Catalog Title

Organizational Communication and Leadership - Master of Arts (Online)

College

Arts and Sciences

Campus

NMSU Global Campus

Division

No Division for this Campus

Department

Communication Studies

Effective Catalog

2024-2025

Program Format

Global Campus

Thesis and Non-Thesis Format

Non-Thesis

CIP Code

520213 - Organizational Leadership.

Normal or typical length of time for students to complete the program (in years)

2

Curriculum Information

Program Learning Outcomes

	Learning Outcomes
Outcome 1	Equip students with effective leadership skills in individual, team, and organizational contexts for professionals who work in any organization (private, government, non-profit).
Outcome 2	Enhance leadership skills to prepare leaders to work effectively in today's dynamic, changing, global, and diverse business environment.
Outcome 3	Enhance analytical and problem-solving skills through written and verbal, and nonverbal communication.
Outcome 4	Enhance written, verbal, and nonverbal communication skills.

List of academic departments/units and or institutions involved in the delivery of courses

Department/Unit
Communication Studies
Agricultural and Extension Education
Industrial Engineering
Business Administration

The Course Requirements, need to be in the standard format for the catalog because this piece of the form will be imported directly onto the catalog page. See the Student Records Website for a guide. The total number of credits at the bottom of the course list will be the "official" total for the degree. Please make sure it adds up correctly.

Course Requirements

The professional master's degree in organizational communication and leadership is designed to equip students to develop effective leadership and communication skills in individual, group, team, and organizational contexts for professionals who work in organizations of any type (private, government, non-profit). The program will help students master effective leadership and communication skills in a time of dynamic change in global business, diversity, technology, and digital skills. The degree requires 36 credit hours of coursework. At least 21 credits of coursework must be completed in the Communication Studies Department (COMM). The final three credits of coursework must be project hours (COMM 5994 MA Project). All Communication Studies course requirements and other concentration course requirements are offered online and taught asynchronously in 8-week formats generally following the graduate course rotation below. Coursework used to complete a graduate certificate in any other discipline may be used to fulfill elective credit requirements.

Professional Masters in Organizational Leadership Requirements:

To complete the degree students must take the required courses listed below, complete the project (COMM 5994 MA Project) during their final semester of studies and take an additional 15 credits from any department, including Communication Studies. Two courses (6 credits) with numbers 4500+ can be counted. 21 credits must be completed in the Department of Communication Studies. All courses can be completed in the Department of Communication Studies.

Prefix	Title	Credits
Degree Requirements		
COMM 5230	Strategic Communication	3
COMM 5510	Organizational Communication	3
COMM 5530	Leadership Communication	3
COMM 5550	Case Studies in Leadership Communication	3
COMM 5560	Ethics & Diversity in Leadership Communication	3
COMM 5994	MA Project	6
Electives [1]		
Select 15 credits of Electives from any discipline, including COMM		15
Total Credits		**36**

[1] In order to graduate students will need 36 credits, 21 of which must be in COMM, including COMM 5994 MA Project which should be taken in the last two 8-weeks of coursework.

A GPA of 3.0 or better must be maintained overall and grades in each course must be a B- or better.

Graduate Course Rotation:

Fall

- COMM 5530 Leadership Communication
- COMM 5230 Strategic Communication
- COMM 5510 Organizational Communication
- COMM 5550 Case Studies in Leadership Communication
- COMM 5994 MA Project

Spring

- COMM 5530 Leadership Communication
- COMM 5220 Communication Technologies
- COMM 5560 Ethics & Diversity in Leadership Communication
- COMM 5998 Communication Internship for Graduate Students
- COMM 5994 MA Project

Suggested Electives for Completing Degree:

- COMM 5630 Family Communication
- COMM 5640 Nonverbal Communication
- COMM 5710 Communication and Culture
- COMM 5610 Interpersonal Communication
- COMM 5996 Special Topics
- COMM 5998 Communication Internship for Graduate Students
- AXED 5110 Management of Change, Diffusion, and Adoption of Innovations
- AXED 5320 Risk and Crisis Communications in Agricultural, Consumer, and Environmental Sciences
- B A 545 Business Ethics
- I E 537 Large Scale Systems Engineering
- I E 563 Topics in Engineering Administration

Any COMM course 4500 or higher will be counted toward this degree. Only 6 credits of 4500-4999 courses can be counted.

Entrance Requirements for Graduate Study in Communication Studies

Students wishing to enroll in the Master's program in Organizational Leadership must meet the following criteria:

1. Hold a BA or BS degree from an accredited institution of higher learning.
2. Hold a minimum grade point average of 3.00. Professional work experience may be accepted in the cases of lower GPAs.
3. Professional experience can be considered for any applicant with an overall undergraduate GPA below 3.0.

The Road Map, need to be in the standard format for the catalog because this piece of the form will be imported directly onto the catalog page. See the Student Records Website for a guide. All courses and the total number of credits at the bottom of the roadmap should match the Course Requirements list.

Road Map

Semester 1		Credits
COMM 5230	Strategic Communication	3
COMM 5510	Organizational Communication	3
COMM 5530	Leadership Communication	3
COMM 5550	Case Studies in Leadership Communication	3
	Credits	**12**
Semester 2		
COMM 5220	Communication Technologies	3
COMM 5560	Ethics & Diversity in Leadership Communication	3
COMM 5998	Communication Internship for Graduate Students	3
Elective Course		3
	Credits	**12**
Semester 3		
COMM 5994	MA Project	6
Elective Course		3

Elective Course	3
Credits	**12**
Total Credits	**36**

Will this Master's degree program have a Master's Accelerate Program (MAP) option and roadmap?

Yes

MAP Requirements

New Mexico State University master's accelerated program provides **the opportunity for academically qualified undergraduate students** to begin working on a master's degree **during their junior and senior years** while completing a bachelor's degree. Typically, a bachelor's degree requires four years to complete, and a master's degree requires an additional two years. The master's accelerated programs allow students the opportunity to complete a graduate program in an accelerated manner. You can also check NMSU's catalog for additional information about our programs. The MAP program allows undergraduate students to take graduate courses and count up to twelve credits toward both undergraduate and graduate degrees in COMM.

MAP Requirements

- The Graduate School allows qualified junior or senior students to substitute its graduate courses for required or elective courses in an undergraduate degree program and then subsequently count those same courses as fulfilling graduate requirements in a related graduate program.
- Undergraduate students may apply for acceptance to the accelerated master's program after completing 60 semester hours of undergraduate coursework of which a minimum of 25 semester credit hours must be completed at NMSU.
- The grade point average must be at a minimum of 3.25.
- Students must receive a grade of B or higher in this coursework to be counted for graduate credit. If a B- or lower grade is earned, it will not count toward the graduate degree.

Accepted MAP Courses

The following courses are accepted for use in the MAP program, any other courses may be considered after a consultation with an advisor. An exception will need to be made to the degree audit in order for the additional course(s) to be included on both the Undergraduate and Graduate degrees.

Prefix	Title	Credits
COMM 5220	Communication Technologies	3
COMM 5230	Strategic Communication	3
COMM 5310	Sports Communication	3
COMM 5630	Family Communication	3
COMM 5640	Nonverbal Communication	3
COMM 5998	Communication Internship for Graduate Students	3

Enrollment in graduate courses requires the approval of the Department Chair and a completed MAP form before the first semester to take MAP courses for dual credit. Please meet with Dr. Armfield for more information.

The admission requirements are needed if the program has a specialized admission process that exceeds the campus requirements for either the Undergraduate or Graduate admission standards.
• For graduate programs, the Graduate School asks for the following information (Provide a summary of the documents and specific information each student will need to provide to be considered for the program): Description, Statement of Purpose/Letter of Interest; Specialty Letter of Interest; Resume; Writing Sample; GRE; GMAT; Special Questions (if yes, what questions need to be answered); Letters of Recommendation (how many are required); NMSU Faculty Representative (if yes, how many); Foreign Language; WES Evaluation; Special License or Verifications (what license/verification)

Admission Requirements

To apply for graduate study in our department, students must first apply to the NMSU Graduate School **(**https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantConnectLogin.asp?id=nmsugrad**) and must be prepared to include the following application materials:**

- Official Transcripts
- Current Resume or Vita

Does this program lead to licensure, yes or no?

No

Is credit for prior learning built into the program, if yes explain?

Students enrolled in the NMSU MAP program will receive MAP credits from their undergraduate studies.

Faculty Members Employed to Teach in the Program

Existing Personnel

11

FTE

1.0

Course load and courses they will teach in the proposed program

Tenure and Tenure-track faculty from COMM, AXED, IE, and BUS have committed their faculty to teach some courses for each of their departments. Two visiting faculty holding doctorate degrees will teach full-time, 12 credits per semester, in the program.

Courses taught in other programs currently offered

5

Description of academic qualifications

Two visiting professors were hired in the Fall of 2021 to support this new MA. Both specialize in Leadership and Organizational Communication. Present faculty of COMM, AXED, IE, and BUS currently hold teaching and research backgrounds in this topic. All professors are graduate faculty in the Graduate College.

Prior instructional responsibility and other experiences relevant to assigned courses

Current NMSU faculty hold doctoral degrees and conduct research in the areas of expertise that they will be assigned. Additional faculty will be hired in the area of leadership and organizational communication as needed.

For graduate programs, document scholarship and research capability

Anne Hubbell, Ph.D. is a Professor of Organizational and Health Communication in the Department of Communication Studies. She has over 40 scholarly review publications.

Edward Pines, Ph.D. is a Professor of Industrial Engineering. In recent years he has collaborated with students and colleagues on ten peer-reviewed conference papers in the areas of systems engineering and engineering management. He currently serves in the Senior Personnel category on NSF Improving Undergraduate STEM Education (IUSE): HSI grant (NSF #1953466). He works with the NMSU Arrowhead Center on a variety of entrepreneurship education programs.

Gabriela Morales, Ph.D. is an Assistant Professor of Intercultural and Health Communication in the Department of Communication Studies. She has seven publications and is highly engaged in the scholarship of application.

Greg Armfield, Ph.D. is a Professor or Organizational and Sport Communication and the Department Head of Communication Studies. He has co-edited two books on ESPN, is the lead editor of Human Communication in Action (8th ed), and has over 20 scholarly reviewed publications.

Jeanne Flora, Ph.D. is a Professor of Interpersonal and Family Communication in the Department of Communication Studies. She is a co-author of Family Communication (3rd ed) and has over 16 scholarly reviewed publications.

Sangwon Lee, Ph.D. is an Assistant Professor of Political Communication in the Department of Communication Studies. He has over 24 scholarly reviewed publications.

Steven Fraze, Ph.D. is a Professor and Department Head for Agriculture and Extension Education. In recent years he has had several peer-reviewed publications and secured several grants.

Duli Shi, Ph.D. is an Assistant Professor of Strategic Communication in the Department of Communication Studies and has 5 publications. She specializes in Strategic Communication, Communication Technology, and Corporate Responsibility.

Jason Feltz, Ed.D. is a Visiting Assistant Professor of Organizational Communication and Leadership in the Department of Communication Studies. He specializes in Organizational Leadership.

William Hoffmann, Ph.D. is a Visiting Assistant Professor of Interpersonal Communication in the Department of Communication Studies and has over 10 publications. He specializes in Interpersonal Communication.

Dea Romero, M.A. is a College Assistant Professor of Human Communication in the Department of Communication Studies. They specialize in Diversity and Intersectionality.

Documentation of department faculty support

Department NMSU G MA support memo.pdf
AXED support.pdf
IE Support.pdf

Curriculum Committee Approval

MA in Organizational Leadership Evaluation AS Curriculum Cmte.docx

Gray Associates Data

gray_scorecard_grad_comm_053123.pdf
gray_masters_completions_comm_053123.pdf
gray_comm_jobsdata_053123.pdf
Gray Data Narrative 2023.pdf

NM Higher Education Department

Is there a certificate embedded in the degree program? If so, list certificates and courses required?

No

Does the master's level degree articulate to a doctoral program, yes or no?

No

Describe your institution's plan for periodic evaluation of program effectiveness. Include criteria that will be used to determine effectiveness.

The MA Project course required in the graduate program will serve as the assessment point for the MA program. In addition to completing a project, all students will complete a program evaluation and a case study that graduate faculty in the Department of Communication Studies will evaluate. Graduate faculty will review the case studies separately from the course instructor, assessing program effectiveness, and making course adjustments as needed.

Quantitative and qualitative metrics will be used to evaluate whether the program meets the above-stated program objectives. In addition, student completion and placement or promotion rates will be tracked to assess the effectiveness of the concentrations and MA program.

In addition to specific learning objectives, NMSU will assess whether enrollment and completion goals listed below are being met. The annual retention and graduation rates listed (66% and 60% respectively) take into account national data on retention specific to online programs.

While 6 graduate hours of MA project seems a lot for an online program, the experience will enable close one-to-one contact between students and faculty that we hope will foster long-term contact that will enable NMSU to evaluate effectiveness of the program in advancing careers of its graduates.

The proposed program must meet one or more specified needs within the state or region. Clear and convincing evidence must be provided of the reality and extent of such need.

The primary objective of the Organizational Communication and Leadership graduate program is to equip students to develop effective leadership skills in individual, team, and organizational contexts for professionals who work in organizations of any type (private, government, non-profit). The program will help students master effective leadership in a time of dynamic change in global business, diversity, technology, and digital skills.

The program's impetus aligns with Gray Associates data that reports that programs focused on business administration and management skills are the second-ranked online graduate degree with a student demand score in the 95th percentile. Dean Lakey analyzed three markets within 350 miles of Las Cruces and Nationally. The scorecard shows that the CIP rates very highly at the Master's and other levels in terms of student demand nationally but somewhat lower for NM in terms of job outlook. That said, no competing program exists in NM at this time. Gray rates this program highly in terms of competitive intensity, which is a measure of potential to attract students to the program. Gray considers anything in the 90th percentile or above to have excellent potential. The ranking for this online leadership program is in the 95th percentile. Furthermore, student completion of Distance Education OL (CIP. 52.0213) programs have grown fourfold in only six years. The State of New Mexico has a high need for an Organizational Communication and Leadership degree program.

The learning objectives emphasize practical skills that will help professionals advance their theoretical and applied knowledge of leadership skills and abilities. The core learning objectives center around organizational leadership skills germane to the needs of global organizations in the 21st century. The core areas include:
1. Competency in leadership theory and EID competence
2. Competency in communication
3. Competency in analytical approaches to problem-solving and decision-making models

The Organizational Communication and Leadership degree program's primary goal will address the NMSU land grant mission and LEADS 2025 to improve organizational skills, business development, and effectiveness in New Mexico and the surrounding region. We anticipate that students will enroll in the Organizational Communication and Leadership program for personal enrichment and to upskill their competencies. This skill development will spill over to support community organizations to help them reach business goals and support business growth in the region. Further, the program aligns with three NMSU LEADS 2025 goals: 1) Enhance Student Success & Social Mobility through enrollment growth, 2) Amplify Extension & Outreach through community engagement, and 3) Build a Robust University System focused on equity, diversity, and inclusion. This is discussed further later in this document.

Program graduates' communication skill development will spill over to support community organizations to help them reach business goals and support business growth in the region.

If the program fills a regional workforce need, describe collaboration between your institution and regional employers in the program development.

NA

Identify where similar degree programs are offered by other public higher education institutions in New Mexico.

The proposed Master's of Organizational Communication and Leadership degree does not overlap with any existing master's degree program offered in the state of New Mexico.

1. The University of New Mexico's School of Business has an undergraduate concentration in organizational leadership and the UNM's Department of Communication & Journalism has an undergraduate concentration in organizational communication but does not have a graduate program in either of these areas.
2. New Mexico Institute of Mining and Technology does not have an organizational leadership program of any type.
3. New Mexico Highlands University has a Bachelor's degree in Organizational Leadership and Public Safety, but not a Master's degree.
4. Eastern New Mexico University does not have an organizational leadership program of any type.
5. Northern New Mexico College does not have an organizational leadership program of any type.

If similar programs are offered at other public higher education institutions in New Mexico, provide a rationale for offering an additional program.

There are no similar existing programs offered at public higher education institutions in New Mexico at the graduate (master's) level. The programs listed above, including the concentrations in Organizational Leadership and in Organizational Communication offered at the University of New Mexico and the Bachelor's degree in Organizational Leadership and Public Safety offered by New Mexico Highlands University, are at the undergraduate (bachelor's) level. An online professional master's in Organizational Communication and Leadership would provide broad, accessible opportunities for career advancement for working adults in the state of New Mexico.

List any nearby non-New Mexico institutions of higher learning where the program is being planned or offered, particularly WICHE member institutions.

UTEP offers a Master's of Arts in Leadership Studies, focusing on public administration, communication, community engagement. Our multidisciplinary approach extends what is currently offered at UTEP by including graduate courses from multiple colleges, providing students with diverse learning in content, approach, and theoretical backgrounds. Further, this MA has a very opportunity for more programs to create concentrations or certificates that can be packaged with this minor.

Enrollment and Graduation Projections

Student Type	Year 1	Year 2	Year 3	Year 4	Year 5
New Students	6	10	10	15	15
Continuing Students	0	4	7	7	10
Graduates	0	4	6	6	11

Annual Retention Rate Target (%)

66

Target 100% Graduation Rate (%)

60

Target Job Placement Rate (%)

75

Describe the faculty resources that are needed to initiate the program. Will any additional faculty be needed?

NMSU Department of Communication Studies has an adequate pool of faculty with the support of NMSU Global (see attached letter) to deliver this degree. NMSU can support many of the multidisciplinary courses with the requisite teaching and research expertise to meet the initial program demands.

Descibe the library and other academic support resources that are needed to initiate the program. What, if any, additional resources will be needed?

No new equipment, materials, or library resources are anticipated to support the offering of this program. The resources (equipment, materials, library) are currently available in the participating departments and within NMSU are sufficient and fully support this program’s launch and initial phases.

Describe the physical facilities of the institution that will be used for the first five years of the program. Will additional space or modifications of existing space be required within the first five years of program operation.

Given this degree program is online, no new physical facilities are foreseen to be required, and no modifications of existing space will be required. At best, office space may be needed for new faculty, but since the program is all asynchronous online, faculty may not require a physical office on main campus.

Describe the institution’s equipment and technological resources needed for the first five years of the program? What, if any, additional equipment will be needed?

None expected. The resources (equipment, materials, technology) currently available at the participating departments within NMSU are sufficient and fully support this program’s launch and initial phases.

Describe any other operating resources needed to initiate the program.

NMSU Digital Learning professionals have already assisted in the design of all the required core courses for this program. Going forward only support will be from DL professionals will be needed to assist with course updates and the design of new courses. Administrative oversight will be maintained by the Department Head for Communication Studies.

Are there existing external facilities that will be used? Have agreements been established to ensure use of the those facilitates?

No. This is an online program.

Provide a clear analysis of the projected cost of the proposed program and the sources of funding that will support it for the first five years that the program will be offered. Include a discussion how any of the needed resources discussed in your attachment. This should be completed in collaboration with your institution's financial office.

MA Financial analysis.xlsx
Kollmann Organizational Leadership_Graduate_Support_6302023.pdf

Letters of Support

Chelsea Mirkin_Endorsement.pdf
Support_Letter_LDW.pdf
Org Comm Letter Claudia DeJesus.pdf
NMSU-O letter of support Eva Videla .pdf
NMSU-O COMM Letter of Support - Kathryn Boren.pdf
Letter Support_Werner.pdf
Letter of Suppport, Communication MA Degree Program.pdf
Letter of Support for Comm Studies Organizational Leadership - Master of Arts.pdf
Letter of Support - MAOL.pdf
Jardin de los Niños.pdf

Accreditation

Is the program seeking specialized accreditation?

No

Is specialized accreditation required for licensure or practice in the program?

No

Has the program already obtained the appropriate specialized accreditation? If so, attach a copy of the letter from the agency granting accreditation?

No

If the program has not yet obtained accreditation but has begun the process of seeking or plans to seek specialized accreditation, specify the name of the agency and provide the time-line for completing the process.

No accreditation will be sought. Communication Studies does not have a national or international accrediting organization.

If the program does not plan to seek specialized accreditation, provide a rational for not-seeking accreditation here. (if there is not a specialized accrediting organization for this program, indicate so as your rationale).

Communication Studies does not have a national or international accrediting organization.

If the program includes any of the following, explain how it will ensure that student work and levels of knowledge competencies achieved will be comparable to those achieved through traditional formats: (Award credit for prior learning; use of compressed time frames; use of on-line deliver; inclusion of accelerated formats; or other approaches to learning.)

No credit for prior learning will be given unless the credit is for the concentrations directly linked to the MA program or from the NMSU MAP program.

Courses will be delivered online asynchronously in an 8-week format since this appeals to our target market of adult learners and military personnel. Faculty will work with Digital Learning Instructors and experts at NMSU in instructional design, specifically Beth Apodaca. All courses will meet student contact hours requirements.

Will the program be part of a contractual or consortial arrangement (yes/no, explain)?

Yes, in effect that the four NMSU colleges and four departments have agreed to offer the courses for the multidisciplinary concentration and Master's Degree.

If the program is planning any involvement by external organizations (other than from accredited higher education institutions) in the key operations as identified below, provide the information as requested.

Type of Involvement	Name of External Organization	Percent of Involvement
Course placement and advising of students	Local Organizations offering internships	10
Design and oversight of curriculum	NA	0
Direct instruction and oversight	NA	0

Other support for delivery of instruction	NA	0
Recruitment and admissions of students	NMSU Global Promotions	10

Briefly describe the planning process for determining the need for this new program, including the role of faculty in the planning and approval process.

In early 2021, Sherry Kollmann (Associate Vice-Chancelor of Digital Learning) and Carol Flinchbaugh (Assc. Dean, Graduate School) identified Organizational Communication and Leadership as a broadly accessible area of study to create opportunities for career advancement through attainment of a master's degree for adult learners in the state of New Mexico through the NMSU Global campus. The proposed program is specifically designed for adult learners, especially ones in the state of New Mexico, who may not have time or access to progress in a "trad" program.

The proposal originated as a collaboration between NMSU Global, the Graduate School the department heads for Agricultural and Extension Education, Industrial Engineering, and Communication Studies. The program was originally proposed in 2022 under the title "Organizational Leadership" and was envisioned to have a flexible curriculum of 15 graduate credits of COMM courses, Including COMM 470, Leadership Communication, and 15 additional credits from any discipline.

In a meeting of the Council of Graduate Deans in 2022, concerns were expressed about the title of the program but the council approved moving the proposal forward to NMHED. The proposal was heard by NMHEAC on November 3, 2022. Official decision not to approve came from Cabinet Secretary Rodriguez dated November 16. The decision noted misalignment between the title "Organizational Leadership" and the course curriculum and suggested either changing the title to "Organizational Leadership" or providing a greater emphasis on leadership through the curriculum.

After significant internal discussion it was decided to change the title to "Organizational Communication and Leadership" that reflects a growing trend in online Master's programs nationally (and an absence of such programs in the region), and to modify the curricula accordingly. The revised curriculum places a much clearer emphasis on leadership. The revised program will have gone through all internal NMSU approvals.

There are separate Classification of Instructional Program (CIP) codes for Organizational Leadership (52.0213) and Organizational Communication (09.0901). Several master's programs already exist in the US that combine the terminology with titles including Organizational Leadership & Communications, Organizational Communication & Leadership, Communication Management, etc.

Describe the process for assessing and improving student learning in the proposed program.

A case study will be administered in the MA Project course to evaluate the program learning objectives listed above. The Communication Studies graduate faculty will assess students' responses to evaluate the program's ability to meet the stated learning outcomes. After results have been analyzed for five to ten students, faculty who teach the courses will meet to brainstorm ways to improve the curriculum.

In addition to the case study, student evaluations will be conducted on every course, and in the MA Project class, a program evaluation will be conducted. Furthermore, student placement and graduation rates will also be tracked.

Describe the process for assessing and improving student persistence and completion, in the new program.

Research demonstrates that several strategies can be effective for student retention and increasing completion rates. Cohorts have been shown to improve student retention. Given the small nature of this program, cohorts traveling through the concentrations will begin in the spring or fall. Cohorts have been shown to increase student completion rates.

Further, the shortened 8-week course formation will help keep students motivated and progressing through the program quicker moving on to early completion of concentrations and eventually degree MA programs. Further, NMSU Global and the Department Head for Communication Studies will advise students, stay connected, and be approachable. The flexibility of this MA program, along with short course timeframes and a wide variety of content offerings, will provide the flexibility many students look for in an online degree program.

If any of the institution's accreditation relationship (including other regional, specialized, or national accrediting agencies) are currently under or recommended for a negative status or action (e.g., withdrawal, probation, sanction, warning, show-cause, etc.)

NA

If the institution is undergoing or facing substantial monitoring, special review or financial restrictions from the U.S. Department of Education or other federal or state government agencies.

NA

If the institution's senior leadership or board membership has experienced substantial resignations or removals in the past year.

NA

If the institution is experiencing financial difficulty through conditions, such as, a currently declared state of exigency, a deficit of 10% or more, a default or failure to make payroll during the past year, or consecutive deficits in the two most recent years.

NA

Institution Specific Information Area

Primary target audience for the program (e.g., full#time, part#time, traditional college age, working adults, transfer students, military personnel, or particular ethnic group)

The Master of Arts in Organizational Communication and Leadership aims to equip students with the knowledge, skills, and abilities to possess leadership skills to meet organizational needs in the current context. The degree will provide students with effective leadership and communication skills in individual, group, team, and organizational contexts for professionals who work in any organization (private, government, non-profit).

The primary target audience for this asynchronous online MA is adult learners who work part-time or full-time, including military personnel. The program learning objectives emphasize practical skills that will help professionals advance their theoretical and applied leadership skills and abilities in a wide variety of careers. The core learning objectives center around organizational leadership skills germane to the needs of global organizations in the 21st century.

The program will help students master effective leadership in a time of dynamic change in global business, diversity, technology, and digital skills. The program's impetus aligns with Gray Associates data that reports that programs focused on organizational administration and management skills are the second-ranked online graduate degree with a student demand score in the 98th percentile. Furthermore, student completion of Distance Education OL (CIP. 52.0213) programs have grown fourfold in only six years. The State of New Mexico has a high need for a Master's of Organizational Communication and Leadership degree. Locally, UNM has undergraduate concentrations in organizational leadership and organizational communication. UTEP has a MA in Leadership Studies, focusing on public administration, communication, and community engagement. New Mexico Highlands University has a Bachelor's degree in Organizational Leadership and Public Safety. Our MA approach extends what is currently offered regionally by including graduate leadership courses focused on leadership diversity and ethics, organizational communication, and strategic communication providing students with diverse learning approaches and theoretical backgrounds.

Marketing and advertising oversight will be coordinated between NMSU Global, NMSU Graduate School, The College of Arts and Sciences, and the Department of Communication Studies.

How does the proposed program align with the department, college and university mission?

The program aligns with NMSU LEADS 2025 in the following ways (LEADS 2025):

Goal 1: Enhance Student Success & Social Mobility:
Enrollment Growth. The program was developed to meet the increasing demand of the OL degree nationwide per Gray Associate's data. The program will be attractive to professionals employed in any organization type who see NMSU as a viable academic option due to the fully online option of this program.

Goal 3: Amplify Extension & Outreach
Community Engagement. The program is designed to meet the needs of professionals working in any industry. It is anticipated that many students from the region will enroll in the program, creating learning that can be applied in their local businesses and communities. Moreover, as part of their capstone experience, students will engage in experiential learning projects applied to their current employer allowing for an immediate application of their learning to the aid of local businesses.

Goal 4: Build a Robust University System
Diversity and Inclusion: The OL degree program will provide a wealth of expertise to broaden student understanding of diversity and inclusion from theoretical and applied perspectives.

Discuss how admissions criteria and strategies will recruit a diverse student body?

Admission criteria are based on completing a BA or BS and a GPA of 3.0. A standardized exam is not required for admittance. The MA can be completed online and will only be offered through NMSU Global. All courses are 8 weeks which is appealing to our target market of working professionals. The only required documents for application are a resume or vita and official transcripts from an accredited institution.

What controls are in place to ensure that the information presented to all constituencies in advertising, brochures, and other communications will be accurate?

The office for Digital Learning under the direction of Vice Provost Sherry Kollmann will coordinate with Carol Flinchbaugh in the Graduate School to coordinate all marketing and promotional materials. All three colleges and departments involved in the degree will also distribute marketing materials.

Quantitative and qualitative metrics will be used to monitor the program's marketing, implementation, and overall effectiveness on an ongoing basis. Primary measures include the number of student inquiries on the program landing pages, enrollment, and degree completion. Separate course-based grading metrics exist to assess the learning outcomes of students and the acquisition of critical skills.

Student Records Office Uploads

HLC wants CIP Code information that is currently being offered at both the institutional and degree level for 4-digit and 2-digit CIP codes for all new programs. This information will be provided by the University Student Records office and added to the form during the HED submissions workflow step.

SRO Upload

CIP Code HLC.xlsx

NM Council of Graduate Deans

NMCGD Approval_Org Leadership.pdf

NM HED/Board of Finance

NMSU_MA_Organizational Leadership_Decision Letter FINAL.pdf

Historical Documentation

NMSU_MA_Organizational Leadership_Decision Letter FINAL HED.pdf

Admin Comments

4 Digit Renumbering Project - COMM

Reviewer Comments

Kori Plank (krkeyes) (Thu, 09 Sep 2021 14:16:46 GMT): Rollback: To update the missing information, I will open the system for today to get these added. Kori

Kori Plank (krkeyes) (Wed, 06 Oct 2021 17:04:49 GMT): Rollback: Department has elected to hold this program for now and will continue with the specified concentrations attached to the Communication Studies - MA program. They will re-evaluate this next cycle. Will stay in the PIM system with all the proposal information as if for now. -Kori

Carol Flinchbaugh (cflinch) (Wed, 22 Jun 2022 21:50:33 GMT): Rollback: Hi Greg. This looks great! The only issue I see is with the 8 possible MAP courses. I know that the registrars office wants to cap possible MAP courses at 6 total. Please remove two courses. Thanks, Carol

Kori Plank (krkeyes) (Mon, 18 Jul 2022 17:55:02 GMT): department is creating the new courses to replace the special topics. There was confusion as to if they needed to be taught as special topics before created or not. KP allowed the move to the next workflow to keep the degree on track and will update the curriculum once the new courses are in CIM by the August 1 deadline

Kori Plank (krkeyes) (Mon, 21 Nov 2022 20:46:32 GMT): Rollback: Accidentally pushed through, the Secretary did not approve

Kori Plank (krkeyes) (Tue, 22 Nov 2022 16:49:58 GMT): Secretary Denied: The decision to not approve the program at this time is based on a couple of factors that should be taken into strong consideration when revaluating the proposal for future review by NMHEAC. One of the main concerns of the proposal was the program title itself. Members of the committee and I did not feel that the curriculum was consistent with a title of “Organizational Leadership.” Consideration of a new title that better reflects the “Organizational Communication” focused curriculum would be beneficial. Alternatively, the proposal could be revised with a greater emphasis on “Leadership” if the current proposed title were to remain.

Kori Plank (krkeyes) (Tue, 22 Nov 2022 16:50:37 GMT): Rollback: Rolled back to make additional edits in the 2024-2025 cycle that opens April 2nd

Kori Plank (krkeyes) (Mon, 06 Mar 2023 23:41:55 GMT): removed the "concentration" verbiage on the paragraph information as its inaccurate this degree cannot be completed with those concentrations yet. Those are still under the MA in Communication Studies, if the degree gets approved the concentrations can move and the statement can be re-added at that point.

Joe Lakey (jlakey) (Thu, 20 Apr 2023 22:48:17 GMT): Rollback: At Greg's request

Carol Flinchbaugh (cflinch) (Mon, 10 Jul 2023 18:35:25 GMT): Rollback: Hi Greg. Check the paragraph above the "requirements" section. It still states the degree requires 30 credit hours. 36 is reflected in the requirements section.

Key: 916

Board of Regents Meeting **Agenda Item # D-2**
Meeting Date: October 16, 2023
Agenda Item Cover Page

☒ Action Item
☐ Consent Item
☐ Informational Item

Presented By: **Michaela Buenemann**
Department Head
Geography & Environmental Studies

Agenda Item: Geographic Information Science and Technology - Master of Science

Requested Action of the Board of Regents: Approval of the Geographic Information Science and Technology - Master of Science program as presented.

Executive Summary

The proposed master's program in GIS&T will help our department attract a large number of students across diverse populations. This will support efforts to increase student enrollment and success at NMSU (LEADS 2025, Goal 1, Objective 1).

The proposed curriculum will combine cutting-edge and emerging theories, methods, and applications in GIS&T, hands-on training to solve real-world problems, and diverse professional development activities that leverage our partnerships with the private, public, and non-profit sectors. This unique blend of program components support us developing a workforce who can help meet geospatial labor market demands and lead to improved social mobility and enhanced academic and career outcomes.

Students in the program will complete a capstone research project in collaboration with our private, public, and non-profit partners to address actual problems of interest to our partners. In this manner, our program will facilitate the convergence of research to address real-world challenges integrated with graduate student education and meet local and regional needs that align with global challenges. As regards the linkage between the proposed program and departmental goals, the proposed program will help us meet our goals to grow the graduate program in the department and capitalize on the existing strengths of our GIS&T faculty. By doing so, we will train the next generation of GIS&T experts who can help the State of New Mexico meet the considerable challenges it faces in areas such as land and water resource management, adaptations to climate change, urban and environmental planning, and economic development.

References

See attached proposal and presentation.

Prior Approvals

October 12, 2023 –Regents Student Success Committee
(a complete list of prior approvals is available in the attached materials)

Online Master of Science in Geographic Information Science & Technology (GIS&T)

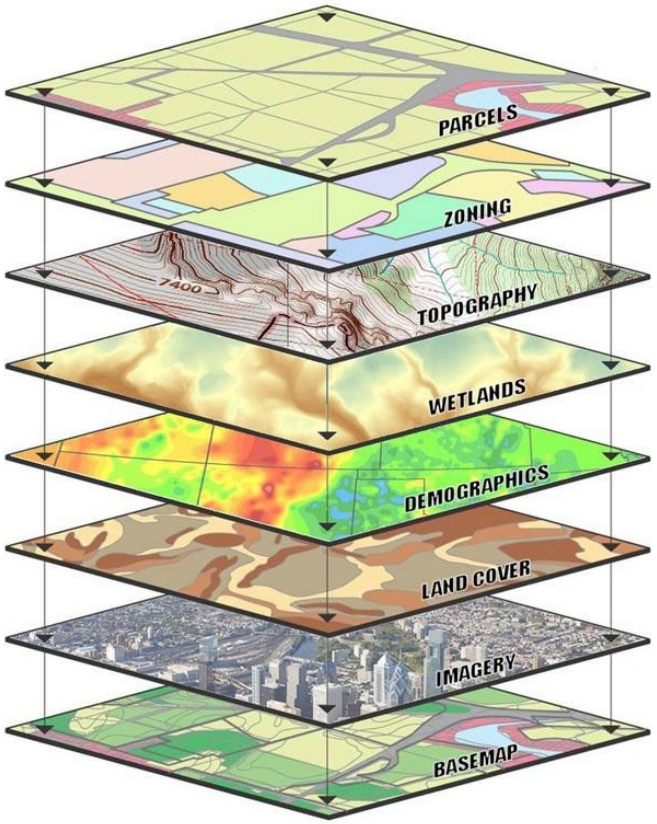
Michaela Buenemann* and Christopher Brown**
*elabuen@nmsu.edu **brownchr@nmsu.edu

10/16/2023

Board of Regents Meeting

GIS&T

- **Geographic Information Science & Technology (GIS&T)**
  - Geospatial Science
  - Geospatial Technology
    - **Remote Sensing (RS)**
    - **Geographic Information System (GIS)**
    - **Global Positioning System (GPS)**
  - Applications of GIS&T



GIS&T

- Online Master of Science in GIS&T
- 30-31 credits, flexible time frame, applied.
- Working professionals and recent graduates
  - Improve careers and join the growing geospatial workforce
    - Data and information management
    - Geospatial intelligence
    - Urban and regional planning
    - Rangeland ecology
    - Climate science and water resources
    - Emergency management
    - Environmental engineering
    - Public health

Program Learning Outcomes

1. **Think spatially, geographically, and geospatially.**
2. **Discuss the moral, ethical, social, political, and legal implications** of geospatial data.
3. **Explain basic and advanced concepts, methods, and applications** in geographic information science and technology, including geographic information systems and remote sensing.
4. **Solve real-world problems** by acquiring, analyzing, interpreting, evaluating, and visualizing spatial data.
5. **Conduct all stages of an independent research project**, including conceptualization, planning, implementation, management, and communication.

Program Road Map

Semester	Courses	Credits	Total Credits
Fall 2024	GEOG 578: Fundamentals of GIS GEOG 573: Introduction to Remote Sensing	4 4	8
Spring 2025	GEOG 571: Cartography and GIS GEOG 542: Programming for GIS	4 3	7
Summer 2025	GEOG 505: **Capstone I – Geospatial Research Design** GEOG 545: **Geospatial Professionalism**	3 2	5
Fall 2025	GEOG 585: Spatial Analysis and Modeling GEOG ###: Elective	3 3-4	6-7
Spring 2026	GEOG 506: **Capstone II – Geospatial Research Implementation** GEOG 544: **GIS&T Professional Portfolio**	3 1	4
Total		30-31	30-31

Enrollment & Graduation Projections

Student Type	Year 1	Year 2	Year 3	Year 4	Year 5
New Students	10	15	20	25	30

- Annual retention rate: 100%
- Target graduation rate: 100%
- Target job placement rate: 100%

New VAP

←

Existing Faculty

→

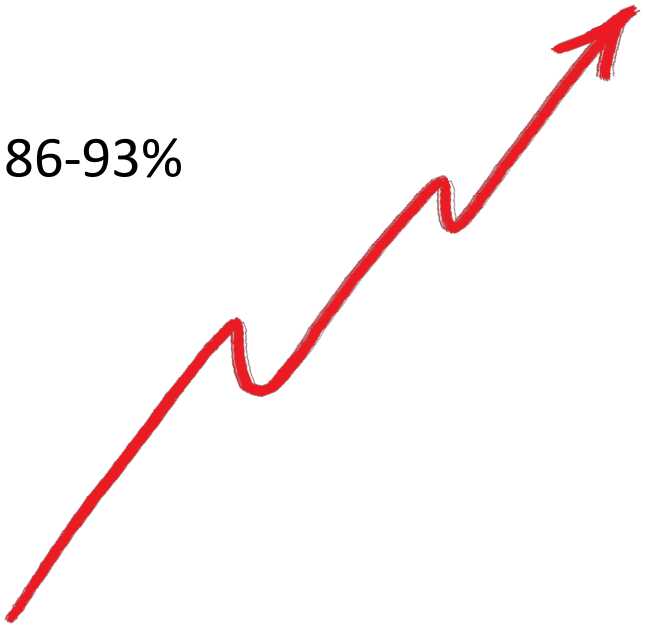
PhD Students

What Our Supporters Say

- Bestelmeyer, United States Department of Agriculture Agricultural Research Service (USDA-ARS): “excellent pathway for students from their graduate programs into the federal workforce.”
- Sesnie, U.S. Fish and Wildlife Service (USFWS): “proposed … program will prepare students to meet new challenges and demand for spatial data synthesis in an ever-changing region and world.”
- Runyan, New Mexico Geographic Information Council (NMGIC): “caters to the evolving needs of students, working professionals, and the job market … in the fast-growing field of geospatial technology.”
- Talasila, New Mexico Geospatial Advisory Committee (NMGAC): “At our last GAC meeting, we already had a member eager to sign up!”

Gray Associates & NMSU Online Data

- Solid score of master's program
  - Ranks in 89th percentile among all CIP codes
- Robust student demand
  - 74-81% nationally, 82-93% relative to NM, 86-93% relative to 350-mile radius of Las Cruces
- Growth of NMSU online over last 2 years
  - 19% increase in online grad enrollment
  - 26% increase in online grad admissions



Job Outlook

$97k per year
Median Salary

47,627
Job Openings

490,164
Currently Employed

16% Projected outlook

Greater Tucson Area — National

+21% in Greater Tucson Area

$106k per year
Median Salary

2,726
Job Openings

29,422
Currently Employed

9% Projected outlook

Greater Tucson Area — National

+13%% in Greater Tucson Area

$72k per year
Median Salary

1,412
Job Openings

15,462
Currently Employed

8% Projected outlook

Greater Tucson Area — National

+9% in Greater Tucson Area

https://shorturl.at/AHLRW (2023-08-17)

Job Outlook

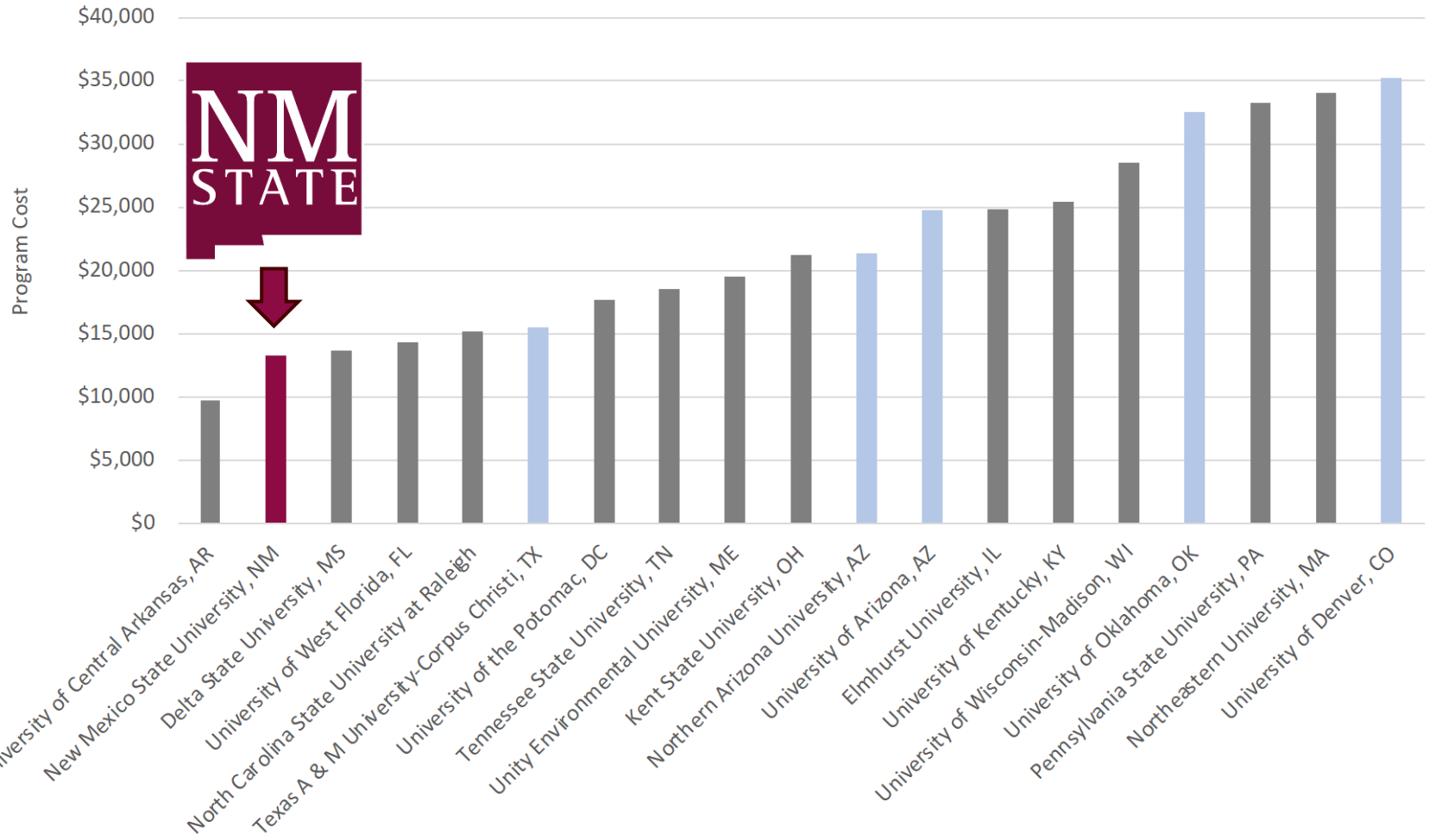
	LinkedIn	Indeed.com	Usajobs.gov
GIS & NM	11	177	10
Remote Sensing & NM	45	69	8
Mapping & NM	323	200	17
GIS & El Paso	78	24	1
Remote Sensing & El Paso	43	31	4
Mapping & El Paso	214	34	7

Data collected on 2023-07-15

Marketing & Recruitment

- Work with NMSU Global on marketing
- Strong web and social media presence
- Webinars, virtual open houses, online forums
- Recruitment tables at job and career fairs
- Networking at conferences and meetings
- Nurture existing and build new partnerships with business, agencies, etc.
- Responsive support
- Alumni advocacy
- Feedback and continuous improvement

Competitive Pricing



Data source for non-NMSU programs (in-state or all students, out-of-state more expensive in some cases): https://shorturl.at/oDHZ6
Data source for NMSU ($444.40/credit hour): https://global.nmsu.edu/cost

Questions? Comments?

… where when life gives you lemons, you map the rise of lemonade.

989: GEOGRAPHIC INFORMATION SCIENCE AND TECHNOLOGY - MASTER OF SCIENCE

In Workflow

1. Student Records Office - Programs (gdmart@nmsu.edu)
2. AS Academic Dean (jlakey@nmsu.edu)
3. Graduate Dean (phame@nmsu.edu; cflinch@nmsu.edu)
4. UPAC - Chair (jlakey@nmsu.edu)
5. Provost (sstovall@nmsu.edu)
6. President (leslie86@nmsu.edu)
7. Board of Regents (cavotta@nmsu.edu)
8. Graduate School - Council of Deans (phame@nmsu.edu; cflinch@nmsu.edu)
9. Student Records Office - HED (gdmart@nmsu.edu)
10. Student Records Office - CIP (gdmart@nmsu.edu)
11. MA HLC (sstovall@nmsu.edu)
12. Student Records Office (gdmart@nmsu.edu)

Approval Path

1. Wed, 05 Jul 2023 15:58:41 GMT
   Gabrielle Martinez (gdmart): Approved for Student Records Office - Programs
2. Mon, 10 Jul 2023 17:23:42 GMT
   Joe Lakey (jlakey): Approved for AS Academic Dean
3. Mon, 10 Jul 2023 19:42:52 GMT
   Carol Flinchbaugh (cflinch): Rollback to Initiator
4. Tue, 18 Jul 2023 14:00:07 GMT
   Gabrielle Martinez (gdmart): Approved for Student Records Office - Programs
5. Tue, 18 Jul 2023 15:16:40 GMT
   Joe Lakey (jlakey): Approved for AS Academic Dean
6. Tue, 18 Jul 2023 17:08:38 GMT
   Carol Flinchbaugh (cflinch): Approved for Graduate Dean
7. Fri, 18 Aug 2023 17:07:57 GMT
   Joe Lakey (jlakey): Approved for UPAC - Chair
8. Thu, 07 Sep 2023 16:38:53 GMT
   Shelly Stovall (sstovall): Approved for Provost
9. Mon, 18 Sep 2023 21:46:27 GMT
   Lydia Duran (lbduran): Approved for President

New Program Proposal

Date Submitted: Tue, 18 Jul 2023 00:43:36 GMT

Viewing: 989 : Geographic Information Science and Technology - Master of Science

Last edit: Wed, 16 Aug 2023 21:33:27 GMT

Changes proposed by: Michaela Buenemann (elabuen)

Submission Information

The Degree Type will factor into the level and the submissions that must occur for HED and HLC.
• Community College Types: Applied Associate Degree, Associate Degree, Certificate, Concentration
• Main Campus Undergrad Types: Bachelor's Degree, Concentration, Minor
• Main Campus Graduate Types: Master's Degree, Doctoral Degree, Certificate, Concentration, Minor

Degree Type

Master's Degree

The Degree Title dropdown has all existing degree titles in Banner, if you do not see the one you are looking for you will select "Other" then in the New Degree Title box you will type out the official title of the degree (as you would want it to appear on a students record, transcript, and/or diploma).

Degree Title

Master of Science

Academic Level
Graduate

The Catalog Title will be what is displayed in the catalog page. The standard format is Major (Concentration) - Degree Title. (I.e., Mathematics (Secondary Education) - Bachelor of Science. Note: If there is no concentration you would just list the Major - Degree.

Catalog Title
Geographic Information Science and Technology - Master of Science

College
Arts and Sciences

Campus
Main Campus

Department
Geography & Environmental Studies

Effective Catalog
2024-2025

Program Format
Global Campus
Online (not NMSU Global)

Thesis and Non-Thesis Format
Non-Thesis

CIP Code
450702 - Geographic Information Science and Cartography.

Normal or typical length of time for students to complete the program (in years)
2

Curriculum Information

Program Learning Outcomes

	Learning Outcomes
Outcome 1	Think spatially, geographically, and geospatially.
Outcome 2	Discuss the moral, ethical, social, political, and legal implications of analyzing geospatial data to create spatial data products.
Outcome 3	Explain basic and advanced concepts, methods, and applications in geographic information science and technology, including geographic information systems and remote sensing.
Outcome 4	Solve real-world problems by acquiring, analyzing, interpreting, evaluating, and visualizing spatial data.
Outcome 5	Conduct all stages of an independent research project, including conceptualization, planning, implementation, management, and communication.

List of academic departments/units and or institutions involved in the delivery of courses

Department/Unit
Geography and Environmental Studies

The Course Requirements, need to be in the standard format for the catalog because this piece of the form will be imported directly onto the catalog page. See the Student Records Website for a guide. The total number of credits at the bottom of the course list will be the "official" total for the degree. Please make sure it adds up correctly.

Course Requirements
The proposed Master of Science in Geographic Information Science and Technology (GIS&T) program curriculum is composed of a minimum of 30 graduate credits, including 20 required core credits, 3-4 elective credits, and 7 credits aimed at the completion of a capstone project and the development of a professional portfolio. All courses are offered as 8-week online courses.

- The **Core Courses** (20 credits) are designed to give students a solid common foundation in GIS&T theory, methods, and applications relevant for today's geospatial professionals.

- Students who are already proficient in areas covered by one or more of these core courses (e.g., due to prior academic or work experience) may substitute them (Students will work with a faculty advisor to develop an alternative customized curriculum that meets their needs.).
- The **Elective Course** (3-4 credits) allows students to develop specialized knowledge and skills in their areas of interest.
- The **Capstone Project** (6 credits) requires students to design and implement an applied GIS&T project in their area of interest and expertise with guidance from a faculty advisor and in collaboration with an external partner. The project culminates in a) a written technical report, peer-reviewed publication, or comparable document and b) a formal oral presentation during the Digital Symposium, a public symposium hosted at the end of each semester by the GIS&T master's program for our external partners and the geospatial community at NMSU. Examples of external partners include and are not limited to the following:
  - City, county, state, and federal government agencies like the City of Las Cruces, Doña Ana County, New Mexico Fish and Wildlife Conservation Office, New Mexico Department of Transportation, New Mexico Department of Health, United States Geological Survey, United States Department of Agriculture, and Department of Defense units like White Sands Missile Range and the National Geospatial Intelligence Agency.
  - Companies like SWCA Environmental Consultants, Bohannan Huston Inc., Wilson & Company Inc., Merrick & Company, ESRI, L3Harris Geospatial, or Maxar Technologies.
  - Nonprofits like the Southern New Mexico Trail Alliance, Friends of Organ Mountains Desert Peaks, Gila Conservation Coalition, Taos Land Trust, New Mexico Land Conservancy, Nature Conservancy, World Wildlife Fund, or United States Fund for UNICEF."
- The **Professional Portfolio** (1 credit) is a digital representation of the student's accomplishments in the proposed master's program and knowledge and skills as a geospatial professional.

Prefix	Title	Credits
Course Requirements		
GEOG 571	Cartography and GIS [1]	4
GEOG 578	Fundamentals of GIS	4
GEOG 573	Introduction to Remote Sensing	4
GEOG 542	Programming for GIS	3
GEOG 585	Spatial Analysis and Modeling	3
GEOG 545	Geospatial Professionalism	2
GEOG 544	GIS&T Professional Portfolio	1
GEOG 505	GIS&T Capstone I - Geospatial Research Design	3
GEOG 506	GIS&T Capstone II - Geospatial Research Implementation	3
Choose one of the following electives:		3-4
GEOG 572	Geodatabase Design	3
GEOG 582	Advanced Remote Sensing	4
GEOG 588	GIS and Water Resources	3
Total Credits		**30-31**

The Road Map, need to be in the standard format for the catalog because this piece of the form will be imported directly onto the catalog page. See the Student Records Website for a guide. All courses and the total number of credits at the bottom of the roadmap should match the Course Requirements list.

Road Map

The following tables are examples of what students' curricula might look like if they started in either the Fall or the Spring semester and then took the typical course load of two courses per each of four semesters and one summer.

Fall Start

First Year		
Fall		**Credits**
GEOG 578	Fundamentals of GIS [1]	4
GEOG 573	Introduction to Remote Sensing [1]	4
	Credits	**8**
Spring		
GEOG 571	Cartography and GIS	4
GEOG 542	Programming for GIS	3
	Credits	**7**
Summer		
GEOG 505	GIS&T Capstone I - Geospatial Research Design	3
GEOG 545	Geospatial Professionalism	2
	Credits	**5**
Second Year		
Fall		
GEOG 585	Spatial Analysis and Modeling	3
Choose one of the following electives:		3-4
GEOG 582	Advanced Remote Sensing	

GEOG 572	Geodatabase Design	
GEOG 588	GIS and Water Resources	
	Credits	**6-7**
Spring		
GEOG 506	GIS&T Capstone II - Geospatial Research Implementation	3
GEOG 544	GIS&T Professional Portfolio	1
	Credits	**4**
	Total Credits	**30-31**

Spring Start

First Year		
Fall		**Credits**
GEOG 585	Spatial Analysis and Modeling	3
GEOG 573	Introduction to Remote Sensing	4
	Credits	**7**
Spring		
GEOG 571	Cartography and GIS [1]	4
GEOG 542	Programming for GIS	3
	Credits	**7**
Summer		
GEOG 505	GIS&T Capstone I - Geospatial Research Design	3
GEOG 545	Geospatial Professionalism	2
	Credits	**5**
Second Year		
Spring		
GEOG 578	Fundamentals of GIS	4
Choose one of the following electives:		3-4
GEOG 473	Advanced Remote Sensing	
GEOG 482	Geodatabase Design	
GEOG 488	GIS and Water Resources	
	Credits	**7-8**
Summer		
GEOG 506	GIS&T Capstone II - Geospatial Research Implementation	3
GEOG 544	GIS&T Professional Portfolio	1
	Credits	**4**
	Total Credits	**30-31**

Will this Master's degree program have a Master's Accelerate Program (MAP) option and roadmap?

No

The admission requirements are needed if the program has a specialized admission process that exceeds the campus requirements for either the Undergraduate or Graduate admission standards.
• For graduate programs, the Graduate School asks for the following information (Provide a summary of the documents and specific information each student will need to provide to be considered for the program): Description, Statement of Purpose/Letter of Interest; Specialty Letter of Interest; Resume; Writing Sample; GRE; GMAT; Special Questions (if yes, what questions need to be answered); Letters of Recommendation (how many are required); NMSU Faculty Representative (if yes, how many); Foreign Language; WES Evaluation; Special License or Verifications (what license/verification)

Admission Requirements

- Bachelor's degree from an accredited university with a GPA of 3.0 or higher (on a 4.0 scale). Students with a cumulative undergraduate GPA of 2.5-3.0 may be admitted on a provisional basis if they have significant professional experience outside of the classroom. Students who are admitted provisionally must complete the first three courses with a minimum GPA of 3.0; provisional students who do not meet this requirement are subject to dismissal.
- While many graduate students have a STEM background or GIS&T experience, we encourage all individuals with an interest in GIS&T to apply.
- Students who earned the Graduate Minor in GIS&T with a GPA of 3.0 or higher may transfer credits from the minor and partially fulfill the requirements of the proposed Master of Science program in Geographic Information Science and Technology.

Does this program lead to licensure, yes or no?

No

Is credit for prior learning built into the program, if yes explain?

No, we do not have a formal mechanism to provide credit for prior learning. However, students who are already proficient in areas covered by one or more of our core courses (e.g., due to prior academic or work experience) may substitute them. Students will work with a faculty advisor to develop an alternative customized curriculum that reflects prior academic or work experience and meets their needs.

Faculty Members Employed to Teach in the Program

Existing Personnel

Dr. Michaela Buenemann

FTE

1.0

Course load and courses they will teach in the proposed program

Dr. Buenemann's typical course load is 2 classes one semester, and 1 class the other, as she is academic department head. Dr. Buenemann is qualified to teach all classes in the program.

Courses taught in other programs currently offered

Dr. Buenemann currently teaches GEOG 571: Cartography and GIS, GEOG 585: Spatial Analysis and Modeling, GEOG 573: Introduction to Remote Sensing, and GEOG 582: Advanced Remote Sensing.

Description of academic qualifications

Dr. Buenemann is a full professor and co-director of the NMSU Spatial Applications Research Center. She has a robust teaching and research record in the areas of GIS&T, land system science, and landscape epidemiology. Her research has been funded by NSF, NGA, NIH, NRCS, BLM, NMDOH, and NMACD.

Prior instructional responsibility and other experiences relevant to assigned courses

Dr. Buenemann carries a full teaching load for a department head and capably carries out all of her teaching duties. She has extensive experience teaching many technical classes online and is highly focused on self-evaluation of her classes and learning outcomes to improve her classes.

For graduate programs, document scholarship and research capability

As noted above, Dr. Buenemann is a full professor and co-director of the NMSU Spatial Applications Research Center, and she has a robust teaching and research record in the areas of GIS&T. She has also been extremely successful at bringing external funds to NMSU to support her research and graduate students. Please see https://geography.nmsu.edu/about-us/Faculty_Bios/MichaelaBuenemann/index.html for a link to her current CV.

Existing Personnel

Dr. Christopher Brown

FTE

1.0

Course load and courses they will teach in the proposed program

Dr. Brown's typical course is 3 classes one semester, and 2 classes the other. Dr. Brown is qualified to teach GEOG 505: Capstone I – Geospatial Research Design, GEOG 506: Capstone II – Geospatial Research Implementation, GEOG 545: Geospatial Professionalism, GEOG 544: GIS&T Professional Portfolio, and GEOG 585: Spatial Analysis and Modeling.

Courses taught in other programs currently offered

Dr. Brown has taught GEOG 585: Spatial Analysis and Modeling and GEOG 501: Research Design and History of Geographic Thought.

Description of academic qualifications

Dr. Brown is a full professor and co-director of the NMSU Spatial Applications Research Center, and he has a robust teaching and research record in border studies, environmental planning, research design, and select areas of GIS&T.

Prior instructional responsibility and other experiences relevant to assigned courses

Dr. Brown carries a full teaching load and capably carries out all of his teaching duties. He has very successfully deployed team-based learning (TBL) in all of his classes for many years, both in face to face and online classes. He recently was successful in taking a TBL class into a hybrid environment with students joining the class in both face to face and virtual environments.

For graduate programs, document scholarship and research capability

As noted above, Dr. Brown is a full professor and co-director of the NMSU Spatial Applications Research Center, and he has a robust teaching and research record. Please see https://geography.nmsu.edu/about-us/Faculty_Bios/ChrisBrown2/BrownBio.html for a link to his current CV.

Existing Personnel

Dr. Chao Fan

FTE

1.0

Course load and courses they will teach in the proposed program

Dr. Fan's typical course is 3 classes one semester, and 2 classes the other, and she is qualified to teach all classes in the program.

Courses taught in other programs currently offered

Dr. Chan is a newly hired faculty member in the department. At her previous post, she taught a wide range of GIS&T classes, in both online and face to face environments.

Description of academic qualifications

Dr. Chan taught a wide range of GIS&T classes for 4 years as an instructor of record at her previous institution, she has a very robust teaching record, and she was the preferred candidate out of 42 applicants for the job she will be starting at NMSU in the fall of 2023.

Prior instructional responsibility and other experiences relevant to assigned courses

As noted above, Dr. Chan taught a wide range of GIS&T classes for 4 years as an instructor of record at her previous institution, and her application packet for the position in the department reflected a very high level of preparation and creativity in classes she taught previously.

For graduate programs, document scholarship and research capability

Dr. Chan has a very strong research record, and she was the preferred candidate for the job at NMSU among 42 applicants. She has an impressive publication record, with 25 refereed publications to date, including 3 that appeared in the first half of 2023. Please see https://geography.nmsu.edu/about-us/Faculty_Bios/ChaoFan/FanBio.html for her current CV.

Existing Personnel

Dr. Carol Campbell

FTE

1.0

Course load and courses they will teach in the proposed program

Dr. Campbell's typical course is 3 classes one semester, and 2 classes the other, and Dr. Campbell is qualified to teach GEOG 505: Capstone I – Geospatial Research Design, GEOG 506: Capstone II – Geospatial Research Implementation, GEOG 545: Geospatial Professionalism, and GEOG 544: GIS&T Professional Portfolio.

Courses taught in other programs currently offered

Dr. Campbell has taught GEOG 120, Culture and Environment, GEOG 326, U.S. National Parks, GEOG 351/557, Biogeography, GEOG 373/573, Introduction to Remote Sensing, and GEOG 452/552, Landscape Ecology.

Description of academic qualifications

Dr. Campbell is an Associate Professor with a very strong teaching record and an active research agenda in biogeography, landscape ecology, and the exploration of citizens' science to engage the public on geographic research and assist in collecting spatial data. She is PI on AmericaView and New Mexico View projects and has been very successful at including both graduate and undergraduate students into research efforts that these externally funded projects support.

Prior instructional responsibility and other experiences relevant to assigned courses

Dr. Campbell carries a full teaching load and capably carries out all of her teaching duties. As noted above, Dr. Campbell has been very successful at including both graduate and undergraduate students into research efforts that externally funded projects support.

For graduate programs, document scholarship and research capability

As noted above, Dr. Campbell is an Associate Professor with an active research agenda in biogeography, landscape ecology, and the exploration of citizen science to engage the public on geographic research and assisting in collecting spatial data. Please see https://geography.nmsu.edu/about-us/Faculty_Bios/CarolCampbell/CampbellBio.html for a link to her current CV.

Documentation of department faculty support

GES_Faculty_Approval_PMS_GIST_Final.pdf

Curriculum Committee Approval

AS Curr_Ed_Policies_Committee_approval_PMSGIST.pdf

Gray Associates Data

gray_450702_ms_scorecard_062623.pdf
gray_450701_ms_scorecard_062623.pdf

NM Higher Education Department

Is there a certificate embedded in the degree program? If so, list certificates and courses required?

Not at present, but we will build one in the future.

Does the master's level degree articulate to a doctoral program, yes or no?

No

Describe your institution's plan for periodic evaluation of program effectiveness. Include criteria that will be used to determine effectiveness.

NMSU has well-documented policy concerning the effectiveness of academic programs, and departments perform annual assessments of the outcomes of these programs. With respect to graduate programs, these assessments examine both the ability of students completing graduate degrees to critically analyze and interpret complex issues and also their mastery of subject matter knowledge. The NMSU Department of Geography and Environmental Studies gathers data on program effectiveness during graduate final exams (details provided below), and these data are forwarded to the NMSU central administration for use in its institutional evaluation of program effectiveness.

The proposed program must meet one or more specified needs within the state or region. Clear and convincing evidence must be provided of the reality and extent of such need.

The global GIS&T market is already excellent and predicted to grow at a compound annual growth rate of 11.6% between 2020 and 2030, making it one of the fastest growing employment sectors, both in the U.S. and globally. GIS&T jobs offer competitive salaries, as demonstrated in a University of Arizona interactive tool for exploring career opportunities in GIS&T in the southwest US (https://online.arizona.edu/programs/graduate/online-master-science-geographic-information-systems-technology-ms). New Mexico is no exception to this trend, as employment opportunities in the areas such as land and water resources management, urban planning, environmental consulting, real estate, and military intelligence all demand the geospatial analytical knowledge and skills that the program we are proposing will instill in students.

The CIP code we are attaching to the proposed system is 45.0702 Geographic Information Science and Cartography. This is most adequate code, but it does not fully capture the proposed curriculum or employment opportunities for our students. CIP code 45.0701 Geography is also relevant, yet also not entirely adequate. The Gray Associates data thus need to be interpreted with some caution. Gray Associates data show that a master's program under CIP 45.0702 scores +2 nationally, 0 relative to the NM market, and +17 relative to the 350-mile radius of Las Cruces (LC-350), ranking it in the 89th percentile among all CIP codes. A master's program under CIP 45.0701 scores +7 nationally, +18 relative to the NM market, and +16 relative to the 350-mile radius of Las Cruces (LC-350), ranking it in the 89th percentile among all CIP codes.

Gray Associates data show a robust student demand for the program (74-81% nationally, 82-93% relative to NM, 86-03% relative to the 350-mile radius of Las Cruces (LC-350)) and NMSU has demonstrated an ability to compete for online students with a 26% increase in online graduate student admissions and a 19% increase in online graduate student enrollments over the last 2 years. While the Gray Associates data employment scores are comparatively low, with scores of -3 to -7 for the two codes nationally, relative to the NM market, and relative to the 350-mile radius of Las Cruces (LC-350), this is likely an artifact of the narrow CIP- to SOC- mapping.

An internet search of GIS-, remote sensing, and mapping-related jobs (see the list below for common job titles) on 7/16/2023 reported 379 and 335 jobs for New Mexico and El Paso, respectively, via LinkedIn; 446 and 86 jobs for New Mexico and El Paso, respectively, via Indeed; and 35 and 21 jobs for New Mexico and El Paso, respectively, via USA Jobs. These data suggest a strong demand for graduates from our program in the region.

- GIS Specialist / Analyst / Technician
- Geospatial Analyst / Data Engineer / Systems Analyst
- Mapping Specialist / Mapping Technician / Mapping Manager
- Remote Sensing Scientist / Specialist / Solution Engineer
- Imagery Analyst / Imagery Scientist/ Imagery Network Analyst
- Earth Observations Data Scientist, Radar Engineer, Imagery Product Manager
- Geographer, Cartographer, Cartographic

If the program fills a regional workforce need, describe collaboration between your institution and regional employers in the program development.

Many of the alumni of the NMSU Department of Geography and Environmental Studies (both at the undergraduate and graduate level) have mastered GIS&T skills in the Department and now work in a range of agencies and private sector firms that require these skills. NMSU faculty who have developed this program proposal have had extensive discussions with former students and other professional colleagues working in the field, and these discussions have guided program development, both as regards specific skills employers need and how this program can best help students master these skills. Specifically, we have had discussions with GIS&T professionals that work in the New Mexico Water Resources Research Institute, Bureau of Land Management, National Resources Conservation Service, Agricultural Research Service, and White Sands Missile Range that have been very helpful in developing this program.

Identify where similar degree programs are offered by other public higher education institutions in New Mexico.

Central New Mexico Community College, Southwestern Indian Polytechnic Institute, and Navajo Technical University offer AAS degrees and Certificates in Geographic Information Technology or Geographic Information Systems. New Mexico Highlands University offers an undergraduate minor, an undergraduate certificate, and a graduate certificate in Geographic Information Systems. The University of New Mexico (UNM) and New Mexico State University (NMSU) both offer undergraduate and graduate minors in Geographic Information Science / Geographic Information Science and Technology. UNM also offers a 6 CEUs-based certificate in Geographic Information Systems. With the exception of the UNM-based certificate, none of the certificates or minors are offered fully online. None of the public higher education institutions in New Mexico currently offer a Bachelor's or a Master's degree in GIS&T and, consequently there are also no fully online undergraduate or graduate programs in the state. NMSU and UNM do both offer graduate programs in Geography, which may involve some coursework in GIS&T. However, the degrees are not focused on the topic and they are also not fully online. Within the Paso del Norte region, UTEP does not offer undergraduate or graduate degrees in Geography or GIS&T. The specialized master's program we are proposing thus fills an important gap in New Mexico, especially for working professionals seeking to improve their geospatial careers and recent graduates aspiring to join the fast-growing geospatial workforce.

If similar programs are offered at other public higher education institutions in New Mexico, provide a rationale for offering an additional program.

There are currently no graduate degree programs in GIS&T in New Mexico or the Paso del Norte region. The two Geography graduate programs in the state / region are not fully online and lack the focus on GIS&T. A graduate program is needed because, as some of our collaborators have pointed out, undergraduates do not often come with enough technical experience or a foundation on how to take a project from start to finish. A fully online graduate program is needed to widen access and participation by learners from diverse backgrounds. A fully online specialized master's program in GIS&T will allow working professionals and recent graduates to earn an advanced degree from anywhere in flexible time frames while focusing on the specific skills and knowledge needed for them to advance in their geospatial careers.

List any nearby non-New Mexico institutions of higher learning where the program is being planned or offered, particularly WICHE member institutions.

The University of Arizona offers a Master of Science degree in Geographic Information Systems Technology that can be taken face to face or online. This degree program is a Western Regional Graduate Program (WRGP) program; WRGP tuition for this program is $12,348/year, over 50% above the $8,000/year that the NMSU Global program for online degrees charges. Arizona State University offers an online Master of Arts in Geography, but this program does not focus on GIS&T. Arizona State University also offers a Master of Applied Science in Geographic Information Systems, but this program is not offered online.

Enrollment and Graduation Projections

Student Type	Year 1	Year 2	Year 3	Year 4	Year 5
New Students	10	15	20	25	30

Annual Retention Rate Target (%)

100

Target 100% Graduation Rate (%)

100

Target Job Placement Rate (%)

100

Describe the faculty resources that are needed to initiate the program. Will any additional faculty be needed?

The NMSU Department of Geography and Environmental Studies currently has 4 faculty members that teach research design and GIS&T classes that are the core of the proposed program; details are noted above. We have also received a commitment from the NMSU Office of Digital Learning for a visiting assistant professor position to support the proposed program (commitment letter is included below in attached external letters). This soon to be hired faculty member will help in program development and teach a number of the required classes. As regards the qualifications of the person we will hire, based on the excellent pool of candidates we reviewed for our most recently filled tenure stream GIS&T faculty position, we expect a very high caliber of candidates who would possess both technical GIS&T skills and the ability to teach classes in an online environment.

Descibe the library and other academic support resources that are needed to initiate the program. What, if any, additional resources will be needed?

Owing to efforts of Geography and Environmental Studies faculty to shore up Library holdings in the areas of GIS&T and the excellent work that Library leadership and staff have done on providing access to online resources and supporting our needs for GIS&T resources, we do not anticipate needing additional Library resources. The Library is also working to launch an Emerging Technologies Laboratory that will have robust GIS&T capabilities, and the GIS&T resources in the Library will be available to students in the proposed program. Details of these resources are noted in an attached letter from David Irvin, Department Head of Research and Reference Services.

NMSU also has two units dedicated to supporting teaching and research that can support the proposed program, the NMSU Teaching Academy, and the Office of Digital Learning. Geography and Environmental Studies faculty actively take advantage of a large number of workshops and other events in both units to support teaching and research, and students in the proposed program would have access to these programs, resources, and activities.

Describe the physical facilities of the institution that will be used for the first five years of the program. Will additional space or modifications of existing space be required within the first five years of program operation.

The Geography and Environmental Studies Department has two computer labs that support GIS&T classes and related research, the Spatial Applications Research Center (SpARC) and a 20 station teaching computer lab. The Department possesses licenses for a suite of Environmental Systems Research Institute (ESRI) software tools, and also the NV5 Geospatial Solutions remote sensing software tools that support these labs. The SpARC lab also has two high performance unoccupied aerial systems (UASs, aka drones), survey-grade GPS units, and a lab/field spectroradiometer with diverse accessories. Although we are proposing an online degree program, these facilities and resources will be very helpful in teaching students about a range of state of the art GIS&T tools.

Describe the institution's equipment and technological resources needed for the first five years of the program? What, if any, additional equipment will be needed?

The Geography and Environmental Studies Department has all of the hardware and software tools needed to support the program. NMSU has recently deployed a "College-IT" program to provide departments with general IT support on a college by college basis, and College-IT staff supporting the Geography and Environmental Studies Department are located in the same building as the Department, providing us with excellent IT support. We have also negotiated dedicated server capacity to support both teaching and research activities, resources that would also support the proposed degree program.

Describe any other operating resources needed to initiate the program.

No other resources will be needed to launch this program.

Are there existing external facilities that will be used? Have agreements been established to ensure use of the those facilitates?

No external facilities will be needed to launch the program.

Provide a clear analysis of the projected cost of the proposed program and the sources of funding that will support it for the first five years that the program will be offered. Include a discussion how any of the needed resources discussed in your attachment. This should be completed in collaboration with your institution's financial office.

PMSGIST Resource Needs Document 2023-06-29.docx

Letters of Support

External_letters_list.docx
ODL_Support_VAP_line_Online_GIST_2023.pdf
Library_impact_GIST_Final.pdf
USFWS_Sesnie.pdf
USDA-ARS_Bestelmeyer.pdf
NMWRRI_Sabie.pdf
Wilson_Darlington.pdf
BHInc_Dzur.pdf
WSMR_Hestir.pdf
NMGIC_Talasila.pdf
NMGAC_Runyan.pdf

Accreditation

Is the program seeking specialized accreditation?

No

Is specialized accreditation required for licensure or practice in the program?

No

Has the program already obtained the appropriate specialized accreditation? If so, attach a copy of the letter from the agency granting accreditation?

No

If the program has not yet obtained accreditation but has begun the process of seeking or plans to seek specialized accreditation, specify the name of the agency and provide the time-line for completing the process.

Not applicable, as no accreditation organization exists for this type of program.

If the program does not plan to seek specialized accreditation, provide a rational for not-seeking accreditation here. (if there is not a specialized accrediting organization for this program, indicate so as your rationale).

Not applicable, as no accreditation organization exists for this type of program.

If the program includes any of the following, explain how it will ensure that student work and levels of knowledge competencies achieved will be comparable to those achieved through traditional formats: (Award credit for prior learning; use of compressed time frames; use of on-line deliver; inclusion of accelerated formats; or other approaches to learning.)

We have built the program so that students can start in either fall or spring terms, then proceed through the program at their own pace. The program will be delivered 100% online, and all classes will have a clear pacing guide and timeline with set due dates. All faculty teaching in the program have extensive experience in online teaching, and we are working actively with leadership and staff in the Office of Digital Learning as we develop the program to take full advantage of best online teaching practices. All courses will have fully developed course maps that map course learning objectives (LOs), content module LOs, tools, and learning and assessment activities to ensure continuity of class content and assessment mechanisms.

Will the program be part of a contractual or consortial arrangement (yes/no, explain)?

Not applicable, as the Department of Geography and Environmental Studies is not working with a contractual or consortial arrangement.

If the program is planning any involvement by external organizations (other than from accredited higher education institutions) in the key operations as identified below, provide the information as requested.

Type of Involvement	Name of External Organization	Percent of Involvement
Course placement and advising of students	N/A	0

Briefly describe the planning process for determining the need for this new program, including the role of faculty in the planning and approval process.

The impetus for developing this program arose in discussions with the NMSU Vice President of Research, Luis Cifuentes, in which VPR Cifuentes shared with NMSU faculty his experience with a very successful online GIS&T program that was developed at Texas A&M, Corpus Christi. Given the lack of any such program in New Mexico and the Paso del Norte region, departmental faculty have worked the last 18 months on developing the proposal for this program to meet a regional demand for GIS&T expertise that would allow New Mexico residents to remain in New Mexico for their studies. Faculty also worked with leadership and staff within NMSU's Office of Digital Learning to explore workforce demand for such a program, as well as external GIS&T experts on program content and sequencing.

Describe the process for assessing and improving student learning in the proposed program.

The Department of Geography and Environmental Studies has a robust track record of assessing and improving student learning in its existing programs and will capitalize on this experience and expertise to assess and improve student learning in the proposed program. For each course, faculty will establish measurable unit-, module-, and course-level learning outcomes. They will evaluate the degree to which students achieve these learning outcomes through regular formal and informal assessments of lab exercises, quizzes, and other assignments. Based on these assessments and feedback solicited from students throughout the semester, faculty will adjust their teaching methods and activities as needed to promote student learning and success. Faculty will also evaluate student performance and progress at the end of the semester, e.g., through comprehensive final exams or projects, and use findings from these assessments to revise their courses in subsequent semesters. At the program level, graduate committees holding final exams formally poll committee members on the degree to which they think students achieved the program-level learning outcomes (see above). Results from these surveys will be used to inform curriculum development and to foster student learning and success in the future.

Describe the process for assessing and improving student persistence and completion, in the new program.

We will create and maintain a database containing data on students' progress on several key milestones towards degree completion, including and not limited to admission dates, course completion dates and grades, and degree completion dates. This database will allow us to analyze student persistence and degree completion in a quantitative manner. It will also enable us to identify students who may need additional assistance to make adequate progress toward degree completion. In addition, we will conduct exit surveys to obtain quantitative and qualitative data on student satisfaction, including their perception of how easy it was to stay engaged with the program and complete it.

If any of the institution's accreditation relationship (including other regional, specialized, or national accrediting agencies) are currently under or recommended for a negative status or action (e.g., withdrawal, probation, sanction, warning, show-cause, etc.)

Not applicable, as NMSU does not face these issues.

If the institution is undergoing or facing substantial monitoring, special review or financial restrictions from the U.S. Department of Education or other federal or state government agencies.

Not applicable, as NMSU does not face these issues.

If the institution's senior leadership or board membership has experienced substantial resignations or removals in the past year.

Leadership in the College has been very stable for years, with longstanding College and Associate Deans. NMSU has an Interim Chancellor and Graduate Dean (searchers are ongoing) and a new Provost.

If the institution is experiencing financial difficulty through conditions, such as, a currently declared state of exigency, a deficit of 10% or more, a default or failure to make payroll during the past year, or consecutive deficits in the two most recent years.

None exist; NMSU's financial situation is extremely stable.

Institution Specific Information Area

Primary target audience for the program (e.g., full#time, part#time, traditional college age, working adults, transfer students, military personnel, or particular ethnic group)

The primary audience for this program are working professionals in a range of fields that benefit from employing capably trained GIS&T professionals, including and not limited to land and water resources management, urban planning, environmental consulting, real estate, and military intelligence. The online nature of the program will allow working professionals to take the program at their own pace from any location.

How does the proposed program align with the department, college and university mission?

We have examined how the proposed program would support NMSU's long term strategic plan, LEADS 2025 (see https://leads2025.nmsu.edu/ for details), and we note the following:

• The proposed master's program in GIS&T will help our department attract a large number of students across diverse populations. This will support efforts to increase student enrollment and success at NMSU (LEADS 2025, Goal 1, Objective 1).
• The proposed curriculum will combine cutting-edge and emerging theories, methods, and applications in GIS&T, hands-on training to solve real-world problems, and diverse professional development activities that leverage our partnerships with the private, public, and non-profit sectors. This unique blend of program components support us developing a workforce who can help meet geospatial labor market demands (LEADS 2025, Goal 1, Objective 2) and lead to improved social mobility and enhanced academic and career outcomes (LEADS 2025, Goal 1, Objective 4).
• Students in the program will complete a capstone research project in collaboration with our private, public, and non-profit partners to address actual problems of interest to our partners. In this manner, our program will facilitate the convergence of research to address real-world challenges integrated with graduate student education (LEADS 2025, Goal 2, Objective 1) and meet local and regional needs that align with global challenges (LEADS 2025, Goal 2, Objective 3).

As regards the linkage between the proposed program and departmental goals, the proposed program will help us meet our goals to grow the graduate program in the department and capitalize on the existing strengths of our GIS&T faculty. By doing so, we will train the next generation of GIS&T experts who can help the State of New Mexico meet the considerable challenges it faces in areas such as land and water resource management, adaptations to climate change, urban and environmental planning, and economic development.

Discuss how admissions criteria and strategies will recruit a diverse student body?

The Department of Geography and Environmental Studies actively and intentionally promotes BAJEDI - belonging, accessibility, justice, equity, diversity, and inclusion - at all levels (students, staff, and faculty) and across all activities (hiring, curriculum, etc.):

- Belonging: ensure that people feel like they belong.
- Accessibility: ensure equitable access to opportunities and resources.
- Justice: eliminate barriers to access, equity, diversity, and inclusion.
- Equity: ensure that everyone has what they need to succeed, despite systemic barriers.
- Diversity: embrace and promote differences among many different groups of people.
- Inclusion: foster a sense of belonging, psychological safety, and "showing up."

We pledge to also foster these principles in the new proposed program. We will make focused and deliberate efforts to identify people from diverse groups as potential students, connect to them through intentional engagement, invite them into our program, and work hard to see they are welcome and supported in their work towards degree completion. We will continue to collaborate closely with the American Association of Geographers (AAG) to ensure our efforts are cutting-edge - the AAG is a BAJEDI pioneer in general and within geography in particular (https://www.aag.org/jedi/). For the same purpose, we will also continue to stay actively engaged with research on the topic, including and not limited to innovative BAJEDI projects promoted and funded by the National Science Foundation (NSF; e.g., https://www.nsf.gov/awardsearch/showAward?AWD_ID=2135767&HistoricalAwards=false).

What controls are in place to ensure that the information presented to all constituencies in advertising, brochures, and other communications will be accurate?

NMSU Global marketing staff are responsible for developing all promotional materials, and this includes working with the departmental faculty to confirm that all data included in these materials are accurate. Departmental faculty will review the promotional materials regularly as needed to confirm that marketing materials are accurate and work with NMSU Global staff to develop a timeline for deployment.

Student Records Office Uploads

HLC wants CIP Code information that is currently being offered at both the institutional and degree level for 4-digit and 2-digit CIP codes for all new programs. This information will be provided by the University Student Records office and added to the form during the HED submissions workflow step.

Reviewer Comments

Carol Flinchbaugh (cflinch) (Mon, 10 Jul 2023 19:42:53 GMT): Rollback: Per my email comments about employment opportunities. Please review and amend.

Key: 989

Board of Regents Meeting **Agenda Item # D-3**
Meeting Date: October 16, 2023
Agenda Item Cover Page

☒ Action Item
☐ Consent Item
☐ Informational Item

Presented By: **Efren Delgado**
Department Head
Family and Consumer Sciences

Agenda Item: Food Science - Doctor of Philosophy

Requested Action of the Board of Regents: Approval of the Food Science - Doctor of Philosophy program as presented.

Executive Summary

Food science is the study of the physical, biological (including microbiological) and chemical makeup of food, to better understand food processing and improve food products for the general public. Food scientists develop ways to process, preserve, package and /or store food, according to industry and government specifications and regulations.

Jobs in Food Science include: Food Quality, Food Safety & Microbiology, Food Engineering, Product Development. Food Chemistry, Food Marketing & Sales, Food Regulations & Inspections, and Sensory Science and offer competitive salaries commensurate with other science and engineering degrees. The median salary for professionals working in the science of food is $92,000 and employment opportunities include the food industry, academia, USDA, FDA, consumer research, regulatory affairs, basic research, food marketing & sales, and nutrition.

Value-added agriculture is one of the nine targeted industries that the State of New Mexico has identified to grow into the future. Several stakeholders and studies conducted by other organizations in New Mexico have identified an opportunity to expand the agriculture industry into the food processing sector. NMSU is uniquely located to address borderland food safety and security issues. The Ph.D. program will attract students from underrepresented minorities.

References

See attached proposal and presentation.

Prior Approvals

October 12, 2023 –Regents Student Success Committee
(a complete list of prior approvals is available in the attached materials)

BE BOLD. Shape the Future.
New Mexico State University
aces.nmsu.edu

Department of Family and Consumer Sciences (FCS)

Proposal for a Ph.D. in Food Science

Efren Delgado, Luis Sabillon Galeas, Nancy Flores, Sergio Martinez-Monteagudo, John Floros, Willis Fedio, Rolando Flores, Francine Giotto, Donald Conner.

Board of Regents

What is Food Science? (Institute of Food Technologists - IFT)

Food science draws from many disciplines:

- Food science is the study of the physical, biological (including microbiological) and chemical makeup of food, to better understand food processing and improve food products for the general public.
- Food scientists develop ways to process, preserve, package and /or store food, according to industry and government specifications and regulations.

Jobs in Food Science

- Food Quality
- Food Safety & Microbiology
- Food Engineering
- Product Development
- Food Chemistry
- Food Marketing & Sales
- Food Regulations & Inspections
- Sensory Science

Income

- Competitive with other science and engineering degrees.
- Median salary for professionals working in the science of food is $92,000.

Employers Include: Food industry, academia, USDA, FDA, consumer research, regulatory affairs, basic research, food marketing & sales, and nutrition.

Required coursework- At least 42 credits must be completed from the following:

Prefix	Title	Credits
Students will take at least 15 credits from the following: [4]		**15**
FSTE 600	Special Research Program	1-6
FSTE 698	Doctoral Reserach	1-6
FSTE 520	Graduate Study in Food Microbiology	3
FSTE 521	Graduate Study in Food Chemistry	3
FSTE 523	Food Processing Technologies	4
FSTE 524	Sensory Evaluation of Foods	3
FSTE 525	Graduate Study in Food Analysis	3
FSTE 531	Food Preservation	3
FSTE 598	Special Research Programs	1-4

Prefix	Title	Credits
Students are required to take at least 6 statistic credits from the following:		**6**
AXED 5510	Research Methods	3
AXED 5515	Data Collection and Analysis	3
AEEC 503	Introduction to Quantitative Methods	3
Required Courses		**21**
FSTE 605	Doctoral Seminar	3
FSTE 700	Doctoral Dissertation	18
Total Credits		**42**

Existing Resources:

- **New food science building (F'23)**
- Food microbiology lab
- Food safety lab
- Food pilot plant
- Food chemistry lab
- ACES manufacturing facility

Faculty Resources

- Existing investment in a critical mass of faculty with food science expertise.
- Record of national and international collaborations.
- High research productivity. Over 250 peer reviewed publications and more than 10,000 citations, h-index 12 – 37. (Web of Science)

Well-established collaboration with relevant departments across campus including: Animal Science, Engineering, Biology, Biochemistry, Plant and Environmental Sciences, Fish, Wildlife and Conservation Ecology, School of Hotel, Restaurant and Tourism Management, Agricultural Economics & Agricultural Business.

Based on the overview of 01 Agriculture CIP (Classification of Instructional programs) data:

- The Ph.D. in Food Science ranks #3 in overall student demand nationwide.
- 11 % of employees in food science related positions have a Ph.D.
- There is a record of steady student demand, enrollment and completion in the discipline.
- There are no food science doctoral programs in the region. This program will allow students from NM to stay in-state and will meet the needs of students in CO, W TX and AZ.
- Industry stakeholders in the region have expressed a need for this program as evidenced by letters of support.

- Food Science is the #1(01 CIP) ranked Ph.D. program in terms of international student demand. (2019 – 2023 data Study portal https://studyportals.com/students/)
- From 2020-2021, Food Science Ph.D. programs experienced a 68 %, year-over-year, increase in enrollment.
- Programs located in the western United States were responsible for only 13 completions compared to 160 nation - wide.
- Ph.D. – More attractive for undergraduate students.
- The Ph.D. program will attract students from different disciplines and will promote interdisciplinary research.

IMPORTANCE TO NM

- Value-added agriculture is one of the nine targeted industries that the State has identified to grow into the future.
- Several stakeholders and studies conducted by other organizations in New Mexico have identified an opportunity to expand the agriculture industry into the food processing sector (NEW MEXICO ECONOMIC DEVELOPMENT DEPARTMENT-Center for Innovation Strategy & Policy@ SRI International-2021).
- NMSU is uniquely located to address borderland food safety and security issues.
- The Ph.D. program will attract students from underrepresented minorities (Tribal communities, Hispanics).
- Attract NM-Students –Experts to Stay in The State.
- Graduates will contribute to the economic development of NM

Projected Costs

- **NO** additional resources including faculty, facilities, equipment, technological and library resources are being requested to support the program.
- The department has secured a commitment from the Director of CESFAS to fund 2 graduate assistantships.
- Other support will come from grants. (Over $ 3 million has been approved on grants and over $ 25 million is under-review).

Enrollment and Graduation Projections

Student Type	Year 1	Year 2	Year 3	Year 4	Year 5
New Students	3+	3+	3+	3+	3+
Continuing Students	0	3+	6+	6+	9+
Total Students	**3**	**6**	**9**	**9**	**12**
Graduates	0	0	0	3+	3+

Dr. Efren Delgado

Dr. Francine Giotto

Dr. John Floros

Dr. Nancy Flores

Dr. Rolando Flores

Dr Willis Fedio

Dr. Luis Sabillón

Dr. Don Conner

Dr. Sergio Martinez

Thank you

Efren Delgado
edelgad@nmsu.edu
575-646-1759

984: FOOD SCIENCE - DOCTOR OF PHILOSOPHY

In Workflow

1. Student Records Office - Programs (gdmart@nmsu.edu)
2. AG Academic Dean (deconner@nmsu.edu)
3. Graduate Dean (phame@nmsu.edu; cflinch@nmsu.edu)
4. UPAC - Chair (jlakey@nmsu.edu)
5. Provost (sstovall@nmsu.edu)
6. President (leslie86@nmsu.edu)
7. Board of Regents (cavotta@nmsu.edu)
8. Graduate School - Council of Deans (phame@nmsu.edu; cflinch@nmsu.edu)
9. Student Records Office - HED (gdmart@nmsu.edu)
10. Student Records Office - CIP (gdmart@nmsu.edu)
11. MA HLC (sstovall@nmsu.edu)
12. Student Records Office (gdmart@nmsu.edu)

Approval Path

1. Mon, 03 Jul 2023 15:24:20 GMT
   Gabrielle Martinez (gdmart): Approved for Student Records Office - Programs
2. Fri, 14 Jul 2023 17:42:07 GMT
   Donald Conner (deconner): Approved for AG Academic Dean
3. Fri, 14 Jul 2023 20:48:07 GMT
   Carol Flinchbaugh (cflinch): Approved for Graduate Dean
4. Fri, 18 Aug 2023 17:08:12 GMT
   Joe Lakey (jlakey): Approved for UPAC - Chair
5. Thu, 07 Sep 2023 16:38:40 GMT
   Shelly Stovall (sstovall): Approved for Provost
6. Mon, 18 Sep 2023 21:46:24 GMT
   Lydia Duran (lbduran): Approved for President

New Program Proposal

Date Submitted: Fri, 30 Jun 2023 18:39:00 GMT

Viewing: 984 : Food Science - Doctor of Philosophy

Last edit: Thu, 21 Sep 2023 15:21:58 GMT

Changes proposed by: Efren Delgado (edelgad)

Submission Information

The Degree Type will factor into the level and the submissions that must occur for HED and HLC.
• Community College Types: Applied Associate Degree, Associate Degree, Certificate, Concentration
• Main Campus Undergrad Types: Bachelor's Degree, Concentration, Minor
• Main Campus Graduate Types: Master's Degree, Doctoral Degree, Certificate, Concentration, Minor

Degree Type

Doctoral Degree

The Degree Title dropdown has all existing degree titles in Banner, if you do not see the one you are looking for you will select "Other" then in the New Degree Title box you will type out the official title of the degree (as you would want it to appear on a students record, transcript, and/or diploma).

Degree Title

Doctor of Philosophy

Academic Level

Graduate

The Catalog Title will be what is displayed in the catalog page. The standard format is Major (Concentration) - Degree Title. (I.e., Mathematics (Secondary Education) - Bachelor of Science. Note: If there is no concentration you would just list the Major - Degree.

Catalog Title

Food Science - Doctor of Philosophy

College
Agricult/Consumer/Environ Sci

Campus
Main Campus

Department
Family & Consumer Sciences

Effective Catalog
2024-2025

Program Format
Traditional-Face to Face

CIP Code
011001 - Food Science.

Credit Hour Total
42

Normal or typical length of time for students to complete the program (in years)
3 - 7

Curriculum Information

Program Learning Outcomes

	Learning Outcomes
Outcome 1	Students will demonstrate proficiency in experimental design, scientific writing, and data analysis.
Outcome 2	Demonstrate mastery of food science content through a thesis defense and preparation of at least one manuscript for peer review in a scientific journal.
Outcome 3	Students will utilize technology and science to solve food – science-related problems and independently conduct food science-related scientific research.
Outcome 4	Students will develop teaching skills as Teaching Assistants in food science-related courses
Outcome 5	Students will conduct scholarly or professional activities in an ethical manner

List of academic departments/units and or institutions involved in the delivery of courses

Department/Unit
Family and Consumer Science

The Course Requirements, need to be in the standard format for the catalog because this piece of the form will be imported directly onto the catalog page. See the Student Records Website for a guide. The total number of credits at the bottom of the course list will be the "official" total for the degree. Please make sure it adds up correctly.

Course Requirements

Coursework for students with a Master of Science degree should complete 42 credits:

Prefix	Title	Credits
Requirements		
Area of Research Emphasis		
Students will take at least 15 credits from the following: [4]		*15*
FSTE 6997	Special Research Program	1-6
FSTE 6991	Doctoral Reserach	1-6
FSTE 5110	Food Microbiology	0,3
FSTE 5120	Food Chemistry	3
FSTE 5230	Food Processing Technologies	0,4
FSTE 5250	Sensory Evaluation of Foods	0,3
FSTE 5140	Food Analysis	0,3
FSTE 5130	Food Preservation	3
FSTE 5997	Special Research Programs	1-4

Students are required to take at least 6 statistic credits from the following: [1]		*6*
AXED 5510	Research Methods	3
AXED 5515	Data Collection and Analysis	3
AEEC 5110	Introduction to Quantitative Methods	3
Required Courses		*21*
FSTE 6910	Doctoral Seminar	1
FSTE 7000	Doctoral Dissertation	1-12
Total Credits		**42**

Coursework for students with a Bachelor of Science degree should complete 72 credits:

Prefix	Title	Credits
Requirements		
Statistics, Research Methodology, and Master Thesis Courses		*12*
Statistics Course [1]		3
Research Methodology Course [2]		3
FCSC 5999	Master's Thesis (at least 6 credits must be taken)	6
Take at least 12 credits from the following: [3]		12
FSTE 5110	Food Microbiology	0,3
FSTE 5120	Food Chemistry	3
FSTE 4998	ACES Foods at NMSU-Experiential Learning	1
FSTE 4997	Special Problems	1-4
FSTE 4996	Special Topics	1-4
FSTE 5230	Food Processing Technologies	0,4
FSTE 5250	Sensory Evaluation of Foods	0,3
FSTE 5140	Food Analysis	0,3
FSTE 5130	Food Preservation	3
FSTE 5240	Experimental Foods	3
FSTE 5997	Special Research Programs	1-4
Area of Research Emphasis		
Students will take at least 15 credits from the following: [4]		15
FSTE 6997	Special Research Program	1-6
FSTE 6991	Doctoral Reserach	1-6
FSTE 5110	Food Microbiology	0,3
FSTE 5120	Food Chemistry	3
FSTE 5230	Food Processing Technologies	0,4
FSTE 5250	Sensory Evaluation of Foods	0,3
FSTE 5140	Food Analysis	0,3
FSTE 5130	Food Preservation	3
FSTE 5997	Special Research Programs	1-4
Students are required to take at least 6 statistic credits from the following: [1]		*6*
AXED 5510	Research Methods	3
AXED 5515	Data Collection and Analysis	3
AEEC 5110	Introduction to Quantitative Methods	3
Required Courses		*21*
FSTE 6910	Doctoral Seminar	1
FSTE 7000	Doctoral Dissertation	1-12
Total Credits		**72**

1 Students select a statistics course with the help of their committee chair (major advisor). Alternative statistic courses can be taken besides AXED 5510 Research Methods, AXED 5515 Data Collection and Analysis, and AEEC 5110 Introduction to Quantitative Methods.

2 Students select a research methodology course with the help of their committee chair (major advisor).

3 Students must take a total of 30 credits to continue to the Area of Research Emphasis coursework requirement for the Ph.D.

4 Other courses may be used to satisfy the required credits as approved by the student's committee chair (major advisor).

The Road Map, need to be in the standard format for the catalog because this piece of the form will be imported directly onto the catalog page. See the Student Records Website for a guide. All courses and the total number of credits at the bottom of the roadmap should match the Course Requirements list.

Road Map

Students will select classes with the help of their committee chair (major advisor) based on background and interests. Students are expected to complete their degree in three to four years but may be allowed up to seven years to complete the requirements. Candidates are paired with a committee chair from their department and then they select two other committee members, at least one must be from another department.

Ph.D. candidates must meet the following requirements:

- Completion of a minimum of 6 semesters with at least two occurring after the comprehensive exam.
- Maintain a minimum grade point average of 3.0
- Completion of the degree within seven years of admission.
- Enrollment in at least 1 credit per semester, or 9 credits if on a GA.
- Enrollment in FSTE 6910 Doctoral Seminar, Doctoral Seminar, each year for three semesters.
- Gain experience as a teaching assistant for at least two semesters.
- Present a public seminar during FSTE 6910 Doctoral Seminar to be submitted as an oral or poster presentation at a regional/ national or international conference.
- Have at least one refereed journal as the first author accepted for publication
- Yearly completion of Student Progress Review
- Successful completion of three exams:

1. Qualifying exam – completed by the end of the first year. Content to be determined by the Committee.

2. Comprehensive exam – The comprehensive examination consists of two parts: written and oral presentation of the research proposal. Students must pass the examination within 24 months of passing the qualifying examination and may not take 7000-level courses until both parts of the comprehensive examination have been passed.

3. Final oral exam – taken after completing all degree requirements, but not earlier than one month before completing six registration units. During this time, students are enrolled in 7000-level courses. The program of study must include a minimum of 18 credits of doctoral dissertation. There is a minimum period of one year between the comprehensive examination and the final oral examination ("dissertation defense").

Satisfactory completion of a dissertation under the supervision of the Committee.

Students should consult the Graduate School website for specific information regarding the completion of the degree and submission of the dissertation

The admission requirements are needed if the program has a specialized admission process that exceeds the campus requirements for either the Undergraduate or Graduate admission standards.
• For graduate programs, the Graduate School asks for the following information (Provide a summary of the documents and specific information each student will need to provide to be considered for the program): Description, Statement of Purpose/Letter of Interest; Specialty Letter of Interest; Resume; Writing Sample; GRE; GMAT; Special Questions (if yes, what questions need to be answered); Letters of Recommendation (how many are required); NMSU Faculty Representative (if yes, how many); Foreign Language; WES Evaluation; Special License or Verifications (what license/verification)

Admission Requirements

In addition to the requirements of the NMSU Graduate School, applicants should include:

- A letter of intent describing the applicant’s goals for academic and professional development and proposed major advisor.
- Three letters of recommendation from academic or professional sources.
- GPA 3.5 or above.

A master's degree is preferred, but not required. A Doctor of Philosophy in Food Science can be earned with 72 credits (for students without a master's degree) of which at least 18 credits must be dissertation research credits. Students who hold a master's degree may transfer up to 30 hours of that degree toward a Ph.D. Students holding a master's degree in food science-related areas, can earn a Doctor of Philosophy in Food Science with 42 credits, from which at least six credits must be statistics courses.

Does this program lead to licensure, yes or no?

No

Is credit for prior learning built into the program, if yes explain?

Students may transfer up to 30 credits from their MS program into the Ph.D. program, as approved by their major advisor.

Faculty Members Employed to Teach in the Program

Existing Personnel

John Floros

FTE

1

Course load and courses they will teach in the proposed program

Advising

Courses taught in other programs currently offered

Purdue University 1. FS 444 – Statistical Process Control, senior level 2. FS 445 – Food Packaging, senior level 3. FS 591 – Fruit and Vegetable Processing, senior/graduate level, and 4. FS 690B – Process/System Optimization Methods 5. FS 640 – Aseptic Processing & Packaging, graduate level 6. FS 654 – Food Processing & Packaging, graduate level, and 7. FS 655 – Industrial Case Studies, graduate level Pennsylvania State University1. FD SC 411 – Managing Food Quality, senior level 2. FD SC 105 – Food, Facts & Fads, freshman level, and 3. FD SC 200 – Introduction to Food Science, sophomore level 4. FD SC 497B – Food Systems in Central America (with a 10-day visit to Costa Rica) 5. FD SC 497F – Food Systems in Italy (with a 10-day visit to Italy) Kansas State University At KSU, I was a regular contributor as an invited lecturer to several courses New Mexico State University During my Presidency at NMSU, I often contributed as an invited lecturer, and I lead the instruction of one course: 1. UNIV 395/495 – Presidential Ambassadors, junior/senior/graduate level The course includes interactive group activities, research projects, self-reflection activities, exploration of Higher Education and NMSU Leadership, and presentations by local and regional leaders.

Description of academic qualifications

PhD. Food Science and Technology

Prior instructional responsibility and other experiences relevant to assigned courses

Previous professor at Purdue University. Has worked as a professor and the head of the Pennsylvania State University Department of Food Science. 68th president of the Institute of Food Technologists

For graduate programs, document scholarship and research capability

Research includes the application of chemical engineering, applied mathematics and industrial statistics to the field of food process engineering and packaging. Focusing in developing innovative, efficient, and effective food processing and packaging systems, improving the value, quality, safety, and shelf life of food products, and advancing optimization methodology for better processes and packaging systems. Projects have addressed the understanding and modeling of several complex physicochemical and biochemical phenomena that occur during food processing and food packaging, and the development and optimization of many food manufacturing operation.

For doctoral programs, document faculty experience in directing student research

Throughout my career, I have been very active in graduate student training. I have advised or co-advised 22 graduate students (10 M.S. and 12 Ph.D.). Five (5) of those students, having their own funding from fellowships, scholarships, and/or governmental support, chose me as their major professor because of my research expertise and excellent national and international reputation. In addition, two (2) Postdoctoral Fellows and two (2) Visiting Scholars have worked under my direction in my laboratory. Additionally, I have served as a member of the Advisory Committee for 42 other graduate students.

Existing Personnel

Efren Delgado

FTE

0.35

Course load and courses they will teach in the proposed program

FSTE 621 Advanced Studies in Food Chemistry
FSTE 605-Doctoral Seminar

Description of academic qualifications

PhD. Food Science and Technology, Technische Universitaet Berlin, Germany

Prior instructional responsibility and other experiences relevant to assigned courses

Has advised Post-doctoral students. Graduated 55 master's students, and 5 Ph.D. students. Currently, advising 4 Ph.D. students, a major advisor to four master's students, and serving on 19 master's committees.
Has five externally funded grants totaling over $ 2 million. Author of over forty-seven peer-reviewed articles and three books in food science and biotechnology, more than 100 conference proceedings in food science and biotechnology.

For graduate programs, document scholarship and research capability

Alternative proteins sources- Chemistry and Food Applications. Prediction of chemical and structural interactions in extrusion processes by molecular dynamics simulation. Product development with glandless cotton seed. Texturization and Extrusion of cotton seed proteins. Aquaculture feed. Ruminant feed technology.

For doctoral programs, document faculty experience in directing student research

Over 20 years of experience directing and supervising graduate and undergraduate students, Demonstrated leadership for strong and relevant programming in research, teaching and extension, developing and managing budget.

Existing Personnel

Luis Sabillon-Galeas

FTE

1

Course load and courses they will teach in the proposed program

FSTE 620 Advanced Studies in Food Microbiology (3)

Courses taught in other programs currently offered

Prior to joining NMSU, Sabillón was an assistant professor of practice at the University of Nebraska-Lincoln where he conducted research in applied food safety and taught two upper-level undergraduate courses in the area of commodity processing. He received his Ph.D. from the University of Nebraska-Lincoln, where his research evaluated the impact of antimicrobial interventions to improve the microbiological safety of wheat flour and flour-based foods using a risk-based approach.

Description of academic qualifications

Ph.D. Food Science and Technology, University of Nebraska- Lincoln

Prior instructional responsibility and other experiences relevant to assigned courses

Conduct grant-funded research and extension programming in the area of food safety microbiology. Collaborate as part of the Center of Excellence on Sustainable Food and Agricultural Systems. Mentor domestic and international graduate and undergraduate students. Provide technical advice, workforce training, and food safety/regulatory compliance training to clientele in the state and region to improve the safety and quality of the food supply chain. Collaborated in the development of online modules, training activities, and workshops in food sanitation and related subjects. Collaborated as part of the Applied Research and Engineering unit in The Food Processing Center

For graduate programs, document scholarship and research capability

Luis Sabillón is an assistant professor in the Department of Family and Consumer Sciences. His research program aims to improve the microbiological safety of food products by contributing to the understanding of pathogen ecology, and by developing antimicrobial intervention strategies along the farm-to-table continuum. The long-term goal of Sabillón's research is to develop a better understanding of how environmental factors influence the survival, prevalence, and transmission dynamics of enteric pathogens in agricultural regions and food processing plants, and how that relates to emergence of phenotypic traits, such as antibiotic resistance.

For doctoral programs, document faculty experience in directing student research

Mentor domestic and international graduate and undergraduate students. Provide technical advice, workforce training and food safety/regulatory compliance training to clientele
in the state and region to improve the safety and quality of the food supply chain.

Existing Personnel

Sergio Martinez-Monteagudo

FTE

0.7

Course load and courses they will teach in the proposed program

FSTE 547 Experimental Foods

Description of academic qualifications

Ph.D. Biosource and Food Engineering- University of Alberta, Canada

Prior instructional responsibility and other experiences relevant to assigned courses

Food Safety Laboratory Director conducts research on rapid detection methods for pathogens in foods and next-generation sequencing for food safety. Provides process authority service and is a technical resource for growers, processors, and regulators. Provides assistance to the food processing industry through product and process development, troubleshooting production issues, development of nutrition facts panels, HACCP plans and Listeria control programs.

For graduate programs, document scholarship and research capability

Research interest The generation of waste and byproducts is ubiquitous throughout the entire agricultural chain. Instead of landfilling, these materials can be turned into value-added products, such as fine chemicals, micronutrients, ingredients, and additives. Creating value from waste and byproducts is multidisciplinary in nature since it involves the application of a number of disciplines to create a

desirable modification. This research strives to integrate concepts from engineering, chemistry, nutrition, and microbiology to develop effective, affordable, and safe solutions.

Existing Personnel

Nancy Flores

FTE

1

Course load and courses they will teach in the proposed program

FSTE 601-Special Research Programs
FSTE 698- Doctoral Research

Courses taught in other programs currently offered

Food Preservation special topics: A 2 ½ day intensive workshop hands-on courseon various techniques of canning, dehydration and freezing specific to extension home economists. Food Preservation HNFS 331/531: course on food preservation including fermentation. Food Microbiology HNFS 320/520 course on the microbiological aspects of various foods.

Description of academic qualifications

PhD, Food Science, Kansas State University, Manhattan, KS

Prior instructional responsibility and other experiences relevant to assigned courses

Extension Food Technology. New Mexico State University responded to a grassroots stakeholder initiative by developing and implementing a Food Technology program. Assist food producers in NM by providing information on food regulations and with services such as process review of acidified foods and analysis for nutritional labeling. Food processors receive direct technical assistance for product development, labeling, and marketing of new food products.

Existing Personnel

Rolando Flores

FTE

0.15

Course load and courses they will teach in the proposed program

FSTE 600- Special Research Program
FSTE 698- Doctoral Research

Courses taught in other programs currently offered

Taught graduate courses (Advanced Grain Processing Technologies - GRSC-840, Milling Processing Technology Management - GRSC-734) and undergraduate courses in grain milling (Milling Technology II, GRSC-730; Management Applications in Grain Processing Industries - GRSC-630, Principles of Milling, GRSC-100). Developed GRSC-840 as a new K-State course.

Description of academic qualifications

PhD, Grain Science, Kansas State University

Prior instructional responsibility and other experiences relevant to assigned courses

Has been head of the Food Science and Technology Department, and Director of The Food Processing Center at the University of Nebraska-Lincoln. Has an extensive career in teaching, research, and Extension programs at Kansas State University and Iowa State University as well as years of federal agency experience.

Existing Personnel

Donald Conner

FTE

0.15

Course load and courses they will teach in the proposed program

FSTE 600 - Special Research Programs
FSTE 698 - Doctoral Research

Description of academic qualifications

University of Georgia, Athens; Food Science (Food Microbiology)

Prior instructional responsibility and other experiences relevant to assigned courses

Associate Dean and Director of Academic Programs. Has been department head in the Dept. of Poultry Science, Auburn University, Auburn, AL

For graduate programs, document scholarship and research capability

• Oversaw planning, construction, and occupancy of new $20+M state-of-the-art Poultry Science Building.
• Envisioned, planned and now building new $34M Charles C. Miller Jr. Poultry Research and Education Center (aka farm), a major funding partnership between university, industry, and private donors.
• Poultry & Animal Nutrition Center and Feed Mill, 2012. $7.1M (primarily private funding).
• Two animal care & use facilities and a technology test facility, 2016. $2.5M (private funding).
• Education & Administration Building, 2018. $2.5M (single gift funded this building).
• Pilot Processing Plant, 2019 est., $6.9M (private + university funding).
• 13 Remaining facilities + support costs, 2019-2021 est. ~$15M (private + university funding).
• Planned, designed and constructing new BSL2 avian disease research facility, 2019. $2.9M.
• Gained AAALAC accreditation and reaccreditation for the department's animal care and use facilities.

For doctoral programs, document faculty experience in directing student research

• Served as departmental Graduate Program Officer
• Led 6 Ph. D. and 8 M.S. students to degree completion
• Successfully merged food science faculty and academic program from College of Human Science into Department of Poultry Science and College of Agriculture.
• Obtained institutional and state approval for BS degree in Food Science.
• Developed new and appropriately targeted student-learning and program outcomes, as well as corresponding assessment criteria for 10 degree tracks.
• Increased gender, ethnic and discipline diversity among departmental faculty.
• Established and expanded active undergraduate recruitment, retention and placement program.
• Implemented ePortfolio development project and support for undergraduate students
• Executed MOU's for 2+2 "Poultry Science Pathway" programs with three community colleges.
• Managed and allocated $120-$140k annually in undergraduate scholarships from endowments, foundations, and other sources. Four new scholarship endowments and several other annual scholarships, fellowships and other means of student recognitions established.
• Coordinated and led externally reviews of Department.
• USDA-CSREES.
• Auburn University Academic Program Review.
• Accreditation (SACS) site visits.

Existing Personnel

Willis Fideo

FTE

1.0

Course load and courses they will teach in the proposed program

FSTE 598 Special Research Problems

Description of academic qualifications

Ph.D., Food Microbiology, Department of Food Science, University of Alberta, Edmonton, Alberta, Canada

Prior instructional responsibility and other experiences relevant to assigned courses

Established a Food Microbiology Laboratory for pathogen detection in foods. Manage Biosafety Level 2 Laboratory. Manage laboratory staff: 5 analysts and 5 students. Work with clients to develop experimental protocols for the development and evaluation of microbial assays in food and environmental samples. Courses taught: Food Products and Processing, Food Microbiology, Special Topics in Food Microbiology, Fluid Food Products, Quality Assurance for the Food Industry. Write reports and work with laboratory staff to prepare final reports. Review processing procedures for New Mexico food products. Provide technical and analytical support for food processors, including processing and formulation optimization. Conduct short courses for Food Emergency Response Network Trainings, Better Process.

For graduate programs, document scholarship and research capability

Development and evaluation of procedures for rapid detection and isolation of bacterial pathogens from foods using: Real Time PCR, Immunoassays, Immunomagnetic Separation Technologies, and cultural procedures. Incidence and control of pathogenic bacteria in chile and chile products. Safety of southwestern and imported foods

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Existing Personnel
Francine Giotto

FTE
0.25

Course load and courses they will teach in the proposed program
FSTE 525 Graduate Study Food Analysis

Courses taught in other programs currently offered
Meat Industry, Food Safety, and Quality Systems – AGSC 255

Description of academic qualifications
Ph.D. University of Nevada Animal Science and Food Safety

Prior instructional responsibility and other experiences relevant to assigned courses
RNA extraction, cDNA library construction, primer designing, RT-PCR. Biosafety level 2 training, microbial county analysis, bacteriophage isolation, and amplification. Gas chromatography, volatile compounds, Soxhlet extractor. Carcass characteristics and composition, proximate analysis, objective tenderness (WBSF, slice shear force), sensory analysis, instrumental color, fatty acid profile, volatile compounds, and lipid oxidation.

For graduate programs, document scholarship and research capability
Effects of grain and grass-fed diets on miRNA expression and meat quality attributes of beef steers. miRNA expression in raw, cooked, and digested meats.

Documentation of department faculty support
CurriculumCommitteePhDProposalMemo.pdf
Floros Letter of support for PhD Program.pdf
Support Letter - PhD Program LS.pdf
Nancy FLores - PHD support.pdf
Letter of support PhD SM.pdf
Letter of support PhD Giotto.pdf
Letter of support PhD ED.pdf
Food Science PhD support letter Don Conner.pdf
Letter of support PhD RF.pdf
Jay Lilywhite.pdf
Willis Fedio.pdf
Department HEad FCS-Letter of support-PhD-Food Science.pdf
Food Science PhD LOR_Brewer.pdf

Curriculum Committee Approval
Curriculum Committe ACES -Food Science PhD 2023 Proposal Support Memo.pdf

Gray Associates Data
01-1001 Data for New PhD Program Proposal.pdf
01-1001_Food Science_new_phd_proposal.pdf

NM Higher Education Department

Describe your institution's plan for periodic evaluation of program effectiveness. Include criteria that will be used to determine effectiveness.
The main criteria used to determine program effectiveness in terms of quality will be early career placements of students completing the program, research products, documentation of the impact of the research, and documented food-industry impact.
Gray Associates data will be used to quantify real costs associated with the program based on measurable inputs including faculty salaries, fractional workloads associated with programs, and credit hour production. This system will be used to measure cost-effectiveness, compared to other doctoral programs at NMSU. Other standard metrics that apply to all programs, such as retention and time-to-degree, will also be used.

The proposed program must meet one or more specified needs within the state or region. Clear and convincing evidence must be provided of the reality and extent of such need.
New Mexico has identified nine target industries that the state wishes to grow into the future. Sustainable and Value-Added Agriculture is one of the nine targeted industries . Based on the NM Economic Development Department "Empower & Collaborate" report, Sustainable and Value-Added Agriculture needs attention from state and local leaders for workforce development, incentives,

institutional capacity, and institutional alignment. New Mexico's agricultural producers lead the United States in the production of chiles and pecans, alongside the state's strong dairy industry. On a more local scale, the value-added agriculture industry serves as a vital source of income and employment for many located in New Mexico's rural communities, including the state's large Native American population. Subsequently, supporting employees and employers in New Mexico's value-added agriculture will also strengthen New Mexico's rural communities. Preventing New-Mexico-grown produce and livestock to be processed and commercialized out of state. Several stakeholders and studies conducted by other organizations in New Mexico have identified an opportunity to expand the agriculture industry into the food processing sector.
The Ciudad Juarez–El Paso–Las Cruces Borderplex comprises the 7th largest manufacturing hub in North America representing a strong collaboration potential for research, teaching and outreach with partners Universities in Northern Mexico. The proposed program will promote student and faculty exchange with universities in the border region as well. The collaboration with result in dual degree programs, joint publications, and grant proposals.
The NM Economic Development Department reports a 27.4 % job growth in sustainable and value-added agriculture between 2010 and 2020. Manufacturing in N.M. is a small and growing sector that can be developed into a sizable cluster that provides residents with STEM-based education and employment opportunities. Also, high specialization in value-added agriculture is needed.
New Mexico and the surrounding region currently do not offer a Ph.D. program in food science. This is a problem for students in the region that wish to pursue graduate degrees in either field beyond the master's level. The Institute for Food Technologists (the scientific society for undergraduate programs) lists 45 graduate programs in Food Science in the US. Only one of those programs is within 500 miles (Texas Tech University). Our proposed Ph.D. program will allow us to serve underrepresented minorities such as the Native American population in our state, which will differentiate from Texas Tech. Currently, doctoral programs in Food Science do not exist in New Mexico, leaving interested NMSU graduates and New Mexico residents to pursue such a degree out-of-state. By 2050 food production must increase 70% to feed 9 billion people. As a consequence, science-based improvements in food science and food systems are critically significant. The US Bureau of Labor Statistics projects that overall employment of agricultural and food scientists will grow seven percent from 2016 to 2026.

If the program fills a regional workforce need, describe collaboration between your institution and regional employers in the program development.

An advisory board with people representing producers including chile, dairy, meat, and others, community organizations, and relevant regulatory agencies will be established to maintain close collaboration with stakeholders. The results and measurable outcomes of the program will be shared with the Advisory Committee on an annual basis.
Potential employers from the value-added agriculture industry in the NM, have expressed the need for a Ph.D. program in Food Science (see letters of support). This degree program will provide students with a viable option, after which, they can pursue careers as Food Scientists, Food Technology, and Food Processors, Research & Development Specialists, Professors, or Food Policy Analysts. Students completing this degree will be uniquely poised to combine their knowledge and expertise to support the value-added agriculture in NM.

To work as a Specialist within the Cooperative Extension Services and provide content expertise at the state level, a doctoral degree in a related field is required. We have limited degrees available at NMSU at the doctoral level that relate to the Family and Consumer Sciences field which has pressing needs at the state specialist level. There is no doctoral degree available at NMSU that relates to food science, in a state with great needs in this particular area of value-added agriculture, a major pillar of focus for the College of Agricultural, Consumer, and Environmental Sciences and a primary focus for the state-supported Center of Excellence in Sustainable Food and Agricultural Systems (CESFAS).

Identify where similar degree programs are offered by other public higher education institutions in New Mexico.

New Mexico and the surrounding region currently do not offer a Ph.D. program in food science. This is a problem for students in the region that wish to pursue a graduate degree in this field beyond the master's level.

If similar programs are offered at other public higher education institutions in New Mexico, provide a rationale for offering an additional program.

N.A.

Enrollment and Graduation Projections

Student Type	Year 1	Year 2	Year 3	Year 4	Year 5
New Students	3+	3+	3+	3+	3+
Continuing Students	0	3+	6+	6+	9+
Graduates	0	0	0	3+	3+

Annual Retention Rate Target (%)

100

Target 100% Graduation Rate (%)

100

Target Job Placement Rate (%)

100

Describe the faculty resources that are needed to initiate the program. Will any additional faculty be needed?

No additional faculty is needed. The department has the faculty resources necessary to support the proposed degree program. The program and its coursework are based on the existing Master's degree program. Through a redistribution of workload, the current faculty members, identified above, will provide instruction, supervise PhD students, and pursue funding opportunities to support the program without diminishing the programs currently serving undergraduate and graduate students.
The program has secured a commitment from the Director of the Center of Excellence in Sustainable Food and Agricultural Systems (CESFAS) to fund 2 of the positions on an annual basis (see the letter of support), while other support will come from grants.

Faculty in the food science program has funded proposals from different organizations that have support and can support future students in the program. Over $ 3 million has been approved on grants and over $ 25 million is pending. Proposals have been submitted and/or funded by the following organizations:
- New Mexico Department of Agriculture (NMDA) - Specialty Crop Grant Program (SCBGP)
- USDA-NIFA-AFRI
- NM Chile Association
- USDA- Hispanic Serving Institutions (HSI)
- USDA-NIFA
- US-Israel Binational Agricultural Research and Development Fund (BARD)
- USDA/NIFA/HIS
- The food processing industry
- National Science Foundation (NSF)
- NASA
- Sandia National Laboratories
- Foundation for Food & Agriculture Research
- US Food and Drug Administration
- USDA-NIFA-SCRI
- FDA CFSAN

Descibe the library and other academic support resources that are needed to initiate the program. What, if any, additional resources will be needed?

The library provides adequate support for the initial needs of this program. The library provides access to the Digital Library, which supports the most reputed conferences and journals in Food Science. No additional resources are needed. The library has prepared a report in response to the College of Agricultural, Consumer, and Environmental Sciences' new program proposal for a Ph.D. in Food Science. This report assesses the Library's ability to support the program. Please see the Attachment for the Library Report. We will continue to work with the library to identify essential resources needed to support the program in subsequent years.

Describe the physical facilities of the institution that will be used for the first five years of the program. Will additional space or modifications of existing space be required within the first five years of program operation.

The facilities available to the FSTE program are adequate to support the proposed Ph.D. program. The Food Science Laboratories support a major potential profit center for the State of New Mexico and the growing food industry. The facilities offer training for students at undergraduate and graduate levels for careers in food science and meat processing. A specific breakdown of facilities follows:
- Food Chemistry Lab (GT W301)
- Food Microbiology Labs including a new BSL2 Lab (GT 322 and GT 2??)
- Two food processing facilities
- A test kitchen for product development and training.
- The new Food Science, Security, and Safety Facility funded through the GO Bond Ag Modernization Act include:
The Laboratories support emerging research areas key to New Mexico's future, such as:
- Value-added products
- Product development
- Functional foods and nutraceuticals
- Food Chemistry
- Food safety
- Food engineering
- Minimization of water use in food production
- State-of-the-art meat processing and slaughter facilities, canning facilities, dairy and cheese processing, and research facilities.
- 1 Specialist in the area of Extension Food Science.
- Extension offices, agents, and other personnel located in all 33 counties, 1 satellite office, 1 education center, and 4 Tribal Extension offices.

The Food Safety Lab is the focal point for food safety research, academic, and extension programs at NMSU. The Food Safety lab supports interaction with research sponsors and serves to increase NMSU's competitiveness in obtaining research funding in these areas. The lab enhances interdisciplinary opportunities and fosters collaborative partnerships with federal and state agencies and the private sector. The following laboratory and facilities with equipment accessible for this proposal include:
Chemical Analysis and Instrumentation Laboratory
Food Safety Laboratory for food microbiology

Describe the institution's equipment and technological resources needed for the first five years of the program? What, if any, additional equipment will be needed?

With already existing equipment and the new equipment acquired to furnish the laboratories in the new building, the program has no immediate needs.
Equipment for food analysis, chemistry, and rheology. Equipment such as; centrifuge, spray dryer, extruder, pasteurizer, dairy processing, refrigerators, walk-in freezer, bio-safety cabinet, gelato processing equipment, tortilla processing equipment. The Core University Research Resources Laboratory (CURRL) at NMSU houses the Microscopic Imaging Core Suite (MICS), a Molecular Biology Molecular Analysis Support Unit (MolBio MAS), and an X-ray Diffraction Laboratory (XRD) (currl.research.nmsu.edu/), which include equipment that may be used for the Ph.D. program. Particularly, the MICS includes a Hitachi H-7650 120 kV automatic transmission electron microscope (TEM), a Hitachi model S-3400N Type II scanning electron microscope (SEM) with an EDS (energy-dispersive x-ray spectrometer, NORAN System Six 300) capable of spectral analysis, x-ray imaging, and spectral imaging, a Bruker Dimension FastScan atomic force microscope, a TCS SP5 II Broadband confocal microscope, a Dimension FastScanTM Atomic Force Microscope, and an M165 FC stereo-fluorescence microscope. (Acquisition of this equipment was supported by the National Science Foundation under MRI-DBI-0959817, MRI-DBI-0520956, and MRI-DMR-1229558.). In addition, the PANalytical Empyrean X-Ray Diffractometer was funded by a grant from the U. S. Department of Defense Research and Education Program through the Army Research Office.
Computers: The graduate student office is equipped with PCs with Windows and running various word processing, presentation, graphics, and bio-analysis software. The Department of Family and Consumer Sciences has food chemistry and food microbiology labs. The labs are equipped with research equipment. Various pieces of food processing and testing equipment are available for this project: single screw extruder, convection oven, freeze dryer; pasteurizer, spray dryer, aseptic filler, vacuum packager, grain dryer, mixers, continuous centrifuge, grinder, texture analyzer, thermo-balance, water activity meter, pH meter, balance, autoclave, bio-safety hood, centrifuge, spectrophotometer, distiller, electrophoresis, falling number, soxhlet apparatus, muffles furnace, temperature control shaker, and gas chromatography.

Describe any other operating resources needed to initiate the program.

Initial funding to support two doctoral research will be provided through the Center of Excellence in Sustainable Food and Agricultural Systems (CESFAS).

Are there existing external facilities that will be used? Have agreements been established to ensure use of the those facilitates?

No external facilities will be used.

Provide a clear analysis of the projected cost of the proposed program and the sources of funding that will support it for the first five years that the program will be offered. Include a discussion how any of the needed resources discussed in your attachment. This should be completed in collaboration with your institution's financial office.

Budget-Information-for-new-PhD proposal in Food Science.pdf

Letters of Support

Letter of support-PhD-Food Science_NMCA.pdf
Beef Packing - Letter of support-PhD-Food Science.pdf
06092023LOS-Memo_PhD-Food-Science_NMSU.pdf
Letter of support-PhD-Food Science EF.pdf
2023 JUN NMSU Support of PhD Program Comfort Foods.pdf
NMSU Memo_PhD Food Science.pdf
NAPI Letter of Support.pdf
Letter of Support Border Industrial Association.docx
Letter of Support NM WIne Association.pdf
Letter of Support University Poland.pdf
TEchnological Institute of Durango-Mexico-Support Letter PhDProgram.pdf
Hebreww Unversity Letter of support.pdf
Letter of support-PhD-Texas A&M.pdf
Fresno State.pdf
Letter of support-PhD-Food Science-UACH.pdf
Cattle grower association_NMCA_Letter_of_Support_Food_Science.pdf
2023 NMSU PhD Memo of Support - signed.pdf
NM Ag Leadership Letter of support-PhD-Food Science.pdf
Sothwest Border Food Proctection and Emergency Prepardness Center.pdf
Center of Excellence in Sustainable Food and Agriculture Systems.pdf
Letter of Support Curry Farms.pdf
PhD Food Science Support Letter_NMCA.pdf
NMFLB Letter of Support ACES.docx
Graduate School NMSU -Support Letter_ Food Science PhD Program.docx
LIBRARY IMPACT STATEMENT_Food_Science_6_30_23.pdf

Accreditation

Is the program seeking specialized accreditation?

No

Is specialized accreditation required for licensure or practice in the program?

No

Has the program already obtained the appropriate specialized accreditation? If so, attach a copy of the letter from the agency granting accreditation?

No

If the program has not yet obtained accreditation but has begun the process of seeking or plans to seek specialized accreditation, specify the name of the agency and provide the time-line for completing the process.

N.A.

If the program does not plan to seek specialized accreditation, provide a rational for not-seeking accreditation here. (if there is not a specialized accrediting organization for this program, indicate so as your rationale).

There is no specialized accrediting organization for this program.

If the program includes any of the following, explain how it will ensure that student work and levels of knowledge competencies achieved will be comparable to those achieved through traditional formats: (Award credit for prior learning; use of compressed time frames; use of on-line deliver; inclusion of accelerated formats; or other approaches to learning.)

Students who hold a master's degree may transfer up to 30 hours of that degree toward a Ph.D. Students holding a master's degree in food science-related areas, can earn a Doctor of Philosophy in Food Science with 42 credits, from which at least six credits must be statistics courses.

Will the program be part of a contractual or consortial arrangement (yes/no, explain)?

No

If the program is planning any involvement by external organizations (other than from accredited higher education institutions) in the key operations as identified below, provide the information as requested.

Type of Involvement	Name of External Organization	Percent of Involvement
Other support for delivery of instruction	No involment of external ornanization	No involment of external ornanization

Briefly describe the planning process for determining the need for this new program, including the role of faculty in the planning and approval process.

FCSC faculty, in collaboration with food producers, has been assessing the need for specialists in food science to support the food industry related to the production of value-added foods in New Mexico and the surrounding region. Planning for the proposal began in 2019 and ran parallel with the work completed in support of the Ag-Modernization GO-Bond proposal which was subsequently funded. FSTE faculty met every week to discuss and work on the proposal. All faculty members in FSTE have had the opportunity to read the proposal and offer comments and suggestions. The proposal has been presented to the Dean of the Graduate School and the faculty of the Department of Family and Consumer Sciences. See the attached letters of support from the Dean of the Graduate School and the FCSC faculty.

Describe the process for assessing and improving student learning in the proposed program.

Regular and ongoing assessments of student learning outcomes will be conducted to improve the curriculum and prepare annual reports. Students in the program will be evaluated for academic and professional progress each year. Criteria considered will include timely coursework completion, performance on qualifying, comprehensive, and final oral exams, and participation in the graduate seminar which will provide insight into where and how learning outcomes can be improved. The outcomes will be reported through the standard mechanism that NMSU uses for the annual assessment of outcomes for all of its academic programs that do not have separate, specialized accreditation.
Students will contribute to at least one accepted peer-review manuscript. Also, all students will participate in poster/oral presentations and competitions. All graduate faculty in the department will meet on an annual basis to review the results of key feedback data and continuous improvement data.

Describe the process for assessing and improving student persistence and completion, in the new program.

Retention will be tracked annually. All students in the program will be provided with advising and mentorship each semester by their committee chair to ensure regular communication and a clear path to completion including coursework and experiential learning.

As needed, the committee chair will refer students to various support services provided by NMSU, such as The Teaching Academy for support related to grant writing and preparing scholarly publications.

Students must also pass the following milestones:
- PhD Qualifying Exam

- Comprehensive Exam with Advancement to Candidacy
- Final Oral Examination (Defense)
Faculty will review annually any circumstance in which: a student leaves before completion; cases in which a student is not making timely progress towards degree completion and cases in which the performance of a continuing student is marginal. In the last two scenarios, possible interventions specific to the student will be considered.

If any of the institution's accreditation relationship (including other regional, specialized, or national accrediting agencies) are currently under or recommended for a negative status or action (e.g., withdrawal, probation, sanction, warning, show-cause, etc.)

N.A.

If the institution is undergoing or facing substantial monitoring, special review or financial restrictions from the U.S. Department of Education or other federal or state government agencies.

N.A>

If the institution's senior leadership or board membership has experienced substantial resignations or removals in the past year.

Our college leadership has been stable. The Dean and Associate Deans have been stable, as well as the Vice President of Research and for Student Success. In addition, we have a new Provost and Chancellor.

If the institution is experiencing financial difficulty through conditions, such as, a currently declared state of exigency, a deficit of 10% or more, a default or failure to make payroll during the past year, or consecutive deficits in the two most recent years.

N.A>

Institution Specific Information Area

Primary target audience for the program (e.g., full#time, part#time, traditional college age, working adults, transfer students, military personnel, or particular ethnic group)

The primary target audience for this program will be full-time, domestic and international students, particularly in the border region, matriculating from undergraduate and master's degree programs in related fields who wish to continue their education. Applications are likely to come from individuals graduating from agricultural, biology, chemistry and engineering majors. Current academics, both domestic and international, seeking a terminal degree in Food Science and professionals in the food industry in the region, who have an interest in food safety, food science and value-added agriculture are potential candidates.

How does the proposed program align with the department, college and university mission?

The proposed Ph.D. program will support the strategic goals outlined in NMSU LEADS 2025. In particular.
1. Objective 1.1 Diversify, optimize, and increase system-wide enrollment by differentiating and targeting recruitment, marketing, and pricing strategies:
- NMSU LEADS 1.1.1: As stated in the proposal the proposed program will be accessible to a broad audience with diverse backgrounds. Grant proposals will be submitted for funding to support underrepresented minorities.
2. Objective 2.3 Amplify the impact of research findings by addressing local needs that align with global challenges:
- NMSU LEADS 2.3.1: The proposed Ph.D. program will develop a sustainable research program in value-added agriculture to serve as a driver for economic development through NM.
- NMSU LEADS 2.3.3: The proposed program will promote student and faculty exchange with the University Autonoma de Chihuahua (UACH), Universidad Autonoma de Ciudad Juarez, Instituto Tecnologico de Agua Prieta, Sonora among other Mexican Institution. The collaboration with result in dual degree programs, joint publications, and grant proposals.
- NMSU LEADS 2.3.5: The Ph.D. program will work interdisciplinary with other departments in the Colleges of ACES, Engineering, and Art and Sciences, as well as other national and international institutions to work on large research grants.
3. Objective 2.4 Amplify the impact of research on society and the economy and promote international collaboration by accelerating technology and knowledge transfer.
- NMSU LEADS 2.4.3: The faculty in the proposed program will work with the Universidad de Antioquia, Colombia, Universidade Estadual de Ponta Grossa, Brazil, Instituto Tecnologico de Durango, Mexico, Universidad Autonoma de Chihuahua, Mexico, Universidad Juarez del Estado de Durango, Mexico, Hebrew University of Jerusalem, Tel#Hai College, Israel, Medical College Jagiellonian University, Poland among others institutions to increase international research and scholarship activity.

The proposed Ph.D. also directly supports food and fiber production and marketing, one of the four Pillars of ACES. The proposed program will support technological innovation to enhance competitiveness and increase the food and agricultural value-added systems in NM. The proposed program also supports indirectly the other three pillars: water use and conservation, family development and health of New Mexicans, and environmental stewardship.

Discuss how admissions criteria and strategies will recruit a diverse student body?

The admission criteria are consistent with expectations for successful doctoral study. Members of the admissions review committee will assess the broad backgrounds of candidates for admission.

Over 66% of the students currently enrolled in the FSTE program at the undergraduate and graduate levels are underrepresented minorities. It is anticipated that a portion of students in the proposed program will be graduates of the current MS program or other undergraduate/masters programs at NMSU which is a MSI and HSI. In addition, the program faculty are diverse. Therefore, the program is bound to attract a diverse student body.

Recruitment materials will be developed with an emphasis on recruiting diverse students including Native Americans, and will be sent specifically to departments and colleagues at institutions which also have a diverse student body.

What controls are in place to ensure that the information presented to all constituencies in advertising, brochures, and other communications will be accurate?

The program leadership will work with the College of ACES to ensure accuracy and compliance with NMSU’s branding standards and ADA requirements. All external communications are approved through the Dean's Offices. NMSU's Marketing Communications will also be used to provide consultation on brand application guidelines and standards, as well as tools, resources, and branded templates.

Student Records Office Uploads

HLC wants CIP Code information that is currently being offered at both the institutional and degree level for 4-digit and 2-digit CIP codes for all new programs. This information will be provided by the University Student Records office and added to the form during the HED submissions workflow step.

Reviewer Comments

Gabrielle Martinez (gdmart) (Tue, 19 Sep 2023 15:28:32 GMT): 24-25: 4 Digit Renumbering

Gabrielle Martinez (gdmart) (Tue, 19 Sep 2023 16:26:47 GMT): 24-25: 4 Digit Renumbering Project.

Gabrielle Martinez (gdmart) (Thu, 21 Sep 2023 15:21:58 GMT): 4 Digit Renumbering AEEC

Key: 984