NM STATE

New Mexico State University
Approval Form for New Graduate Degrees

Date: 10/17/2007

Originating Department or Program: MATHEMATICAL SCIENCES

Contact Person: MARIA C. MARIANI AND KEN MARTIN

Proposed Degree: PROFESSIONAL MASTER'S DEGREE IN FINANCIAL MATHEMATICS

Proposed date to admit new students: FALL 2008

Approvals:	Signature	Date
Department Chair(s)	Pat Morandi	10/17/07
	Elizabeth G Ellis	10/17/07
Academic Dean (s)	[signature]	10/18/07
	[signature]	10/18/07
Associate Dean's Council	[signature]	10/18/07
Graduate Dean	[signature]	10-18-07
Faculty Senate	Wanda A Eastman	Nov 29, 2007
Registrar	[signature]	17 Jan 08
	[signature]	17 Jan 08
Executive Vice President and Provost	[signature]	2/1/08
President of NMSU	Michael V Martin	2/1/08
Board of Regents	Socorro Saenz-Lobato for REGCOS	3-10-08
New Mexico Council of Graduate Deans		
Academic Council for Higher Education		
NM Higher Education Dept.		
NM State Board of Finance		

March 7, 2008

New Graduate Program Approval Request

New Degree: Professional Master's Degree in Financial Mathematics

Submitted by

New Mexico State University
Department of Mathematical Sciences
(College of Arts and Sciences)

Principal Contributors

Maria C. Mariani (Mathematical Sciences)
Kenneth J. Martin (Finance)
Josefina Alvarez (Mathematical Sciences)

Proposal for approval of New Mexico State University

Professional Master's Degree in Financial Mathematics

This proposal has been developed based on the New Mexico Department of Higher Education provisions of 5 NMAC 5.2 that apply to new graduate programs proposed for implementation by a constitutional institution of higher education in New Mexico. Itemization corresponds to 5 NMAC 5.2, Part 9, and Requirement for Approved Graduate Programs (Appendix O).

Table of Contents*

***Section and Sub-section numbers correspond to 5 NMAC 5.2**

Table of Contents: Appendices

9.1.1 Purpose of the Program and Mission of the Proposing Institution. The proposed program must have a clear purpose that is consistent with the mission of the proposing institution.

A. Primary Purpose

The purpose of this proposal is to obtain approval to initiate a Professional Master's Degree in Financial Mathematics at New Mexico State University (NMSU).
The program will increase the number and diversity of Master prepared professionals and educators in financial mathematics who are critically needed to address professional jobs and education within New Mexico, and in the United States. There is no program in financial mathematics in New Mexico or West Texas.

The primary purpose of the proposed Professional Master's Degree in Financial Mathematics (PMFM) is to provide advanced graduate education to professionals in financial mathematics. The proposed program is not a traditional Master degree designed to feed a Ph.D. program. As a professional degree, the PMFM program is designed to meet the advanced training needs of individuals who work or intend to work in the financial mathematics area. The November 14, 2006 online edition of *The Wall Street Journal* published the article "Wall Street Warms to Finance Degree With Focus on Math". The article went on to say "They [banks and hedge funds] have come to realize they really need students with strong skills in financial economics, math and computer modeling for more complex products …the financial mathematics degree is especially hot." Our program is designed to provide these strong skills. Universities that have already such a program, report significant increases in enrollment and plenty of job opportunities. Carnegie Mellon University, for example, reports a 21% increase for its computational finance Master's in 2006, after a 48% jump the previous year.
Most holders of professional degrees in quantitative finances from other universities are employed by agribusiness, banks, financial trading companies and financial exchanges, government regulatory institutions, insurance companies, natural resource-based firms, and power companies. A small but significant group consists of self-employed consultants.

The proposed PMFM will be housed in the Department of Mathematical Sciences in the College of Arts and Sciences. The courses will be taught by faculty in the Department of Mathematical Sciences and the Department of Finance.

Initially, the primary delivery mechanism for the proposed program will be face-to-face courses conducted at NMSU's main campus. Other potential sites include NMSU's Albuquerque Center and NMSU's Branch campuses, to facilitate students who enroll on a part-time basis, the use of distance education methodologies would be an alternative as the program matures.
The staff of both the Department of Mathematical Sciences and the Department of Finance is highly prepared for the implementation of the courses. The required courses in

the program have been already taught several times in the Department of Mathematical Sciences and the Department of Finance[1].

The proposed degree program is fully consistent with the mission and goals of New Mexico State University as expressed in its most recent strategic planning document, "Living the Vision" July, 2005, available on the web at: http://ltv.nmsu.edu/. NMSU's mission is described in the Living the Vision document as follows: New Mexico State University is the state's land grant university, serving the educational needs of New Mexico's diverse population through comprehensive programs of education, research, extension education, and public service.

Goal 4 of the Living the Vision document states that a primary goal of NMSU is to serve as an engine for economic, social, educational and community development in New Mexico. The proposed degree program supplements and enhances the work and mission of each of the two participating departments and of NMSU as a whole, as a unique educational opportunity in New Mexico and West Texas.

B. Program Consistency with the Role and Scope of New Mexico State University

The design of an educational program in financial mathematics at the master level is consistent with the role and scope of New Mexico State University and its strategic vision document, "Living the Vision: A Performance Plan for Excellence".
New Mexico State University, which began in 1888 as an agricultural college and preparatory school, is a comprehensive institution dedicated to teaching, research, and service at the graduate and undergraduate levels. It is the only land-grant institution in the United States that is also classified as Hispanic-serving by the federal government and ranked by the Carnegie Foundation in the top research category, Research-Extensive (Carnegie Foundation, 2005). NMSU has extension offices in every county of New Mexico, multiple off-campus research sites and a rapidly expanding distance education program. Total Fall 2005 enrollment for NMSU main campus and branch campuses was 24,312. The main campus enrollment was 16,040, including 3,126 graduate students. Minority enrollment at the main campus is 48.3 percent (41.5 percent Hispanic, 2.9 percent American Indian, 2.8 percent African-American and 1.3 percent Asian-American). Regular faculty members on the main campus number 693. Eighty-one percent of the full-time faculty hold doctoral degrees. NMSU offers 76 bachelor's degrees, 51 master's degrees and 22 doctoral degrees. (Source: http://www.nmsu.edu/General/NMSU_At_a_Glance.html).

NMSU plays a major role in the economic development of the region. For Fiscal Year 2004-2005, NMSU's Main Campus and the Dona Ana Branch, had a combined budget of $478 million and 5,218 employees. Both directly and indirectly, it is estimated that NMSU's presence on Dona Ana County accounted for 22.3 percent of all jobs and 17 percent of earnings. (Source: "The Economic Impact of New Mexico State University's Main Campus and Dona Ana Branch Community College on Dona Ana County, New

[1] A complete course schedule is included in Section C.

Mexico"). Further, NMSU's graduates contribute to economic development throughout the state.

In addition to its direct and indirect economic impact, NMSU is strongly committed as an institution to promote professional and educational development in New Mexico.

Administrators and faculty in both colleges are also very actively involved in this process. Examples include the design and offering of three new courses at the graduate level: Financial Mathematics I and II in the Department of Mathematical Sciences, and Financial Markets: Structure and Trading in the Department of Finance.

The mission of NMSU's Department of Mathematical Sciences (DOMS) and Department of Finance (DOF) are congruent with the larger NMSU mission and explicitly indicate the need for adding financial mathematics studies to their approved program offerings. The Living the Vision document states that "By 2020, New Mexico State University will be a premier university as evidenced by demonstrated and quantifiable excellence in teaching, research and service relative to its peer institutions." The Professional Master's degree in Financial Mathematics, a program that is unique in New Mexico and West Texas, will be a very important component in the attainment of NMSU's mission and vision. The creation of opportunities for faculty to teach in an interdisciplinary program should be part of the process for attaining status as a premier institution. It would also allow NMSU's faculty from two colleges to compete more successfully for grants and contracts related to financial mathematics activities. In short, the interdisciplinary collaboration between different colleges in NMSU, as well as the possible collaborations with other educational and financial institutions will be tremendously beneficial to NMSU.

C. Institutional Priority for the Proposed Program

We want to remark that this Master program in Financial Mathematics is one of the two priorities of the five year plan that has been approved for the New Mexico Department of Higher Education.

9.1.2 Justification for the Program

The proposed program must meet one or more specified needs within the state or region; must not duplicate existing programs unnecessarily or inappropriately; and, to the extent feasible and appropriate, should benefit from cooperative arrangements with other institutions.

9.1.2.1 Need.

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 need for the proposed Professional Master in Financial Mathematics stems directly from New Mexico's need for economic and professional development. New Mexico is well-positioned geographically to take advantage of international trade opportunities. Even though technological change and international trade are two of the most dynamic factors in achieving high rates of economic growth, New Mexico ranks 47th in terms of per capita income (U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, www.bea.gov). Indeed, New Mexico's per capita income of $26,191 in 2004 was only 80 percent of the national figure of $32,937 and several New Mexico counties have per capita income levels below 60 percent of the national figure. New Mexico needs to work systematically and imaginatively to promote professional and educational development within the state, especially in conjunction with high tech industry, including the new outreach roles of Los Alamos and Sandia National Laboratories, all of New Mexico's major research universities, and such private firms as Intel.

The proposed Professional Master in Financial Mathematics would also place New Mexico and New Mexico State University at the top of the "financial mathematics game in NM." That is, NMSU could become widely-known as the "go to place" for the study and analysis of financial mathematics programs, problems and issues. More than name recognition is at stake. With a reputation as a leader in financial mathematics programs in New Mexico, Las Cruces and in general New Mexico could also become a highly attractive place for firms and organizations currently located in other states and nations.

A significant shortage of professionals in the area of financial mathematics exists throughout the United States. Moreover, minority professionals are under represented. The scarcity of minority professionals in the area of financial mathematics at all levels is critically evident at the graduate level.

As stated before, the proposed program should increase the number and diversity of master prepared professionals and educators in financial mathematics, who are critically needed to address professional jobs and education within New Mexico. No program in financial mathematics in New Mexico or West Texas presently exists. The proposed program is essential to offer the state's population the full range of educational opportunities in the discipline and to assist in attracting additional scholars and educators to NMSU.

Surveys instruments reproduced in Appendix F were used to gather preliminary information concerning interest in the proposed program from the New Mexico financial community and prospective students. About 200 surveys were completed. Nearly all of the responses were very positive.
The question ``The proposed Master in Financial Mathematics program would fill a need that is not currently being filled by other graduate programs at NMSU'' received a 96% of answers either of strongly agree or agree.
The question ``The proposed Master in Financial Mathematics program would fill a need that is not currently being filled by other graduate programs at NMSU'' received a 96% of answers either of strongly agree or agree.

The question ``Given the opportunity, I or someone I know would likely enroll in the Master in Financial Mathematics program'' received a 95% of answers either of strongly agree or agree.
The question ``I (or my organization) would be interested in hiring one or more graduates from the Master in Financial Mathematics program'' received a 84% of answers either of strongly agree or agree.

Finally, this program also responds to the increasing *national* need for professional degrees in mathematics. As a remarkable antecedent, it can be mentioned that in 1998 the American Mathematical Society (AMS), the Mathematicians and Education Reform (MER) Forum and the Society for Industrial and Applied Mathematics (SIAM) joined forces in a two-year project, funded by NSF, to support the development of professional master's degrees in mathematics. http://www.math.uic.edu/~mer/pages/masters/

Our proposal closely follows the general guidelines developed by this project, which we summarize under the next heading.

9.1.2.2 Duplication

The proposed program must not duplicate existing programs unnecessarily or inappropriately. A proposal for a program similar to one (or more) that already exist within the state must present clear and convincing evidence that need for the program cannot be met by the existing program(s).

The proposed Professional Master in Financial Mathematics program at NMSU is unique. The program cannot be met by existing programs within the state because such a program is not offered at any other institution in New Mexico or West Texas. Hence, there is no overlap with existing programs in the state or the region.

To emphasize this last statement, it is appropriate to summarize here the principal characteristics of a Professional Master's Program:

Professional Master's degree programs differ in varying ways from standard master's programs. Some important characteristics are:

1. The program does not intend to feed a PhD program.
2. The students in the program might already be in the profession.
3. The program might stress interdisciplinary study.
4. The program may integrate technology into the program, as course work in computer skills relevant to the profession.

(For further details see:
http://www.math.uic.edu/MER/pages/masters/
http://www.ams.org/tools/masters.html)

Once again, the proposed program is primarily designed to produce highly-trained professionals in financial mathematics, not academics or researchers.

9.1.2.3 Inter-Institutional Collaboration and Cooperation.

To the extent feasible and appropriate, the proposed program should establish collaborative relationships with other programs within New Mexico, so that state investments can be shared and students can benefit from expanded opportunities across institutional boundaries.

The proposed professional master in financial mathematics is a natural outcome of an ongoing collaboration between the Department of Mathematical Sciences and the Department of Finance. It contributes to NMSU's mission and strategic vision. As stated before, the proposed program is essential if NMSU wants to offer the state's population a full range of educational opportunities and to retain and attract for the benefit of the state additional scholars and educators.

The proposed program would also allow graduate students enrolled at other New Mexico universities to take appropriate PMFM courses as part of their program of study. Moreover, since as explained below, the admission process to the proposed program will typically involve an undergraduate degree in a related field as a requirement, we anticipate that NMSU will collaborate with other New Mexico institutions of higher learning to facilitate the admission process. It may be appropriate for students in the proposed PMFM program to take some courses at another New Mexico institution, but that process must involve approval of courses and transfer credits on an individual basis. Collaboration with financial institutions in New Mexico will be established in order to provide places for internships for the students when appropriated.

9.1.3 Clientele and Projected Enrollment
The proposal must clearly describe the population of students who will be recruited into the proposed program and must include a detailed projection of enrollment and credit hours anticipated during the first five years.

9.1.3.1 Clientele
Initial inquiries from potential applicants indicate that an applicant pool of 10 candidates would be available for each of the classes for the first two years. This is a remarkable development because no advertising or any other effort has been made concerning the proposed program. In other words, NMSU is receiving inquiries about admission based merely on the rumor that a proposal is being prepared! After the first two years, through additional national advertising, we project that each year's cohort will increase to 15 to 20 students.
In keeping with current university policy, these cohort sizes would ensure course viability and guard against cancellation of courses due to low enrollment. We anticipate that the ethnic diversity of the program's student body will parallel that found within NMSU and our current undergraduate and graduate programs. In Fall 2005, NMSU's enrollment was 41.4 percent Hispanic, 4.1 percent international, and just under 3.0 percent for both

American Indians and Blacks. (NMSU, Office of Institutional Research, Final Enrollment Counts, Fall 2005). These statistics show a student population considerably more diverse ethnically than the national average in similar programs in financial mathematics.

Efforts will be made to attract applicants from ethnically diverse backgrounds. Specific efforts will be made throughout New Mexico through community agencies and professional associations. Targeted efforts will also be made nationally through minority Chambers of Commerce, emphasizing the Hispano Chambers of Commerce common throughout the Southwestern United States. Additional targeted efforts will be made through the pueblos, SIPI and other organizations, to attract Native American Students. Given the professional development needs of Native Americans within the state, we anticipate strong demand for the proposed program from Native Americans. We aspire to having our PMFM program enrollment to be in parity with the ethnic diversity of the state. We plan to participate in the National Financial Mathematics Career Fair (http://www.siam.org/iafe/programs.htm), the premier showcase in the country for students and graduates of Financial Mathematics Master's programs.

Market analysis: size of the potentially interested group of students

This program is suitable for:

1. Students who are already in the profession.
2. Students whose undergraduate majors are in Sciences or Engineering, and who want to prepare for the profession with an interdisciplinary graduate degree, rather than a second undergraduate degree.
3. Undergraduate students from Business and Mathematics who want to complete a graduate program involving both disciplines.

As mentioned before, there is no program in financial mathematics in New Mexico or West Texas. Taking this fact into account and also considering the excellent response to the course in financial mathematics offered in the Department of Mathematical Sciences, a reasonable estimate would be an average of twenty students in the program after becoming established.

The proposed program consists of courses already in place at NMSU and it is expected that the number of students in those courses will increase steadily during the first five years.

A. Application Deadlines

Fall semester: Initially, only fall admissions will be available to students. January 15 is the deadline for full consideration for admission. Afterwards, acceptance of applications for consideration will be contingent on space, with a final application deadline of May 1. We expect that many of the applicants will be associated with institutions that will

support their employees while enrolled in the program. Notifications for those applicants who meet the initial deadline will be sent jointly by the department heads of both departments by April 1st.
Spring semester: None accepted, at least for the first two years.
Summer sessions: None accepted, at least for the first two years.

B. Admission Requirements

General requirements for a master's degree are set forth in the NMSU Catalog. Foreign students must apply through the Center for International Programs. More information can be found in http://www.math.nmsu.edu/admrequirements.html

The graduate studies committee of the Department of Mathematical Sciences will be in charge of the admission process.

The departments specify the following additional requirements for the proposed PMFM program:

- Possession of an undergraduate in a related field from an accredited university. Most students will enter with a major degree in mathematics, physics, economics, engineering, or computer sciences, although other backgrounds are possible.

- An undergraduate grade point average of 3.0 or higher on a 4.0 scale.

- Applicants should have a good working knowledge of:

  Calculus (equivalent to MATH 291, see Undergraduate Catalog at NMSU)

  Linear Algebra (equivalent to MATH 480, see Undergraduate Catalog at NMSU)

  Probability (equivalent to STAT 470, see Undergraduate Catalog at NMSU)

  Statistics (equivalent to STAT 470, see Undergraduate Catalog at NMSU)

  Differential Equations (equivalent to MATH 392, see Undergraduate Catalog at NMSU)

  Finance (equivalent to FIN 341, see Undergraduate Catalog at NMSU)

  Some facility with a programming language such as C, C++, S-PLUS or SAS is also recommended.

As the program matures, remedial courses in Calculus, Probability and Statistics and Linear Algebra will be offered during the summer.

- A one-two page statement from the candidate addressing individual professional and personal goals with career interests and describing any past or current professional experience in the field of financial mathematics.

- A brief two-to-three page resume that summarizes the candidate's background.

- Three letters of recommendation sent directly by former professors or by persons who know the applicant professionally, including a recommendation from the candidate's employer/ sponsor, if applicable.

Exceptions to any program admission criteria will be considered on an individual basis and are at the discretion of the graduate studies committee, which will send its recommendations to the academic department heads of both departments.

C. Program of Study

The proposed program of study is detailed below in three parts. Core courses for the program are described in C.1 (NMSU/PMFM Course Description). A typical sequence of course offerings, as well as a typical program of study for an entering student are presented in C.2. Faculty members who have the interest and the ability to teach each of the courses have been also listed in C.2, Tables 1, 2 and 3. Additional faculty members are also available to participate in the program. The sequence of courses has been designed to facilitate the educational goals of the PMFM program. Some of the course requirements may be waived for individual students, depending on their background and experience.

Curriculum

The program will consist of ten (10) courses of three (3) credits each, which can be taken over three (3) full time semesters plus a summer term. Students who can enroll in the program only on a part-time basis will be able to complete the program in a longer period of time.
The curriculum we propose parallels the financial mathematics curricula at Florida State University and the University of Illinois at Chicago, two well established and successful program. The proposed curriculum will consist of a master level core of courses related to

Probability and Statistics
Differential Equations
Stochastic Processes
Financial Markets and Derivatives
Valuation and Hedging Techniques
Computational Methods

The use of distance education methodologies will be an alternative mode of instruction to be considered as the program matures.

C. 1 NMSU PMFM Course Description

1. Core Courses

1. MATH 521: Financial Mathematics I
2. Math 522: Financial Mathematics II
3. Math 577: Numerical Analysis
4. FIN 511: Financial Futures Markets
5. FIN 535: Investment Concepts
6. FIN 545: Money and Capital Markets
7. STAT 525: Statistics: Theory and Applications
8. MATH 518: Fourier Series and Boundary Value Problems
9. STAT 535. Elementary Stochastic Processes
10. Elective course: FIN 590: Financial Markets: Structure and Trading, *or* any FIN course numbered 500 and above with consent of advisor *or* MATH 523: Numerical Optimization and Applications to Financial Mathematics.

2. Course Descriptions

MATH 521 Financial Mathematics I
Types of derivatives, forwards and futures, options, returns and payoffs, Arrow-Debre, complete and incomplete markets, the one period model, the binomial option pricing model, binomial trees, martingales and sub martingales, Brownian motion, stochastic integrals, the Ito integral, Ito's lemma, the Black-Scholes model, the Black-Scholes formula, European options, American options, free boundary problems, variational inequalities.
Prerequisite: STAT 470 and MATH 480, or consent of the instructor.

Math 522 Financial Mathematics II
Bonds, swaps, exotic options, barrier options, Asian options, look back options, options with transaction costs, Fokker Plank theory, computing expectations, the Heath-Jarrow-Morton theorem, the Ho-Lee model, stochastic volatility models, exponential-affine models, numerical methods.
Prerequisite: Financial Mathematics I.

Math 577 Numerical Analysis
Topics may include interpolation, differential equations, nonlinear equations and

optimization.
Prerequisites: MATH 480 and MATH 491, or consent of instructor.

FIN 535 Investment Concepts
Investments in common stocks and other securities, risk and return, securities markets, portfolio theory and management.
Prerequisite: FIN 341, or consent of instructor.

FIN 545 Money and Capital Markets
Examination of financial markets and institutions. Emphasis on interest rate determinants, bond markets and fixed income portfolio management.
Prerequisite: FIN 341, or consent of instructor.

FIN 511 Financial Futures Markets
Advanced hedging and speculating strategies using futures and options contracts, coverage includes interest rates, stock indexes, metals, currencies, livestock and grains, concepts of price analysis, technical and fundamental, and basis analysis. Technical paper is required. (*Same as AEEC 511*)
Prerequisite: FIN 311, or AGE 311, or consent of instructor.

FIN 590 Financial Markets: Structure and Trading
Analysis of operation, structure, and regulation of securities markets. Development of software tools for constructing and evaluating trading and portfolio strategies. Utilizes trading simulation.
Prerequisite: FIN 341, or consent of instructor.

Math 523 Numerical Optimization and Applications to Financial Mathematics
Dynamic optimization of a monopolist, trading off inflation and unemployment, the optimal adjustment of labor demand, infinite planning horizon, the optimal investment path of a firm, the optimal social saving behavior, phase-diagram analysis, optimal control theory, the political business cycle, the dynamics of a revenue-maximizing firm, economic examples of state-space constraints.
Prerequisite: Financial Mathematics I.

Stat 525 Statistics: Theory and Applications
Point and interval estimation, sufficiency, hypothesis testing, regression, analysis of variance, chi-square tests.
Prerequisite: STAT 470, or consent of instructor.

Stat 535 Elementary Stochastic Processes
Markov chains, Poisson processes, Brownian motion, branching processes and queuing processes with applications to the physical, biological and social sciences, applications to financial mathematics.
Prerequisite: STAT 470, or consent of instructor.

MATH 518 Fourier Series and Boundary Value Problems
Fourier series and methods of solution of the boundary value problems of applied mathematics.
Prerequisite: MATH 392, or consent of instructor.

C.2 NMSU PMFM Courses: Program Components

Table 1

Fall Term, Year I	Spring Term, Year I	Summer I Term, Year I	Fall Term, Year II
Fourier Series and Boundary Value Problems Financial Futures Markets Statistics: Theory and Applications	Financial Mathematics I Investment Concepts Stochastic Processes	Elective course	Financial Mathematics II Money and Capital Markets Numerical Analysis

Table 2

Program Component	**Fall Term, Year I**	**Spring Term, Year I**	**Summer I Term, Year I**	**Fall Term, Year II**
Financial theory and modeling	Fourier Series and Boundary Value Problems	Financial Mathematics I	Elective course	Financial Mathematics II
Financial theory and practice	Financial Futures Markets	Investment Concepts		Money and Capital Markets
Mathematical tools	Statistics: Theory and Applications	Stochastic Processes		Numerical Analysis

Table 3

Professional Master in Financial Mathematics			
Year and Semester	**Course**	**Course Description**	**Faculty Resources**
Year 1			
Fall	Math 577	Numerical Analysis	Giorgi and Mariani
	Fin 511	Financial Futures Markets	Catlett and Sankaran
	Stat 525	Statistics: Theory and Applications	Nguyen, Smits and Wang
Spring	Math 521	Financial Mathematics I	Mariani and Smits
	Stat 535	Stochastic Processes	Nguyen, Smits and Wang
	Fin 535	Investment Concepts	Martin and Sankaran
Summer I or II	Elective Course		Mariani or Martin
Year 2			
Fall	Math 522	Financial Mathematics II	Mariani and Smits
	Fin 545	Money and Capital Markets	Martin and Sankaran
	Math 518	Fourier Series and Boundary Value problems	Alvarez, Ballyk and Giorgi

9.1.3.2 Projected Enrollment

Table 1 contains the projected enrollment of students. Table 2 contains the projected credit hours generated and formula funding generation. The program as proposed, can be completed in three semesters (one and a half academic years) and one summer of full time study (year round with 9-12 credits in the fall and the spring semesters and 3-6 credits during summer). Part-time options for students will be provided as well. In the table the part time students are counted as half of a full time student. Enrollment and credit hour generation are projected to stabilize in Years 4-5 with 22 graduates and 22 admissions (12 full-time and 10 part-time) per year.

Table 1. Projected Student Enrollment

Enrollment year	Year 1	Year 2	Year 3	Year 4	Year 5
New Students, Part-time	6	6	10	10	10
New Students, Full-time	9	9	12	12	12
Returning Students	0	15 (first semester)	15 (first semester)	22 (first semester)	22 (first semester)
Total Headcount	12	22.5	27.5	33	33
Graduates	0	15	15	22	22

Table 2. Approximate Credit Hour Generation

Enrollment Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Headcount	12=9 full time students + 6 part time students	22.5	27.5	33	33
Student Credit Hours generated**	216	405	495	594	594
Formula Funding**	$141,307	$264,951	$323,829	$388,594	$388,594

*Student Credit Hours (SCH) generated assumes 9 credit hours per semester for a total of 18 SCH per academic year.

**The formula funding is based on an average of Tier 1 ($527.90 per SCH) and Tier 2 ($726.30 per SCH). The average figure per SCH used was $654.20.

9.1.4 Institutional Readiness for the Program

The institution should have nearly all of the resources needed to initiate the program. The proposal should include a clear statement of the extent to which the institution is ready to initiate the program, citing the remaining needs and recognized each of those needs in the cost analysis developed pursuant to Section 9.1.5.

A. Teaching Faculty

The bulk of the faculty needed to teach in the program is already in place. Grant funding for expansion of the program will be sought from external funding sources, including private sources, the National Science Foundation, other foundations, the U.S. Department of Labor and through the New Mexico Department of Higher Education and the New Mexico State Legislature.

The faculty of both, the Department of Mathematical Sciences and the Department of Finance, is highly prepared for the implementation of the courses. The required courses in the program such as Financial Mathematics I, Financial Mathematics II, Numerical Analysis, Statistics: Theory and Applications, Fourier Series and Boundary Value Problems, Elementary Stochastic Processes and Numerical Optimization and Applications to Financial Mathematics are regularly offered by the Department of Mathematical Sciences. Likewise, the courses Investment Concepts, Money and Capital Markets, Financial Markets: Structure and Trading, and Financial Futures Markets have already been taught or are scheduled to be taught by the Department of Finance. Note: Financial Futures Markets is cross-listed with AEEC 511 – Advanced Futures and Options Markets.

Because of the distinctly professional nature of the proposed degree, it is anticipated that the students will have outside funding.

Appendix D contains the qualifications of some of the current NMSU faculty members in both the Department of Mathematical Sciences and the Department of Finance who will be involved in the proposed program. The identified faculty members are expected to have significant contact with the students and some of them have been involved in the development of this proposed PMFM program. The curriculum vitae of the principal contributors, Professors Mariani, Martin and Alvarez, and of the Academic Department Heads of Mathematical Sciences and Finance, Professor Morandi and Professor Ellis are included in Appendix E. These individuals will be directly involved in the administration of the proposed degree.

The proposed PMFM program will not take resources away from the baccalaureate or the current graduate programs of either of the two participating departments. While it is likely that the undergraduate enrollments of the two departments will increase moderately in the near future, with or without a financial mathematics degree program in place, the graduate degree programs are all likely to see continued growth similar to the pattern of the last five years. To implement the professional master in financial mathematics

program initially, additional resources are not needed, however, as the program matures, additional faculty resources will likely be needed.

B. Library and Other Academic Support Services

Current academic support resources are sufficient to initiate the program; however, more resources may be needed by the time the first cohort of students for the PMFM program enter the university. A formal assessment of library resources is currently being undertaken by the NMSU Library to determine long-run library resource needs. That report will be included in this document in Appendix H.

C. Physical Facilities

New Mexico State University's Department of Mathematical Sciences is located in the Science Hall and Walden Hall buildings and it currently offers three undergraduate degrees: the Bachelor of Science in Mathematics, a Supplementary Major in Applied Mathematics degree and a Minor in Mathematics degree. The Department also offers the Master of Science in Mathematics, a Doctor of Philosophy (Ph.D.) in Mathematics and a Minor in Mathematics degree. The Department of Finance is located in the Business Complex. It offers a Bachelor of Business Administration in Finance and a Specialization in Finance within the Master of Business Administration degree. All faculty offices in both departments are private and are equipped with current computer technology.

D. Equipment and Technology Resources

NMSU technology resources, including the email system, will serve as a learning resource to enhance communication among advisors, faculty members, fellow students and professional colleagues around the globe. Software typically used by doctoral students and many master's degree students includes word processing, spreadsheets, input-output models (including RIMS and IMPLAN), SAS, MAPLE and MATLAB. Site licenses for SAS, MAPLE and MATLAB are maintained by NMSU. Site licenses for other software packages can often be negotiated with vendors. Sufficient quantitative statistical software programs are available through the university server as well as on individual faculty, staff and graduate student computers. Labs will be available for student learning needs on-campus. Further, many of these computer programs are available at nominal costs to students for use off campus. Additional budget support for these learning support materials is not required.

9.1.5 Projected Costs of the Program

The program must include a clear analysis of the project cost of the proposed program and the sources of funding that will support it.

9.1.5.1. New Costs for Program Start-Up

A. Faculty

No additional faculty positions are being requested.

B. Professional and Administrative Personnel

No additional professional positions are being requested.

C. Library Resources

The need for significant additional library resources is not anticipated.

D. Additional Facilities, Equipment and Technology Resources

The need for significant additional facilities, equipment and technology resources is not anticipated.

E. New Graduate Assistantships

No new graduate assistantships are requested for the proposed program. It is expected that students will have outside support and will not be supported by graduate assistantships.

9.1.5.2 State Support

The approximate amount of state operational formula funding that will flow to the program for each of the first five years, based on the projected student credit hours generated and current formula funding factors was provided in Table 2 above. At current formula funding levels, approximately $388,594, will be generated annually in Year 5. Costs for the program at Year 5 include approximately: faculty ($200,000), library costs ($10,000) and travel costs ($5,000), for a total of $215,000.

Other Support

All attempts will be made to expose students to a wide variety of financial mathematics programs, courses, and methods currently being offered at NMSU. Courses currently offered will be used as part of the program requirements, to utilize existing teaching resources and to gain broader exposure for students

9.1.6. Quality of the Program

The proposed program has been designed to meet high standards of academic quality, taking into consideration its instructional curriculum, faculty, student admission standards and opportunities for experiential learning and academic support. It is critical that professionals within New Mexico, within the United States and internationally, acknowledge the value of additional discipline-specific and general education opportunities for their financial mathematics specialists, recognizing NMSU as the New

Mexico leader in advanced training for the practitioners, as well as for economic development agencies.
There are some special considerations built into the proposed plan of study. As the program matures, the use of face-to-face but off-campus instruction in nontraditional settings and formats, will be highly attractive to currently employed program candidates. Many courses will use weekend, extended class meetings in Albuquerque or another locations, to help the working student complete his/her degree. Web-based instructional methods will supplement the face-to-face interaction to fill gaps caused by meeting times and places being less regular than in the typical college course. It is expected that some of the students seeking their PMFM will be returning to academics after several years in the workforce. Remedial courses and review of background material at the beginning of the first semester will help insure success in the program.

A diverse multicultural, multiethnic and international financial mathematics student body is anticipated. The outstanding educational environment at NMSU will facilitate student success. The Hispanic Outlook in Higher Education ranked NMSU as one of the nation's top colleges and universities for Hispanic students in May 2003, with an overall rank of 17th for the number of baccalaureate degrees awarded to Hispanic students, 49th for number of master's degrees awarded to Hispanic students and 315th for the number of doctoral degrees awarded to Hispanic students. The proposed PMFM program should enhance those rankings. Both departments involved in the program have successfully educated significant numbers of minority students.

Another student success strategy, faculty and peer support, will be facilitated within all phases of the PMFM program through the use of traditional methods (office visits, 1:1 mentoring of students) and technology supported methods (chat rooms, email list serves, email/video discussion groups). Evaluation of student success and satisfaction will be ongoing with adjustments implemented as appropriate.

9.1.6.1 Assessment of Operations and Impact
The proposal must include a plan by which the proposed program will be assessed for its operation and impact over at least a five-year period.

The evaluation of the program will address specified measurable outcomes for each of the major objectives of the program (outcome evaluation) and the tasks to be accomplished (process evaluation). The planned evaluation is designed to complement the existing ones in both departments. This model uses both quantitative (i.e., course and faculty evaluations) and qualitative (i.e. exit interviews) data collection methods. The PMFM Program will use enhanced evaluation strategies that address effectiveness and efficiency. Evaluations will include: outcomes (access, convenience, connectedness, preparation for professional practice, proficiency with technology use, professional communication, and competency to perform public and private analyses at a master role), educational practices (active learning, prompt feedback, time on task, collaboration and interaction with peers and student-faculty interaction) and use of technology (technology infrastructure, and the use of technology to promote productive time use). The program

evaluation findings will be provided to the NMSU Provost annually, and to the NMSU Regents and the New Mexico Department on Higher Education as requested.

9.1.6.2 Administrative Responsibility for the Program and Institutional Commitment. There must be clear indication in the proposal that the institution is committed to the success of the proposed program.

The PMFM program will be administered under the auspices of the Department of Mathematical Sciences. The Department of Mathematical Sciences is part of the College of Arts and Sciences. Statements of administrative support can be found in Appendix B. The Department of Finance is committed to offering the required Finance courses as they are part of the Specialization in Finance in the MBA program.

Appendix A

Table 1 Approvals Received.			
Approving Body	**Date presented**	**Date Approved**	**Comments**
Department of Mathematical Sciences	August, 2006	September 2006	
College of A&S	April 13, 2007	April 20, 2007	
NMSU Library	April 24, 2007	May 4, 2007	
NMSU Graduate Council	May 3, 2007	October 18, 2007	
NMSU Associate Dean's Academic Council (ADAC)	April 23, 2007	Monday, May 7, 2007	
NMSU Academic Deans Council (ADC)	October 18, 2007	October 18, 2007	
NMSU Faculty Senate	October, 2007	November 29, 2007	
Registrar	December, 2007	January, 2008	
NMSU Provost	December, 2007	January, 2008	
NMSU President	December, 2007	January, 2008	
NMSU Board of Regents	January, 2008	February, 2008	
New Mexico Council of Graduate Deans			
Academic Council for Higher Education			
New Mexico Department of Higher Education			
NM State Board of Finance			

Appendix B

Letters of Support from NMSU

Letters of support from the following individuals on the NMSU Campus:

Department Head, Department of Mathematical Sciences, Dr. Patrick Morandi (Attached)

Department Head, Department of Finance, Dr. Lizbeth Ellis (Attached)

Dean of College of Business, Dr. Garrey Carruthers (Attached)

Department of Mathematical Sciences

Memo

To: Waded Cruzado-Salas, Dean of Arts and Sciences, Linda Lacey, Dean of the Graduate School

From: Patrick Morandi, Department Head Pat

Date: January 30, 2007

Re: Professional Master's Program in Financial Mathematics

I would like to give my support for the proposed Professional Master's Degree Program in Financial Mathematics. This program, which would be housed in my department, will serve an important market, and there is potential for a large demand for the program. Creating it will enhance the reputation of the Department of Mathematical Sciences, The College of Arts and Sciences, The Graduate School, and NMSU. My department has qualified faculty to run the program, notably its principal creator, Dr. Maria Christina Mariani. It will complement our existing graduate program and bring in new students. These students will take some of our existing courses, which will help to make those courses thrive. We are also creating two new courses in financial mathematics specifically for the program. Creating the program will also strengthen ties between my department and the Department of Finance in the College of Business.

I encourage the university to do everything it can to get the program approved.

COLLEGE OF BUSINESS ADMINISTRATION AND ECONOMICS

Department of Finance, MSC 3FIN
New Mexico State University
P.O. Box 30001
Las Cruces, NM 88003-8001
Telephone: (505) 646-3201
FAX: (505) 646-2820

February 20, 2007

Waded Cruzado-Salas
Dean, College of Arts and Sciences
New Mexico State University
P.O. Box 30001, MSC3335
Las Cruces, NM 88003

RE: Math Department Proposal for Professional Master's in Financial Mathematics

Dear Dean Cruzado-Salas,

I am writing in support of the Professional Master's in Financial Mathematics proposed by the Department of Mathematical Sciences. The idea behind the program is an excellent one, namely the training of students in advanced math and computational skills plus the knowledge and skills required of financial market analysts today. Increasingly, financial analysis consists of developing quantitative investment strategies, just the kind of skills the program is intended to deliver.

I am pleased that the Math Department worked closely with the Finance faculty in developing this program, and that the proposal includes several graduate courses in Finance. We are confident that our courses will develop the students' practical background in financial markets today. Because we already offer these courses for our MBA Specialization in Finance, offering these courses will not create any additional burden in my department.

I look forward to the implementation of the program. Please let me know if there is any other way I can help with the process.

Sincerely,

Lizbeth Ellis
Department Head, Finance Department

cc: Dr. Ken Martin
Dr. Patrick Morandi, Department Head, Mathematical Science
Dr. Garrey Carruthers, Dean, College of Business

NM STATE UNIVERSITY

COLLEGE OF BUSINESS
Office of the Dean
MSC 3AD
New Mexico State University
P. O. Box 30001
Las Cruces, NM 88003-8001
Phone: 505-646-2821 Fax: 505-646-6155
http://cbae.nmsu.edu

February 20, 2007

Waded Cruzado-Salas
Dean, College of Arts and Sciences
New Mexico State University
P.O. Box 30001, MSC3335
Las Cruces, NM 88003

Dear Dean Cruzado-Salas,

It is with pleasure that I write to support the Professional Master's in Financial Mathematics program proposed by the Department of Mathematical Sciences. The degree program will help train professionals in the growing field of financial mathematics. The College of Business is pleased that graduate courses in Finance have been included in the program thereby increasing collaboration between our colleges and between the Departments of Finance and Mathematical Sciences.

The program is an excellent idea and one that is not duplicated in the state of New Mexico or even the surrounding region. I look forward to seeing the program in place as soon as possible.

Sincerely,

Garrey E. Carruthers, Ph.D.

Appendix C

Other Letters of Support

1. Dr. Paul Glasserman, Professor, Vice Dean, Columbia Business School, Columbia University (Attached)

2. Dr. Alec Kercheval, Director of Financial Mathematics, Florida State University (Attached)

3. Dr. Ansgar Jüngel, Professor Institut für Analysis und Scientific Computing Technische Universität Wien, Austria (Attached)

4. Dr Frederi Viens, Coordinator of the Computational Finance Program, Purdue University (Attached)

5. Karen Lawrence, President of Prediction Company (Attached)

6. Dr. Carlos Ulibarri, New Mexico Tech Management Department (Attached)

7. Dr. Alejandro Aceves - Chair, Department of Mathematics and Statistics, University of New Mexico, and Maria Cristina Pereyra, Graduate Chair, Department of Mathematics and Statistics, University of New Mexico. (Attached)

COLUMBIA
BUSINESS
SCHOOL

Columbia University
Graduate School
of Business

Uris Hall
3022 Broadway, Room 101
New York NY 10027-6902
212 854 8881
Fax 212 932 0545
pg20@columbia.edu

Paul Glasserman
Jack R. Anderson Professor
Senior Vice Dean

December 22, 2006

Waded Cruzado Salas
Dean, College of Arts and Sciences
New Mexico State University
Deans Office
PO Box 30001, MSC 3335
Las Cruces, NM 88003

Dear Dean Salas:

I am writing in support of the proposed Professional Master's Degree in Financial Mathematics at New Mexico State University.

My knowledge in the area leads me to believe that there will be substantial demand for this degree. Highly trained professionals in the area of financial mathematics are needed for a broad range of jobs in risk management, treasury operations, insurance, banking and public finance. There is no program in financial mathematics like this one in New Mexico or West Texas.

I believe that this will be a high quality program in Financial Mathematics that will fulfill the need for highly qualified professionals in the area in the State of New Mexico, and other parts of the country and the world.

I have known Dr. Maria Cristina Mariani, the principal contributor for the elaboration of this program, for the past seven years since the time she visited New York University and Columbia University in 1999. As a faculty member of the University of Buenos Aires she organized a Master's program in Mathematical Finance. She is highly qualified for successfully running this program.

For all of the above reasons, I strongly support the approval and implementation of this program without reservations, and I encourage New Mexico State University to move the proposed program through the approval process quickly.

Please feel free to contact me if I can be of further assistance.

Sincerely,

Paul Glasserman

cc: Patrick Morandi, New Mexico State University

– COPY –

FLORIDA STATE UNIVERSITY

Professor Alec N. Kercheval
Department of Mathematics
Tallahassee, FL 32306-4510
kercheval@math.fsu.edu

January 26, 2007

Waded Cruzado Salas
Dean, College of Arts and Sciences
New Mexico State University
Deans Office
PO Box 30001, MSC 3335
Las Cruces, NM 88003

Dear Dean Salas,

I am writing, at the request of Dr. Maria Cristina Mariani, in support of the proposal at NMSU to establish a Professional Master's Degree Program in Financial Mathematics.

I am Director of a successful nine-year-old Financial Math program at Florida State University that includes professional masters students in a two-year Master's Degree program, as well as PhD students – we currently have about 50 students enrolled and about 150 applicants each year for 7 TAships and 10 self-paying spaces in the entering class, so competition is intense.

I have looked at the NMSU proposal and believe it to be well-considered and of high quality, and roughly comparable in scope to our own MS program. To my knowledge there is no similar program in New Mexico or West Texas. Moreover, our experience is that there is very strong worldwide demand for these programs because of the tremendous growth of the need for mathematical modeling in the financial and insurance industries. Therefore I expect the program to be in a position to admit high quality students, and I would expect your graduates to easily find employment.

This program is likely to create opportunities for enhancing the New Mexico financial sector as well as contributing to the NM public sector needs for financial modeling and analysis. For example, many of our own students have interned or found employment at the agency in charge of the $150B Florida public employee pension funds. Others have gone to banking, trading, energy, and consulting firms in the state and around the US.

I have known Dr. Mariani, the principal author of this proposal, since early 2004 when we met at a Financial Mathematics conference in Tallahassee. I know that she is actively developing Financial Mathematics at NMSU, and that she has experience organizing a previous Master's program in Financial Mathematics when she was a faculty member at the University of Buenos Aires. Therefore I believe she is uniquely and highly qualified to lead a successful program at NMSU. I have no reservations in strongly recommending that New Mexico State University move to implement this degree program as soon as possible. I expect it will be a very successful contribution to the University and to meeting the needs of the State of New Mexico and the nation.

Sincerely,

Alec Kercheval
Director of Financial Mathematics

cc: Patrick Morandi, Head, Dept. of Mathematical Sciences
New Mexico State University, PO Box 30001, Department 3MB, Las Cruces, NM 88003-8001

TU WIEN
VIENNA UNIVERSITY OF TECHNOLOGY

SCIENTIFIC COMPUTING (E 101)
Univ.-Prof. Dr. Ansgar Jüngel

Prof. Dr. A. Jüngel, Institut E 101, TU Wien, A-1040 Wien

Prof. Waded Cruzado Salas
Dean, College of Arts and Sciences
New Mexico State University
Deans Office, PO Box 30001, MSC 3335
Las Cruces, NM 88003, USA

January 10, 2007

Dear Prof. Cruzado Salas,

herewith I send you a letter of support for the proposed Professional Master's Degree in Financial Mathematics, principal investigators: Prof. Mariani, Prof. Martin, and Prof. Alvarez.

I know Prof. Mariani, one of the principal investigators, since 1999 as the Argentinian principal investigator of a bilateral Argentinian-German research project funded by the German Exchange Service, where I was the principal investigator on the German side. At that time, Prof. Mariani was a faculty member of the University of Buenos Aires where she organized a Master's Program in Mathematical Finance. Meanwhile she has published many research papers in renowned journals of mathematical finance, showing that she is highly qualified for running successfully the proposed Master's Program in Mathematical Finance.

To my experience, topics in mathematical finance become more and more important in the near future due to complicated financial products and a globalized economy, and there is also a strong demand by students and professionals to learn mathematical finance. My experience is based on teaching experience in mathematical finance at the Universities of Rostock, Konstanz, and Mainz (Germany), own research results, and as the author of a book on computational finance.

Therefore, there is a general strong need for a Professional Master's Program in Mathematical Finance to be implemented at New Mexico State University. I believe that such a program has the potential to improve the the reputation of New Mexico State University in the field of financial mathematics. Particularly remarkable features for this program are, in my opinion, that the Master's Program is open and partially intended for professionals and that distance education methodologies are possible. This will allow a larger number of interested candidates, also from outside of the U.S.

TU Wien, Institut E 101, Wiedner Hauptstr. 8-10, A-1040 Wien, Telefon: +43(1)58801-10127, Telefax: +43(1)58801-10196

For these reasons, I strongly support the approval and implementation of this program without any reserve, and I encourage New Mexico State University to move the proposed program through the approval process as fast as possible.

Sincerely yours

Prof. Dr. Ansgar Jüngel

cc: Prof. Patrick Morandi
Head, Department of Mathematical Sciences
New Mexico State University
PO Box 30001, Department 3MB
Las Cruces, NM 88003-8001

PURDUE
UNIVERSITY

DEPARTMENT OF STATISTICS

RECEIVED OCT 2 6 2007

West Lafayette, IN, January 24, 2007

Frederi Viens
Department of Statistics
Purdue University
150 N. University Street
West Lafayette, IN 47907-2067
viens@purdue.edu

To: Waded Cruzado Salas
Dean, College of Arts and Sciences,
New Mexico State University
Deans Office
PO Box 30001, MSC 3335
Las Cruces, NM 88003

c.c. Patrick Morandi
Head, Department of Mathematical Sciences,
New Mexico State University
P.O.Box 30001, Department 3MB
Las Cruces, NM 88003 -8001

Dear Professor Cruzado Salas,

I am writing this letter in support of my colleague Professor M.C. Mariani's proposal to start a graduate program in financial mathematics. I am the Director of the Computational Finance program at Purdue University, for the Department of Statistics, in which I am a regular tenured associate professor. I have coordinated this campus-wide program since Fall 2000, and have extensive experience in organizing the curriculum and designing courses in financial mathematics.

I have succeeded in placing a number of MS students in jobs in investment banks on Wall Street and other financial centers. My experience shows that there has been a steady increase since 2000 in the number of jobs available to quantitative finance students. Very few of the students trained here in the East ever consider jobs in the Southwest. I only know of one case at Purdue, where a student was offered a quant finance job in Arizona, but she preferred to stay in Indiana for family reasons.

Felix Haas Hall ▫ 250 N. University Street ▫ West Lafayette, IN 47907-2066
(765) 494-6030 ▫ Fax: (765) 494-0558 ▫ www.stat.purdue.edu

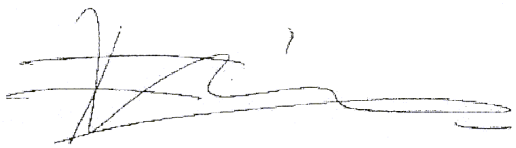
For these very clear reasons, I believe there can be a strong demand for the Professional Master in Financial Mathematics that is planned for New Mexico State University at Las Cruces. MS students trained in financial mathematics are needed not only in high-profile investment banks; increasing numbers of industrial sectors require individuals who can implement complex risk-management and portfolio selection strategies, using financial derivatives such as options and futures, and various portfolio optimization tools. New Mexico and West Texas should be no different in this respect than any other dynamic region, but there is no program in financial mathematics in the area. The proposed program at NMSU should also be able to serve employers in the larger Southwest region of the United States, which contains no high-profile program in quantitative finance.

I have looked in some detail at Professor Mariani's proposal. The course structure is sound: it contains the necessary background in differential equations, probability, and statistics; it covers enough practical finance and numerical methods to make the students competitive in the job market; its financial mathematics content is of good quality; the program can be completed in the time allotted, although I would suggest allowing students with less mathematical preparation an additional semester or an intensive initial summer to ensure adequate preparation. It is impressive that Mariani does not anticipate needing any additional faculty lines for this proposal: this means that NMSU already has the expertise it needs to run the program.

I have known Professor Mariani for the past five years since the time she visited Purdue in 2002. Before this visit, she was a regular professor at the University of Buenos Aires, where she organized a Master's program in Mathematical Finance. At Purdue, she impressed me with her intelligence, her knowledge of financial mathematics, and her excellence in instruction. There is no reason to believe she will not be successful in running this program.

In conclusion, I strongly encourage New Mexico State University to give Professor Mariani the approvals she needs to make this program a reality, and I urge the University to facilitate her task to the fullest extent.

Sincerely,



Frederi G. Viens
Associate Professor of Statistics and Mathematics
Director for Statistics, Computational Finance Program
Associate Director, Actuarial Science Program
Purdue University

PREDICTION COMPANY

January 31, 2007

Prof. Waded Cruzado Salas
Dean, College of Arts and Sciences,
New Mexico State University
Deans Office
PO Box 30001, MSC 3335
Las Cruces, NM 88003

Dear Prof. Salas,

I am writing in support of the proposal to establish a Professional Master's Degree Program in Financial Mathematics at New Mexico State University.

I am CEO of Prediction Company. We are a wholly owned subsidiary of UBS and employ a large group of engineers and scientists. We have a need for individuals trained and experienced in financial mathematical modeling and analysis. A program such as that proposed by Dr. Maria Christina Mariani would benefit companies like mine by providing a pool of qualified applicants locally. To my knowledge, no such program exists in New Mexico, so typically we and other financial services firms recruit employees from out of state.

I have looked at the proposal and I believe that there is a great demand for graduates of this type of program, not just in the business sector, but in the public sector as well. And because of the growth in the use of financial modeling in the financial and insurance industries, this demand is growing.

I strongly recommend the approval and implementation of this degree program. I believe it will be beneficial in attracting students to the University and to meeting the needs of businesses throughout the state and the U.S. as a whole.

Yours truly,

Karen Lawrence
President and CEO

c.c. Patrick Morandi
Head, Department of Mathematical Sciences,
New Mexico State University
P.O.Box 30001 , Department 3MB
Las Cruces , NM 88003 -8001

New Mexico Tech
SCIENCE • ENGINEERING • RESEARCH • UNIVERSITY

Department of Management
801 Leroy Place
Socorro, New Mexico 87801
Phone: (505) 835-5440 Fax: (505) 835-5498
http://management.nmt.edu/

November 7, 2007

Professor Ken Martin
Department of Finance
New Mexico State University

Professor Cristina Mariani,
Department of Mathematical Sciences
New Mexico State University

Dear Professors Martin and Mariani,

Thank you for asking me to review your joint proposal for a Professional Master's Degree in Financial Mathematics. As you know, I am a Professor in the Department of Management at New Mexico Tech where I teach courses in Economics and Finance. I am also co-chair of the state-wide articulation committee in the area of Finance and conducted research in the field of financial markets. With this background I would like to voice strong support for the proposed degree program and offer sincere congratulations to your mathematics and finance faculty in developing the proposed degree offering.

Clearly there are merits to developing an in-state Master's program that focuses on quantitative finance. My review of the materials you forwarded leads me to believe the proposed degree program would contribute significantly towards improving finance education in New Mexico. The combination of instruction envisioned between the Departments of Finance and Mathematics has the potential for advancing a rigorous curriculum for graduate studies. I see the proposed course offerings being necessary for professional advancement in the fields of risk management, corporate finance, asset valuation and investment analysis.

I also feel that the timeliness of the effort is near-optimal. As you are both aware, there is no graduate program in New Mexico which offers a rigorous course of studies in quantitative financial analysis. This is regrettable given the demand for well-qualified graduates who can claim "hands-on" expertise in the application of "state-of-the-art" analytical methods. Certainly our 4-year students and finance professionals would greatly benefit from participating in graduate studies which specialize in the application of Financial Mathematics. By offering such a degree, New Mexico State would be leading the way in providing a unique and rigorous course of studies.

Sincerley,

Carlos A. Ulibarri,
Department of Management
New Mexico Institute of Mining and Technology

UNM

Department of Mathematics and Statistics

Dept. of Math. and Stat.
MSC03 2150
1 University of New Mexico
Albuquerque, NM 87131-0001

January 22, 2008

Dr. Waded Cruzado-Salas
Executive Vice President and Provost
New Mexico State University
P.O. Box 30001, MSC3335
Las Cruces, NM 88003-8001

Dear Dean Cruzado-Salas

We are writing this letter in support of the Professional Master's in Financial Mathematics Program proposed by the Department of Mathematical Sciences at New Mexico State University. These type of programs do not exist in other institutions of higher education in New Mexico, in particular not at the University of New Mexico.

New Mexico State University has put together an impressive team leaded by Prof. María Cristina Mariani that can make this program flourish. Prof. Mariani has extensive experience in the area. Financial Mathematics is an area of mathematics that has become very popular, students with a MS in this area are in high demand by financial institutions (banks and insurance companies) as well as by the public sector.

We think this is a great idea, and it will be interesting if resources can be pulled together so that students of any institution of higher

education in New Mexico can benefit from this initiative.

Sincerely,

Alejandro Aceves
Chair, Department of Mathematics and Statistics
phone: (505) 277-4613
aceves@math.unm.edu

María Cristina Pereyra
Chair, Graduate Committee
Associate Professor of Mathematics
phone: (505) 277-4147
crisp@math.unm.edu

cc: Dr, Greg Fant
Interim Dean College of Arts and Sciences
New Mexico State University
College of Arts and Sciences
Deans Office
PO Box 30001, MSC 3335
Las Cruces, NM 88003

cc: Dr. Patrick Morandi
Head Department of Mathematical Sciences
New Mexico State University
Department of Mathematical Sciences
P.O. Box 30001
Department 3MB
Las Cruces, New Mexico 88003-8001

cc: Maria C. Mariani
Department of Mathematical Sciences
New Mexico State University
P.O. Box 30001
Department 3MB
Las Cruces, New Mexico 88003-8001

Appendix D

Qualifications of Faculty Members Having Significant Contact with Students

Name	Department	Rank	Highest Degree	Major Areas
Josefina Alvarez	Mathematical Sciences	Professor	Ph.D., University of Buenos Aires	Harmonic Analysis, Functional Analysis, Mathematics Education
Mary Ballyk	Mathematical Sciences	Assistant Professor	Ph.D., McMaster University	Mathematical models involving multiple resource limitation, mathematical biology
Tiziana Giorgi	Mathematical Sciences	Associate Professor	Ph.D., Purdue University	The breakdown of superconductivity in high magnetic fields
Maria C. Mariani	Mathematical Sciences	Associate Professor	PhD., University of Buenos Aires	Nonlinear problems with applications to physics and finance, numerical methods, stochastic processes, mathematical physics and neural networks
Ken Martin	Finance	Professor	Ph.D., Purdue University	Corporate control and governance issues, mergers and acquisitions, corporate finance
Hung Nguyen	Mathematical Sciences	Professor	Ph.D., Universite de Lille	Asymptotic theory of statistics, Markov random fields with applications to expert systems
Robert Smits	Mathematical Sciences	Associate Professor	Ph.D., Purdue University	Heat kernel estimates and conditioned Brownian motion
Harikumar Sankaran	Finance	Associate Professor	Ph.D., University of Houston	Compensation design, derivative securities, corporate finance
Tony Wang	Mathematical Sciences	Associate Professor	Ph.D., University of Windsor	Bootstrap methods, multivariate analysis and linear models in statistics

Appendix E
Curriculum Vitae of Principal Contributors and Academic Department Heads

Principal Contributors:

Maria C. Mariani (Mathematical Sciences)
Ken Martin (Finance)
Josefina Alvarez (Mathematical Sciences)

Department Heads

Patrick Morandi (Mathematical Sciences)
Lizbeth Ellis (Finance)

Maria Christina Mariani - Curriculum Vitae

Address
Department of Mathematical Sciences
New Mexico State University
Las Cruces, NM 88003-8001
Email: mmariani@nmsu.edu

Research Interests
Nonlinear partial differential equations, Financial Mathematics, Nonlinear problems with applications to Physics, Numerical Methods, Stochastic processes, Statistical Mechanics, Mathematical Physics, Neural Networks

Education
1. Ph.D. in Mathematics, Faculty of Physical and Natural Sciences, University of Buenos Aires. Outstanding dissertation award, Graduation with highest honors, 1992. (Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, FCEyN UBA)
2. Master degree in Mathematics, Faculty of Physical and Natural Sciences, University of Buenos Aires. Graduation with highest honors, 1987.
3. Master degree in Physics, Faculty of Physical and Natural Sciences, University of Buenos Aires. Graduation with highest honors, 1995.

Awards
- Scientific production award, University of Buenos Aires 1993-1994-1995-1996. (I won this award every year during the period in which the University of Buenos Aires had the award).
- Best PhD Dissertation award, period 1989-1994, Faculty of Physical and Natural Sciences, University of Buenos Aires.
- Nominated by the Department of Mathematical Science for the Patricia Christmore Faculty Teaching Award, 2004.
- Invited to write a chapter for the book: Nonlinear Models in Mathematical Finance: Research Trends in Option Pricing, that will be published by Nova Science Publishers, Inc. NY, 2007.

Professional experience
1. New Mexico State University
Associate Professor 2006-
Assistant Professor 2003 - 2005
2. Purdue University
Visiting Professor of Statistics and Mathematics, 2002-2003.
3. Faculty of Physical and Natural Sciences, University of Buenos Aires.
Associate Professor 1998 - 2004
Assistant Professor 1993 - 1997.
Teaching Assistant 1989 - 1992.
4. CONICET (Equivalent of NSF)
Permanent Researcher 1995 - 2004

5. Institute of Technology, National Atomic Energy Center, Buenos Aires. Full Professor, 1998 - 2003
6. General Cycle - University of Buenos Aires. Instructor, 1987.

PhD Fellowships
CONICET PhD Fellowship, 1987 - 1991.
Postdoctoral Fellowships
Organization of American States Fellowship, 1997-1999.
Fonds National de la Recherche Scientifique, Belgium, Fellowship, 1995.
International Centre for Theoretical Physics Fellowship, 1994, 1995.

Funded Research Grants (Funds for travel and other research costs)

- National Physical Science Consortium. 2007-2011. Principal researcher.
-Minigrant from the College of Arts and Sciences 2007. Principal researcher.
- NSF ADVANCE 2006. Project: Solutions to nonlinear problems arising in Physics and Finance. Principal researcher.
- New Mexico Chile Task Force through Economic Development Administration. Project: Chile Industry System Analysis: Optimal harvest of Southwestern U.S. red chile peppers [Capsicum annuum (L.)]. 2004-2007, Co-PI.
- NSF ADVANCE 2005. Project: Numerical solutions to nonlinear problems arising in Physics and Finance. Principal researcher.
-NSF ADVANCE 2004 - 2005. Project: Nonlinear problems arising in Physics and Finance. Principal researcher.
- NSF ADVANCE 2003 - 2005. Start - up funds for: computer hardware, software, books and classroom materials, travel funds, support of a Level 1 Graduate Assistant for computer support in 2003 - 2004, and summer salary support. Principal researcher.
- Antorchas Foundation: Argentine - Germany cooperation (Deutscher Akademisher Austauschdienst) A-13622/1-5, 1999-2002. Principal researcher.
- Argentina - Chile cooperation, Valparaiso University - University of Buenos Aires, 2002-2003. Principal researcher.
- Argentina - Chile cooperation, Santiago University - University of Buenos Aires CH/A99- EIII/04, Secyt, 2000. Principal researcher.
- “Resolution of nonlinear problems with applications” PEI 0013/97, CONICET, 1997. Principal researcher.
- “Resolution of Differential Equations by topological methods”, UBACYT, UBA EX. 197/95, 1995-1998. Principal researcher.
- “ Resolution of Differential Equations by topological and variational methods” TX 045, UBACYT 1998-2000. Co-principal researcher
- “ Resolution of Differential Equations by topological and variational methods” X 202, UBACYT 2001-2003. Co-principal researcher
- “Analysis and nonlinear equations”, PID 3668/92 CONICET 1994-1996. Co-principal researcher.
- “ Analysis and nonlinear equations”, PMT-PICTO168 SECYT 1997 - 2000. Co-principal researcher.

Other Funded Grants

1. Antorchas Foundation, for organizing “I International Meeting - Non Linear Equations and Free Boundary Problems”, Argentina 1997.
2. National Agency of Science and Technology and International Mathematica Union, for organizing “II International Meeting - Non Linear Equations and Free Boundary Problems”, Argentina 2000.

Lectures and meetings

I have participated in 103 scientific meetings, 71 invited lectures in International Conferences and Seminar talks in Universities and Institutions such as Universite Libre de Bruxelles; Universite Catholique de Louvain; Universita degli Studi di Padova; Courant Institute of Mathematical Sciences, NYU; Southwest Texas State University, San Marcos, Texas; University of Texas at Austin, Austin, Texas; Universitat Konstanz, Germany; Universita degli Studi di Catania, Sicilia; Universidad de Chile, Santiago; The University of Texas at San Antonio, San Antonio, Texas; Technical Universitat Berlin; The University of Houston Downtown; Purdue University, Indiana; The University of Minnesota, USA; Columbia University, New York; Comision Nacional de Energia Atomica, Argentine; Instituto de Calculo, University of Buenos Aires; Astrophysics Institute, Argentine; Universities of Mendoza, Tandil, Mar del Plata, Cordoba, Santa Fe, Argentine; Chemistry Department, University of Buenos Aires; IMPA, Brasil; University of Wisconsin Milwaukee; City University of New York; California State University; New Mexico State University; University of North Texas; Claremont Colleges, California; Indiana University, Bloomington; Florida State University, Tallahassee; The University of Texas at El Paso, Texas; Texas A&M; Trinity University, San Antonio, Texas; SAS Users group Conferences, San Antonio, Texas; University of New Mexico; Florida International University, Miami; Kent State University, Ohio, Middle Tennessee State University, Murfreesboro, Tennessee.
111 Contributed conference talks in scientific meetings.

Research Visits and Seminars

-Universite Libre de Bruxelles, Faculte des Sciences, Departement de Mathematique, Belgium, 1995.
-Universite Catholique de Louvain, Belgium, 1995, 1999.
-Dipartamento di Metodi e Modelli Matematici per le Scienze Applicate, Universita degli Studi di Padova, Padova, Italy, 1995.
-Courant Institute of Mathematical Sciences, New York University, USA, 1996, 1997, 2000, 2001, 2002.
- Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Mar del Plata, Argentina, 1996.
- University of Texas at Austin, USA, 1998, 1999, 2000, 2001, 2002.
- Southwest Texas State University, San Marcos, Texas; USA, 1999.
- International Centre for Theoretical Physics, Trieste, Italy, 1994, 1995.
- Universidad Nacional del Litoral, Argentine 1997.
- Universidad Nacional de C´ordoba, Argentine 1997.
- Technische Universitat Berlin, Germany, 1999.
- The University of Minnesota, USA, 2000.

- Universitat Konstanz, Germany, 2000, 2001.
- Universita di Catania, Sicilia, Italy, 2000.
- Universidad de Chile, Santiago, Chile, 2000.
- The University of Houston Downtown, Texas, 2001.
-The University of Texas at San Antonio, Texas, USA, 2001, 2002.
- Columbia University, USA, 2002, 2003, 2004, 2005, 2006.
-Kent State University, 2007.

Teaching

Undergraduate
Calculus I
Calculus II
Multivariable Calculus
Introduction to Abstract Algebra
Linear Algebra
Probability and Statistics
Statistics
Differential Equations and Partial Differential Equations for Engineering and the Sciences
Differential Equations and Dynamical Systems for Engineering and the Sciences
Mathematics Appreciation

Graduate
Differential Geometry
Real Analysis
Measure and Probability
Functional Analysis
Complex Analysis
Partial Differential Equations
Physics for mathematicians I
Physics for mathematicians II
Fourier Series
Ordinary Differential Equations and Dynamical Systems
Numerical Analysis
Introduction to Math Finance
Math Finance I
Math Finance II
Math Finance III: Optimization - Math Finance
Non Linear Equations and Free Boundary Problems
Resolution of Nonlinear Differential Equations by Variational Methods.
Portfolio Optimization.

I have been nominated for the NMSU Christmore Faculty Teaching Award.
This award is intended to recognize and reward faculty members for excellence in teaching.

I have been invited to Mainz University, Germany, to teach the course Optimization - Math Finance (I created this course) (about 13 lectures, 90min. each) during Summer 2003 and Summer 2004. I postponed the invitation.

Teaching at NMSU: courses creation and Master program in Financial Mathematics
At present I am working in the creation of a Professional Master in Financial Mathematics. I created the courses Math 521/522 Financial Mathematics I and II, and Math 523 Numerical Optimization applied to Financial Mathematics that have been taught at the Department of Mathematical Sciences of New Mexico State University. These courses are taught also for undergraduate students and with the numbers Math 421/422/423.
The courses are intended for students of the College of Arts and Sciences, Engineering and Business who are interested in Financial Mathematics. The goal is to present the theory with great emphasis on applications. These courses are part of the core courses in the Master in Financial Mathematics.
I also worked in the creation of the course Math 375G/Math 475 Business Applications.

SUPERVISION

PhD Dissertations
- Dr. P. Amster. "Equations of mean curvature type", 1998, Math Department, University of Buenos Aires.
- Dr. M.M. Cassinelli. " General quasilinear elliptic second order problems", 2000, Math Department, University of Buenos Aires.
- Dr. P. De Napoli. "Nonlinear equations of the p-laplacian type", 2001, Math Department, University of Buenos Aires.
-Dr. C. Averbuj. "Black Scholes models: topological solutions", 2005, Math Department, University of Buenos Aires.
-Dr. J.P. Borgna. " Solutions to Differential Equations arising in Physics " 2006, Math Department, University of Buenos Aires.

MS students
- MS. M.M. Cassinelli. "Solutions to the mean curvature equation", 1996, Math Department, University of Buenos Aires.
- MS. P. De Napoli. "The mean curvature equation", 1997, Math Department, University of Buenos Aires.
- MS. C. Averbuj, "Nonlinear problemas and applications to Economy ", 1997, Math Department, University of Buenos Aires.
- MS. D. Pinasco, "Resolution of differential equations by topological methods", 2000, Math Department, University of Buenos Aires.
- MS. J. Viegas, "Mathematical Models for Pricing Derivative Securities", 2001, Math Department, University of Buenos Aires.
- MS. M. Figueroa, "Critical Phenomena Models", 2001, Physics Department, University of Buenos Aires.

- MS. G. Negrin, “Fixed Point theorems and applications”, 2001, Math Department, University of Buenos Aires.
- MS. I. Pisso, “ Navier Stokes Equations”, 2002, Math Department, University of Buenos Aires.
-MS. G. Kampel, “ Black-Scholes with jumps models”, 2002, Math Department, University of Buenos Aires.
- MS. N. Furman, “Intermittence, Scale Invariance and a new method to predict the behavior of major indeces near a Crash”, 2002, Physics Department, University of Buenos Aires.
- MS. E. Acosta, “Generalizations of the Black - Scholes model”, 2003, Math Department, University of Buenos Aires.
- MS. M. Serrano, “American Options”, 2003, Math Department, University of Buenos Aires.
-MS. Y. Liu, “Analysis of the behavior of major indices near a crash, 2005, Department of Mathematical Sciences, NMSU
-MS. J. Jeschelnig, 2007, Department of Mathematical Sciences, NMSU.
-MS. E. Schoot, 2007, Department of Mathematical Sciences, NMSU.

- Advisor of four graduate students who completed a Minor in Mathematics at New Mexico State University.

Graduate Research Advising at New Mexico State University
I have been the advisor of the graduate student Yang Liu who had a Research Assistantship from ADVANCE NSF for working in Mathematical Finance from July 2004 to July 2005.
Graduate Advising at New Mexico State University at present
- Advisor of eight graduate students at the Department of Mathematical Sciences at New Mexico State University: six PhD students and two Master students.

Undergraduate Research Advising at New Mexico State University
I was the advisor of the undergraduate student Allison White, who was awarded a fellowship from ADVANCE to do research in Mathematical Finance during 2005.

Research Advising at the University of Buenos Aires
- Juan Pablo Borgna, Full Time Instructor, Math Department, University of Buenos Aires. 1996 - 2003.
-Jorge Alvarez Julia, Lecturer, Math Department, University of Buenos Aires. 1996 - 2001.
- Pablo Amster, Instructor, Math Department, University of Buenos Aires. 1996 - 1998.
- Luis Fernndez, Instructor, Math Department, University of Buenos Aires. 1996 - 1998.
-Walter Feruglio, Instructor, Math Department, University of Buenos Aires. 1997 -1999.
- Mariano De Leo, Instructor, Math Department, University of Buenos Aires. 1998 - 2003.

Conference and Seminar Organization

- Special Session in Financial Mathematics: The Mathematics of Derivative Securities and Structures, AMS 2007 Fall Western Sectional Meeting, Albuquerque, 2007.
- Sponsor for the trip of the Department of Mathematical Sciences team for the 3rd Annual Arizona Mathematics Undergraduate Conference (AMUC) that was hosted by the Department of Mathematics & Statistics at Northern Arizona University in Flagstaff, Arizona, October 28-30, 2005.
- Special Session in Financial Mathematics: The Mathematics of Derivative Securities, AMS 2004 Fall Western Sectional Meeting, Albuquerque, 2004.
- Member of the Organizer Committee "XLIV Argentine Math Meeting", 1994.
-Member of the Organizer Committee of the Math Department Conferences, University of Buenos Aires, 1994 - 1995, 2001 - 2003.
-Member of the Organizer Committee "III Applied Math Meeting", Entre Rios, Argentina and Salto, Uruguay, 1995.
- Session Organizer EXPOCYTUBA, University of Buenos Aires, Argentine 1995.
- Member of the Organizer Committee I International Meeting - Non Linear Equations and Free Boundary Problems, Argentine, 1997.
- Session Organizer of "Academia de Ciencias Exactas, Fisicas y Naturales en la Feria del Libro" Argentine, 1998.
- Session Organizer XII University of Buenos Aires Research Fellows Meeting, 1998.
- Editor of Proc. I International Meeting - Nonlinear Equations and Free Boundary Problems, Argentine, 1998.
-Member of the Organizer Committee II International Meeting - Nonlinear Equations and Free Boundary Problems, Argentine 2000.
-Member of the Organizer Committee Matebaires, University of Buenos Aires, 2000.
- Session Organizer of XV University of Buenos Aires Research Fellows Meeting, 2001.
-Member of the Organizer Committee IV PAN-AMERICAN Workshop in Applied and Computational Mathematics, 2002.

Professional Societies

- American Mathematical Society
- Mathematical Association of America
- International Federation of Nonlinear Analysts
- Union Matemática Argentina

Professional Service

-Vice Chair of the Graduate Council, NMSU, 2007-
- Chair of the Graduate Studies Committee, Department of Mathematical Sciences, New Mexico State University, 2007-
- Chair of the Departmental Promotion to Associate Professor and Tenure Committee, NMSU, 2007-
- Member of the Senate Scholastic Affairs Committee. New Mexico State University, 2007-
- Member of the Plan2Plan taskforce for NMSU, 2007.
- Mentor of Dr. Villaverde in the Mentoring program of ADVANCE, 2007-
- Panelist of the NSF program in Applied Mathematics, 2005, 2006, 2008.

- Member of the University Faculty Senate, New Mexico State University, 2005-
- Member of the Senate Faculty Affairs Committee. New Mexico State University, 2005-2007.
- Member of the Graduate Council Interdisciplinary PhD programs Committee, 2007-
- Member of the Graduate Studies Committee, Department of Mathematical Sciences, New Mexico State University, 2005-2007.
- Member of the Outreach and Pi Mu Epsilon Committees, Department of Mathematical Sciences, New Mexico State University, 2005-2006
- Member of the Student Recruitment Committee, Department of Mathematical Sciences, New Mexico State University, 2005-2006
- Member of the Development Committee, Department of Mathematical Sciences, New Mexico State University, 2005-2006
- Member of the Undergraduate Curriculum Committee, Department of Mathematical Sciences, New Mexico State University, 2004-2005
- Member of the Major and Minors Committee, Department of Mathematical Sciences New Mexico State University, 2003-2004, and 2005-2006
-I am working with Faculty of the Finance Department, NMSU in a plan for a Professional Master Degree in Financial Mathematics.
-I have been working with Professor Patricia Baggett in the Spanish version of the web page: http://www.math.nmsu.edu/breakingaway/
-Reviewer of applications for the NM Alliance for Minority participation, 2006-
-Judge at the New Mexico Alliance for Minority Participation Student Research Conference, 2006, 2007.
- Judge in the New Mexico MESA On-Site Math Competition on Nov. 2007.
- Judge at the Graduate Research and Arts Symposium NMSU, two sessions, April 2006
- Judge in charge in the New Mexico MESA On-Site Math Competition on Friday, Nov.19th 2006.
- Member of several graduate students committees at New Mexico State University.
- Member of the Library Committee, Argentine Math Union 1988 - 1989.
- Member of the Habitat Committee, University of Buenos Aires, 1996.
- Member of the Graduate Studies Committee, Math Department, University of Buenos Aires, 1997.
- Advisor of FOMEC 382 Math Department, University of Buenos Aires, 1997-1999.
- Member of Lecturers and Instructors Evaluation Committee, Math Department, University of Buenos Aires, 1997.
- Member of the Math Department Advisory Committee, University of Buenos Aires, 1997 - 2003.
- Member of the Faculty Senate, University of Buenos Aires, 1998 - 2003.
- Member of several PhD Thesis Committees, and MS Thesis Committees at the Math and Physics Departments, University of Buenos Aires.
- Executive Hiring Committee. Math Department University of Buenos Aires.
- Reviewer of the Natural and Exact Sciences Committee, CONICET.
- Member of FOMEC Fellowship Committee, Math Department, University of Buenos Aires, 1998.
- Reviewer Research Incentive Program, University of Buenos Aires, 1999.

- Reviewer of Research Projects, Universidad Nacional de General Sarmiento, Argentina, 2001

Teaching at the University of Buenos Aires
Together with Professor Marco Avellaneda (Courant Institute of Mathematical Sciences, New York University) we organized a Master in Mathematical Finance at the Math Department of the University of Buenos Aires.
I created the courses:
Physics for mathematicians I
Physics for mathematicians II
Introduction to Math Finance
Math Finance I
Math Finance II
Optimization - Math Finance
Non Linear Equations and Free Boundary Problems
Resolution of Nonlinear Differential Equations by Variational Methods
for graduate and undergraduate students at the Math Department of the University of Buenos Aires.

Editorial work for professional publications, and referee and review work

Member of the Editorial Board of Australian Journal of Mathematical Analysis and Applications.

Publications Reviewer
- Royal Society of Edimburgh
- Journal of Mathematical Analysis and Applications
- Applied Numerical Mathematics
- Studies in Applied Mathematics
- Mathematical Finance
- Finance and Stochastics
- Australian Journal of Mathematical Analysis and Applications
- Quantitative Finance
- Electronic Journal of Differential Equations
- Computers & Mathematics
- Applied Mathematics Letters
- Proyecciones
- Revista de la Uni´on Matem´atica Argentina
- Ciencia Hoy

- Reviewer of
1. American Mathematical Society
2. Zentralblatt

List of Publications

1. H-Superficies : su contenido analitico y geometrico. E. Lami Dozo, M.C. Mariani. Proc. of the X National Math Meeting, IMAF, Argentine 7 (1991) 73-82.

2. H-systems with variable H. E. Lami Dozo, M.C. Mariani, Revista de la Uni´on Matem´atica Argentina 37 (1991) 87-94.

3. A Dirichlet problem for an H-system with variable H. E. Lami Dozo, M.C. Mariani. Manuscripta Mathematica 81 (1993) 1-14.

4. Soluciones de la ecuacion de curvatura media prescripta. E. Lami Dozo, M.C. Mariani. Revista de la Union Matematica Argentina 39 (1994) 1-12.

5. The prescribed mean curvature equation with Neumann condition. E. Lami Dozo, M.C. Mariani. Non Linear Analysis TMA 22, 9 (1994) 1147-1152.

6. El problema de Plateau para la ecuaci´on de curvatura media prescripta. M.C. Mariani. Proc. of the First Analysis Meeting, Argentine, CLAMI 17 (1992) 47-57.

7. The Plateau problem for the prescribed mean curvature equation. E. Lami Dozo, M.C. Mariani, Revista Colombiana de Matem´aticas. Vol. XXVII (1993) 147-155.

8. The prescribed mean curvature equation with constant boundary values. E. Lami Dozo, M.C. Mariani. Proc. of the Second Meeting “Dr. Antonio A. R. Monteiro” CONICET-UNS (1993) 51-56.

9. Solutions to the Plateau problem for the prescribed mean curvature equation via the Mountain Pass Lemma. E. Lami Dozo, M.C. Mariani. Studies in Applied Mathematics 96 (1996) 351-358.

10. The H-surface system with constant boundary values. E. Lami Dozo, M.C. Mariani, Revista de la Revista de la Uni´on Matem´atica Argentina 40 (1998) 1-12.

11. The prescribed mean curvature equation for a revolution surface with Dirichlet condition. A.L. Maestripieri, M.C. Mariani. Bulletin of The Belgian Mathematical Society - Simon Stevin 3 (1996) 257-265.

12. An improvement in the determination of thermal properties of elastomeric compounds. M.C. Mariani, M.P. Beccar Varela, A.J. Marzocca. KGK Kautschuk Gummi Kunststoffe 50 (1997) 39-42.

13. Solutions to the mean cuvature equation by fixed point methods. M.C. Mariani, D. Rial, Bulletin of The Belgian Mathematical Society - Simon Stevin 4, 5 (1997) 617-620.

14. Estimacion de la dependencia de la difusividad termica en elastmeros con la temperatura. M.P. Beccar Varela, M.C. Mariani, A.J. Marzocca, D. Rial. Proc. of the First Latinamerican Meeting of Mathematical Methods and Applications to Industry and Medicine. (1995) 183-186.

15. Resolution of equations of mean curvature type with variational and topological methods. M.C. Mariani. Proc. of the I International Meeting - Nonlinear Equations and Free Boundary Problems, Argentine 1998.

16. Influence of the carbon black dispersion in the thermal diffusivity of SBR vulcanizates, S. Goyanes, M.P. Beccar Varela, M.C. Mariani, A.J. Marzocca. Journal of Applied Polymer Sciences 72 (1999) 1379-1385.

17. Existence and uniqueness of H-system's with Dirichlet conditions. P. Amster, M.C. Mariani, D. Rial, Nonlinear Analysis 42 (2000) 673-677.

18. Existencia y unicidad de soluciones para ecuaciones del tipo curvatura prescripta. P. Amster, M.C. Mariani. Proc. of the VIII Math Meeting Capricornio, Chile (1998).

19. Resolution of Semilinear Equations by Fixed Point Methods. P. Amster, M.C. Mariani. Bull. Bel. Math. Soc. 7 (2000) 215-220.

20. The prescribed mean curvature equation with Dirichlet conditions. P. Amster, M.C. Mariani. Nonlinear Analysis 44 (2001) 59-64.

21. Existence and regularity of weak solutions to the prescribed mean curvature equation for a nonparametric surface. P. Amster, M.M. Cassinelli, M.C. Mariani, D.F. Rial. Abstract and Applied Analysis 4, 1 (1999) 61-69.

22. Solutions to the prescribed mean curvature equation with Dirichlet conditions by variational methods. P. Amster, P. De Napoli, M.C. Mariani. Proyecciones 18, 2 (1999) 155-164.

23. Efecto del nivel de dispersi´on del negro de humo en las propiedades t´ermicas del SBR vulcanizado. S. Goyanes, M.P. Beccar Varela, M.C. Mariani, A.J. Marzocca. Proc. of SAM 98, Iberomet V (1998) 895-899.

24. Some mathematical properties of gauge transformations with respect to the Coulomb gauge: variational analysis of an energy functional. M.P. Beccar Varela, M. Ferraro, P. Lazzeretti, M.C. Mariani, D. Rial. International Journal of Quantum Chemistry 77 (2000) 599-606.

25. Solution to the mean curvature equation for nonparametric surfaces by fixed point methods. P. Amster, J.P. Borgna, M.C. Mariani, D.F. Rial. Revista de la Union Matematica Argentina 41, 3 (1999) 15-21.

26. Solutions to general quasilinear elliptic second order problems. P. Amster, M.M. Cassinelli, M.C. Mariani. Nonlinear Studies 7, 2 (2000) 283-290.

27. Solutions to quasilinear equations by an iterative method. P. Amster, M.M. Cassinelli, M.C. Mariani. Bull. Belg. Soc. 7 (2000) 435-441.

28. Solutions of h-systems using the Green function. P. Amster, M.C. Mariani, D. Rial. Bulletin of the Belgian Mathematical Society 7 (2000) 487-492.

29. A boundary value problem for a semilinear second order ODE. P. Amster, M.C. Mariani, J. Sabia. Revista de la Uni´on Matem´atica Argentina 41, 4 (2000) 61-68.

30. A boundary value problem in the hyperbolic space. P. Amster, G. Keilhauer, M.C. Mariani. Abstract and Applied Analysis 4, 4 (1999) 249-253.

31. An iteration procedure for nonlinear boundary conditions. P. Amster, M.C.Mariani. Revista de la Uni´on Matem´atica Argentina 42, 1 (2000) 9-16.

32. Three solutions of some quasilinear equations near resonance. P. De Napoli, M.C. Mariani. Electronic Journal of Differential Equations 2001 (2001) 131-140.

33. Solutions to equations of p-laplacian type in Lorentz spaces. P. De Napoli, M.C. Mariani. Bull. Belg. Soc 8 (2001) 469-477.

34. Subsonic solutions to a one-dimensional non-isentropic hydrodynamic model for semiconductors. P. Amster, M.P. Beccar Varela, A. Jungel, M.C. Mariani. Journal of Mathematical Analysis and Applications 258 (2001) 52-62.

35. Existence results for the mean curvature equation. P. Amster, M.C. Mariani. Journal of Nonlinear Analysis. Series A, Theory and Methods 47 (2001) 4845-4848.

36. Dirichlet and periodic-type conditions for a Painlev´e II Equation. P. Amster, M.C. Mariani, C. Rogers. Journal of Mathematical Analysis and Applications 265 (2002) 1-11.

37. Solvability and uniqueness results for equations of mean curvature type. P. Amster, M.C. Mariani. Revista de la Uni´on Matem´atica Argentina 42, 1 (2000) 75-83.

38. A Fixed Point Operator for a Nonlinear Boundary Value Problem. P. Amster, M.C. Mariani. Journal of Mathematical Analysis and Applications 266 (2002) 160-168.

39. Local Existence of Solutions to the Transient Quantum Hydrodynamic Equations. A. Jungel, M.C. Mariani, D.F. Rial. Mathematical Models and Methods in Applied Science, M3AS 12 (2002) 485-495.

40. Multiple solutions of a stationary nonhomogeneous nonlinear Schrodinger equation. P. Amster, J.P. Borgna, M.C. Mariani, D.F. Rial. Revista de la Union Matematica Argentina 42, 2 (2001) 43-50.

41. Topological methods for an option pricing model with stochastic volatility. P. Amster, C. Averbuj, M.C. Mariani. Proc. Dyses 2001 (II Reunion Internacional sobre Dinamica de Sistemas Socio-Economicos).

42. The effects of the assian crisis on emergent markets: critical phenomena model. M. Figueroa, M.C. Mariani, M. Ferraro. Proc. Dyses 2001. (II Reuni´on Internacional sobre Dinamica de Sistemas Socio-Economicos).

43. Solutions of a non isentropic hydrodinamic model for semiconductors by an iterative method. P. Amster, M. C. Mariani. Proc. of Semigoups of Operators, Theory and Applications. Second International Conference. Optimization Software Inc. New York-Los Angeles (2002) 9-15.

44. Properties of gauge transformations with respect to the Coulomb gauge with a non hermitic operator. M. P. Beccar Varela, M. Ferraro, M. C. Mariani, D. Rial. Proc. of Semigoups of Operators, Theory and Applications. Second International Conference. Optimization Software Inc. New York-Los Angeles (2002) 330-340.

45. The prescribed mean curvature equation for nonparametric surfaces. P. Amster, M.C. Mariani. Nonlinear Analysis 52 (2003) 1069-77.

46. A second order ODE with a nonlinear final condition. P. Amster, M.C. Mariani. Electronic Journal of Differential Equations 75 (2001) 1-9.

47. Quasilinear elliptic systems of resonant type and nonlinear eigenvalue problems. P. De Napoli, M.C. Mariani. Abstract and Applied Analysis 7, 3 (2002) 155-167.

48. Nonlinear periodic-type conditions for a second order ODE. P. Amster, M.C. Mariani, D.Pinasco. Nonlinear Studies 8, 2 (2001) 185-192.

49. Existence of solutions for elliptic systems with critical Sobolev exponent. P. Amster, P. De Napoli, M. C. Mariani. Electronic Journal of Differential Equations 49 (2002) 1-13.

50. Mountain Pass Solutions to Equations of p-Laplacian type. P. De Npoli, M.C. Mariani. Nonlinear Analysis 54 (2003) 1205-1219. This paper was ranked #12 in Nonlinear analysis - Most downloaded articles January - August 2003.

51. Equations of p-Laplacian Type in Unbounded Domains P. De Npoli, M.C. Mariani. Advanced Nonlinear Studies 2, 3 (2002) 237-250.

52. Solutions to a stationary nonlinear Black-Scholes type equation. P. Amster, C.G. Averbuj and M.C. Mariani. Journal of Mathematical Analysis and Applications 276 (2002) 231-238.

53. Solutions to H-systems by topological and iterative methods. P. Amster, M.C. Mariani. Abstract and Applied Analysis 9 (2003) 539-545.

54. Existence and multiplicity results for the nonlinear Klein - Gordon equation. P. Amster, J.P. Borgna, M.C. Mariani, D.F. Rial. Applicable Analysis 82, 9 (2003) 895-903.

55. Solving Differential Equations with Unsupervised Neural Networks. D.R. Parisi, M.C. Mariani and M.A. Laborde. Chemical Engineering & Processing, Applications of Neural Network to Multiphase Flows. 42, 8 (2003) 719-725.

56. The Effects of the Asian Crisis of 1997 on Emergent Markets through a Critical Phenomena Model. M.G. Figueroa, M.C. Mariani, M.B. Ferraro. International Journal of Theoretical and Applied Finance 6, 6 (2003) 605-612.

57. Periodic Solutions of a Resonant Third-Order Equation. P. Amster, P.De Napoli and M.C. Mariani. Nonlinear Analysis, Theory, Methods and Applications 60,3 (2005) 399-410.

58. Stationary solutions for two nonlinear Black-Scholes type equations. P. Amster, C. Averbuj, M.C. Mariani. Applied Numerical Mathematics 47 (2003) 275-280.

59. On two-point boundary value problems in multi-ion electrodiffusion. P. Amster, M.C. Mariani, C. Rogers and C. Tiddell. Journal of Mathematical Analysis and Applications 289, 2 (2004) 712-721.

60. Periodic solutions of a resonant higher order equation. P. Amster, P.De Napoli and M.C. Mariani. Portugaliae Mathematica 62, I (2005) 13-24.

61. Long correlations and Truncated Levy walks applied to the study Latin American Market Indices. S. Jaroszewicz, M.C. Mariani, M. Ferraro. Physica A, 355, (2005) 461.

62. A n-dimensional pendulum-like equation via topological methods. P. Amster, P.De Napoli and M.C. Mariani. Nonlinear Analysis, Theory, Methods and Applications 60,2 (2005) 389-398.

63. Periodic solutions of the forced pendulum equation with friction. P. Amster, M.C. Mariani. Bulletin de la Classe des Sciences (2003) 7-12.

64. Resonant Problems for Ordinary Differential Equations. P. Amster, P.De Napoli and M.C. Mariani. Proc. of the VII Monteiro Conference, (2004) 17-23.

65. An n-dimensional forced pendulum equation with friction. P. Amster, P.De Napoli and M.C. Mariani. Proc. of the VII Monteiro Conference (2004) 11-16.

66. Periodic Solutions for p-Laplacian Like Systems with Delay. P. Amster, P. De Napoli and M. C. Mariani. Dynamics of Continuous, Discrete and Impulsive Systems Ser. A Math. Anal. 13 (2006) no. 3-4, 311-319.

67. Existence of solutions to n-dimensional pendulum-like equations. P. Amster, P. De Napoli and M. C. Mariani. Electronic Jounal of Differential Equations 125 (2004) 1-8.

68. A Black-Scholes Option Pricing Model with Transaction Costs. P. Amster, C. G. Averbuj, M. C. Mariani and D. Rial. Journal of Mathematical Analysis and Applications 303, 2 (2005) 688-695.

69. Boundary nonlinearities for a one dimensional p-Laplacian like equation. P. Amster, P. De Napoli and M. C. Mariani. Revista de la Uni´on Matem´atica Argentina 45, 2 (2004) 1-10.

70. Two iterative schemes for an H-system. P.Amster, M. C. Mariani. Journal of Inequalities in Pure and Applied Mathematics 6, 1 Art. 5 (2005).

71. An H-system for a revolution surface without boundary. P. Amster, P. De Napoli and M.C. Mariani. Abstract and Applied Analysis 3, (2006) 4-15.

72. A general RLC system with complex values. P. Amster, M.C. Mariani and J. Zilber. Applicable Analysis 5, 84 (2006) 1-12.

73. Analysis of Intermittence, Scale Invariance and Characteristic Scales in the Behavior of Major Indices near a Crash. M. Ferraro, N. Furman, Y. Liu, M.C. Mariani and D. Rial. Physica A, 359, (2006) 576.

74. Solutions of nonlinear elliptic equations in unbounded Lipschitz domains. P. Amster, M.C. Mariani and O. Mendez. To appear in Forum Mathematicum.

75. A system of coupled pendulii. P. Amster, M.C. Mariani. Nonlinear Analysis 64, 8, (2006) 1647–1653

76. Truncated Levy walks applied to the study of the behavior of Market Indices. M. P. Beccar Varela, M. Ferraro, S. Jaroszewicz, M.C. Mariani. Proceedings of the South Central SAS Users group, 15th Conference, 2005, San Antonio, Texas.

77. Nonlinear boundary conditions for elliptic equations. P. Amster, M.C. Mariani, O. Mendez. Electronic Journal of Differential Equations. Vol. 2005(2005), No. 144, pp. 1-8.

78. A new Analysis of Intermittence, Scale Invariance and Characteristic Scales applied to the Behavior of Financial Indices near a Crash.Maria Cristina Mariani and Yang Liu. Physica A 367 (2006) 345-352.

79. Oscillating solutions of a nonlinear fourth order ordinary differential Equation. P.Amster, M.C. Mariani. To appear in Journal of Mathematical Analysis and Applications.

80. La matematica financiera y el nacimiento de una nueva disciplina. M. C. Mariani.Matematicalia, Vol. 2, 2 April 2006.

81. Normalized Truncated Levy walks applied to the study of Financial Indices M.C. Mariani and Yang Liu. Physica A 377 (2007) 590-598.

82. Some remarks on Gleason measures. M. C. Mariani and P. De Napoli. To appear in Studia Mathematica

83. Some remarks on the forced pendulum equation. P. Amster and M.C. Mariani. To appear in Nonlinear Analysis.

84. A new analysis of the effects of the Asian Crisis of 1997 on Emergent markets. M.C. Mariani and Y. Liu. Physica A 380 (2007) 307-316.

85. Extensions of the Nemytsky Operator: Distributional Solutions of Nonlinear Problems. J. Alvarez and M.C. Mariani. To appear in Journal of Mathematical Analysis and Applications.

86. Normalized Truncated Levy models applied to the study of Financial Markets. M.C. Mariani, K. Martin, D.W. Dombrowski, D. Martinez. To appear in A. Journal of Math An. and Appl.

87. Long correlations and Normalized Truncated Levy Models applied to the study of Indian Market Indices in comparison with other emerging markets. M.C. Mariani, J.D. Libbin, V. Kumar Mani, M.P. Beccar Varela, C. A. Erickson and D.J. Valles-Rosales. To appear in Physica A.

88. Distributional solutions to an integro-differential parabolic problem arising on Financial Mathematics, M.C. Mariani and M. Eydenberg. Invited chapter for the book: Nonlinear Models in Mathematical Finance: Research Trends in Option Pricing, that will be published by Nova Science Publishers, Inc. NY, 2008.

Publications on the teaching of Mathematics

1. Report on the Curriculum Reform in the Faculty of Physical and Natural Sciences. L. Gerschenson, M. C. Mariani, Marta Mudry. FCEyN, UBA, 1999.

2. Teaching practices in the Faculty of Physical and Natural Sciences. L. Gerschenson, M. C. Mariani, FCEyN, UBA, 2000.
3. Cuando nos movemos mas rapido alrededor del sol? De dia o de noche? Revista Funcion continua, 2000.

VITA

KENNETH J. MARTIN

College of Business Administration & Economics
Department of Finance, (505) 526-4614

New Mexico State University, Las Cruces, NM 88003-8001

(505) 646-1236 (voice)

(505) 646-2820 (fax)

email: kjmartin@nmsu.edu

EDUCATION

Ph.D.	Purdue University, 1987. Major: Finance, Minor: Econometrics
M.B.A.	Oklahoma State University, 1980, Finance
B.S.	Oklahoma State University, 1977, Accounting
A.B.	Northern Oklahoma College, 1975, Computer Science

RESEARCH INTERESTS

Corporate Control and Governance Issues, Mergers and Acquisitions, Corporate Finance

ACADEMIC POSITIONS

Associate Professor, Department of Finance, New Mexico State University, 1997-Present.

Assistant Professor, Department of Finance, New Mexico State University, 1995 - 1997.

Assistant Professor, Department of Finance, The University of Iowa, 1987 - 1995.

Graduate Teaching and Research Assistant, Krannert Graduate School of Management, Purdue University, West Lafayette, Indiana, 1983 - 1987.

Lecturer, Oklahoma State University, Stillwater, Oklahoma, 1982 - 1983.

Instructor, Southwestern Oklahoma State University, Weatherford, Oklahoma, 1981 - 1982.

PUBLICATIONS

Randall S. Thomas and Kenneth J. Martin, "Litigating Challenges to Executive Pay: An Exercise in Futility?" *Washington University Law Quarterly*, Volume 79, No. 2, 2001, pp. 569-613.

James F. Cotter and Kenneth J. Martin, "Using Internet Data to Forecast Quarterly Earnings: A Real-Time Case for Class Use", *Financial Practice and Education*, Volume 10, No. 2, Fall/Winter 2000, pp. 222-230.

Randall S. Thomas and Kenneth J. Martin, "The Determinants of Shareholder Voting on Stock Option Plans", *Wake Forest Law Review*, Volume 35, No. 1, Spring 2000, reprinted in *Corporate Practice Commentator*, Volume 41, 2000.

Randall S. Thomas and Kenneth J. Martin, "The Effect of Shareholder Proposals on Executive Compensation", *University of Cincinnati Law Review*, Volume 67, No. 4, Summer 1999, abstracted in Bowne Digest for Corporate & Securities Lawyers, Vol. 14, February 2000.

Randall Thomas and Kenneth J. Martin, "Should Labor Be Allowed to Make Shareholder Proposals?" *Washington Law Review*, Volume 73, No. 1, January 1998, pp. 41-80, reprinted in *Securities Law Review*, Volume 32, 1999.

Claudio Loderer and Kenneth Martin, "Executive Ownership and Performance: Tracking Faint Traces," *Journal of Financial Economics*, Volume 45, No. 2, August 1997, pp. 223-256.

Randall S. Thomas and Kenneth J. Martin, "Using State Inspection Statutes for Discovery in Federal Securities Fraud Actions", *Boston University Law Review*, Volume 77, No. 1, February 1997, pp. 69-107, reprinted in, *Corporate Practice Commentator*, Volume 39, 1997 and *Securities Law Review* Volume 31, 1998.

Kenneth J. Martin, "The Method of Payment in Corporate Acquisitions, Investment Opportunities, and Management Ownership," *The Journal of Finance*, Volume 51, No. 4, September 1996, pp. 1227-1246.

Randall S. Thomas and Kenneth J. Martin, "The Impact of Rights Plans on Proxy Contests: Reevaluating Moran v. Household International," *International Review of Law and Economics*, Volume 14, 1994, pp. 327-339.

Claudio Loderer and Kenneth Martin, "Postacquisition Performance of Acquiring Firms", *Financial Management*, Volume 21, Autumn 1992, pp. 69-79.

Wilbur Lewellen, Claudio Loderer, Kenneth Martin and Gerald Blum, "Executive Compensation and the Performance of the Firm", *Managerial and Decision Economics*, Volume 13, January-February 1992, pp. 65-74.

Kenneth J. Martin and John J. McConnell, "Corporate Performance, Corporate Takeovers, and Management Turnover", *The Journal of Finance*, Volume 46, No. 2, June 1991, pp. 671-687.

Claudio Loderer and Kenneth Martin, "Corporate Acquisitions by Listed Firms: The Experience of a Comprehensive Sample", *Financial Management*, Volume 19, Winter 1990, pp. 17-33.

Wilbur Lewellen, Claudio Loderer, and Kenneth Martin, "Executive Compensation and Executive Incentive Problems: An Empirical Analysis", *Journal of Accounting and Economics*, Vol. 9, No. 3, December 1987, pp. 287 – 310, reprinted in The Economics of Executive Compensation, Edward Elgar Publishing Limited, 1998 (see letter in Appendix IV).

WORKING PAPERS

Kenneth J. Martin and Randall S. Thomas, "When is Enough, Enough? Market Reaction to Highly Dilutive Stock Option Plans and the Subsequent Impact on CEO Compensation."

PARTICIPATION AT CONFERENCES AND PROFESSIONAL MEETINGS

1. Paper presentations at professional conferences

"Market Reaction to Highly Dilutive Stock Option Plans," Law and Entrepreneurship Research Conference at Northwestern Law School of Lewis & Clark College, October 20, 2000.

"The Determinants of Shareholder Voting on Stock Option Plans," 2000 Business Law Symposium on Executive Compensation at Wake Forest University School of Law.

"Do Top Executives Under-Estimate the Value of Their Stock Option Compensation?" 1999 Financial Management Association Meeting, Orlando.

"When Should Labor Be Allowed to Use Rule 14A-8?", 1996 Financial Management Association Meeting, New Orleans.

"Executive Stock Ownership and Firm Performance: Tracking Faint Traces," 1996 Southwestern Finance Association meeting, San Antonio.

"An Empirical Analysis of Delaware's Inspection Statute: Does It Promote Effective Shareholder Monitoring", 1995 Financial Management Association meeting, New York.

"The Method of Payment in Corporate Acquisitions, Investment Opportunities, and Management Ownership", 1995 Association of Financial Economists program at ASSA meeting, Washington, D.C.

"The Method of Payment in Corporate Acquisitions, Investment Opportunities, and Management Ownership", 1994 Financial Management Association meeting, St. Louis.

"The Impact of Rights Plans on Proxy Contests: Reevaluating Moran v. Household International", co-authored with Randall Thomas, 1993 Financial Management Association meeting, Toronto.

"Financial Stakes and Corporate Acquisitions," co-authored with Claudio Loderer, 1992 Financial Management Association meeting, San Francisco.

"The Effects of Outside Director Stock Incentive Compensation Plans on Stockholder Wealth," co-authored with Scott Linn, 1992 Financial Management Association meeting, San Francisco.

"Corporate Acquisition Announcements: Time-Series Patterns," co-authored with Claudio Loderer, Second Conference on Financial Economics and Accounting, SUNY-Buffalo, 1991.

"Corporate Acquisition Announcements: Time-Series Patterns," co-authored with Claudio Loderer, 1990 American Finance Association meeting, Washington, D.C.

"Corporate Acquisition Announcements: Time-Series Patterns," co-authored with Claudio Loderer, 1990 Financial Management Association meeting, Orlando.

"Corporate Acquisitions by NYSE and AMEX Firms: The Experience of a Sample of 10,000-Plus," co-authored with Claudio Loderer, 1989 Western Finance Association meeting, Seattle.

"Corporate Performance, Corporate Takeovers, and Management Turnover," co-authored with John J. McConnell, 1987 Meeting of Association of Managerial Economists, Chicago.

"Firm Performance and Managerial Discipline in Contests for Corporate Control," Conference on the Distribution of Power Among Corporate Managers, Shareholders, and Directors, Rochester, 1987.

2. Discussant

Financial Management Association meetings – 2001, 1999, 1996, 1995, 1994, 1993, 1992

Western Finance Association meeting - 1989

3. Other presentations

Financial Management Association Doctoral Student Seminar - 1986

Financial Markets Research Institute Conference, University of Iowa, 1989.

COURSES TAUGHT AT UNIVERSITY OF IOWA AND NEW MEXICO STATE UNIVERSITY

1. Undergraduate

Investment Analysis (Elective course)

Financial Information Technology (Elective course)

Financial Management (Elective corporate finance course)

International Finance (Elective course)

Theory of Financial Decisions (Second corporate finance course, required of Finance majors)

Introduction to Financial Management (Core course required of all students)

2. MBA

Managerial Finance (Core course required of all students)

Financial Policy Decisions (Elective case course in corporate finance topics.)

International Finance (Elective course)

3. Executive MBA

Managerial Finance

Financial Policy Decisions

4. Executive Development

Basic corporate finance overview (3-hour session)

OTHER TEACHING RELATED ACTIVITIES

Served as member of eight doctoral dissertation committees

Supervised eight research reports for students in M.A. in Finance program

Supervised six projects for students in undergraduate honors program

Service on Master's Oral Examination committees

SERVICE

1. Professional Service

Ad-Hoc Journal Reviewing

Journal of Finance

Journal of Empirical Finance

Journal of Financial and Quantitative Analysis

Financial Management

The Financial Review

Journal of Financial Research

International Review of Economics and Finance

Quarterly Review of Economics and Finance

Program Committee, 1993, 1996, and 1999 Financial Management Association Annual Meeting.

2. Service Work at the University of Iowa

Academic Computing Committee, 1991-1993

Undergraduate Programs Committee, 1992-1994

Department of Finance MBA curriculum review committee, 1993

Department of Finance PhD examination committee, 1993

3. *Service Work at New Mexico State University*

Faculty Senate, Fall 1995, Fall 1997.

MBA Curriculum Committee, 1996-1997.

Undergraduate Curriculum and Policy Committee, 1997-2002.

Assessment Committee, 2001-02.

Faculty advisor to student Financial Management Association group, 2000-2002.

HONORS AND FELLOWSHIPS

Bank of America Distinguished Professorship, 2001 (New Mexico State University)

Outstanding Performance in Scholarly Research, 1997 (New Mexico State University)

Outstanding Performance in Community Service, 1999 (New Mexico State University)

Executive MBA Teacher of the Year, 1993 (University of Iowa)

College of Business Summer Grant, 1990 (University of Iowa)

Old Gold Summer Fellowship, 1988 - 1989 (University of Iowa)

PROFESSIONAL AFFILIATIONS

American Finance Association

Financial Management Association

Josefina (Lolina) Alvarez - Vitae

Professional Interests:

Harmonic Analysis, Functional Analysis, Mathematics for General Audiences, Curriculum Development.

Education:

- 1969: Licenciada (M.S.) in Mathematics, Universidad de Buenos Aires.
- 1976: Doctora (Ph.D.) in Mathematics, Universidad de Buenos Aires. Thesis Advisor: Alberto P. Calderón.

Academic Positions:

- 1970-1973: Ayudante (Teaching Assistant), Universidad de Buenos Aires.
- 1973-1976: Jefe de Trabajos Prácticos (Teaching Associate), Universidad de Buenos Aires.
- 1976-1979: Profesor Adjunto (Assistant Professor), University of Buenos Aires.
- 1979-1984: Profesor Asociado (Associate Professor), University of Buenos Aires.
- 1980-1990: Investigador Independiente (Independent Researcher), CONICET (National Council of Sciences, Argentina).
- 1984-1985: Visiting Scholar, Department of Mathematics, Princeton University.
- 1986: Visiting Scholar, Department of Mathematics, University of Chicago.
- 1986-1990: Associate Professor, Florida Atlantic University, tenured in 1988.
- 1990-: Professor, tenured in 1991, member of the Graduate Faculty, New Mexico State University.
- 1997-: Member of the Honors College Faculty, New Mexico State University.

Awards:

- Coca-Cola in Arts and Sciences Award for mathematical research, Argentina, 1983, $3,000.
- El Paso Energy Foundation Faculty Achievement Award, 1998, $3,000.
- First Manasse Chair Award, College of Arts and Sciences, New Mexico State University, 2000-2002, $12,000.

Grants:

- Fellowship, Scuola Normale Superiore de Pisa, Italy, 1973.
- Fellowship, National Council of Sciences, Argentina, 1984-1986, $36,000.
- Research appointment, Department of Mathematics, University of Chicago, 1986, $19,600.
- Grant (with F. Cobos, M. Milman, F. Soria) U.S.-Spain cooperation program, National Science Foundation, 1988, $7,200.
- Travel Grant, CNPq National Council of Sciences, Brazil, 1988, for research collaboration.

- Travel Grant, National Council of Sciences, Sweden, 1989, for research collaboration.
- Florida Atlantic University Summer Research Fellowship (with N. Erdol, and G. Pajunen, Department of Electrical Engineering), 1990, $15,068, for an interdisciplinary research project.
- Travel Grant, Instituto de Matemáticas, Universidad Nacional Autónoma de México, 1994, to present a series of lectures.
- Travel Grant, Universidad Autónoma de Madrid, Spain, 1996, for research collaboration.
- Travel Grant, Universitat de Barcelona, Spain, 1996, for research collaboration.
- Travel Grant, Université de Mons, Belgium, 1996, for research collaboration.
- Travel Grant, Umeä University, Sweden, 1996, to present a series of lectures.
- Travel Grant, Royal Institute of Technology, Sweden, 1996, to present a colloquium talk.
- Travel Grant, Programa de Matemática Aplicada, Santa Fe, Argentina, 1998, to present a series of lectures.
- Minigrant, Research Center, College of Arts and Sciences, New Mexico State University, 1999, for a research collaboration.
- Grant (with J. Lakey and C. Pereyra, to organize the New Mexico Analysis Seminar), National Science Foundation, 2001-2003, $20,941.
- Grant (for curriculum development), New Mexico Collaborative for Excellence in Teacher Preparation, National Science Foundation, 2001-2002, $25,062.
- Travel Grant, Mathematical Association of America, to present three minicourses at the National Mathematics Meetings, 2002-2004.
- Travel Grant, Universidad de La Laguna, Spain, 2004, to present a course module, to lecture at the Semester in Harmonic Analysis, and to meet with the Editorial Board of *Matematicalia*.
- Grant (for research) NSF-ADVANCE Program at NMSU, National Science Foundation, 2004, $21,420.
- Travel Grant, University of Sonora, Mexico, 2005, to present three lectures to advanced undergraduate students, graduate students and faculty.
- Travel Grant, Sociedad Matemática Mexicana, 2005, to present a one-hour invited lecture at its annual meeting in Mexico City.

Editorial Activities:

- 2002-2007: Associate Editor, Rocky Mountain Journal of Mathematics.
- 2003-2005: Member of the Advisory Board of *Matematicalia*.
- 2005-: Member of the Editorial Board of *Matematicalia*, author of the column "¿Qué pasaría si ...?" ("What if ...?").

Reviewing Activities:

1. **Articles refereed for**
    1. Mathematical and Computing Modelling.
    2. Proceedings of the American Mathematical Society.

3. Journal of Mathematical Analysis and Applications.
4. Proyecciones, Revista de Matemática de la Universidad Católica del Norte, Chile.
5. Forum Mathematicum.
6. Constructive Approximation.
7. Rocky Mountain Journal of Mathematics.
8. Journal of the London Mathematical Society.
9. Mathematische Nachrichten.
10. Collectanea Mathematica.
11. Electronic Journal of Differential Equations.
12. International Journal of Mathematics.
13. Colloquium Mathematicum.
14. Studia Mathematica.
15. Georgian Mathematical Journal.

2. **Articles and books reviewed for**
    1. Mathematical Reviews.
    2. Zentralblatt für Mathematik.
3. **Proposals reviewed for**
    1. National Science Foundation.
    2. U.S. Civilian Research and Development Foundation.
4. Numerous book manuscripts reviewed for several publishers.

Selected Service:

- 1977-1979: Graduate Advisor, School of Sciences, University of Buenos Aires.
- 1984: Assistant Chair, Department of Mathematics, School of Sciences, University of Buenos Aires.
- 1987-1989: Elected member, University Senate, Florida Atlantic University.
- 1990: American Mathematical Society representative to the Meeting of the National Board for Professional Teaching Standards, Miami, Florida.
- 1991-1995: Chair, Committee on Academic Freedom, Tenure, and Employment Security, American Mathematical Society.
- 1991-1995: Chair, Undergraduate Curriculum Committee, Department of Mathematical Sciences, New Mexico State University.
- 1992-1995: Member, Western Section Program Committee, American Mathematical Society.
- 1995-1998: Chair, Distinguished Visiting Professorship Committee, New Mexico State University.
- 1995, 1997, 1998, 2005: Elected member and chair, Promotion to Professor Subcommittee, Department of Mathematical Sciences, New Mexico State University.
- 1996-1997: Chair, American Mathematical Society-Mathematical Association of America Joint Program Committee for the annual meeting in San Diego, CA, January 1997.
- 1997-1998: Member, American Mathematical Society-Sociedad Matemática Mexicana Joint Program Committee.

- 1997-1998: Elected member and chair, Department Head Search Subcommittee, Department of Mathematical Sciences, New Mexico State University.
- 1997-1999: Colloquium Chair, Department of Mathematical Sciences, New Mexico State University.
- 1997-2002: Chair, Graduate Studies Committee, Department of Mathematical Sciences, New Mexico State University.
- 1998-1999: Member, Publications and Communications Board, Associated Students, New Mexico State University.
- 1999-2006: Liaison for the Unión Matemática Argentina.
- 1999-2002: Chair, Committee on Committees, American Mathematical Society.
- 1999-2000: Elected member and chair, Hiring Long Term Planning Committee, Department of Mathematical Sciences, New Mexico State University.
- 1999-2005: Member of the proposal writing team and member of the Steering Committee, New Mexico Alliance for Graduate Education and the Professoriate (NM-AGEP), statewide program supported by the National Science Foundation.
- 2001-2003: Elected member, Graduate Council, New Mexico State University.
- 2002-2003: Elected member and chair, Tenure and Promotion to Associate Professor Subcommittee, Department of Mathematical Sciences, New Mexico State University.
- 2002-2006: Member of the Recruitment Committee, NSF-ADVANCE program, New Mexico State University.
- 2004-: Elected member, Faculty Affairs Committee, College of Arts & Sciences, New Mexico State University.
- 2004: Member, Nomination and Feedback Committee for the selection of Associate Dean for Research and Director of the Research Center, College of Arts and Sciences, New Mexico State University.
- 2005-: Member, Liaison C, Department of Mathematical Sciences, New Mexico State University.
- 2007-: Chair, Undergraduate Majors and Minors Committee, Department of Mathematical Sciences, New Mexico State University.

Consulting:

1. Stephen Austin State University, Nacogdoches, Texas, 1997. In site consulting visit on the design of a terminal mathematics course for non-science majors. The course was successfully implemented in 1998 and it has been offered ever since.
2. New Mexico Teacher Assessment Passing Score Review, National Evaluation Systems, Inc., Albuquerque, NM, 2002.
3. Kansas State University's Targeted Excellence Project, Outside reviewer, 2003, 2004.

Invited Presentations at Research Conferences:

- 1972, 1976-1983: Annual Meeting of the Union Matemática Argentina.
- 1978: IV Escuela Latinoamericana de Matemática, Lima, Peru.
- 1979: Seminar on Fourier Analysis, El Escorial, Spain.

- 1981: X Congreso Latinoamericano de Matemática, Paipa, Colombia.
- 1981: Seminario Latinoamericano de Análisis, Santa Fe, Argentina.
- 1983: Seminar on Fourier Analysis, El Escorial, Spain.
- 1984: Julio R. Pastor Lecture, Annual Meeting of the Unión Matemática Argentina, Córdoba.
- 1985: Special Session on ``Maximal functions in harmonic analysis," 823rd meeting AMS, Columbia, MO.
- 1988: Conference on Harmonic Analysis and its Applications, Mathematical Sciences Research Institute, Berkeley, CA.
- 1988: Mini Conference on Harmonic Analysis and Related Topics, Auburn University, AL.
- 1989: Topics in Pseudo-differential Operators, Oberwolfach, Germany.
- 1989: NSF-CBMS Regional Research Conference on Singular Integral Operators, Missoula, MT.
- 1989: Special Session on "Harmonic Analysis," 853rd meeting American Mathematical Society, Los Angeles, CA.
- 1991: Plenary address, 865th meeting American Mathematical Society, Tampa, FL.
- 1991: X Latin American School of Mathematics, Córdoba, Argentina.
- 1992: Special Session on "Harmonic Analysis," 872nd meeting American Mathematical Society, Tuscaloosa, AL.
- 1992: Sixth International Workshop in Analysis and Its Applications, Orono, ME.
- 1993: Spring Lecture Series, University of Arkansas, Fayetteville, AR.
- 1994: International Conference in Honor of Mischa Cotlar, Caracas, Venezuela.
- 1995: Special Session on "Classical Harmonic Analysis", 902nd Meeting American Mathematical Society, Burlington, VT.
- 1995: Special Session on "Functional and Harmonic Analysis", II Joint Meeting American Mathematical Society-Sociedad Matemática Mexicana, Guanajuato, Mexico.
- 1997: Seventh International Workshop in Analysis and its Applications, Orono, Maine.
- 1997: Special Session on "Functional and Complex Analysis", III Joint Meeting American Mathematical Society-Sociedad Matemática Mexicana, Oaxaca, Mexico.
- 1998: Special Session on "Fourier Analysis", 935th Meeting American Mathematical Society, Chicago, Il.
- 1999: International Conference on Algebraic Analysis, Warsaw, Poland.
- 2002: Special Session on "Function Spaces in Harmonic Analysis and PDEs", 976th Meeting American Mathematical Society, Montreal, Canada.
- 2002: Special Session on "Function Spaces, Singular Integrals and Applications to PDEs", 982th Meeting American Mathematical Society, Orlando, FL.
- 2006: Special Session on "Structure of Function Spaces and Applications", 1015th Meeting American Mathematical Society, Miami, FL.

Organization of Research Conferences:

- 1991: Organizer, Special Session on "Harmonic Analysis and Applications", 865th meeting American Mathematical Society, Tampa, FL.
- 1993: Organizer, Special Session on "Harmonic Analysis and Applications", 886th Meeting American Mathematical Society, College Station, TX.
- 1998-2003: Co-founder and co-organizer, New Mexico Analysis Seminar, supported by the National Science Foundation in 2001-2003.
- 1999: Co-organizer, Special Session on "Functional Analysis and Applications", IV Joint Meeting American Mathematical Society-Sociedad Matemática Mexicana, Denton, Texas.
- 2001: Co-organizer, Special Session on "Functional and Harmonic Analysis", V Joint Meeting American Mathematical Society-Sociedad Matemática Mexicana, Morelia, Mexico.
- 2004: Co-organizer, Special Session on "Functional and Harmonic Analysis", VI Joint Meeting American Mathematical Society-Sociedad Matemática Mexicana, Houston, TX.
- 2007: Co-organizer, Special Session on "Functional and Harmonic Analysis in Memory of Mischa Cotlar", VII Joint Meeting American Mathematical Society-Sociedad Matemática Mexicana, Zacatecas, Mexico.

Colloquium Talks:

- Instituto Argentino de Matemática, Buenos Aires, 1976.
- Departamento de Matemáticas, Universidade Federal de Pernambuco, Brazil, 1978.
- Instituto de Matemática Pura e Aplicada, Rio de Janeiro, Brazil, 1981.
- Programa de Matemática Aplicada, Santa Fe, Argentina, 1984.
- University of Maryland, College Park, 1985.
- Southern Illinois University, Carbondale, 1985.
- Calderón-Zygmund Seminar, University of Chicago, 1985.
- Princeton University, 1985.
- Florida Atlantic University, 1986.
- Calderón-Zygmund Seminar, University of Chicago, 1986.
- Departamento de Matemática, School of Sciences, University of Buenos Aires, Argentina, 1986.
- Instituto Argentino de Matemática, Buenos Aires, 1986.
- Departamento de Matematicas, Universidade Federal de Pernambuco, Brazil, 1988.
- Department of Mathematics, Universidad Autónoma de Madrid, Spain, 1989.
- Department of Mathematics, Umeä University, Sweden, 1989.
- Department of Mathematical Sciences, New Mexico State University, 1990.
- Department of Mathematics, Bryn Mawr College, 1990.
- Department of Mathematics, University of New Mexico, 1990.
- Instituto Argentino de Matemática, Buenos Aires, Argentina, 1991.
- Department of Mathematics, University of Texas at El Paso, 1992.
- Department of Mathematics, Universidad Autónoma de Madrid, Spain, 1996.
- Department of Mathematics, Universitat de Barcelona, Spain, 1996.

- Department of Mathematics, Université de Mons, Belgium, 1996.
- Department of Mathematics, Umeä University, Sweden, 1996.
- Joint Analysis Seminar, Royal Institute of Technology-Stockholm University, Sweden, 1996.
- Instituto de Matemática, Cuernavaca, Mexico, 1997.
- Programa de Matemática Aplicada, Santa Fe, Argentina, 1998.
- Instituto Argentino de Matemática, Buenos Aires, 1998.
- Department of Mathematics, Kansas State University, 2002.
- Departamento de Análisis Matemático, Universidad de La Laguna, Tenerife, Spain, 2004.
- Department of Mathematical Sciences, New Mexico State University, 2005.
- Departamento de Matemática, Universidad de Sonora, Mexico, 2005.
- Departamento de Matemática, Instituto Tecnológico Nacional de Mexico, 2007.

Membership in Scientific Societies:

- American Mathematical Society.
- Unión Matemática Argentina.

Supervision of Graduate and Post-Graduate Students:

Master's Theses

School of Sciences, University of Buenos Aires, Argentina, 1976-1984 (eleven theses).

School of Mathematics, Physics and Astronomy, University of Cordoba, Argentina, 1977 (one thesis).

Doctoral Dissertations

Cristina Zorko, "Los espacios de Morrey," School of Sciences, University of Buenos Aires, Argentina, 1984.

David Emery, "Pseudo-differential Operators with Non-Isotropic Symbols" New Mexico State University, 1998.

Hamed Obiedat, "Topological Characterizations of the Schwartz Space and the Beurling-Björck Space", New Mexico State University, 2005.

Lloyd Moyo, "Maximal Codomains for the Laplace Operator and the Product Laplace Operator", New Mexico State University, 2006.

Post-Doctoral Students

Martha Guzmán-Partida, Ph.D. Universidad Nacional Autónoma de México, 1997-1998.

Doctoral Students

Currently supervising one doctoral student.

Refereed Articles on Harmonic Analysis and Functional Analysis:

1. "On the inversion of pseudo-differential operators". *Studia Mathematica* 64 (1979), 25-32.

2. "Existence of a functional calculus on certain algebras of pseudo-differential operators". *Journal of the Unión Matemática Argentina* 29 (1979), 55-76. Volume in honor of Luis A Santaló.
3. (with A. P. Calderón), "Functional calculi for pseudo-differential operators, I". *Proceedings of the Seminar on Fourier Analysis held at El Escorial*, *Sociedad Matemática Española* 1 (1979), 1-61.
4. "Some facts about regularizing pseudo-differential operators". *Proceedings of the IV Escuela Latinoamericana de Matemática*, Lima, Peru, 11-20, (1979).
5. "The distribution function in the Morrey space". *Proceedings of the American Mathematical Society* 83 (1981), 693-699.
6. "The kernel of a regularizing operator". *Journal of the Unión Matemática Argentina* 30 (1982), 110-114.
7. (with A. P. Calderón), "Functional calculi for pseudo-differential operators, II". *Studies in Applied Mathematics* 8, Academic Press (1983), 27-72. Volume in honor of Irving Segal.
8. "An algebra of L^p-bounded pseudo-differential operators". *Journal of Mathematical Analysis and Applications* 84 (1983), 268-282.
9. "Functions of L^p-bounded pseudo-differential operators". *Proceedings of the Seminar on Fourier Analysis, El Escorial, Spain*, North Holland (1985), 3-11.
10. (with M. Milman), "H^p continuity properties of Calderón-Zygmund type operators". *Journal of Mathematical Analysis and Applications* 118 (1986), 63-79.
11. (with M. Milman), "Vector valued inequalities for strongly singular Calderón-Zygmund operators." *Revista Iberoamericana de Matemática* 2 (1986), 205-226.
12. (with M. Milman), "Interpolation of tent spaces and applications". Proceedings of the International Conference on Interpolation, Lund, Sweden, 1986. *Lecture Notes in Mathematics*, No. 1302, 11-21, Springer.
13. (with R. Durán), "On the L^p continuity of pseudo-differential operators with discontinuous symbols". *Proceedings of the American Mathematical Society* 104 (1988), 165-168.
14. "A remark on the H^1-BMO duality in product domains". *Colloquium Mathematicum* 58 (1989), 39-42.
15. (with M. Milman), "Carleson measures: Duality and interpolation". *Arkiv för Matematik* 25 (1987), 155-174.
16. "Functional calculi for pseudo-differential operators, III". *Studia Mathematica* 95 (1989), 53-71.
17. (with J. Hounie), "Estimates for the kernel of pseudo-differential operators and (L^p,L^q continuity". *Arkiv för Matematik* 28 (1990), 1-22.
18. "On the T(1) theorem on product domains". *Journal d'Analyse Mathématique*, 62 (1994), 155-167.
19. (with J. Hounie), "Spectral invariance and tameness of pseudo-differential operators on weighted Sobolev spaces". *Journal of Operator Theory* 30 (1993), 41-67.
20. (with M. Milman), "Calderón-Zygmund operators and Poisson like operators". *Colloquium Mathematicum* 60-61 (1990), 361-378. Volume in honor of Antoni Zygmund.

21. (with R. Bagby, D. Kurtz, C. Pérez), "Weighted estimates for commutators of linear operators". *Studia Mathematica* 104 (1993), 194-209.
22. (with C. Pérez), "Estimates with $A_{infinity}$ weights for various singular integral operators". *Bollettino Unione Mat. Italiana* (7) 8-A (1994), 123-133.
23. (with J. Hounie, C. Pérez), "A pointwise estimate for the kernel of a pseudo-differential operator, with applications". Proceedings of the X Latin American School of Mathematics, Cordoba, Argentina, *Revista de la Unión Matemática Argentina* 37 (1993), 184-199.
24. "H^p and weak H^p continuity of Calderón-Zygmund type operators". *Fourier Analysis, Analytic and Geometric Aspects*, Marcel Dekker, (1994), 17-34.
25. "Continuity of Calderón-Zygmund type operators on the predual of a Morrey space". *Clifford Algebra in Analysis and Related Topics*, CRC Press (1996), 309-319.
26. "Continuity properties for linear commutators of Calderón-Zygmund Operators", *Collectanea Mathematica*, 49 (1998), 17-31.
27. (with J. Hounie) "An oscillatory singular integral operator with polynomial phase". *Studia Mathematica* 133 (1999), 1-18.
28. (with J. Hounie) "Functions of pseudo-differential operators of non-positive order". *Journal of Functional Analysis* 141 (1996), 45-59.
29. (with C. Carton-Lebrun) "Optimal spaces for the S´-convolution with the Marcel Riesz kernels and the n-dimensional Hilbert kernel" . *Analysis of Divergence: Control and Management of Divergent Processes*, Birkhauser (1999), 233-248.
30. "Spectra of pseudo-differential operators in the Hörmander class" . *Analysis of Divergence: Control and Management of Divergent Processes*, Birkhauser (1999), 187-199.
31. (with M. Guzmán-Partida, J. Lakey) "Spaces of bounded Lambda-central mean oscillation, Morrey spaces, and Lambda-central Carleson measures". *Collectanea Mathematica* 51 (2000), 1-47.
32. "The Weyl correspondence as a functional calculus". Proceedings of the International Conference on Algebraic Analysis, Warsaw, Poland, September 1999, *Banach Center Publications* 53, Polish Academy of Sciences, 2000, 79-88.
33. (with M. Folch-Gabayet, S. Pérez-Esteva) "Banach spaces solutions of the Helmholtz equation in the plane". *Journal of Fourier Analysis and Applications* 7 (2001), 49-62.
34. (with M. Guzmán-Partida) "The S´-convolution with singular kernels in the Euclidean case and the product domain case". *Journal of Mathematical Analysis and Applications* 270 (2002), 405-434.
35. (with M. Guzmán-Partida, U. Skórnik) "S´-convolvability with the Poisson kernel in the Euclidean case and the product domain case". *Studia Mathematica* 156 (2003), 143-163.
36. (with H. Obiedat) "Characterizations of the Schwartz space S and the Beurling-Björck space S_w". *Cubo* 6 (2004), 167-183.
37. (with M. Guzmán-Partida, S. Pérez-Esteva) "Harmonic extensions of distributions", *Mathematische Nachrichten* 280, No. 13-14 (2007), 1443-1466.

38. (with M. Guzmán-Partida, S. Pérez-Esteva) "N-harmonic extensions of weighted integrable distributions", *Journal of Function Spaces and Applications*, Volume 4, No. 3 (2006), 305-327.
39. (with L. Moyo) "Optimal codomains for the Laplace operator and the product Laplace operator", *Journal of Function Spaces and Applications*, Volume 5, No. 3 (2007), 269-285.
40. (with M. Eydenberg, H. Obiedat), "The action of operator semi-groups on the topological dual of the Beurling-Björck space", *Journal of Mathematical Analysis and Applications*, Volume 339, (2008), 405-418.
41. (with M.C. Mariani), "Extensions of the Nemytsky operators: Distributional solutions of nonlinear problems", 17 pages, to appear in *Journal of Mathematical Analysis and Applications*.

Research Monographs and Lecture Notes:

1. "Distribuciones y transformación de Fourier". *Cursos y Seminarios* 25, Universidad de Buenos Aires, (1977), 85 pages.
2. "Temas de ecuaciones en derivadas parciales". *Cursos y Seminarios* 27, Universidad de Buenos Aires, (1979), 119 pages.
3. "Existence of functional calculi over some algebras of pseudo-differential operators and related topics". *Notas de Curso* 17, Universidade Federal de Pernambuco, Brazil, (1979), 94 pages.
4. (with J.E. Bouillet), "Temas de ecuaciones en derivadas parciales, Primera parte". *Cursos y Seminarios* 30, Universidad de Buenos Aires, (1982), 74 pages.
5. "Continuity properties of some pseudo-differential operators". *Monografías de Matemática* 2, Universidad Autónoma de Madrid, Spain, (1982), 43 pages.
6. (with J. Zilber), "Cálculos funcionales en álgebras de Banach". *Cursos y Seminarios* 31, Universidad de Buenos Aires, (1984), 134 pages.
7. "Lecture Notes on the T(1) theorem". *Notas de Curso* 29, Universidade Federal de Pernambuco, Brazil, (1989), 50 pages.
8. (with J.E. Bouillet), "Temas de ecuaciones en derivadas parciales, Segunda parte". *Cursos y Seminarios* 30, Universidad de Buenos Aires, (1992), 54 pages.
9. "Distributions and Fourier Transform". *Cuadernos de Matemática y Mecánica, Serie de Cursos y Seminarios* 7, International Center for Computational Methods and Litoral Applied Mathematics Institute, (2000), Argentina, 89 pages, in its second edition.
10. "La Geometría de los Espacios de Hilbert". *Material Didáctico* No. 10, Departamento de Matemáticas, University of Sonora, Mexico, (2005), 39 pages.

Educational Activities:

1. **Course Offerings:** I have designed and/or taught courses at all levels, for instance, Freshman Year Experience, College Algebra, Mathematics Appreciation (including an Honors version), Calculus, Advanced Calculus, Linear Algebra, History of Mathematics, Ordinary Differential Equations, Discrete Mathematics, Mathematics for Engineering, Mathematics for Physics, Partial Differential

Equations, Real Analysis, Complex Analysis, Functional Analysis and Special Topics Courses at various levels. In many cases, I acted as coordinator for large, multisection courses.

2. **Curriculum Development:**
    1. (with D. Finston, M. Gehrke, P. Morandi) *Themes for a First Semester Calculus Course*, New Mexico State University, 1992-1993.
    2. *Materials for a Course on Mathematics Appreciation for Non-Science Majors*, New Mexico State University, 1994-1997, 2002.
    3. *Materials for an Introductory Course on Real Analysis*, New Mexico State University, 1997.
    4. *The Accidental Mathematician* (HON 210G), Honors Program course development, New Mexico State University, 1997-2001.
    5. *Materials for a First Semester Calculus Course for Engineering Technology Majors,* New Mexico State University*,* 1998-1999.
    6. *Materials for a First Semester Calculus Course for Life Science and Management Science Majors,* New Mexico State University*,* 1998-1999.
    7. *Materials for a Graduate Course on Complex Analysis*, New Mexico State University, 1998-1999.
    8. *Materials for a Graduate Course on Functional Analysis*, New Mexico State University, 1998-2000.
    9. *Materials for a Graduate Course on Real Analysis*, New Mexico State University, 2000-2002.
    10. *Materials for a Course on Discrete Mathematics for High School Teachers, Secondary Mathematics Education Majors, and Mathematics Education Graduate Students*, New Mexico State University, 2001, supported by the National Science Foundation through the New Mexico Collaborative on Excellence in Teacher Preparation.
    11. (with M. Kingery), *Mathematics by Inquiry*, packet for participants in a workshop for mathematics high school teachers, Fall Conference of the New Mexico Collaborative for Excellence in Teacher Preparation, National Science Foundation, Ruidoso, New Mexico, 2001, 96 pages.
    12. *Incorporating Discrete Mathematics in the Preparation of K-12 Mathematics Teachers*, packet for participants in three minicourses presented at the National Meetings in 2002, 2003, 2004, with the sponsorship of the Mathematical Association of America, 78 pages.
3. **Advising and Mentoring:**
    1. Advisor, Honors students oral and poster presentations at the Undergraduate Research and Creative Arts Symposium, New Mexico State University, 2000, 2001.
    2. Mentor, EXITO! retention program for high school and freshman undergraduate students, New Mexico State University, funded by the Kellogg Foundation, 2000-2003.
    3. Mentor, NSF-ADVANCE Program, New Mexico State University, funded by the National Science Foundation, 2001-2006.
    4. Currently advising twelve undergraduate mathematics majors.
    5. Member of numerous Master's and doctoral committees.

6. 2003-: Judge, *Southern New Mexico Science Fair*.
7. 2002-: Judge, *Graduate Research and Creative Arts Symposium*, New Mexico State University.

4. **Presentations at Conferences, Universities and Schools:**
    1. Participant in the panel discussion *Women in Mathematics: An International Perspective*, International Congress of Mathematicians, Berkeley, CA, 1986.
    2. Participant, *Start Graduate School Workshop*, Women Studies Program, New Mexico State University, 1991.
    3. *Teaching Mathematics Courses with Themes*, presentation at the Harvard Conference on the Teaching of Calculus, Cambridge, MA, 1992.
    4. *Teaching Mathematics Appreciation*, colloquium talk, Department of Mathematical Sciences, New Mexico State University, 1995.
    5. *Mathematics Appreciation*, one-hour invited talk, Mathematical Association of American Regional Meeting, Grants, NM, 1997.
    6. *Designing a terminal mathematics course for non-science majors*, colloquium talk, Stephen Austin State University, Nacogdoches, Texas, 1997.
    7. *El Matemático Accidental*, colloquium talk, Departamento de Matemática, School of Sciences, University of Buenos Aires, Argentina, 1998.
    8. *La evolución histórica del teorema fundamental del cálculo*, invited one-hour talk, Instituto Argentino de Matemática, 1998.
    9. *La tecnología en la enseñanza de la matemática*, invited one-hour lecture delivered as part of the activities en celebration of the XXXVI anniversary of the Instituto Tecnológico de Ciudad Juárez, Mexico, 2000.
    10. *Academic Careers*, presentation to first year McNair scholars, New Mexico State University, 2000, 2005.
    11. *The sound of mathematics*, Manasse Chair Award acceptance lecture, New Mexico State University, 2000.
    12. *Counting infinite sets,* two class presentations at Mayfield High School, Las Cruces, New Mexico, 2001.
    13. *Similarity and self-similarity*, two class presentations at Oñate High School, Las Cruces, New Mexico, 2001.
    14. *Going to college, careers in mathematics*, three class presentations at Mayfield High School, Las Cruces, New Mexico, 2001.
    15. *What does it take to be a mathematician, what do I do as a math person at NMSU?*, Mayfield High School, Las Cruces, New Mexico, 2001.
    16. *Why is animal size so important? All about King Kong*, two class presentations at Mayfield High School, Las Cruces, New Mexico, 2001.
    17. *Scaling up and down*, Las Cruces Prefreshman Engineering Program (PREP), New Mexico State University, 2001.
    18. *Tecnología Educativa (El uso de recursos existentes en el Internet en la enseñanza de la matemática)*, invited one-hour talk, Primer Symposium Internacional de Ingeniería y Ciencias Económico-Administrativas, Instituto Tecnológico de Ciudad Juárez, Mexico, 2001.

19. *Doubling processes*, presentation to the mathematics education majors, College of Education, New Mexico State University, 2001.
20. Moderator of the panel discussion *Women in Science, Mathematics and Engineering*, New Mexico Alliance for Graduate Education and the Professoriate Conference, New Mexico State University, 2001.
21. *Drawing over the phone*, two class presentations at Mayfield High School, Las Cruces, New Mexico, 2002.
22. *Letting it go tightly*, presentation at a panel of Honors faculty on teaching practices, Conroy Honors Center, New Mexico State University, 2002.
23. *Cross-stitching in the news*, one-hour presentation to mathematics education majors, College of Education, New Mexico State University, 2002.
24. *Life of Lolina*, invited talk, Distinguished Women in Engineering and Science Lecture Series, Kansas State University, 2002.
25. *Teaching Discrete Mathematics in K-12*, presentation at the Fifth Annual Mathematics Education Institute, New Mexico State University, 2002.
26. *Los matemáticos accidentales*, Module in the interdisciplinary course *Sociedad, Ciencia, Tecnología y Matemática*, Universidad de La Laguna, Tenerife, Spain, March - October, 2004.
27. *Careers in Mathematics*, Las Cruces Prefreshman Engineering Program (PREP), New Mexico State University, 2005.
28. *The mathematics of color and shape*, presentation to the NMSU chapter of Pi Mu Epsilon, Mathematics Honor Society, 2005.
29. *The geometry of Hilbert spaces*, three one-hour lectures presented in the Department of Mathematics, University of Sonora, Mexico, May 2005.
30. *Bernstein polynomials: From classical analysis to computer aided design*, one-hour invited lecture, XXXVIII Annual Meeting of the Sociedad Matemática Mexicana, Mexico City, Mexico, October 2005.
31. *The miraculous libarians: The role of linear algebra and analysis in Google's PageRank algorithm*, one-hour invited lecture, XL Annual Meeting of the Sociedad Matemática Mexicana, Monterrey, Mexico, October 2007.

5. **Organization of Workshops and Special Sessions:**
    1. Coordinator, *Facing Choices After High School*, program for high school students and teachers in Palm Beach and Broward Counties, Florida, 1989.
    2. *Evaluating Group Work*, Project NEXT (New Experiences in Teaching) Summer Workshop, Burlington, VT, 1995.
    3. *Teaching Mathematics Appreciation to Non-Science Majors*, Chautauqua Course, Science Education Center, College of Education, University of Texas, Austin, June 1997, supported by the National Science Foundation.
    4. *Teaching Mathematics Appreciation to Non-Science Majors*, workshop, Stephen Austin State University, Nacogdoches, Texas, 1997.
    5. *An Integrated Approach to the Precalculus/Calculus Curriculum*, Chautauqua Course, Alliance for Minority Participation, Resource Center for Science and Engineering, University of Puerto Rico, May 1998, supported by the National Science Foundation.

6. *Tutoring in Calculus*, training workshop for mathematics tutors, Student Support Services, New Mexico State University, 2000.
7. (with Michael Kingery), *Mathematics by Inquiry*, workshop for mathematics high school teachers, Fall Conference of the New Mexico Collaborative for Excellence in Teacher Preparation, National Science Foundation, Ruidoso, New Mexico, 2001.
8. *Incorporating discrete mathematics in the preparation of K-12 mathematics teachers, I*, Minicourse sponsored by the Mathematical Association of America, National Joint Meetings, San Diego, January 2002.
9. *Incorporating discrete mathematics in the preparation of K-12 mathematics teachers, II*, Minicourse sponsored by the Mathematical Association of America, National Joint Meetings, Baltimore, January 2003.
10. *Incorporating discrete mathematics in the preparation of K-12 mathematics teachers, III*, Minicourse sponsored by the Mathematical Association of America, National Joint Meetings, Phoenix, January 2004.
11. *Cross-Stitching in the News (The mathematics of computer aided design)*, workshop, Mathematical Association of America, Regional Meeting, Flagstaff, 2004.
12. Special session organizer: *A sample of mathematics-centered educational and outreach activities at New Mexico State University*, Annual Meeting of the Southwestern Section of the Mathematical Association of America, El Paso, 2005.
13. *Griddy Mathematics: The mathematics and the art of grids*, presentation in the Special Session on Mathematical Connections in the Arts, National Joint Meetings, San Antonio, 2006.

6. **Refereed Publications:**
   1. (with D. Finston, M. Gehrke, P. Morandi), "Calculus Instruction at New Mexico State University Through Weekly Themes and Cooperative Learning". Proceedings of the Harvard Conference on the Teaching of Calculus, Primus 3 (1993), 83-93.
   2. "Teaching mathematics appreciation to non-science majors". *Humanistic Mathematics Network Journal* 16, November 1997.
   3. "Mathematics Appreciation" in *"Inspiring students: Case studies in motivating the learner"*. Kogan Page, London (1999), 103-111.
   4. "Loving Math Infinitely". *The Chronicle of Higher Education*, January 19, 2001, B14.
   5. (with M. Guzmán-Partida), El desarrollo de la integral desde Cauchy a Lebesgue. *Arenario* 1 (2001), 127-139, journal of mathematics education published by the University of Sonora, Mexico.
   6. Impossible Tilings, *Function* 28 (2004), 93-102, refereed journal for high school students and teachers published by Monash University, Australia.

7. Bordando Imágenes, *Matematicalia*, Volume 1, No. 2, June 2005.

7. **Preprints:**

1. The mathematics of bathroom floors, 17 pages.

2. Counting the uncountable, 13 pages.

Patrick J. Morandi - Curriculum Vitae

Degrees:
B. A., Mathematics, California State University, Sacramento, 1983
Ph.D., Mathematics, University of California, San Diego, 1988

Professional Positions:
Lecturer University of Texas at Austin 1988 - 1989
Visiting Assistant Professor Indiana University 1989 - 1990
Assistant Professor New Mexico State University 1990 - 1993
Associate Professor New Mexico State University 1993 - 1996
Visiting Professor Indiana University 1996 - 1997
Associate Professor New Mexico State University 1997 - 2000
Professor New Mexico State University 2000 - present
Department Head New Mexico State University 2006 - present

Research Interests:
Finite-dimensional division algebras, algebras with involution, noncommutative valuation theory, quadratic forms, algebraic geometry, universal algebra, point-set topology.

Mathematical Research Grant Support:
- Postdoctoral assistant, Quadratic Forms, Division Algebras and Galois Cohomology, National Science Foundation grant DMS.8996250, June 1989.May 1991.
-Principal investigator, Noncommutative Prüfer Rings, New Mexico State University minigrant #91-031, April 1991.
-Principal investigator, Division Algebras and Valuation Theory, National Science Foundation grant DMS.9024939, June 1991.May 1993.
-Principal investigator, Error Correcting Codes and Division Algebras, New Mexico State University minigrant #95-093, July 1995.
-Principal investigator, Indecomposable Division Algebras, New Mexico State University minigrant #96-019, May 1996.
-Principal investigator, Clifford Algebras of Algebras with Involution, New Mexico State University minigrant #98-036, May 1998.
-Mathematical Sciences Activity co-coordinator, Title V Developing Hispanic Serving Institutions Program, Department of Education grant, five year grant commencing October 2000.
-Co-investigator, Applications of Topology and Universal Algebra in Modal Logic, Georgian-U.S. Bilateral Grants Program, two year grant commencing in September 2002.

Other Grant Support:
-Co-mathematics coordinator, Title V.Developing Hispanic Serving Institutions Program (Bahram Nassersharif, principal investigator), United States Department of Education, 2000-2005.

-Participant, Mathematics & Science Educators for the Future (Pat Baggett and Dave Finston, principal investigators), 1999-2002.
-Participant, Mathematically Connected Communities (Rick Scott, KarinWiburg, Doug Kurtz, principal investigators), New Mexico Public Education Department, 2004-present.

Mathematical Research Publications:

1. The Henselization of a valued division algebra, Journal of Algebra 122 (1989), 232-243.

2. Value functions on central simple algebras, Transactions of the American Mathematical Society 315 (1989), 605-622.

3. Integral Dubrovin valuation rings (with A. Wadsworth), Transactions of the American Mathematical Society 315 (1989), 623-640.

4. Baer orderings with noninvariant valuation ring (with A. Wadsworth), Israel Journal of Mathematics 68 (1989), 241-255.

5. An approximation theorem for Dubrovin valuation rings, Mathematiche Zeitschrift 207 (1991), 71-82.

6. On Dubrovin valuation rings in crossed product algebras (with D. Haile), Transactions of the American Mathematical Society 338 (1993), 723-752.

7. Maximal orders over valuation rings, Journal of Algebra 152 (1992), 313-341.

8. Noncommutative Prüfer rings satisfying a polynomial identity, Journal of Algebra 161 (1993), 324-341.

9. Bézout orders and Henselization (with D. Haile and A.Wadsworth), Journal of Algebra 173 (1995), 394-423.

10. On defective division algebras, pp. 359-367 in .K-Theory and Algebraic Geometry: Connections with Quadratic Forms and Division Algebras., (editors B. Jacob and A. Rosenberg), Proceedings of Symposia in Pure Mathematics, Vol. 58, Part 2, American Mathematical Society, Providence, RI, 1995.

11. Kummer sub.elds of tame division algebras (with B. A. Sethuraman), Journal of Algebra 172 (1995), 554-583.

12. Indecomposable division algebras with a Baer ordering (with B. A. Sethuraman), Communications in Algebra 22 (1994), 5401-5418.

13. Noncrossed product division algebras with a Baer ordering (with B. A. Sethuraman), Proceedings of the American Mathematical Society 123 (1995), 1995-2003.

14. Divisors on division algebras and error correcting codes (with B. A. Sethuraman), Communications in Algebra 26 (1998), 3211-3221.

15. Lie algebras, composition algebras, and the existence of cross products on .nite dimensional vector spaces, Expositiones Mathematicae 17 (1999), 63-73.

16. Generalized cocycles with values in one-units of Henselian valued division algebras (with B. A. Sethuraman), Journal of Algebra 224 (2000), 123-139.

17. Decomposition of involutions on inertially split division algebras (with B. A. Sethuraman), Mathematiche Zeitschrift 235 (2000), 195-212.

18. On the Tensor Product of Composition Algebras (with J-M Pérez-Izquierdo and S. Pumplün), Journal of Algebra 243 (2001), 41-68.

19. Hyperbolicity of algebras with involution and connections with Cli¤ord algebras (with D. Haile), Communications in Algebra 29 (2001), 5733-5753.

20. The Priestley separation axiom for scattered spaces (with G. Bezhanishvili and R. Mines), Order 19 (2002), 1-10.

21. Scattered, Hausdor¤-reducible, and Hereditarily Irresolvable spaces (with G. Bezhanishvili and R. Mines), Topology and its Applications 132 (2003), 291-306.

21. Division algebras with an anti-automorphism but with no involution (with B.A. Sethuraman and J.-P. Tignol), Advances in Geometry 5 (2005), 485-495.

22. Valuations on tensor powers of a division algebra (with B.A. Sethuraman), Journal of Algebra 293 (2005), 385-394.

23. Pro-finite completions and canonical extensions of Heyting Algebras (with G. Bezhanishvili, M. Gehrke, and R. Mines), Order 23 (2006), 143-161.

24. Topo-canonical completions of closure algebras and Heyting algebras (with G. Bezhanishvili and R. Mines), Algebra Universalis (to appear).

25. A Springer theorem for higher degree forms, Mathematische Zeitschrift (to appear).

Mathematical Research Preprints:

1. Generic Symbol Algebras and Elementary Abelian Maximal Subields of Symbol Algebras (with B.A. Sethuraman), in preparation.

Educational Research Publications:

1. Calculus instruction at New Mexico State University through weekly themes and cooperative learning (with J. Alvarez, D. Finston and M. Gehrke), Primus 3 (1993), 83-98.

2. Exploration, explanation, formalization: a three-step approach to proof (with T. Hodgson), Primus 6 (1996), 49-58.

3. Computing the Symmetry Groups of the Platonic Solids with the Help of Maple, Resonance 9 (8) (2004), 18-26.

Books:

1. Field and Galois Theory, Graduate Texts in Mathematics, Vol. 167, Springer-Verlag, New York, 1996.

2. Mathematics Courses using Themes (with J. Alvarez, M. Gehrke, D. Kurtz, R. Staffeldt), unpublished manuscript.

3. The Classification of Wallpaper Patterns: From Group Cohomology to Escher.s Tessellations, unpublished manuscript.

4. An Introduction to Abstract Algebra via Applications (with D. Finston), submitted to Springer-Verlag, February 2005.

Invited Addresses

-Ostrowski's theorem for valued division algebras, conference on quadratic forms and real algebraic geometry, Corvallis OR, 25 July 1986.
-Ostrowski's theorem for valued division algebras, American Mathematical Society Annual Meeting, special session on Brauer groups, San Antonio TX, 24 January 1987.
-The Henselization of a valued division algebra, conference on quadratic forms and division algebras, Berkeley CA, 17 October 1987.
-Value functions and Dubrovin valuation rings on central simple algebras, American Mathematical Society Far Western Meeting, special session on division algebras, Claremont CA, 12 November 1988.
-Valuations on division algebras and Henselization, colloqium talk, Carleton University, Ottawa Ontario, 15 November 1988.
-Valuations on division algebras and Henselization, seminar talk, Queens University, Kingston Ontario, 16 November 1988.
-Value functions on central simple algebras, American Mathematical Society Annual Meeting, session on associative rings, Phoenix AZ, 13 January 1989.
-An approximation theorem for noncommutative valuation rings, American Mathematical Society Central Meeting, special session on noncommutative algebra in geometry and arithmetic, Muncie IN, 28 October 1989.

-Maximal orders over valuation rings, joint University of Cincinnati and Indiana University algebra seminar talk, Cincinnati OH, 31 March, 1990.
-Maximal orders over valuation rings, conference in honor of Prof. Goro Azumaya, Bloomington IN, 23 May 1990.
-Noncommutative Prüfer rings, conference on Brauer groups and group representations, Oberwolfach Germany, 18 April 1991.
-Maximal orders over valuation rings, seminar talk, University of California, San Diego, San Diego CA, 9 July 1991.
-Noncommutative Prüfer rings, conference on Brauer groups, Fort Collins CO, 27 June 1991.
-Noncommutative Prüfer rings, American Mathematical Society Western Meeting, special session on quadratic forms, Santa Barbara CA, 9 November 1991.
-Noncommutative Prüfer rings, seminar talk, Indiana University, Bloomington IN, 25 June 1992.
-Bézout maximal orders and Henselization, American Mathematical Society Summer Workshop on Division Algebras and Quadratic Forms, Santa Barbara CA, 24 July 1992.
-The use of computers in teaching linear algebra, colloqium talk, Montana State University Bozeman MT, 30 November 1992.
-Constructions and some major results in the theory of division algebras, colloquium talk, California State University, Northridge, Northridge CA, 24 February 1993.
-New proofs of some theorems of Galois theory, seminar talk, California State University, Northridge, Northridge CA, 25 February 1993.
-Kummer sub.elds of tame division algebras, conference on Brauer groups, Fort Collins CO, 4 August 1993.
-Noncrossed products and indecomposable division algebras with a Baer ordering, seminar talk, Indiana University, Bloomington IN, 10 January 1994.
-Noncrossed product division algebras with a Baer ordering, American Mathematical Society Annual Meeting, special session on quadratic forms and division algebras, Cincinnati OH, 13 January 1994.
-Using projects and themes in undergraduate mathematics courses, California State University, Northridge Distinguished Visitor colloquium talk, Northridge CA, 21 April 1994.
-Noncrossed products and indecomposable division algebras with a Baer ordering, University of Southern California algebra seminar talk, Los Angeles CA, 10 October 1994.
-Error correcting codes, algebraic geometry and finite dimensional division algebras, California State University, Northridge algebra seminar talk, Northridge CA, 22 May, 1995.
-Divisors on division algebras and error correcting codes, International Workshop on Brauer Groups and Galois Groups, Haifa, Israel, 30 June 1996.
-Algebras with involution, Hermitian forms, and algebraic groups, colloquium talk, New Mexico State University, Las Cruces NM, 16 October 1997.
-Algebras with involution that become hyperbolic over a given field extension, NSF-CBMS Conference on division algebras, Ft. Collins CO, 14 June 1998.
-Cross products on finite dimensional vector spaces, colloquium talk, California State University, Northridge, Northridge, CA, 9 December 1998.

-Hyperbolicity of algebras with involution and connections with Clifford algebras, colloquium talk, Université Catholique de Louvain, Louvain-la-Neuve, Belgium, 11 June 1999.
-Activity-based mathematics courses for future K-8 Teachers at New Mexico State University (with Pat Baggett), Mathematical Association of America Annual Meeting, contributed paper session: Looking to our Future: Recruiting and Preparing the Next Generation of Mathematics Teachers, Washington, D.C., 22 January 2000.
-Partnership program in mathematics for prospective and practicing K-8 teachers (with Pat Baggett), Mathematical Association of America Annual Meeting, contributed paper session: The Role of Mathematicians in the Development of Mathematics Teachers and Their Students, Washington, D.C., 20 January 2000.
-Tensor products of composition algebras, colloqium talk, Université Catholique de Louvain, Louvain-la-Neuve, Belgium, 23 June 2000.
-Hyperbolicity of algebras with involution and connections with Clifford algebras, colloquium talk, Universität Regensburg, Regensburg, Germany, 14 July 2000.
-Decomposition of involutions on inertially split division algebras, American Mathematical Society Annual Meeting, special session on Algebras, Forms, and Algebraic Groups, 7 January 2002.
-Graph-theoretic assignments in elementary mathematics, Mathematics Education Institute Mini-conference, Las Cruces, NM, 17 March 2002.
-Tensor products of composition algebras, conference on Brauer Groups, Pingree Park, CO, 2 July 2002.
-The use of projects and writing assignments in undergraduate mathematics courses at New Mexico State University, colloquium talk, California State University, Northridge, Northridge CA, 4 December 2002.
-The Priestley separation axiom for scattered spaces, American Mathematical Society Annual Meeting, special session on the Many Lives of Lattice Theory, 17 January 2003.
-Writing assignments at New Mexico State University, colloquium talk, RWTH Aachen, Aachen, Germany, 17 June 2003.
-Valuation theory of division algebras and applications to noncrossed products, colloquium talk, RWTH Aachen, Aachen, Germany, 18 June 2003.
-Valuation theory of division algebras and applications to noncrossed products, seminar talk, University College Dublin, Dublin, Ireland, 22 September 2003.
-Applications of valuation theory to noncrossed products and prime-to-p extensions, seminar talk, Università Degli Studi di Trento, Trento, Italy, 27 October 2003.
-Valuation theory of division algebras and applications to noncrossed products, seminar talk, Université Catholique de Louvain, Louvain-la-Neuve, Belgium, 1 December 2003.
-Valuations on tensor powers of division algebras, seminar talk, Indiana University, Bloomington, IN, 1 March 2004.
-Valuations on tensor powers of division algebras, seminar talk, Oberseminar zur Algebrentheorie, Universität Regensburg, Regensburg, Germany, 27 May 2004.
-A Springer theorem for higher degree forms, seminar talk, Oberseminar zur Algebrentheorie, Universität Regensburg, Regensburg, Germany, 3 June 2004.
-Division AlgebrasWith an Anti-Automorphism but no Involution, colloquium talk, New Mexico State University, Las Cruces, NM, 23 September 2004.
-Division Algebras With an Anti-Automorphism but no Involution, colloquium talk,

California State University, Northridge, Northridge, CA, 16 November 2004.
-Division Algebras With an Anti-Automorphism but no Involution, American Mathematical Society Annual Meeting, special session on Division Algebras, Galois Theory, Cohomology and Geometry, San Antonio, TX, 12 January 2006.
-Valuations on Tensor Powers of Division Algebras, American Mathematical Society Annual Meeting, special session on Division Algebras, Galois Theory, Cohomology and Geometry, San Antonio, TX, 12 January 2006.

Other Educational Talks:

-Differentiation skills exams in calculus courses, Annual meeting of the Southwestern section of the Mathematical Association of America, New Mexico State University, Las Cruces NM, 5 April 1991.
-Differentiation skills exams in calculus courses, New Mexico State University teaching seminar talk, Las Cruces NM, 20 April 1992.
-The use of computers in teaching linear algebra, colloquium talk, New Mexico State University, Las Cruces NM, 11 November 1993.

Other Talks:
-University of California, San Diego, three seminar talks while a graduate student.
-University of Texas at Austin, two seminar talks while in residence.
-Indiana University, several seminar talks while in residence.
-University of California, Santa Barbara, two seminar talks while in residence.
-New Mexico State University, numerous seminar talks.

Other Professional Meetings Attended:
-American Mathematical Society Annual Meeting, San Francisco CA, January 1991.
-Mathematical Association of America annual meeting of the southwestern section, Las Cruces NM, April 1991.
-New Mexico State University holiday symposium, Las Cruces NM, December 1992.
-American Mathematical Society Annual Meeting, San Francisco CA, January 1995.
-Southwest RIMS conference, Tucson AZ, February 1995.
-Southern California Algebra Conference, Northridge CA, October 1995.
-Mini-cours sur les groupes de Chow, variétiés de Severi-Brauer et cohomologie galoisienne, Université d.Artois, Lens, France, May 1996.
-Euroconference on linear algebraic groups and related structures, Louvain-la-Neuve, Belgium, June 1996.
-Brauer groups, Pingree Park conference center of Colorado State University, July 1997.
-European Autumn School on the Hasse Principle and Algebraic Groups, Université d.Artois, Lens, France, October 1997.
-Minicourse on involutions and algebraic groups, Université d.Artois, Lens, France, June 1999.
-Minicourse on Geometric Methods in the Theory of Quadriatic Forms, Université d.Artois, Lens, France, June 2000.
-Minicourse on Quadratic Forms and Witt Groups, Université d.Artois, Lens, France, June 2001.

-Minicourse on Quadratic Forms, Université d.Artois, Lens, France, June 2003.
-Workshop on Algebraic Groups, Quadratic Forms and Related Topics, Université de Franche-Comté, Besançon, Besançon, France, July 2003.
-International Conference on Algebraic and Topological Methods in Non-Classical Logics, Tbilisi State University, Tbilisi, Georgia, July 2003.
-Minicourse on Quadratic Forms, Université d.Artois, Lens, France, June 2004.
-Workshop on K-Theory, Algebraic Groups and Related Structures, University College, Dublin, Dublin, Ireland, July 2004.
-Minicourse on Quadratic Forms, Université d.Artois, Lens, France, June 2006.

Professional Activities:
-Member, American Mathematical Society
-Member, Mathematical Association of America
-Reviewer, Mathematical Reviews, 1990 – present
-Reviewer, National Science Foundation Grant Proposals, 1993, 1994, 2000
-Reviewer, Fondo Nacional de Investigacion Cientifica y Techologica, Chile, 2004
-Referee, Communications in Algebra, 1989, 1993, 1994, 1995, 1996, 1997, 2003, 2004
-Referee, Transactions of the American Mathematical Society, 1989, 1990
-Referee, Contemporary Mathematics, 1990
-Referee, Journal of Algebra, 1991, 1992, 1995, 1996, 1997, 2003, 2004
-Referee, Proceedings of the American Mathematical Society, 1992, 1993, 1994, 1995,1998, 2000, 2003
-Referee, Israel Journal of Mathematics, 1993
-Referee, Mathematicsche Nachrichen, 1994
-Referee, Scientia Iranica, An International Journal of Science and Technology, 1996
-Referee, Journal of Sciences, Islamic Republic of Iran, 1996
-Referee, Proyecciones Revista De Matematica, 1996
-Referee, Bulletin of the Canadian Mathematical Society, 1997
-Referee, Linear and Multilinear Algebra, 1997
-Referee, Mathematics Results, 1997
-Referee, American Mathematical Monthly, 1999
-Referee, Algebra Colloquium, 2000
-Referee, Manuscripta Math., 2002

Department of Mathematical Sciences Activities:
-Ph.D. Thesis supervision of Jean-Bernard Nganou.
-Ph.D. Thesis supervision of Douglas Larmour. Ph.D. completed in Summer 1999. Thesis title: A Springer Theorem for Hermitian Forms and Involutions. Head, Ph.D oral comprehensive examination, Spring 1996.
-Ph.D. Thesis supervision of Yan-Wen Wang. Head, Ph.D. oral comprehensive examination, Spring 1997.
-Chair, Teaching Committee, 2004.present.
-Chair, Undergraduate Curriculum Committee, 1997.-2003.
-Member, Advisory Committee, 1999-2003, 2005.
-Member, Promotion to Professor Subcommittee, 2002.
-Member, Ad-hoc Committee on Hiring, 1999-2000.

-Member, Tenure and Promotion to Associate Professor Committee, 1998-1999.
-Member, Department Head Search Subcommittee, 1997-1998.
-Co-writer of algebra comprehensive exam, 1991, 1993, 1994, 1995, 1998, 1999, 2000, 2001, 2003, 2005.
-Organizer and/or participant in the algebra seminar, 1990.present.
-Member, Graduate Studies Committee, 1993-1994.
-Member, Undergraduate Majors and Minors Committee, 1994-1996.
-Member, Arts and Sciences Advising Committee, 1991-1996.
-Member, Computer Advising Committee, 1991-1992, 1995-1996.
-Member, Student Honors Committee, 1991-1992.
-Member, Social Committee, 1992-1996.
-Chair, Social Committee, 1995-1996.
-Member, ad-hoc committee to choose linear algebra texts, 1991.

-Course coordinator:
Math 280, Spring 1993, Fall 1993, Fall 1995
Math 279, Spring 1994, Spring 1995
Math 191, Fall 1994, Spring 1998
Math 210G, Spring 1999
Math 112G, Fall 2000
Math 111, Fall 2004
Math 111, Fall 2005
- Member, Ph.D. final comprehensive examination:
Fall 1997, Richard Reynolds
Spring 2001, Mark Rhodes
- Member, Ph.D. oral comprehensive examination:
Fall 1995, Minzhen Wu
Fall 1995, Hideo Nagahashi
Fall 1995, Richard Reynolds
-Head, Ph.D. oral qualifying examination:
Spring 2005, Jean-Bernard Nganou
-Member, Ph.D. oral qualifying examination:
Fall 2004, Huy Nguyen
Spring 2005, Qin Yang
-Head, master's oral examination:
Spring 1994, David Emery
Spring 1994, David Steinberg
Spring 2003, Trung Ding
Spring 2005, Stephanie Glass
Spring 2005, Sarah Ellis
-Member, master's oral examination:
Spring 1991, William Gallegos
Spring 1991, Ross Johnson
Spring 1992, Peter Wildman
Spring 1992, Michael Wallace
Spring 1993, Diane Martinez

Summer 1993, Karen Trujillo
Fall 1993, James Strange
Fall 1993, David Harris
Spring 1994, Suzanne Hill
Spring 1994, John Chamberlin
Spring 1994, Richard Reynolds
Spring 1994, Denette Sinclair
Spring 1994, Joseph Dotolo
Spring 1995, Hideo Nagahashi
Spring 1995, Eric York
Spring 1996, Jason Bright
Spring 1996, Stuart Wilber
Spring 2005, Thomas Ngniatedema
Spring 2005, Joel Lucero-Bryan

University Activities:
-Advisor, College of Arts and sciences, 1991-1996.
- Dean's representative, master's oral examination, computer science, Spring 1992.
-Dean's representative, master's oral examination of Manish Mamnani in computer science, Summer 1994.
-Dean's representative, master's oral examination of Quo-qing Tian in computer science, Fall 1995.
-Dean's representative, master's oral examination in Industrial Engineering, Fall 1997.
-Dean's representative, master's oral examination in Electrical Engineering, Spring 2003.
-Ad-hoc university committee for revising course requirements to satisfy entry-level Teacher Competencies, Fall 1999.Spring 2000.
-Dean's representative, master's oral examination of Stuart Wilber in Electrical Engineering, August 2001.
-Promotion and Tenure Committee outside member for the Biology Department, 2001-2003.
-Promotion to Professor Committee, Computer Science, 2004.2005.
-Mentor, NMSU Advance Program, 2004-present.

Courses Taught:

Courses at New Mexico State University:
- Math 111 - Fundamentals of Elementary Mathematics I
-Math 112G - Fundamentals of Elementary Mathematics II
-Math 191 - Calculus and Analytic Geometry I
-Math 192 - Calculus and Analytic Geometry II
-Math 210G - Mathematics Appreciation
-Math/Hon 275G - Spirit and Evolution of Mathematics
-Math 279 - Introduction to Finite Mathematics
-Math 280 - Introduction to Linear Algebra
-Math 330 - Discrete Mathematics
-Math 331 - Introduction to Modern Algebra

-Math 431 - Algebraic Coding Theory
-Math 481/526 - Modern Algebra I
-Math 482/527 - Modern Algebra II
-Math 505 - Elementary Number Theory (for Gadsden teachers)
-Math 581 - Field Theory
-Math 582 - Commutative and Noncommutative Algebra
-Math 601 - Algebraic Geometry
-Math 601 - Error Correcting Codes and Algebraic Curves
-Math 683 - Homological Algebra
-Math 687 - Topics in Ring Theory

Courses at Universities other than New Mexico State:
University of Texas at Austin:
-Math 311 - Linear Algebra, Spring 1989
-Math 343K - Abstract Algebra, Fall 1989
-Math 403L - Business Calculus II, Fall 1989
-Math 808B - Engineering Calculus II, Spring 1989
Indiana University:
-Math 118 - Finite Mathematics, Spring 1990
-Math 119 - Business Calculus, Fall 1989
-Math T403 - Abstract Algebra for Secondary Teachers, Fall 1996

VITAE
LIZBETH GRIFFIN ELLIS

EDUCATION AND DEGREES

Juris Doctor: Arizona State University, May 1984
• Magna Cum Laude (Class Rank 9 of 135)
• Order of the Coif
• Arizona State Law Journal (1982-1983)
• American Jurisprudence Award in Family Law
• Regent's Graduate Scholarship

Bachelor of Business Administration: New Mexico State University, May 1981
• Major in Economics
• Phi Kappa Phi (honor society, top 10% of class)
• Wall Street Journal Student Achievement Award
• National Merit Scholarship

LICENSES AND BAR ADMISSIONS

NEW MEXICO:
New Mexico Bar (1984)
Admitted: New Mexico Supreme Court
U.S. District Court, District of NM

ARIZONA:
Arizona Bar (1984)
Admitted: Arizona Supreme Court
U.S. District Court, District of Arizona

EMPLOYMENT - ACADEMIC

NEW MEXICO STATE UNIVERSITY, Associate Professor, College of Business, Las Cruces, New Mexico. Full time position from August 1989 to present. Week-end college instructor Fall semester 1986.
Primary areas of research include: legal issues in health care administration, health care information management, and alternative dispute resolution methods.
Courses taught include: legal issues in health care administration (graduate and undergraduate), business law, legal environment of business, real estate law, contemporary legal issues, an honors course on the legal issues in modern society, and the introductory business course (BUSA 211).

EMPLOYMENT - PRACTICE OF LAW

MILLER, STRATVERT, TORGERSON & SCHLENKER, P.A., Las Cruces, New Mexico. Associate position from August 1988 through August 1989.
Areas of practice included: representation of financial institutions, analysis and litigation of insurance policy coverage issues, real estate transactions and development, business acquisitions, probate and estate planning, civil litigation including contract disputes, and creditor representation in bankruptcy.

LAW OFFICE OF DANIEL A. DOLAN, P.A. (formerly Law Office of Dolan and Wood), Las Cruces, New Mexico. Associate position from April 1986 to August 1988. Areas of practice included: representation of financial institutions, real estate transactions and development, business acquisitions, employment matters (drafting employment contracts, personnel handbooks, litigating discrimination complaints and other employee claims), probate, domestic relations, civil litigation including contract disputes, creditor and debtor representation in bankruptcy.
LEWIS AND ROCA, Phoenix, Arizona. Associate position, commercial litigation section, from September 1984 through March 1986 and clerkship during summer of 1983.
Areas of practice included: defense of federal securities law claims (civil), creditor representation in bankruptcy proceedings, contract claims and state and federal appeals.

RESEARCH AND SCHOLARLY ACTIVITY

PUBLISHED REFEREED JOURNAL ARTICLES

Ellis, Lizbeth G. "Opportunities and Obstacles in Alternative Dispute Resolution Techniques." *The CPA Journal,* February 1996, pp. 18-25.

Ellis, Lizbeth G. and Nina Compton. "An Interdisciplinary Model for Teaching an Undergraduate Course on Law and Economics." *North East Journal of Legal Studies*, Spring 1995, pp. 139-162.

Ellis, Lizbeth G. "Court Mandated Settlement Facilitation: The New Mexico Third Judicial District Court Settlement Week Experience." *Southern Law Journal*, Fall 1994, pp. 23-41.

Ellis, Lizbeth G. "Transboundary Regulation of Hazardous Waste Management Along the U.S.- Mexico Border." *Borderlands Research Monograph Series* No. 1-93 (1993) (reprint of article previously published in *Southern Law Journal*).

Ellis, Lizbeth G. "Transboundary Regulation of Hazardous Waste Management Along the U.S.- Mexico Border." *Southern Law Journal*, Fall 1992, pp. 8-18.

Ellis, Lizbeth G. "Bad Faith or Extra-Contractual Liability Based Upon the Insurance Company's Refusal to Tender Benefits Prior to a Release or Complete Settlement of the Claim." *Southern Law Journal*, Fall 1991, pp. 46-54.

Ellis, Lizbeth G., and Compton, Nina H. "Self-Determination in Death: Your Rights Under New Mexico Law." *The New Mexico Business Forum*, Vol. 9, No. 1 (Spring 1991) pp. 29-34.

PUBLISHED NON-REFEREED ARTICLES

Ellis, Lizbeth G. "Avoid Sexual Harassment Claims in the Workplace." *Southern New Mexico Business Journal*, Vol. 3, Issue 4, pp. 9 (April 1997).

Ellis, Lizbeth G. "Avoid Pitfalls in At Will Employee Terminations." *Southern New MexicoBusiness Journal*, Vol. 3, Issue 2, pp. 14 (December 1996).

Ellis, Lizbeth G. "Employer Concerns Under the Family and Medical Leave Act of 1993." *Business Forecaster*, Vol. 7, No. 2 (Summer 1994).

Ellis, Lizbeth G., and Compton, Nina H. "The Americans with Disabilities Act: The Employers' Responsibilities." *Business Forecaster*, Vol. 5, No. 1 (Spring 1992).

BOOK REVIEWS

Ellis, Lizbeth G. Book Review: "Closed Borders: The Contemporary Assault on Freedom of Movement" by Alan Dowty, in *Journal of Borderlands Studies*, Vol. VII, No. 1 (Spring 1992) pp.124-6.

Ellis, Lizbeth G. Book Review: "Opening and Closing the Doors: Evaluating Immigration Reform and Control" by Frank D. Bean, Georges Vernez and Charles B. Kelly, in *Journal of Borderlands Studies*, Vol. V, No. 1 (Spring 1990) pp. 145-46.

TECHNICAL REPORTS AND OTHER PUBLICATIONS

Ellis, Lizbeth G. *Report to the Third Judicial District Court: 1993 Settlement Week Survey Data*. Unpublished report dated October 12, 1993.

Ellis, Lizbeth G., Barrett, G. Vincent, and Wichert, Peter. *Technical Report: Fair Housing Assessment Study - City of Las Cruces*. Published June 1990 by the New Mexico State University Center for Real Estate and Land Resource Research pursuant to a grant from the City of Las Cruces.

"Las Cruces Fair Housing Ordinance," *Las Cruces Municipal Code* (enacted March 1991). Drafted by Lizbeth G. Ellis with the advice of the Las Cruces Fair Housing Committee and presented to the Las Cruces City Council in February 1991; unanimously approved March 1991.

CONFERENCE PAPERS

“Course Design: Legal Issues in Health Care Administration,” Academy of Legal Studies in Business, August 2003 (Nashville, Tennessee).
“Health Information Privacy Claims Under the Common Law,” Academy of Legal Studies in Business, July 2002 (Las Vegas, Nevada).
“An Examination of the New Federal Health Information Privacy Regulations,” Academy of Legal Studies in Business, August 2001 (Albuquerque, New Mexico).

“Using WebCT to Enhance a Legal Studies Course,” Southern Academy of Legal Studies in Business, March 2000 (San Antonio, Texas).
“ Proposed Regulation of Health Information Privacy and Access to Medical Records,” Academy of Legal Studies in Business, August 1999 (St. Louis, Missouri).
“Liability Issues in Medical Records Management,” Academy of Legal Studies in Business, August 1998 (San Diego, California).
Ellis, Lizbeth G., “A Critical Examination of Medical Malpractice Agreements and the Data Relating to Their Efficacy,” Academy of Legal Studies in Business, August 1997 (Atlanta, Georgia).
Ellis, Lizbeth G., "Arbitration of Employment Discrimination Claims: An Update on *Gilmer v Interstate/Johnson Lane,*" presented at the Rocky Mountain Academy of Legal Studies in Business; September 1995 (Vail, Colorado).
Ellis, Lizbeth G., "Designing a Course on Legal Issues in Health Care Administration," presented at the Southern Academy of Legal Studies in Business; March 1995 (Houston, Texas).
Ellis, Lizbeth G., "Resolving Professional Liability Claims in Accounting through the Use of Alternative Dispute Resolution Techniques," presented at the Academy of Legal Studies in Business;August 1994 (Dallas, Texas).
Ellis, Lizbeth G., "Agreements to Arbitrate Medical Malpractice Claims," presented at the Southern Academy of Legal Studies in Business; March 1994 (Dallas, Texas).
Ellis, Lizbeth G., "Court Mandated Settlement Facilitation: The New Mexico Third Judicial District Court Experience" presented at the Southern Academy of Legal Studies in Business; March 1994 (Dallas, Texas).
Ellis, Lizbeth G., "Transboundary Governmental Kidnapping: An Examination of *United States v Alvarez-Machain*," presented at the Western Social Science Association; April 1993 (Corpus Christi, Texas).
Ellis, Lizbeth G. and Ellis, Michael G., "A Collision Course: The Free Trade Agreement and U.S. Immigration Law," presented at the Western Social Science Association; April 1992 (Denver, Colorado).
Ellis, Lizbeth G., and Ellis, Michael G., "The Effects of COBRA and the Free Trade Agreement on the Economics of Health Care Along the U.S.-Mexico Border," presented at the Western Social Science Association; April 1990 (Reno, Nevada).

FUNDED RESEARCH AND PROJECTS
Co-principal investigator: "The Fair Housing Project," funded April 17, 1990 by the City of Las Cruces ($14,500.00).

PROFESSIONAL ORGANIZATIONS AND ACTIVITIES
Academy of Legal Studies in Business (1989 - present)
(Member of the House of Delegates 1998-2001; Chair of Site Investigation Committee 1999-2001)
American Arbitration Association (1990 - 1996)
American Bar Association (1985 - present)
American Health Lawyers Association (1197-present)
Association of Borderlands Scholars (1990 - 1995)
Arizona State Bar Association (1984 - present); presently inactive

Dona Ana County Bar Association (1986 - 2001)
Maricopa County Bar Association (1984 - 1986)
New Mexico State Bar Association (1984 - present)
Rocky Mountain Academy of Legal Studies in Business (1995)
Southern Academy of Legal Studies in Business (1989 - 2002)
(Secretary-Treasurer 1997-1998; Vice-President and Program Chair 1998-1999; two terms as President 1999-2001)
Southwestern Federation of Administrative Disciplines, Board Member 1998-2001)
Western Social Science Association (1990 - 1995)

HONORS AND RECOGNITION

• 2001: Faculty Award of Special Recognition for Teaching BUSA 211 with $250 stipend.
• 2000: "Outstanding Performance" award in Service to Community.
• 1999: "Outstanding Performance" award in Undergraduate Teaching from the College of Business.
• "Rookie of the Year Award," BA and Econ Council, Business College Awards Day Ceremony (April 23, 1992).
• ASNMSU Listing of Top 10% of Instructors (April 10, 1991 *Round Up*).
• Certificate of Appreciation given by the International Business Association for serving as moderator for the "Iraq-Kuwait Round Table Discussion," Fall 1990.
• Certificate of Appreciation given by the International Business Association for serving as moderator for the "Round Table Discussion on EC 1992," Spring 1991.

STUDENT SERVICE ACTIVITIES

Pre-law advisor for business students considering law school (1989-present); helped organize "Law Day" presentations in connection with the Graduate and Professional School Fair (2001).
Mentor for incoming freshman in ACE Student Mentorship Program (1996-1999)
Truman Scholarship Mock Interview panelist (1996, 1997,1999)
Pre-law Advisor for College of Business (1989 - present).
Faculty Advisor to the NMSU Pre-Law Association (1989 - 1991).
Faculty Advisor to the NMSU Young Democrats (1989 - 1992).
Participant in the College of Business "Career Exploration Day".
Moderator of the "EC 1992" Round Table Discussion," sponsored by the International Business Association of NMSU (March 21, 1991).
Moderator of the "Iraq-Kuwait Round Table Discussion," sponsored by the International Business Association of NMSU (November 13, 1990).

GRADUATE STUDENT COMMITTEES

Sarah Perry, Masters of Nursing Administration (Spring 2003)
Justin Mullins, Masters of Public Administration and Criminal Justice (Spring 2003).
Angie Mickle, doctorate in Educational Management, May 2000 - July 2001 (major advisor)
Mark Rhodes, PhD in Mathematics (1997).
Deborah Pardue, Master of Education (Fall 1995).

Hemu Sundar, Master of Accountancy Degree (Fall 1994).
David L. Harris, Masters Degree, Math major (Fall 1993).
Lynn Ferne Easterling, Master Degree, English major, w/ Thesis (April 15, 1990).

UNIVERSITY AND COLLEGE SERVICE ACTIVITIES

• Legal counsel for Dean's Office in formation of Arrowhead Center.
• Strategic Planning Committee for College of Business (Fall 2003 - present)
• General Education Task Force for University (Fall 2002 - present)
• General Education Assessment Committee for University (Fall 2001 - present)
• Faculty Council for College of Business (Fall 2001 - Spring 2003)
• Bylaws and Policy Committee for College of Business (Fall 2001 - Spring 2003)
• Panelist for Graduate Assistant Orientation (Fall 1999)
• University Budget Committee (1996-97; re-elected for 1997-98)
• Faculty Senate Library Committee (1995 - 2000; chair Fall 1997 - Spring 2000)
• Faculty Senate member (1991 - 1997)
• Senior Senator from BA&Econ (1995 - 1997) conduct all elections; monthly reports to College faculty)
• Committee on Committees, College of BA&Econ representative (1995-1997)
• Faculty Affairs Committee member (1996-97)
• Scholastic Affairs Committee member (1991 - 1995)
• Long Range Planning Committee member (1995-96)
• Faculty Senate Representative to ASNMSU (1994/95)
• Library Long Range Strategic Plan to Plan Committee (1995-96)
• College of BA&Econ Library and Database Committee, Chair (1994-1996)
• College of BA&Econ Performance Evaluation Committee member (1994 - 1996)
• Library Liaison for Department of Finance (1994 - Spring 1998)
• Chaired the NCA internal Academic Review Team for the Department of Criminal Justice (1996); organized site visit and authored written report.
• New Course Proposals:
BLAW 316 - Legal Environment of Business
HON 335 - Legal Issues in Modern Society
BLAW 440 - Health Care Law
BLAW 540 - Legal Issues in Health Care Administration

PROFESSIONAL SERVICE ACTIVITIES

1999: Prepared review of *Business An Integrative Framework* by Fred L. Fry, Stoner & Hattwick for publisher Irwin McGraw-Hill.
1999: Prepared review of *American Business Law in a Global Context* (blind), for publisher Prentice Hall.
1998: Prepared review of *Employment Law and Managerial Practices*, Prentice Hall textbook proposal.
1998: Reviewed manuscripts and prepared evaluations for the selection of the Distinguished Paper Award for the Southern Academy of Legal Studies in Business.
1996: Refereed manuscripts for the 1996 Annual Meeting of Western Decision Sciences Institute entitled:

(1)"Equivalence of the One-Tailed and Two-Tailed Statistical Tests in Title VII Employment Discrimination Litigation"
(2)"The Social Obligation of Corporate Counsel: A Communitarian Justification for Allowing In House Counsel to Sue for Retaliatory Discharge"
(3)"Avoiding Employee Liability for Sexual Harassment: Prompt Remedial Action May Not be Enough"
1995, August 8-12: Panel member on "The Fairness of Mandatory Arbitration Clauses in Employment Contracts" session and participated in mock mediation session (as legal counsel to employer) directed by the U.S. Arbitration and Mediation Service at the Academy of Legal Studies in Business meetings in Milwaukee, Wisconsin.
1995: Refereed manuscript entitled "A Qualitative Study of Sentencing by Two Hispanic Judges in a State-level court of General Jurisdiction in a Southwestern Border Community" for the *Journal of Borderlands Studies.*
1991: Prepared written review of textbook: Jennings, Marianne Moody, *Real Estate Law*, Third Edition, PWS-Kent Publishing Company: 1991.
1991: Prepared written review of textbook : Davidson, et al., *Business Law Principles and Cases*, Third Edition, PWS-Kent Publishing Company: 1991.
1990, Sept. 13: Refereed manuscript entitled "A Comparison of California, Texas and Mexico on Employment-at-Will" for *Journal of Borderlands Studies* and prepared written review.
1990, July 16: Refereed manuscripts entitled "Interpreting International and Domestic Law Concerning Refugees: The U.S. Government vs. the Sanctuary Movement" for *Journal of Borderlands Studies* and prepared written review.
1990, March 15: Refereed manuscript entitled "Community Property Law" for *New Mexico Business Forum* and prepared written review.

PUBLIC SERVICE ACTIVITIES
2003, May-June: Appointed by Governor Richardson to serve on the Third Judicial District Court Nominating Commission.
2002, May: Session speaker at the Regional Health Information Management Association, Spring Workshop at Memorial Medical Center, Las Cruces, New Mexico.
1997-2000: Served on Board of Directors of Planned Parenthood of New Mexico, Inc., a non-profit organization serving the state of New Mexico.
1999-2002: Co-chaired local Planned Parenthood Advisory Group and organized fund raiser netting $6,000 to $12,000 each year from over 500 contributors.
1999-2000: Volunteer at Mesilla Elementary School tutoring “at risk” students in reading.
1999, Feb.: Session speaker at the Texas Health Information Management Association, District III, Spring Workshop at the Columbia Lifecare Center-West in el Paso, Texas. Topic: Current Legal Developments in Medical Record Management.
1996, June 12: Professional Development Speaker for the Southern New Mexico Affiliate of the National Association of Purchasing Management.
1994-1996: AIDS Law Panel, Young Lawyers Division, State Bar of New Mexico; providing probono legal services to indigent persons with AIDS.
1993: Served on the "Third Judicial District Judgeship Selection Committee"; appointed by Governor Bruce King.

1993: Settlement Week Committee Chairperson and Coordinator, New Mexico Third Judicial District Court; appointed by Chief Judge James T. Martin.
1993, Jan. 15: Organized seminar on settlement facilitation held at New Mexico State University, attended by over 80 attorneys; sponsored by Dona Ana County Bar Association and N.M.S.U. College of Business Administration and Economics.
1991, Nov. 11: Speaker at public forum on constitutional rights, "Celebration of Freedom," sponsored by various non-profit organizations in Las Cruces, New Mexico.
1991, Oct. 11: Seminar organizer and speaker at the "Las Cruces Fair Housing Seminar" sponsored by New Mexico State University College of Business Administration and Economics and the City of Las Cruces.
1991, Oct. 4: Speaker during radio program on "Fair Housing Rights," KOBE radio station.
1991, Oct. 1: Speaker at the meeting of the American Association of University Women.
1990, June 13: Seminar speaker at the "New Mexico/Oklahoma Health and Safety Workshop"
(Topic: *Potential Tort Liability of the Federal Employee and the Federal Government*) sponsored by the Bureau of Land Management, United States Department of the Interior.
1987-1988: Member of the Board of Directors, La Luz de Esperanza, a non-profit organization.

PERSONAL DATA
ADDRESS: 345 El Prado Avenue
Las Cruces, New Mexico 88005-2906
TELEPHONE: (505) 523-5384

Court-appointed counsel for indigent parties in child abuse and neglect cases (1986 - 1992).
Democratic Party of Dona Ana County, Executive Committee (1986 - 1988).
Campaign Coordinator, Bardacke for Governor Campaign (1990).
Presentation of at the New Mexico/Oklahoma Health and Safety Workshop, sponsored by the Bureau of Land Management, United States Department of the Interior, June 13, 1990.

Appendix F

Program Interest Surveys

Surveys instruments reproduced below were used to gather preliminary information concerning interest in the proposed program from the New Mexico financial community and prospective students. About 200 surveys were completed. Nearly all of the responses were very positive.

Master in Financial Mathematics Survey, New Mexico State University

After reading the brief description of the proposed Master in Financial Mathematics, please respond to the statements below. We would also appreciate any written comments you might provide at the bottom of the page. Please save the completed form and send it as an e-mail attachment to mmariani@nmsu.edu. Thank you!

Name	
Address	
E-mail	
Phone	
Position	

Please check only one response per row.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Opinion
The proposed Master in Financial Mathematics program would fill a need that is not currently being filled by other graduate programs in New Mexico.	☐	☐	☐	☐	☐	☐
I would advise a qualified and interested student to apply to the Master in Financial Mathematics program.	☐	☐	☐	☐	☐	☐
I (or my organization) would be interested in hiring one or more graduates from the Master in Financial Mathematics program.	☐	☐	☐	☐	☐	☐
The proposed training provided in the Master in Financial Mathematics program is sufficient for development of professionals.	☐	☐	☐	☐	☐	☐
Additional comments:						
If you know someone else who would have an opinion on this topic, please provide his/her name and e-mail address and we will send him/her a survey form. Thank you.						

Master in Financial Mathematics Survey, New Mexico State University

After reading the brief description of the proposed Master in Financial Mathematics, please respond to the statements below. We would also appreciate any written comments you might provide at the bottom of the page. Thank you!

Please check only one response per row.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Opinion
The proposed Master in Financial Mathematics program would fill a need that is not currently being filled by other graduate programs at NMSU.	☐	☐	☐	☐	☐	☐
Given the opportunity, I or someone I know would likely enroll in the Master in Financial Mathematics program.	☐	☐	☐	☐	☐	☐
Additional comments:						
If you know someone else who would have an opinion on this topic, please provide his/her name and e-mail address and we will send him/her a survey form. Thank you.						

Appendix G

References

Carnegie Foundation. (2005). "Classifications" http://www.carnegiefoundation.org/classifications/sub.asp?key=62&subkey=127

New Mexico Department of Higher Education (2005), *5 NMAC 5.2 POST-SECONDARY EDUCATION CHAPTER 5 POST-SECONDARY EDUCATIONAL PROGRAMS PART 2: APPROVAL OF NEW GRADUATE PROGRAMS* **http://www.nmcpr.state.nm.us/nmac/parts/title05/05.005.0002.htm**

New Mexico State University, Office of Institutional Research, Final Enrollment Counts, (Fall 2005).

New Mexico State University, Office of the President (July 2, 2005) "Living the Vision" http://ltv.nmsu.edu/

New Mexico State University (September 2005) "NMSU at a Glance" http://www.nmsu.edu/General/NMSU_At_a_Glance.html.

U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Economic Information System*, www.bea.gov .

Professional Master Degree Programs in Mathematics Departments,
http://www.math.uic.edu/MER/pages/masters/
http://www.math.uic.edu/~mer/pages/masters

Directory of Professional Master's Degree Programs in the Mathematical Sciences, American Mathematical Society, http://www.ams.org/tools/masters.html

New Mexico State University, College of Arts and Sciences, Graduate program, http://www.math.nmsu.edu/admrequirements.html

Appendix H

Guidelines

The Guidelines were downloaded from the New Mexico Department of Higher Education website
(http://www.nmcpr.state.nm.us/nmac/parts/title05/05.005.0002.htm)

TITLE 5 POST-SECONDARY EDUCATION
CHAPTER 5 POST-SECONDARY EDUCATIONAL PROGRAMS
PART 2 APPROVAL OF NEW GRADUATE PROGRAMS

5.5.2.1 ISSUING AGENCY: New Mexico Higher Education Department (NMHED).
[3/16/51, 7/1/94; 5.5.2.1 NMAC - Rn & A, 5 NMAC 5.2.1, 02/28/07]

5.5.2.2 STATUTORY AUTHORITY: The NMHED has statutory responsibility to review new graduate programs proposed by state universities as part of its authority for statewide planning and oversight of post-secondary education. The Post-Secondary Educational Planning Act, specifically Section 21-2-5 NMSA 1978, authorizes the NMHED to conduct statewide planning, including analyses of state needs for post-secondary educational programs. Section 21-1-24 NMSA 1978 requires that any graduate program that is to benefit from state funding must first be approved by the NMHED and by the New Mexico state board of finance.
[4/5/71, 3/29/73; 5.5.2.2 NMAC - Rn & A, 5 NMAC 5.2.2, 02/28/07]

5.5.2.3 SCOPE: The provisions of 5.5.2 NMAC apply to any new graduate program proposed for implementation by any constitutional institution of higher education in New Mexico.
[2/26/85, 5/4/90, 9/30/97; 5.5.2.3 NMAC - Rn, 5 NMAC 5.2.3, 02/28/07]

5.5.2.4 DURATION: Permanent.
[9/30/97; 5.5.2.4 NMAC - Rn, 5 NMAC 5.2.4, 02/28/07]

5.5.2.5 EFFECTIVE DATE: September 30, 1997, unless a later date is cited at the end of a section.
[9/30/97; 5.5.2.5 NMAC - Rn & A, 5 NMAC 5.2.5, 02/28/07]

5.5.2.6 OBJECTIVE: The objective of 5.5.2 NMAC is to provide an orderly, objective basis for review and approval or disapproval of each new graduate program proposed for implementation. Although this regulation is intended primarily to guide decisions by the NMHED and its staff, it may also be used to guide review by the institutions and by statewide councils of graduate deans and chief academic officers. Decisions about new graduate program proposals shall be exercised so as to:

A. fulfill societal requirements, employer needs and student demand;
B. support high standards of academic quality;
C. encourage cooperation among institutions, public and private;

D. avoid unnecessary or inappropriate duplication; and

E. maximize cost effectiveness for the state.

[2/26/85, 5/4/90, 9/30/97; 5.5.2.6 NMAC - Rn & A, 5 NMAC 5.2.6, 02/28/07]

5.5.2.7 DEFINITIONS:

A. "Graduate program" is defined as any sequence of courses, activities or experiences which leads to award of any degree beyond the baccalaureate degree. Graduate programs subject to 5.5.2 NMAC include those leading to a master's degree, a doctoral degree, or a professional degree in fields such as law, medicine or other professions.

B. "New" graduate program is defined as one that differs from currently approved programs at the proposing institution, in terms of level of degree or area of study.

[2/26/85, 5/4/90, 9/30/97; 5.5.2.7 NMAC - Rn & A, 5 NMAC 5.2.7, 02/28/07]

5.5.2.8 GENERAL REQUIREMENT OF NMHED APPROVAL:

A. No graduate program established following the effective date of 5.5.2 NMAC, nor any student enrolled in that program, shall be eligible for inclusion in any of the NMHED's funding recommendations unless the program has been approved by the NMHED and by the New Mexico state board of finance.

B. In the case of a question of applicability of 5.5.2 NMAC to a particular change in graduate programming, the NMHED staff will consult with the NMHED review board, council of graduate deans, and the New Mexico academic council and will consider the advice of all groups in rendering a decision about applicability. Staff decisions may be appealed to the NMHED's cabinet secretary whose decision will be final.

C. Changes that require approval by the NMHED.

(1) Addition of a doctoral degree in an area in which a master's degree is already awarded, or the converse, is subject to the provisions of 5.5.2 NMAC.

(2) Any substantial change in an existing graduate degree program, which may or may not be reflected as a change in the title of the degree awarded, will be sumitted to the NMHED for review and may be required to undergo the process for approval of new graduate programs (5.5.2.10). Among the tests of substantial change will be (i) change in a curriculum impacting at least one-third of the courses, (ii) change reflecting a new program title in the institution's catalog, (iii) change which adds a distinct and separate course of study at the institution and/or (iv) change that may later change the classification of the proram in the institutions's inventory of instuctional programs.

(a) Addition of a program option, concentration or specialization that will result in a new degree title being awarded will be submitted to the NMHED for review and may be subject to the provisions of 5.5.2 NMAC, but addition of another option, concentration or specialization to an existing approved program that would not change the title of the degree awarded does not require approval of the NMHED.

(b) Proposed changes in the name of an existing program, option, concentration, emphasis, specialization, or number of credit hours, without other substantive change or questions of applicability of 5.5.2 NMAC should be referred to the

NMHED for a staff determination of applicability and to assure that the NMHED's data base remains accurate.

D. Changes that do not require approval by the NMHED.

(1) Revisions of the curriculum of a program, option, concentration or specialization that do not alter how the program, enrollments and degrees awarded are reported to the NMHED are not subject to the provisions of 5.5.2 NMAC.

(2) Deletion of a program option, concentration or specialization within an existing graduate program is not subject to the provisions of 5.5.2 NMAC.

(3) Reconfiguration of an existing program in a manner that will retain the title of an existing program and that will not result in a net gain in the number of programs offered by an institution, such as consolidation of two or more programs into a single program, is not subject to the provisions of 5.5.2 NMAC.

(4) Change in the department responsible for a graduate program, without a substantial change in the curriculum of the program and without a corresponding change in the title of the degree awarded, is not subject to the provisions of 5.5.2 NMAC.

(5) A program, option, concentration or specialization that has been prepared to meet a request of a particular employer and that will be financially supported by that employer is not subject to the provisions of 5.5.2 NMAC. However, such programs are considered restricted and do not receive state funding. Students enrolled in such programs are not eligible for any state support until the program is approved pursuant to 5.5.2 NMAC and the program becomes unrestricted.

(6) Dormant programs. Dormant programs are graduate degree programs that have not admitted new graduate students for a period of three consecutive years. The institution of higher education must inform the NMHED about dormant programs each year and indicate whether or not the program of study will be deleted by the institution or revised to attract new graduate students. Programs can be dormant for a period of six years. Plans to revise degree programs that require changes in the type of degree awarded require approval by the NMHED.

(7) Post-baccalaureate certificate of specialization.

E. Post-baccalaureate certificate programs do not require the same level of review and approval as post-baccalaureate degree programs. The NMHED will need to approve programs that demonstrate financial need and require additional resources in the form of new funding, additional faculty or additional facilities. Certificate programs that do not require new resources and can be implemented with existing faculty, existing courses, and existing facilities can be approved internally as indicated below. A certificate of specialization is a program of study that is designed to develop or enhance a focused area of expertise. The primary purpose of certificate programs is to provide specific skill training and to enhance employability and quickly meet manpower needs within the state of New Mexico. Certificate programs can be offered to currently enrolled degree seeking students and students that meet the admissions criteria but that enroll solely to obtain a certificate in a given area of expertise.

F. Concentrations or specializations differ from certificate programs in that they are designed to meet the needs of enrolled degree seeking students within the given institution of higher education.

G. Certificate programs offered by institutions of higher education within the state of New Mexico must include at least 12 credit hours of course work that

is interrelated and designed to develop a focused skill or area of expertise. Certificate programs cannot exceed 18 credit hours. Courses that comprise the certificate must be regular approved courses that are already offered by the institution.

H. Certificate programs that do not require new resources and can be implemented with existing faculty, existing courses, and existing facilities can be approved internally by the appropriate mechanisms within the institution of higher education and the chief academic officer of that institution. Approved certificate programs must be registered with the NMHED within three months of approval. The registration process includes submitting a copy of the proprosal, a CIP code request, and a copy of the signature sheet documenting the approval process for the new certificate program.

I. The NMHED will serve as a clearinghouse for information regarding degree and certificate programs offered in the state of New Mexico. A web-based listing of certificate programs posted on the NMHED website will allow potential students to obtain a comprehensive picture of educational opportunities within New Mexico.

J. Internal proposals for new certificate programs should include information on the rationale for the certificate, evidence of need, statements on the ability to meet manpower needs within the state, enrollment projections, and an evaluation plan that indicates whether or not the needs of the state are being met.

K. Certificate proposals that require new resources must develop a proposal for external approval by the New Mexico council of graduate deans, the academic council, the NMHED, and the New Mexico state board of finance, following the process for new degree proposals.

L. Students enrolled in post-baccalaureate certificate programs must meet the same minimum admissions criteria as students admitted into graduate degree programs at the institution of higher education.

M. Institutions of higher education must notify the NMHED immediately if a certificate program is discontinued.

[2/26/85, 5/4/90, 9/30/97; 5.5.2.8 NMAC - Rn & A, 5 NMAC 5.2.7 & 8, 02/28/07]

5.5.2.9 REQUIREMENTS FOR APPROVED GRADUATE PROGRAMS: The requirements and questions listed below will be used in reviewing proposals to establish new graduate programs. The NMHED reserves the right to weigh these factors differentially and to consider additional factors in reaching decisions that best meet the interests of the state of New Mexico. These requirements are constructed to reflect state-level interests in post-secondary education; reviews of new graduate programs within the proposing institution are expected to reflect a somewhat different balance of concerns, for example, devoting greater consideration to details of program quality.

A. Purpose of the program and mission of the proposing institution. The proposed program must have a clear purpose that is consistent with the mission of the proposing institution.

(1) What is the primary purpose of the proposed program? What are its secondary purposes, if any?

(2) Is the proposed program consistent with the role and scope of the institution as set forth in its mission statement and interpreted by its governing board?

(3) What is the institution's priority for the proposed program, as indicated in its most recent plans, funding requests or other institutional documents?

(4) What is the curriculum for the proposed program? What types of courses and other degree requirements are needed for degree completion? What types of skills or competencies will students develop as a result of completing the degree prgoram?

B. Justification for the program. The proposed program must meet one or more specified needs within the state or region; must not duplicate existing programs unnecessarily or inappropriately; and, to the extent feasible and appropriate, should benefit from cooperative arrangements with other institutions.

(1) Need. 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.

(a) Why is the program needed? Will graduates of the program help meet some specified state or regional workforce need? Have specific potential employers requested or expressed interest in, the program? What, if any, internal institutional needs will also be met by the program?

(b) Evidence of need might include results of employer surveys, current labor market analyses and projections, or long-term need projections prepared by a relevant professional organization. Summaries of student interest also are appropriate but will not by themselves be considered sufficient evidence of need.

(c) Although academic and research interests of institutional faculty may be met through implementation of the proposed program, such interests by themselves are unlikely to persuade the NMHED of need for the program. However, institutions of higher education may build programs around their areas of excellence. A clear demonstration of such excellence is expected in the proposal.

(2) Duplication. The proposed program must not duplicate existing programs unnecessarily or inappropriately. A proposal for a program similar to one (or more) that already exists within the state must present clear and convincing evidence that need for the program cannot be met by the existing program(s).

(a) Is this program, or are similar programs, offered at any other public or private institutions within New Mexico?

(b) If so, what is the remaining capacity of the program(s)? How many students could the existing program(s) accommodate without additional resources for faculty, equipment, facilities and other needs?

(c) In light of the above information, why should the proposed program also be approved? What programmatic, geographic or other factors warrant approval of the program as an addition to the existing educational resources in the state?

(d) Do New Mexico students have access to a comparable program in another state through either the WICHE professional student exchange or the WICHE regional graduate program?

(e) As evidence, the proposing institution must assemble and display data listing each similar program offered by regionally accredited public and private universities in New Mexico; the numbers of students admitted to each of those programs during each of three recent, consecutive years; the numbers of degrees/ certificates

awarded during each of those years; and each university's estimated remaining capacity of its program(s).

(f) To the extent feasible and appropriate, statements from representatives of the existing programs should be attached to the proposal, articulating their positions with regard to the proposed program.

(g) The purpose of this requirement is twofold: (i) to assure that communication has taken place with existing programs, as an element in planning the proposed program, and (ii) to aid reviewers in assuring that there is need for the program that cannot be met through existing programs.

(3) Inter-institutional collaboration and cooperation. The NMHED strongly encourages collaborative relationships with other programs within New Mexico, so that state investments can be shared and students can benefit from expanded opportunities across institutional boundaries.

(a) Are there programs at other institutions, and particularly programs already supported by the state, through which shared instruction, collaboration with faculty or other means of broadening student options and experiences can be arranged as part of the proposed program?

(b) If the proposed program is related to other programs operating at public institutions in the state, the proposal should document how collaboration will be achieved with those programs. For example, if it is feasible and productive to share faculty, instruction or other assets with an existing program at another institution, the proposal should outline how that collaboration will take place. If other arrangements for expanding students' experiences can be made with other institutions, those arrangements should be summarized.

C. Clientele and projected enrollment. The proposal must clearly describe the population of students who will be recruited for the proposed program and must include a detailed projection of enrollment and credit hours anticipated during the first five years.

(1) Clientele.

(a) Who are the students to be served by the proposed program? Will the program concentrate its recruitment upon students representing some particular geographic area, students from some special employment sector or some other identified group?

(b) What academic or experiential qualifications will be set for admission?

(c) Will the proposed program be consistent with state goals for equitable representation of all students? How will the program assure equal access and success of students from groups historically underrepresented in graduate education or in the fields of employment for which the program is intended to prepare its graduates?

(i) At a minimum, the proposal should include data illustrating the representation of diversity in ethnic and sex/gender groups of (a) undergraduate students and (b) graduate students at the proposing institution and should articulate the methods that will be used to assure equity in access and success in the proposed program.

(ii) To the extent possible, the proposal also should include information about representation in the fields of employment for which the program is

intended to prepare students and other information relevant to assessing the capacity of the program to help redress underrepresentation.

(2) Projected enrollment.

(a) The proposal must display, in clear tabular form, the projected enrollment in the proposed program during its first five years. This presentation must distinguish the number of new students (headcount) expected to enroll each year, the number of returning students expected to re-enroll in each year, and the methodology used to arrive at those projects.

(b) The proposal should indicate the number of students expected to enroll full-time and the number expected to enroll on a part-time basis and must display the total number of student credit hours expected to be generated in each of the first five years.

D. Institutional readiness for the program. The institution should have nearly all of the resources needed to initiate the program. The proposal should include a clear statement of the extent to which the institution is ready to initiate the program, citing the remaining needs and recognizing each of those needs in the cost analysis developed pursuant to Subsection E of 5.5.2.9 NMAC.

(1) Is the teaching faculty adequate in number and qualifications to initiate the program? If not, what additional faculty are needed? To what extent will the program rely upon graduate assistants to free faculty time for graduate instruction in the proposed program?

(2) Are the library and other academic support resources sufficient to initiate the program? If not, what additional resources are needed?

(3) Are the physical facilities of the institution adequate 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?

(4) Are the institution's equipment and technological resources adequate for the first five years of the program? What, if any, additional equipment will be needed?

(5) Are other operating resources adequate to initiate the program? For example, will additional clerical or specialized personnel be needed?

(6) Are there existing external facilities that will be used? Have agreements been established to ensure use of those facilities? For example, if you are offering a nursing or allied health program have you established a partnership with local hospital(s) and other clinical settings?

E. Projected cost of the program. The proposal must include a clear analysis of the projected cost of the proposed program and the sources of funding that will support it.

(1) New costs for program start-up. The proposal should provide a clear indication of new costs that must be met in order to begin the program and to sustain it during its first five years. The analysis must address at least the following cost categories:

(a) Additional faculty needed for the program, full-time and part-time.

(b) Additional library resources needed for the program. The proposal should include a statement from the university librarian, indicating the cost of these new resources and the schedule on which the resources will be provided.

(c) Additional facilities, equipment and technological resources needed for the program.

(d) New graduate assistantships needed to support the program, including the dollar value of the assistantships during each of the first five years of the program.

(2) State support. An analysis must be presented showing the approximate amount of state operational formula funding that will flow to the program for each of the first five years, based upon the projected student credit hours and current formula funding factors, and recognizing the delay and averaging characteristic of the formula.

(3) Other support. If the proposed program will benefit from other sources of operational support, the proposal should describe those. For example, if particular cost categories such as new equipment or additional graduate assistantships are expected to be supported by research grants, contracts or other sources, the proposal should clearly describe those sources and levels of support and should indicate the advantage to the state of receiving such support.

F. Quality of the program. The proposed program must be designed to meet high standards of academic quality, considering its instructional curriculum, faculty, student admission standards, opportunities for experiential learning and academic support, and provisions for continual review and improvement of the program.

(1) All programs supported by state funds are expected to comply with principles of academic quality delineated as part of the NMHED's regulation on instructional funding: 5.3.12 NMAC.

(2) Among the questions that will be considered in evaluating proposals for new graduate programs are the following:

(a) Is the curriculum adequately structured to meet the stated purposes of the program?

(b) Is the faculty adequate in number, experience and availability to offer a high quality program?

(c) How do the proposed academic admission standards for students entering the program compare with standards for other programs at the institution and with admission standards for comparable programs at other institutions in New Mexico or other states?

(d) How will the proposed program utilize current technologies to support program quality and delivery?

(e) What opportunities will be available for assisting students to gain experiences relevant to work settings for which the program will prepare them?

(f) What academic support services are available to students, to assist them in succeeding in the program?

(g) What final integrating experiences or other features will be used to assure that graduates have acquired the knowledge and skills expected for the degree or certificate awarded?

(h) Has the proposed program been evaluated by any external reviewers or is there other external evidence or opinion regarding the quality of the program?

(i) When will the new program be proposed for accreditation by the higher learning commission of the north central association?

(j) Will specialized accreditation be sought for the program? If so, when?

G. Assessment of operations and impact. The proposal must include a plan by which the proposed program will be assessed for its operation and impact over at least a five-year period.

(1) At a minimum, the plan must indicate methods that will be used to monitor program operations, progress of students and program completion rates.

(2) The plan also must include methods for obtaining evaluations from students, graduates or other appropriate sources and feeding that information into future operation of the program.

H. Administrative responsibility for the program and institutional commitment. There must be clear indication in the proposal that the institution is committed to the success of the proposed program.

(1) The proposal should indicate where in the structure of the institution the program will be administered. For example, which department will have primary responsibility and which additional departments, if any, will contribute to operation of the program?

(2) The proposal should include a clear statement of administrative support for the program, sufficient to assure that resources will be provided during the first five years of the program. The proposal should also verify that all within-institution approvals needed for the program have been granted, including approval by the institution's governing board.

[2/26/85, 5/4/90, 9/30/97; 5.5.2.9 NMAC - Rn & A, 5 NMAC 5.2.9, 02/28/07]

5.5.2.10 PROCESS FOR APPROVAL OF NEW GRADUATE PROGRAMS:

A. Before submitting a proposal for review by the NMHED, an institution must have completed all internal institutional reviews required for new graduate programs. The proposal must be in a form that is fully supported by the institution.

B. Advance notice to the NMHED staff of the intent to submit a proposal for a new graduate program is required, as it will assist in planning and will create a more efficient review process. A proposal should be submitted to the NMHED and the council of graduate deans at least nine months prior to the anticipated date of implementation of the program, in order to allow sufficient time for review by the council of graduate deans, the academic council, the NMHED review board and the New Mexico state board of finance prior to implementation. Programs cannot be included in institutional catalogs until they have been approved.

C. The proposal may be submitted simultaneously to the NMHED and to the council of graduate deans. The NMHED staff will begin an independent review of the proposal and will follow the proposal through the review process with the council of graduate deans and the academic council. Members of the council may solicit input on the proposal from cognizant members of their faculty, for inclusion in the council's consideration. As it deems appropriate, the council may suggest modifications of the proposal or the proposed program.

D. If the council of graduate deans finds that the proposed program warrants further consideration, it will forward its written recommendation and comments to the academic council on higher education (the chief academic officers of the state universities) and to the NMHED. A proposal considered but not recommended by the council of graduate deans may be forwarded by the sponsoring institution directly to the academic council.

E. The academic council will conduct its review of the proposal and may suggest modifications of the proposal or the proposed program. The NMHED staff will participate in the review by the academic council.

F. When the academic council has completed its review of the proposed program, it will notify the NMHED that the proposal is ready for consideration by the NMHED. The council will forward to the NMHED its written comments regarding the proposed program.

G. Following notification by the academic council, the proposal will be subjected to independent review by the NMHED staff. The NMHED staff may request additional information from the institution for use in its review. Based upon the outcome of its review, staff will submit a written recommendation to the NMHED review board indicating either (1) that the proposal satisfies the requirements set forth in this regulation and that the NMHED recommends approval of the program; or (2) that staff recommend denial of the proposal. Information supporting the decision to deny the proposal will be included.

H. Following completion of the staff review, the proposal and staff recommendation will be considered by the NMHED review board. The proposal and staff recommendation will be presented as an approval item at the next NMHED review board meeting. The NMHED may elect to return a proposal to the sponsoring institution, for modification, or to the council of graduate deans, the academic council, or both, for reconsideration. At any point during the review process, the sponsoring institution may withdraw its proposal.

I. If the NMHED review board approves the proposed program, the NMHED staff will submit the proposal or an appropriate summary of the proposal, along with the council of graduate deans, the academic council's, the NMHED review board's, and the NMHED's recommendations, to the New Mexico state board of finance. The NMHED staff will notify the institution of the date when the New Mexico state board of finance has scheduled its consideration of the proposal.

J. The NMHED staff will present a summary of the proposed program along with the recommendation of the NMHED to the New Mexico state board of finance. Institution personnel will be expected to be present to answer questions, present additional information or provide justification of the proposal to the New Mexico state board of finance. The role of the NMHED staff will be to present the recommendation of the NMHED to the board.

[9/30/97; 5.5.2.10 NMAC - Rn & A, 5 NMAC 5.2.10, 02/28/07]

HISTORY OF 5.5.2 NMAC:

Pre-NMAC History: The material in this part was derived from that previously filed with the State Records Center and Archives under:

BEF Rule 210, Graduate Programs - Approval of New, 2/26/85.

CHE Rule 210, Graduate Programs - Approval of New, 5/4/90.

History of Repealed Material: [RESERVED]

Institution: New Mexico State University
Proposed program: Professional Master's Degree in Financial Mathematics

Projected Graduate Program Cost Estimates and Resources

Table 1. Revenues and Expenses

ESTIMATED REVENUES	Year 1	Year 2	Year 3	Year 4	Year 5
Projected University I&G or tuition	$141,307	$264,951	$323,829	$388,594	$388,594
External Grants and Contracts					
Other					
TOTAL REVENUE	$141,307	$264,951	$323,829	$388,594	$388,594
ESTIMATED EXPENSES	Year 1	Year 2	Year 3	Year 4	Year 5
Salaries and/or benefits (Faculty & Staff)					
Learning Resources					
Equipment					
Facilities & modifications					
Other					
TOTAL EXPENSES	0	0	0	0	0
DIFFERENCE (Rev.-Exp.)	$141,307	$264,951	$323,829	$388,594	$388,594
ESTIMATED IMPACT OF NEW PROGRAM	Year 1	Year 2	Year 3	Year 4	Year 5
FTE Enrollment	12=9 full time students + 6 part time students	22.5	27.5	33	33
Projected Annual Credits Generated	216	405	495	594	594
Tuition Generated	$141,307	$264,951	$323,829	$388,594	$388,594

Table 2. Approximate Credit Hour Generation					
Enrollment Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Headcount	12=9 full time students + 6 part time students	22.5	27.5	33	33
Student Credit Hours generated**	216	405	495	594	594
Formula Funding**	$141,307	$264,951	$323,829	$388,594	$388,594
*Student Credit Hours (SCH) generated assumes 9 credit hours per semester for a total of 18 SCH per academic year. **The formula funding is based on an average of Tier 1 ($527.90 per SCH) and Tier 2 ($726.30 per SCH). The average figure per SCH used was $654.20.					

Note: the total expenses in table 1 are 0, because no new resources are needed.