

016MATH08  
ALS

(Firm 1-ENH, Rev. 2007)

## PROJECT SUMMARY

Name of Institution (Include Branch/Campus and School or Division)	University of Louisiana at Lafayette
Address (Include Department)	Department of Mathematics, P.O. Box 41010, University of Louisiana, Lafayette, LA. 70504
Principal Investigator(s)	Kathleen Lopez, Lee Price (Mathematics) Michael Totaro (Business Systems, Analysis, and Technology)
Title of Project	Strengthening the Analytical Thinking and Mathematical Decision-Making Skills of Business Students in a Finite Mathematics Course
<p>Abstract (DO NOT EXCEED 250 WORDS)*</p> <p>This proposal addresses the Board of Regents' "commitment to the reform of undergraduate education" as stated in the Request for Proposals. The Department of Mathematics at UL Lafayette has embraced undergraduate mathematics reform and has redesigned many of its courses, including the calculus sequence for science and engineering majors and the pre-service content courses. Work has also begun on its third major service area – business. Two of the three mathematics courses required of all business majors have undergone reform. The catalyst for reform of the third, Decision Mathematics (Finite Mathematics), was a letter from the Moody College of Business asking for a change in the course content. This project grew out of that request.</p> <p>A publication of the Mathematical Association of America, <i>The Curriculum Foundations Project: Voices of the Partner Disciplines</i>, establishes guidelines for mathematics courses for business majors. The goal of this project is "Design and implement a finite mathematics course with the content and pedagogical practices that will meet the needs of today's business students."</p> <p>This proposal's objectives are:</p> <ol style="list-style-type: none"><li>1) Redesign the Decision Mathematics course with input from the business faculty following the <i>Curriculum Foundations Project</i> guidelines.</li><li>2) Write classroom activities and materials that incorporate key pedagogical components of mathematics reform.</li><li>3) Dedicate a classroom and equip it with multimedia tools that facilitate collaborative learning, use of technology, and student presentations.</li><li>4) Provide two professional development workshops for UL Lafayette faculty and teaching assistants.</li><li>5) Disseminate information about the newly designed course through presentations at national mathematics and business meetings.</li></ol>	

## TABLE OF CONTENTS

4.	NARRATIVE AND BIBLIOGRAPHY .....	1
4.a.	THE CURRENT SITUATION .....	1
4.a.1	Institutional Description .....	1
4.a.2	Rationale for Project .....	1
4.a.3	Impact on Existing Resources .....	3
4.b.	THE ENHANCEMENT PLAN .....	3
4.b.1	Project Goals and Objectives .....	3
4.b.2	Work Plan of Proposed Project .....	4
4.b.3	Evidence of Potential to Achieve Recognized Eminence at the Regional, National, or International Level Commensurate with Degree Offerings and/or Functions .....	10
4.b.4	Impact on Curriculum and Instruction .....	11
4.b.5	Impact on Quality of Students .....	12
4.b.6	Impact on Faculty Development .....	12
4.b.7	Performance Measures .....	12
4.c.	EQUIPMENT .....	12
4.c.1	Equipment Request .....	12
4.c.2	Equipment on Hand for Project .....	13
4.c.3	Equipment Housing and Maintenance .....	13
4.d.	FACULTY AND STAFF EXPERTISE .....	13
4.e.	ECONOMIC AND/OR CULTURAL DEVELOPMENT AND IMPACT .....	14
4.e.1	Relationships with Industrial/Institutional Sponsors .....	14
4.e.2	Promotion of Economic Development and/or Cultural Resources .....	14
4.f.	ADDITIONAL FUNDING SOURCES .....	15
	BIBLIOGRAPHY OF RESOURCES .....	15
5.	PREVIOUS BOARD OF REGENTS SUPPORT FUND AWARDS .....	16
6.	BUDGET AND BUDGET NARRATIVE .....	19
	BUDGET JUSTIFICATION .....	20
	INSTITUTIONAL MATCH .....	26
7.	BIOGRAPHICAL SKETCH .....	28
8.	CURRENT AND PENDING SUPPORT .....	34
9.	PROPOSAL APPENDIX	
	Letter of Support from Dean of Business Administration .....	37

# **STRENGTHENING THE ANALYTICAL THINKING AND MATHEMATICAL DECISION-MAKING SKILLS OF BUSINESS STUDENTS IN A FINITE MATHEMATICS COURSE**

## **4. NARRATIVE AND BIBLIOGRAPHY**

### **4.a. THE CURRENT SITUATION**

#### **4.a.1 Institutional Description**

The University of Louisiana at Lafayette, a member of the University of Louisiana System, is a public “Research University with High Research Activity”. The University offers bachelor's, master's, and doctoral degrees from its ten Colleges and Schools and is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. Enrollment is approximately 16,000, including about 1400 graduate students. The Department of Mathematics offers Bachelor of Science, Master of Science and Doctor of Philosophy programs. With eighty undergraduate degree programs at the university, the Department of Mathematics also has a large component of service courses and is committed to providing quality instruction in these courses.

#### **4.a.2 Rationale for Project**

This proposal addresses the Board of Regents’ “commitment to the reform of undergraduate education” as stated in the Request for Proposals. The Department of Mathematics at the University of Louisiana at Lafayette has three main areas for which it provides service courses. These are science and engineering, education, and business. The department has embraced the spirit of undergraduate education reform for many of its courses, including most of those provided for majors in the three previously mentioned areas. In 1994, the department adopted the Harvard Consortium Reform Materials for its calculus sequence for students in science and engineering. In the same year, it began a long process of redesigning and creating materials for its mathematical content courses for pre-service teachers. Some of the courses for business majors have also undergone some type of reform.

All students in the B. I. Moody III College of Business Administration (referred to as Moody College of Business) are required to take three mathematics courses: College Algebra, Survey of Calculus, and Decision Mathematics (also called Finite Mathematics at some universities). The Department of Mathematics at UL Lafayette was one of the first in the state to address the reform of College Algebra in 1994, and the Survey of Calculus course also uses material based on the Harvard Consortium materials. This leaves Decision Mathematics as the only service course with numerous sections that has not undergone reform. Across the nation, very little has been done in this area. Using traditional textbooks which emphasize memorization and use of formulas makes it difficult to engage the students in the classroom, and the students themselves see little connection to their field.

Although no one was satisfied with the course, the real catalyst for change happened a year ago, when the Committee on Course Improvement in the Moody College of Business sent a letter to the Department of Mathematics requesting that more emphasis be placed on data analysis, quantitative literacy, and reasoning and that the simplex method be omitted. After searching in

vain for a new textbook that would satisfy their request, the idea for this project developed.

The good news is that there are resources available for references. The discipline of mathematics has been in the forefront of the reform of undergraduate education. In all of its efforts in undergraduate mathematics education reform, the Department of Mathematics at UL Lafayette has been guided by recommendations established by The Mathematical Association of America (MAA) which has published numerous books and reports on the subject. Two of the most influential ones from the past are *Toward a Lean and Lively Calculus: The Report of the Tulane Conference on Calculus* [3] in 1987 and *A Call for Change: Recommendations for the Mathematical Preparation of Teachers of Mathematics* [4] in 1991. The latter was in response to *Curriculum and Evaluation Standards for School Mathematics* published by the National Council of Teachers of Mathematics [5] in 1989.

The most recent publications that have an impact on undergraduate mathematics education include *Undergraduate Programs and Courses in the Mathematical Sciences: CUPM Curriculum Guide 2004* [1], which is a report by the MAA Committee on the Undergraduate Program in Mathematics and *The Curriculum Foundations Project: Voices of the Partner Disciplines* [2], which consists of reports from a series of eighteen disciplinary workshops organized by the Curriculum Renewal Across the First Two Years (CRAFTY) subcommittee of the CUPM. The *CUPM Curriculum Guide* gives general recommendations to mathematics and mathematical sciences departments, while *The Curriculum Foundations Project* includes specific recommendations concerning courses for various disciplines, one of which is Business and Management. The Business and Management Report addresses both mathematical content and processes needed by business majors as well as pedagogical techniques to increase student engagement and learning.

The *CUPM Curriculum Guide 2004* [1], includes the following recommendations for Departments, Programs, and all Courses in the Mathematical Sciences

- Develop mathematical thinking and communication skills.
  - Promote interdisciplinary cooperation.
  - Use computer technology to support problem solving and to promote understanding.
- (PD's Note: This includes graphing calculators which are hand-held computers.)

The Business and Management Report of *The Curriculum Foundations Project* [2] states "Mathematics Departments can help prepare business students by stressing problem solving using business application, conceptual understanding, quantitative reasoning and communication skills. These aspects should not be sacrificed to breadth of coverage. ... In general, business faculty are less concerned with specific course content than with developing quantitative literacy and analytical ability in our students. Upon completion of a business mathematics curriculum the students should be comfortable with using mathematics as a tool to communicate analytical concepts. A measure of the curriculum's success is the students' comfort level when exposed to a new formula in a business class."

In accordance with these recommendations, materials for the new finite mathematics course will be created with help from the business faculty, will incorporate use of spreadsheets along with the graphing calculator, will be interactive to engage students during class, and will require

the students to analyze situations, draw appropriate conclusions and to state these conclusions clearly.

#### **4.a.3 Impact on Existing Resources**

The incorporation of spreadsheet technology into the course will require the students to have access to a computer and printer. The resources for this are already in place. The university has nine general open access computer Student Technology Enhancement Program (STEP) labs funded through student technology fees. Within these labs are 430 PC's, 140 Sun workstations, and 36 Mac's. These labs can accommodate the increased use by students who do not own a computer.

Currently, the Department of Mathematics has only one classroom furnished with multimedia equipment. Classes are scheduled in it for most time slots and the department uses it for meetings, conferences, and weekly colloquia. About twelve sections of Decision Mathematics are offered each semester and these would occupy the newly equipped room most of the time. However, the room could be used for other courses when it is not being used for its primary purpose. Having another multimedia classroom will be an added benefit to the department.

As stated in the MAA's *CUPM Curriculum Guide 2004* [1], "mathematical sciences departments should establish ongoing collaborations with disciplines that require their majors to take one or more courses in the mathematical sciences." There are some instances of the Department of Mathematics collaborating with other departments both within and outside of the College of Sciences. Within the college, the Biology and Mathematics Departments are involved in a multi-year undergraduate research project. Also, some research mathematicians occasionally work on projects at the Louisiana Wetlands Center. Of course, the department has a long-standing cooperative relationship with the Curriculum and Instruction Department in the College of Education. This relationship has served both departments well during the development of the mathematical content courses for pre-service teachers, the redesign of the programs for teacher certification, and the NCATE accreditation process. In addition, mathematics faculty have on occasion consulted other disciplines about courses, but not at the level of cooperation and collaboration that is proposed by this project. Faculty members from both colleges are excited about the new lines of communication and hope they can learn much from each other. Once the initial relationships are established, both parties will be open to more joint ventures with other partner disciplines.

The faculty development workshops will improve instruction, particularly by the teaching assistants. Moreover, by teaching this course they will absorb pedagogical techniques of reform mathematics and make them more marketable in the academic job environment.

### **4.b. THE ENHANCEMENT PLAN**

#### **4.b.1 Project Goals and Objectives**

It is the goal of this project to design and implement a finite mathematics course (Decision Mathematics) with the mathematical content and pedagogical practices that will meet the needs of today's business students. This is to be accomplished in collaboration with the Moody College of Business and following the recommendations of The Mathematical Association of America's

## *Curriculum Foundations Project: Voices of the Partner Disciplines [2].*

There are five objectives of this project:

- 1) Redesign the Decision Mathematics course with input from the business faculty following the *Curriculum Foundations Project* guidelines.
- 2) Write classroom activities and materials that incorporate key pedagogical components of mathematics reform.
- 3) Dedicate a classroom and equip it with multimedia tools that facilitate collaborative learning, use of technology, and student presentations.
- 4) Provide two professional development workshops for UL Lafayette faculty and teaching assistants.
- 5) Disseminate information about the newly designed course through presentations at national mathematics and business meetings.

### **4.b.2 Work Plan of Proposed Project**

#### **Objective 1: Redesign the Decision Mathematics course with input from the faculty of the Moody College of Business and following the guidelines of the Business and Management Report from the CRAFTY Curriculum Foundations Project [2].**

A faculty committee from the Moody College of Business requested changes in the course that mesh with recommendations from the Business and Management Report of the *Curriculum Foundations Project*:

“Students should be able to . . . understand the use of common functions in modeling business concepts, construct and understand graphs, and use abstraction to build simple models. . . . Students should examine, summarize, analyze, graph and interpret real data sets used in business.”

#### **Activities and Personnel:**

Work toward this objective has already begun:

- 1) The initial letter from the Moody College of Business includes areas that require change.
- 2) A meeting was held on June 6, 2007 with R. Heady, the Chair of the Committee on Course Improvement, and M. Totaro, both from the Moody College of Business, and L. Price and K. Lopez from Mathematics, concerning the next steps to be taken.
- 3) This fall, Totaro sent notices to other business faculty requesting more feedback about content. In the future, through Totaro, they will also be asked to provide sample problems that they would like their students to be able to solve after they have completed the course. Particular attention will be given to the requests from the professors of the Quantitative Methods sequence of courses for which finite mathematics is a prerequisite.
- 4) The deans of both colleges have been consulted about the coming changes and welcome the collaboration. The Dean of the College of Sciences is a strong supporter of undergraduate education reform and, as a member the Department of Mathematics years ago, he was a leader in the movement. See Appendix for the Letter of Support from the Dean of the Moody College of Business.

Goals and objectives for the course will be formulated. Content topics to be included will be

finalized and the proper sequence of these topics will be decided. All three PI's will work on the course redesign with Totaro coordinating the input from the business faculty.

**Evaluation:**

- 1) Final goals and objectives for this course are approved by the Sophomore Courses Committee in the Department of Mathematics.
- 2) Survey of faculty teaching pilot section(s) about the pace of the course and importance placed on various activities and topics will be conducted.

**Use of Evaluation Results:**

- 1) Revise course goals and objectives as necessary.
- 2) Make necessary changes to syllabi.

**Schedule of Activities:**

by mid-June 2008	Have goals and objectives finalized and approved by the Sophomore Courses Committee in the Department of Mathematics.
August 2008	Complete course syllabi (time-line stating pace of course for various formats: three-days a week, two-days a week or once a week ).
December 2009	After pilot sections are completed, review class time devoted to content topics and make necessary changes to syllabi.

**Objective 2: Write classroom activities and materials that incorporate key pedagogical components of mathematics reform.**

These pedagogical techniques include guided discovery to promote understanding concepts rather than memorizing formulas, collaborative learning, appropriate use of technology, and developing the student's ability to analyze information and interpret results rather than merely perform procedures. In addition to these practices valued by the mathematics department, the Business and Management Report from the *Curriculum Foundations Project* [2] also includes "real-time problem solving or model building" and more emphasis on student communication in the form of written reports and oral presentations.

While creating these materials, the PI's will keep the following recommendations from the Business and Management Report of the *Curriculum Foundations Project* in mind:

"Business decisions are most commonly made under conditions of uncertainty and risk.

Inference must be drawn from data and information that are incomplete, inconclusive, and most likely imprecise. Wherever possible, math courses should attempt to illustrate this ambiguity and provide guidance in dealing with such uncertainty and variation."

"In order to achieve the desired outcomes, the business faculty recommends that the curriculum include:

1. Realistic business problems. We do not expect mathematics faculty to develop problems on their own. We envision a partnership, in which business faculty contribute.
2. Solutions that make use of business technology, such as spreadsheets.
3. Real (or realistic) data sets.
4. Problem motivated modeling.
5. Development of students' abilities to express ideas symbolically.
6. Sensitivity analysis."



**Activities and Personnel:**

Lopez and Price will create classroom activities and course materials that incorporate the suggestions described above. These will be set in business and management situations with the help of Totaro and with some additional input from the business faculty. Because of his experience teaching with spreadsheets, Totaro will provide much support in the implementation of spreadsheet applications. An undergraduate will be hired to type the materials and will be supervised by Lopez.

At least one section of the redesigned course will be piloted in Fall 2008. The pilot instructor will be Lopez, and possibly Price, depending on scheduling requirements. After completing the training, another instructor may volunteer to teach a pilot section also. Price will be responsible for data gathering and analysis.

**Evaluation:**

- 1) Through sampling, a comparison will be made between students' work in the old course in Spring 2008 and the new course in Spring 2009. Student performance on questions that require analysis and a statement of conclusion will be compared.
- 2) The percent of students who make grades of A, B, or C in Spring 2009 will be compared with those of Spring 2008, Spring 2007 (54%), and Spring 2006 (58%).
- 3) The percent of students who withdraw from the course in Spring 2009 will be compared with those of Spring 2008, Spring 2007 (24%), and Spring 2006 (24.5%).
- 4) Rating and comments from the Student Evaluation of Instruction will be evaluated.
- 5) Although the information could not be gathered in time for the final report, information from the Moody College of Business would be the most meaningful. This includes
  - a) Student success rate in the first quantitative methods course taken after the redesigned finite mathematics course.
  - b) Feedback from the faculty in the college about any perceived change in the abilities and attitudes of the students after completing the new course.

**Use of Evaluation Results:**

- 1) Modify course delivery and emphasis that is given to various topics as deemed necessary, in particular by using comments from instructors of the pilot sections and student performance on evaluated questions.
- 2) Student comments will be examined and suggestions considered.
- 3) If necessary, make more of an effort to "sell" the students on the benefits of the change in course content and pedagogy.

**Schedule of Activities:**

Spring 2008	In selected sections, include control questions on exams.
May 2008	Hire undergraduate student clerical help.
June 2008	Begin writing materials.
July 2008	Order manipulatives needed for class activities.
August 2008	Complete first draft of the course materials and syllabus.
Fall 2008	Pilot one or more sections of the course with new materials.
Spring 2009	Implement the course for all sections; include questions on exams to be used for comparison to previous spring.

May 2009	Collect data and analyze.
June 2009	Make appropriate modifications to any aspect of the course as indicated in the evaluation process.

**Objective 3: Dedicate a classroom for use by all sections of Decision Mathematics and equip it with multimedia tools that facilitate collaborative learning, use of technology, and student presentations.**

Again the Business and Management Report from the *Curriculum Foundations Project* summarizes the current thinking on the topic: "Technology has several roles to play in the business mathematics curriculum. First, it provides a tool that students will encounter in the work place. Second, it enhances the effectiveness and efficiency of the learning process. Third, it can help to deepen and maintain student interest." The report mentions both the spreadsheet and the financial calculator.

For many years, the Mathematics Department has required the use of the graphing calculator (which incorporates financial calculations) in all of its freshman courses and in most sophomore courses. This choice was made to avoid the expense of computers and to provide portable technology. With the advent of affordable laptop computers, the use of spreadsheets is more feasible. In their freshman year, all business students are required to take a course on Microcomputer Applications or to pass a Computer Proficiency Examination. This requirement will allow the use of spreadsheets as a tool in the finite mathematics course. The computer with the projection system will permit classroom demonstrations, while existing open computer labs across campus will allow students access to the technology needed to do homework.

A document camera provides for the projection of printed material, such as the results of a group effort on a problem or graphs from outside sources. It also allows the instructor to capture written notes for future use. The purchase of a document camera will enhance the instructor's ability to incorporate real-world information and student input into a lesson.

While incorporation of spreadsheets will be new to the mathematics department, the technology of graphing calculators has been a common staple in the department since the early 1990's. It is the experience of the faculty that the TI-84 graphing calculator is the most effective and user-friendly calculator for the needs of finite mathematics students. Its easily accessible graphing features, data entry, and matrix operations make it the calculator of choice for this course. The calculator presenter connects the graphing calculator to the projection system so the entire class is able to see the screen of the calculator. This piece of equipment is very useful when students are learning to use a new feature of the calculator, and also students may share their results with the rest of the class. (The department will furnish both the classroom calculator and the presenter package.)

The computer will have all necessary software such as Microsoft Office and WordPerfect Office. While the business students will probably use Microsoft Office and instructors will be using Excel spreadsheets, some instructors may still want to create documents using WordPerfect. (Historically, WordPerfect was the software of choice among non-research instructors teaching mathematics because of the ease of creating mathematical equations and drawing figures, and certain faculty are very dedicated to the software.)

The department has already selected a large room (Room 311) in the mathematics building and, beginning in the Fall 2008, all sections of Decision Mathematics will be scheduled in this

room. To facilitate group learning, the desks will be replaced with chairs and tables that seat four to six students. This arrangement encourages student interaction and is much more conducive to small group learning. The department will purchase a large storage cabinet so items needed for classroom activities will be readily available to all faculty teaching the course. The replacement of the chalk boards with white boards will protect the equipment from chalk dust. Also, the designated classroom is already equipped with internet access, and the university is in the process of setting-up wireless internet in the building.

**Evaluation:**

- 1) By Fall 2008, the equipment is in place and the room is ready for classes.
- 2) Beginning Fall 2008, all sections of Decision Mathematics are scheduled in MDD 311.
- 3) By Spring 2009, all faculty teaching the course are using the equipment.

**Activities and Personnel:**

Since Totaro is the most knowledgeable about computer technology, he will be primarily responsible for the acquisition of the equipment. He has already obtained quotes and developed relationships with the necessary personnel both on and off campus. (The business he has contacted for the multimedia center has installed numerous ones on the UL Lafayette campus and is under state contract.) Lopez will be responsible for ordering the rest of the equipment.

**Schedule of Activities:**

- |           |   |
|-----------|---|
| May 2008  | Place work order for the Physical Plant to run electrical lines for the automatic projection screen and to the ceiling for the installation of the projector. |
| June 2008 | Contract for multimedia center and schedule installation.<br>Order computer, software, white boards, table and chairs, and storage cabinet.                   |
| July 2008 | Obtain graphing calculator and presenter package from the department.   |
| July 2008 | Schedule installation of white boards.  |

**Objective 4: Provide two professional development workshops for UL Lafayette faculty and teaching assistants.**

Showing the faculty how to use the new materials effectively will be necessary to the success of the course. Moreover, teaching assistants are responsible for at least half of the sections of Decision Mathematics taught each semester. So faculty development is essential. The PI's will present two day-long faculty development workshops for mathematics faculty who may teach the course and for all graduate assistants. The areas for potential growth are the use of technology and new pedagogical skills. While nearly everyone uses the graphing calculator, most have only minimal experience in teaching with a spreadsheet. Participants will be given instruction on using spreadsheets as effective tools in the classroom. Participants will also be trained in teaching with the new materials which will include guiding group activities, encouraging effective oral and written communication, and fostering analytical thinking. Much of this will be done by the PI's conducting model lessons. The workshops will take place on the UL Lafayette campus in August 2008 and January 2009.

**Activities and Personnel:**

Presenters at this workshop will be Price, Lopez and Totaro. Lopez and Price are very experienced in organizing and conducting workshops involving the techniques of mathematics education reform. Also for years, Totaro has taught students to use microcomputer applications.

**Evaluation:**

- 1) Workshop takes place in August 2008 as scheduled.
- 2) At end of workshop, participants complete evaluation forms concerning the quality of the workshop including usefulness of the information, quality of the presentations, and increased confidence about teaching the course.
- 3) Workshop takes place in January 2009 with an end of workshop evaluation.

**Use of Evaluation Results:**

- 1) Incorporate comments from first workshop to improve the content and presentation of the second one.
- 2) Use comments from both workshops to improve class activity or assigned problem.

**Schedule of Activities:**

July 2008	Order supplies for workshop; develop evaluation form for workshop.
August 2008	Prepare for workshop and obtain copies of materials for each participant. Present workshop and obtain feedback through evaluation.
January 2009	Prepare for second workshop using participant comments from the first workshop. Present workshop and conduct evaluation.

**Objective 5: Disseminate information about the newly designed course through presentations at national mathematics and business meetings.****Activities and Personnel:**

Price and Lopez will submit one or more proposals to speak about this project at the national AMS-MAA (American Mathematical Society - Mathematical Association of America) meetings in Washington D.C. in January 2009. A presentation about this project will be made at the LA-MS Section meeting of the MAA in spring 2009.

Totaro will apply to present at The International Academy of Business and Public Administration Disciplines (IABPAD) Conference in Orlando, FL, January 3 - 6, 2009.

**Evaluation:**

- 1) At least one of the mathematics PI's present at the national AMS-MAA joint meetings.
- 2) Totaro presents at the IABPAD Conference.
- 3) A presentation about this project is made at the LA-MS Section meeting of the MAA.
- 4) Paper is written and submitted to a teaching journal.

**Schedule of Activities:**

September 2008	Submit one or more proposals to speak about this project at the national AMS-MAA meetings in Washington D.C. in January 2009 and at The International Academy of Business and Public Administration Disciplines
----------------	---

	(IABPAD) Conference.
October 2008	Be informed if our proposal(s) have been accepted.
December 2009	Prepare presentation(s) for January meeting, if accepted.
January 2009	Present at AMS-MAA and IABPAD meetings.
February 2009	Submit proposal to speak at the LA-MS MAA Section meeting. Attend the LA-MS MAA Section meeting and present.
June 2009	Write a paper about the project and submit it to a teaching journal in business and in mathematics.

#### **4.b.3 Evidence of Potential to Achieve Recognized Eminence at the Regional, National, or International Level Commensurate with Degree Offerings and/or Functions**

The Moody College of Business is listed in *Best 290 Business Schools* as named in the 2008 edition of The Princeton Review. Moreover, the Moody College of Business has attained AACSB International accreditation. AACSB International accreditation assures stakeholders that business schools produce graduates who have achieved specified learning goals. As posted on the Moody College of Business website "AACSB International accreditation represents the highest standard of achievement for business schools, worldwide. Institutions that earn accreditation confirm their commitment to quality and continuous improvement through a rigorous and comprehensive peer review. AACSB International accreditation is the hallmark of excellence in management education."

The Department of Mathematics at UL Lafayette has gained recognition for its efforts in undergraduate mathematics education reform. With financial support from the Board of Regents funds, the department was one of the first in the state to address the reform of College Algebra in 1994, and the next year, it offered the first faculty development workshop on the subject for Louisiana university faculty. Since then, the department has presented five more statewide faculty development workshops on the reform of undergraduate mathematics education with the most recent being in 2006. (In addition, Lopez organized two for faculty from two-year colleges while she was a faculty member at South Louisiana Community College.) Through these workshops and through faculty presentations at regional meetings, the Department of Mathematics is known for its innovative curriculum throughout Louisiana and Mississippi.

Presentations at national meetings about the mathematical preparation of teachers at UL Lafayette has garnered the department national attention. In particular, in March 2003, a team from the department was invited to present a case study of its program for teachers at a plenary session of a Mathematics in Education Reform workshop. The presentation was well received by workshop participants who were from all parts of the United States, and they were impressed with the amount of support given to the department by the Louisiana Board of Regents.

The department continues to have the reputation of active reform. John Wiley & Sons Publishers selected the department to participate in the class testing of its new materials for College Algebra. Several sections of the course are using the new materials.

Just as in the past, presentations at national and regional mathematical meetings will allow dissemination of information about what the Department of Mathematics at UL Lafayette has accomplished with the support of the Board of Regents. In 2009, it is expected that there will also be positive responses to the presentations about this project as well.

Another area for recognition is in the growing number of professional journals devoted to

the teaching of business and mathematics at the undergraduate level. In addition to presentations at meetings, the PI's will write a joint paper about the project and will submit it to journals in both areas. Two possible choices are The International Journal of Education Research (IJER) and Problems, Resources, and Issues in Mathematics Undergraduate Studies (PRIMUS).

Innovation in the teaching of finite mathematics is rare. In an attempt to find better materials, Lopez has attended several presentations on finite mathematics at national mathematical meetings. The only promising programs are project-driven and intertwine the material of the finite mathematics and survey of calculus into a two-course sequence. At UL Lafayette, many non-business students enroll in Survey of Calculus so this program would not be feasible here. Hence, the new materials for the course have the potential to be the foundations of the leading textbook in the field that could be used by other institutions across the country. (The PI's Lopez and Price are co-authors, along with P. Jones, of *A Mathematical Foundation for Elementary Teachers*, which was published by Addison-Wesley as a class test edition in 1997. This text was adopted by colleges in Louisiana and in other states. It is still used by LSU Shreveport and Bossier Parish Community College and by UL Lafayette for one course.) A peripheral benefit is that the new course could serve as a launching pad for the development of web-based materials, which would bring even greater national attention to the project.

In summary, it is clear that both the Department of Mathematics and the Moody College of Business exhibit leadership and innovation in higher education at the local, state, and national levels. Thus the combined efforts of both can only result in the enhancement of each unit and of the university itself.

#### **4.b.4 Impact on Curriculum and Instruction**

Decision Mathematics is a required course for every one of the more than three thousand students in the Moody College of Business. In the past year, nearly nine hundred fifty students were enrolled in a course that has not been as effectual as either the Department of Mathematics or the Moody College of Business would like. During the last two spring semesters the percent of students receiving a grade of "C" or better was about 56%, while about 24% withdrew from the course. The newly designed course will integrate mathematical reasoning with business applications and incorporate group learning and spreadsheet technology. As a result, Decision Mathematics will be more in line with the courses offered in the Moody College of Business and with the other reform courses in the Mathematics Department. It is expected that the percent of students receiving a grade of "C" or better will increase and the percent of withdrawal will decrease. As an aside, the Department of Mathematics has an excellent history of institutionalizing all of its newly reformed mathematics courses. So any benefit derived from the new course can be expected to continue well into the future.

Of equal importance, Decision Mathematics serves as a prerequisite for a two-course sequence in the Moody College of Business. By soliciting input from the business faculty about the design of the course, the result will be a course that better prepares the students for success in subsequent quantitative business courses.

#### **4.b.5 Impact on Quality of Students**

The active nature of the class and the inclusion of more topics that are relevant to the student's area of interest will result in better attendance and more engaged students. It is expected that the pass rate will rise and the withdrawal rate decrease. Exercises in current textbooks encourage the belief by students that simply memorizing formulas and applying routine procedures are the only things necessary for success in a mathematics class. With the new materials, using a procedure to find a numerical solution will only be one step in the process of answering the question. This practice will result in improvement of the student's ability to think analytically and to present interpretations to the mathematical solutions clearly. Use of more open-ended questions and classroom discussions will help the student be more adaptive to dynamic business conditions and to operating in a highly uncertain global environment.

#### **4.b.6 Impact on Faculty Development**

The faculty development aspect is a strong feature of this proposal. The Principal Investigators will present two day-long faculty development workshops for mathematics faculty who may teach the course and for all graduate assistants. Participants will also be given training in the use of spreadsheets in the classroom and in teaching with the new materials. It has been the experience in the department that when instructors teach familiar material in a new way, they often reflect and re-evaluate every aspect of their teaching in other courses as well. So there is an expectation that the overall quality of instruction in the department will improve. Moreover, the pedagogical training of the workshop will be invaluable to graduate students and will make them more attractive to future academic employers.

#### **4.b.7 Performance Measures**

See 4.b.2 Work Plan of Project on pages 3 - 10 for evaluation of individual components. Specifically, it is the goal of the project to achieve the following benchmarks:

- 1) The comparison between students' work in the old course in Spring 2008 and the new course in Spring 2009 will show that students using new materials will have scores that are 10% higher than when the traditional materials were used.
- 2) The percent of students with grades of "C" or higher in Spring 2009 will be 5% higher than the average for the three previous spring semesters.
- 3) The percent of students who withdraw from the course in Spring 2009 will be 5% lower than the average for the three previous spring semesters.

#### **4.c. EQUIPMENT**

This proposal is "not primarily an equipment request" but does have a major equipment component.

##### **4.c.1 Equipment Request**

As indicated in Objective 3 on pages 7 - 8 and in the Budget Justification, a projection system connected to a computer with spreadsheet capability and to a graphing calculator will permit classroom demonstrations. A document camera will allow student presentation of classroom work and real-world information from printed sources. These will all be incorporated

into a secure media center cabinet. Since group learning will be a vital part of the project, student tables, rather than individual desks, are required. The department will purchase a large storage cabinet so items needed for classroom activities will be readily available to all faculty teaching the course. The replacement of the chalk boards with white boards will protect the equipment from chalk dust.

#### **4.c.2 Equipment on Hand for Project**

As mentioned previously, open computers labs across campus are available to students. Moreover, the designated classroom is already equipped with internet access, and the university is in the process of setting-up wireless internet in the building.

#### **4.c.3 Equipment Housing and Maintenance**

The equipment will be housed in a secure media cabinet in the designated room provided by the Department of Mathematics. The class manipulatives and supplies will be stored in a locking storage cabinet. The room will be locked when not in use. Maintenance of the proposed equipment will be incorporated into the existing maintenance plan of the department.

#### **4.d. FACULTY AND STAFF EXPERTISE**

The project director is Dr. Kathleen Lopez. The Co-PI's are Ms. Lee Price from Mathematics and Dr. Michael Totaro from Business Systems, Analysis, and Technology in the B. I. Moody III College of Business. Deborah Hughes Hallett, who is internationally known in the area of undergraduate mathematics education reform, has agreed to serve as a consultant for this project.

Kathleen Lopez is an assistant professor with a doctorate in Mathematics. She has been the project director for four grants and has participated in several projects which included the design of courses and preparation of materials for mathematics courses. She was the primary author of *Proportional Reasoning and Problem-Solving for Teachers* by P. Jones, K. Lopez, and V. Schneider (2003). Lopez has organized and presented seven workshops for Louisiana higher education faculty. She has made presentations at local, state, regional, and national meetings. Lopez has been teaching undergraduate mathematics courses for over twenty-five years including seven sections of Decision Mathematics in the last two years. She has been active in the reform of undergraduate mathematics education for more than fourteen years. In 2001, she won the LA-MS Section MAA Award for Distinguished College or University Teaching of Mathematics. She will work on the design and the content of the course, write course activities and materials, coordinate collaboration with the consultant, hire and supervise the undergraduate student, co-organize and present at the faculty and graduate student workshops, and pilot at least one section of new course in Fall 2008.

Lee Price has a Masters of Science degree in Statistics and has taught numerous statistics courses as well as mathematics courses. She has been the College of Sciences nominee for UL Outstanding Teacher Award. Price is experienced in developing materials for mathematical content courses for the elementary education program. She is the primary author of *Probability, Statistics, and Number Systems for PK-8 Teachers*, L. Price, K. Lopez, V. Schneider (2005). She has conducted many faculty development workshops for both university faculty and for in-



service teachers. She has been teaching Decision Mathematics since 1990. She will work on the design and the content of the course, write course activities and materials, analyze data for comparison of courses, co-organize and present at the faculty and graduate student workshops, and, if her schedule permits, pilot one section of the new course in Fall 2008.

Michael Totaro is an assistant professor in the Department of Business Systems, Analysis and Technology and has a doctorate in Computer Science. He brings the business prospective and technology expertise to the project. His experience in industry and in the classroom will enable him to effectively contribute business and management situations to the material. Moreover, his extensive experience teaching microcomputer applications to business students makes his participation in the project essential. He will be responsible for the specifications, purchase, and installation of the projection system and equipment for the designated classroom. He will also gather and organize input from Moody College of Business faculty about desired content and pedagogical techniques for the course, work on the design and the content of course, contribute to course activities involving spreadsheet applications, and present at the faculty and graduate student workshops.

Deborah Hughes Hallett is a professor of Mathematics at the University of Arizona and an adjunct professor for the Kennedy School of Government at Harvard University where she teaches statistics to government policy makers. She is currently a member of the CRAFTY subcommittee of the CUPM. She is internationally known as the author or co-author of thirteen textbooks used in college mathematics courses. She is currently teaching a project-driven finite math course that uses spreadsheet technology. She will review the list of topics, activities, and materials created for this project and make recommendations.

#### **4.e. ECONOMIC AND/OR CULTURAL DEVELOPMENT AND IMPACT**

##### **4.e.1 Relationships with Industrial/Institutional Sponsors**

The Moody College of Business has well-established relationships with local corporations, which routinely hire graduates from the College. With their increased analytical and decision-making skills, these graduates will contribute to the increased success of these companies.

The newly designed course could impact other universities by serving as a model for a similar course.

##### **4.e.2 Promotion of Economic Development and/or Cultural Resources**

The business world is increasingly becoming more global. Business graduates must be able to think, adapt, and change within this global environment. Students who are required to examine open-ended problems, interpret solutions, and communicate results and their implications in this mathematics course and in subsequent quantitative methods courses will be better qualified to enter the highly competitive business world. As enunciated in the Moody College of Business "Learning Goals and Objective", business graduates are expected to "demonstrate effective problem-solving."

The College has strong linkages with the business community, both at regional and state levels. This is exemplified by the College's Executive Advisory Council, comprised of highly successful business leaders from at least fifteen different companies, ranging from banks to CPA

firms to a large-scale jewelry manufacturer. Many graduates of the Moody College of Business ultimately work for these companies.

The Louisiana Small Business Development Center (SBDC) continues to operate as an integral part of the Moody College of Business as well as local and state communities. The Louisiana SBDC operates in partnership with the U.S. Small Business Administration, thus entrepreneurs and small business owners are encouraged to consider guidelines and requirements for SBA Loan Programs and other small business resources. Graduates of the College may become involved with small business creation and development. Again, we see the need for effective problem-solving.

Finally, several of the Moody College of business faculty serve as participants of the Center for Business and Information Technologies (CBIT), for which the mission statement reads: "To support economic development in Louisiana through Research, Development and Technology Transfer in Business and Information Technologies." Similar to the Louisiana SBDC, CBIT supports economic development by providing an entrepreneurial infrastructure for the business community. The College faculty serves as a link between business students and CBIT. Moreover, business graduates are potential participants in activities supported in part by CBIT.

#### 4.f. ADDITIONAL FUNDING SOURCES

The only additional funding source is the UL Lafayette Institutional Match of \$24,599. See Budget Justification (pages 26 - 27) for details

A. University Match for Equipment:	\$ 4,836 (in cash) + \$ 345 (in kind)	\$ 5,181
B. University Match for Software:	\$ 74 (in cash)	\$ 74
D. University Match for Shipping:	\$ 20 (in cash)	\$ 20
E. University Match for Installation:	\$ 50 (in cash)	\$ 50
G 2. Travel for UL Lafayette Faculty:	\$2660 (in cash)	\$ 2,660
H. Indirect costs: 44% of faculty and student salaries (in kind)		<u>\$16,614</u>
TOTAL INSTITUTIONAL MATCH:		\$24,599

#### BIBLIOGRAPHY OF RESOURCES

1. Committee on the Undergraduate Program in Mathematics (2004). *Undergraduate Programs and Courses in the Mathematical Sciences: CUPM Curriculum Guide 2004*. Washington DC: Mathematical Association of America.
2. Committee on the Undergraduate Program in Mathematics (2004). *The Curriculum Foundations Project: Voices of the Partner Disciplines*, Washington DC: Mathematical Association of America.
3. Douglas, R. (Ed., 1987). *Toward a Lean and Lively Calculus*. Report of the Tulane Conference on Calculus, MAA Notes #6. Washington DC: Mathematical Association of America.
4. Leitzel, J. R. C. (Ed., 1991). *A Call for Change: Recommendations for the Mathematical Preparation of Teachers of Mathematics*. Washington, DC: Mathematical Association of America
5. National Council of Teachers of Mathematics. (1989). *Curriculum and Evaluation Standards for School Mathematics*. Reston, VA: Author.

## 5. PREVIOUS BOARD OF REGENTS SUPPORT FUND AWARDS

- 1) Louisiana Systemic Initiatives Program/Louisiana Gaining Early Awareness and Readiness for Undergraduate Programs: Developing “Number and Number Relations” and Proportional Reasoning” in Grades 4 - 9, UL Lafayette, 2006-2007. Senior Associate (**Price**), \$160,199.
  - **Price**: Responsible for one-fourth of 97.5 contact hours of mathematical content instruction during summer institute and 4.5 contact hours of academic year follow-up sessions
- 2) Board of Regents Support Fund Traditional Enhancement: Enhancing the Mathematical Preparation of Pre-Service PK - 8 Teachers, UL Lafayette, 2005-06. P.D.(**Lopez**) and Senior Associate (**Price**), \$77,447
  - **Lopez**: Administered grant, developed a course and co-wrote materials for it, co-organized and presented at workshop, presented results at a national and at a regional meeting
  - **Price**: developed a course and co-wrote materials for it, presented at workshop, presented results at a national and at a regional meeting
- 3) Board of Regents Support Fund Education Enhancement “Project GAP (Gaining Academic Performance)” - Senior Associate (**Lopez**), UL Lafayette, 2005-2006
  - **Lopez**: (with J. Cain) planned and presented a two-day workshop for mathematics faculty at St. Martinville Junior High and a two-day workshop for mathematics faculty at St. Martinville Senior High in August 2005. Both workshops were on mathematical content relating to grade level expectations and instructional strategies.
  - **Lopez**: Conducted three follow-up visits to St. Martinville Junior High to observe and confer with individual teachers
- 4) Board of Regents Support Fund Education Enhancement: Developing Problem Solving in the Middle School and Secondary Mathematics Curricula, UL Lafayette, 2002-03, P.D.(**Lopez**) and co-P.I.. (**Price**), \$63,382
  - **Lopez**: Administered grant, developed a course and co-wrote materials for it, co-organized a workshop and presented at workshop, presented results at a national and at a regional meeting
  - **Price**: developed a course and co-wrote materials for it, presented at workshop, presented results at a national and at a regional meetings
- 5) SLCC Campus Renewal Project: “Workshop on Reform Algebra in Two-Year Colleges”, May 16 - 18, 2000, LaCEPT (NSF and Board of Regents), 1999 - 00, P.D.(**Lopez**), \$20,516
  - Administered grant, was solely responsible for organizing a three-day workshop for twenty-seven faculty members from seven two-year colleges, presented a major component of the workshop that involved teaching with technology and asking concept-oriented questions

- Areas of emphasis were pedagogy of teaching a reform college algebra course, alternative assessment, use of technology such as graphing calculator, Calculator Based Laboratory, and TI-Graph Link.
- 6) SLCC Campus Renewal Project: "Workshop on Reform Mathematics in Two-Year Colleges", May 24 - 28, 1999, LaCEPT (NSF and Board of Regents), 1998 - 99, P.D.(**Lopez**), \$32,061
    - Administered grant, was solely responsible for organizing a five-day workshop for twenty-one faculty members from seven two-year colleges, presented two days
    - Gained valuable experience in being the projector director of a grant and being responsible for all aspects of the project including requisitions and the budget
    - Goals included making faculty more aware of and more open to reform mathematics education, to increase the number of faculty in two-year colleges who would be willing to model Standards-based teaching in pre-service mathematics courses, to have the participants feel more comfortable with hand-held technology, and to increase communication and collaboration among the faculty from two-year colleges across the state. Participant evaluation of the workshop indicated that these goals were met.
  - 7) UL Lafayette Campus Renewal Projects, LaCEPT (NSF and Board of Regents), 1996 - 1997: "Workshop for Supervising Teachers in Grades K - 8", June 23 and June 30 - July 3, 1997 (with P. Jones), senior associate (**Lopez**)
    - Organized a five-day workshop and presented half of it.
    - Goal was to acquaint area supervising teachers with the mathematics and methods that they would encounter in our students who would be student-teaching under their direction. Twenty-three supervising teachers from surrounding parishes attended.
    - Learned to work with and make presentations to elementary teachers; learned to be flexible and creative.
  - 8) UL Lafayette Campus Renewal Projects, LaCEPT (NSF and Board of Regents), 1995 - 1996: Redesigning Mathematics and Sciences Preparation for Teaching in the 21<sup>st</sup> Century: A Complete Restructuring III, senior associate (**Lopez and Price**)
    - Price and Lopez: designed and wrote materials for Data, Probability, & Number Structures for Elementary Teachers
    - Price and Lopez: With P. Jones, presented a five-day workshop entitled "Mathematics Courses for Elementary Teachers", May 20 - 24, 1996 with twenty participants from across the state
    - Lopez: learned to be a leader in her component of the project. For the first time she was the senior member of a team and was more responsible for the project and working with P. Jones taught her about representation, organization, and creativity
  - 9) UL Lafayette Campus Renewal Projects, LaCEPT (NSF and Board of Regents), 1994 - 1995: Redesigning Mathematics and Sciences Preparation for Teaching in the 21<sup>st</sup> Century: A Complete Restructuring II, \$150,000, senior associate (**Lopez**)

- With B. Clark, presented "Reform of Freshman Mathematics", May 21 - 26, 1995 with twenty-five faculty participants from across the state
  - With P. Jones, designed and wrote materials for Geometry for Elementary Teachers
  - Workshop was first experience of the kind and taught her to really think about the audience when preparing a presentation, where they are colleagues or students
- 10) UL Lafayette Campus Renewal Projects, LaCEPT (NSF and Board of Regents), 1993 - 1994: Redesigning Mathematics and Sciences Preparation for Teaching in the 21<sup>st</sup> Century: A Complete Restructuring, \$90,000, senior associate (**Lopez**)
- With B. Clark designed and wrote the textbook for a new freshman mathematics course at UL Lafayette called "Integrated College Mathematics"
  - First major effort in implementing alternate teaching styles
  - First experience with grants
  - Gained much insight into how students learned the importance of the sequence of concepts

## 6. BUDGET AND BUDGET NARRATIVE

### BOARD OF REGENTS SUPPORT FUND TRADITIONAL AND UNDERGRADUATE ENHANCEMENT, FY 2008-2009

#### Budget and Budget Justification Pages

Directions: Each line item under the columns "Support Fund Money Requested," "Institutional Match," and "Private Sector/Other Match" must be itemized, fully explained, and justified on a separate budget justification page(s). Attach additional justification pages as needed.

Title of Proposal: Strengthening the Analytical Thinking and Mathematical Decision-Making Skills of Business Students in a Finite Mathematics Course

Project Director(s): Kathleen Lopez, Lee Price (Mathematics), Michael Totaro (Business Systems, Analysis, and

Institution(s) of Higher Education: University of Louisiana at Lafayette

#### **PROPOSED BUDGET:**

	Support Fund Money Requested	Institutional Match <sup>1</sup>	Private/Other Match <sup>2</sup>
A. Equipment <sup>3</sup>	18,345	4,836 (in cash)	
		345 (in kind)	
B. Software	296	74 (in cash)	
C. Supplies	1,410		
D. Shipping/handling	572	20 (in cash)	
E. Installation	2,706	50 (in cash)	
F. Personnel training	0		
G. Other			
1. PI's summer effort	35,360		
2. Fringe for PI's effort	12,100		
3. Consultant	3,500		
4. Undergraduate student	2,400		
5. Faculty Travel	3,670	2,660 (in cash)	
H. Indirect costs	Not allowed	16,614 (in kind)	
I. Maintenance	Strongly discouraged		
J. Total costs (A-I)	80,359	24,599	

Stipulate whether in-cash or in-kind. The Board strongly encourages the sharing of costs for proposed projects. Applicants and institutional officials should note, however, that the employing institution will be required to honor the commitments made in the original proposal before any awards are made. Discounts for equipment purchases are not allowable as institutional match.

2 The budget page(s) must reflect and the budget justification pages must explain any external funds that are claimed in the proposal. External funds and their expenditure must be accounted for in the same manner as Support Fund money and institutional match.

3 Equipment. If applicable, itemize and describe briefly the proposed equipment and its intended use in the project. Include the name, model number, and manufacturer(s).

(TR and UG Enhancement Program Budget and Budget Justification, Rev. 8/2007)

## BUDGET JUSTIFICATION

### A. Equipment:

Funds are requested to purchase the items of equipment listed in the table below. The University will provide 20% of the equipment costs as a cost share.

Equipment	Qty/Unit Price	Price	Justification
Custom Multimedia Room	1 @ \$14,397	\$14,397	The Custom Multimedia Room conforms to the standard configuration used in several other classrooms and teaching labs throughout campus. This configuration allows for the seamless switching (in-class) among various display devices – computer display, TI-84 Graphical Calculator display, document camera, and DVD/VCR player – by the MATH 201 instructor. An extension to this is that students would be permitted to focus on the content of the lectures and discussions, as opposed to other, more intrusive approaches.

### Details of Custom Multimedia Room:

Qty.	Part Number	Manufacturer	Description	Price Each	Extension
1	CPX445 Lamp	Hitachi	3200 Lumen XGA	2500.00	2500.00
1	RPAUNV	Chief	mounting bracket	171.43	171.43
1	CMA440	Chief	Ceiling plate with adjustable column	94.29	94.29
1	CMA006	Chief	6" Extension Pole	12.86	12.86
1	HC-1	Chief	Cable Lock System	72.86	72.86
1	89750L	Da Lite	69x92 Designer Contour Electric screen with Low	767.14	767.14
1	HV5100XG	Elmo	VGA document camera	2707.14	2707.14
1	DVD	JVC	DVD/VCR Player	0.00	0.00
2	Control25	JBL	stereo wall mounted speakers, black	140.00	280.00
1	Custom 40	Mulnix	40" custom multimedia podium	3200.00	3200.00
2	Fan-1	Tecnec	4" Fans	21.43	42.86
2	Fan-CD6	Tecnec	Power Cords	7.14	14.29
2	Fan-G10915A	Tecnec	Fan Gaurds	5.71	11.43
1	RC3	Middle Atlantic	3 space rack shelf for VCR	51.79	51.79
1	PD915R	Middle Atlantic	rack mounted power ba	76.81	76.81
2	RRF12	Middle	12space rack rai	18.81	37.63

		Atlantic			
2	EB2	Middle Atlantic	double space rack blanks	8.06	16.11
1	60-386-04	Extron	Media Link multimedia switcher with stereo am	1850.00	1850.00
1	60-600-12	Extron	MLC226 IPAAP control panel, black (New Pane	1100.00	1100.00
1	70-220-02	Extron	IRCM-DV+VCR and DVD transport controls	278.57	278.57
1	26-566-03	Extron	VGA M/M with audio 12	42.86	42.86
1	26-534-01	Extron	15 pin female to 5 BNC male 6	25.71	25.71
1	26-533-03	Extron	15 pin male to 5 BNC male 6'	40.00	40.00
1	26-533-02	Extron	15 pin Male to 5 BNC Male 6'	34.29	34.29
1	26-571-03	Extron	6' m/m 3.5mm Mini	4.43	4.43
1	IN8906	Extron	6' A/V Cable	14.29	14.29
1	60-526-01	Extron	Cable Cubby 300S	357.14	357.14
1	DA1907SX	Altinex	1 in 2 out distribution amp	125.00	125.00
1	MB1001	Altinex	mount brackets for DA1907 DA	32.00	32.00
50	RGB-6C/22P-PLN	Liberty	multi conductor plenum cable	2.50	125.00
100	16-2C-TTP-WHT	Liberty	speaker cable	0.26	25.71
1	IT-misc	Intermedia	Miscellaneous	285.71	285.71
<b>Project Total</b>				<b>\$ 14,397.40</b>	

Equipment (continued)

Equipment	Qty/Unit Price	Price	Justification
Dell OptiPlex 745 Minitower	1 @ \$2,764	2,764	The Dell OptiPlex 745 Minitower PC would be used by the MATH 201 instructor in order to demonstrate the use of Microsoft Excel 2007 for mathematical problem-solving. Business students currently use Microsoft Excel 2007 for most of their other quantitative courses, which include: accounting, business statistics, management information systems, operations management, and marketing. The Dell OptiPlex 745 Minitower PC is equipped with sufficient system resources to run effectively the Microsoft Excel application, as well as other course-related applications; these resources include: RAM (memory), storage, and a fast CPU. Moreover, this PC is configured with Microsoft Windows XP Professional, a proven operating system that is very



			widely used by industry. This PC configuration is bundled with both Microsoft Office 2007 Professional Edition and Adobe Acrobat 8 Standard Edition software..
Hitachi CPX445 Lamp	2 @ \$475	950	Although the Hitachi 3200 Lumen XGA is configured with a lamp, the expected life of a lamp is 1-2 years. Given the disruption to a class that might result from a lamp failure, the standard approach on campus is to maintain two replacement lamps.
Student Tables	24 @ 104	2,496	Two trapezoid tables are to be placed together to form a work area for four students. The department currently has three rooms equipped with student tables. These are used primarily for “reformed” courses of calculus and teacher preparation. The level of communication and collaboration among the students is far greater when they are seated around tables than when they are seated in desks. The faculty have experienced this advantage of tables over desks first hand. Even when students are asked to move their desks together to collaborate, many are reluctant. However, when the tables are present, they begin comparing work immediately without prompting. Experience also shows that students from the same table tend to form study groups more readily than students who are merely near each other in a classroom with desks. Since the class activities will require collaboration, student tables are a core component of the project.
Student Chairs	12 @ 4 for 98	1,176	Light weight chairs for changing the seating arrangement.
Best-Rite 202AX – Quick Ship: Porcelain Steel Marker Boards – Aluminum Trim – Large (4’ x 16’)	2 @ 574	1,148	Whiteboards have become the <i>de facto</i> standard in higher education. The most practical reason for this is their easy maintenance and “clean” workability, not to mention the complete eradication of chalk dust, which might have corrosive effects on expensive computer and audio-visual equipment, all of which will be installed in the MATH 201 classroom.
<b>Equipment to be Furnished by Department of Mathematics</b>			
Texas Instruments TI-84 Silver Edition Graphing Calculator	1 @ \$115	\$115 (in kind)	The Mathematics Department has successfully employed use of the TI-8X series of graphing calculators in other courses. Use of the TI-84 Graphing Calculator is required of all students enrolled in MATH 201. This graphing calculator is a powerful tool by which students can learn the mathematical concepts for the topics being presented, as well as enabling them to increase their level of confidence in mastering these highly-relevant mathematical concepts. Moreover, Texas Instruments is a leader in the design, development, and production of graphing calculators, all of which are time and again proven reliable and essential for mathematical and quantitative work.
Texas Instruments TI-Presenter	1 @ \$230	\$230 (in kind)	The TI-Presenter Package would be used to connect the instructor’s TI-84 Silver Edition Graphing Calculator into the video input of the multimedia switcher that is part of the Customer

Package			Multimedia Room, thus allowing the instructor to project the image from the calculator display onto the large classroom screen.
Storage Cabinet for Classroom	1 @ \$250	\$250 (in cash)	Experience indicates that classroom manipulates are used when they are readily available in the classroom. The 72" Steel Storage Cabinet with 3-Point Locking System from Office Depot will also allow faculty to share class materials.
<b>TOTAL EQUIPMENT</b>		<b>23, 526</b>	

*BORSF Request:* \$18,345

*UL Lafayette Cost Share* \$ 5,181

*Total Equipment Costs:* \$23,526

#### **B. Software:**

Funds are requested to purchase the software listed in the table below. The University will provide 20% of the software costs as a cost share.

Item	Qty/Unit Price	Price	Justification
Corel WordPerfect Office X3 Professional Edition	1 @ \$370	\$370	The MATH 201 faculty are "power users" of Corel WordPerfect Office, and thus will use Corel WordPerfect Office X3 Professional Edition for the development of the majority of MATH 201 course materials, which include: customized textbook (developed by Co-PIs of this BORSF grant request), lecture notes, example problems, and homework assignments.
<b>TOTAL SOFTWARE</b>		<b>\$370</b>	

*BORSF Request:* \$296

*UL Lafayette Cost Share:* \$ 74

*Total Software Costs:* \$370

#### **C. Supplies**

**\$1,410**

##### **1) Faculty Development Workshops for UL Lafayette Faculty and Teaching Assistants**

a) Copy course materials	60@ \$15	\$ 900
b) Workshop supplies - binders, paper, disks with course information, pens, pencils	60 @ \$6	<u>\$ 360</u>
	Total for 60 participants	\$1260

##### **2) Manipulatives for hands-on class activities in MATH 201**

	<u>\$ 150</u>
<b>Total Supplies</b>	<b>\$1410</b>

**D. Shipping/handling**

Shipping and handling for equipment in multi-media cabinet: \$572  
 Shipping for storage cabinet for classroom: \$ 20

*BORSF Request:* \$572  
*Department of Mathematics* \$ 20  
*Total Shipping and Handling Costs:* \$592

**E. Installation**

- Installation of projection system and computer equipment: \$2106
  - Installation of electrical boxes for projector and projector screen: \$ 600
  - Installation of white boards provided by university maintenance: \$ 50
- and will be billed to the Department of Mathematics.

*BORSF Request:* \$2706  
*Department of Mathematics* \$ 50  
*Total Installation Costs:* \$2756

**F. Personnel training**

- Only expenses are SUPPLIES for workshops. (See 6C above.)
- All three PI's will work together to present two workshops (one in August 2008 and January 2009) on teaching with the new materials as well as using a spreadsheet. The workshops will be for UL mathematics faculty who may teach the course and for all Graduate Assistants as part of their training as teachers.

**G. Other****G1. Faculty****A. UL Lafayette faculty summer salary Total \$35,360**

In past years, the faculty time devoted to creating new materials for a course has totaled between 4 and 5 summer months. The total faculty time for this project is 5.25 summer months. Considering the extra time and effort required of the mathematical faculty to learn new business/management situations plus the need for an instructor's guide, the total faculty effort is justified.

**1) Kathleen Lopez (faculty; nine-month employee) \$13,314**

work on the design and the content of the course, write course activities and materials including instructor's guide, coordinate collaboration with the consultant, hire and supervise the undergraduate student (\$6657 monthly salary for 2 summer months in Summer 2008 – \$13,314)

**2) Lee Price (faculty; nine-month employee) \$ 9,824**

work on the design and the content of the course, write course activities and materials including instructor's guide, oversee the collection of data

for comparison of courses and conduct analysis  
(\$4912 monthly salary for 2 summer months in Summer 2008 – \$9,824)

- 3) Michael Totaro (faculty; nine-month employee)** **\$12,222**  
be responsible for the specifications, purchase, and installment of the projection system and equipment for the designated classroom; gather and organize input from Moody College of Business faculty about desired content and pedagogical techniques for the course; work on the design and the content of course; provide business situations for course materials; contribute to course activities involving spreadsheet applications  
(\$9778 monthly salary for 1.25 summer months in Summer 2008 – \$12,222)

**G 2. Fringe @ 34.22% of faculty summer salaries** **\$12,100**

- G 3. Consultant - Professor Deborah Hughes Hallett (5 days@ \$700/day)** **\$ 3,500**  
Deborah Hughes Hallett is a professor of Mathematics at the University of Arizona and an adjunct professor for the Kennedy School of Government at Harvard University where she teaches statistics to government policy makers. She is currently a member of the CRAFTY subcommittee of the CUPM. She is internationally known as the author or co-author of thirteen textbooks used in college mathematics courses. She is currently teaching a project driven finite mathematics course that uses spreadsheet technology. She will review the list of topics, activities, and materials created for this project and make recommendations.

**G 4. Undergraduate Student (clerical - 300 hours@ \$8/hr)** **\$ 2,400**

- G 5. Support Fund Money for Travel for UL Lafayette Faculty** **\$ 3,670**  
– Travel for PI's to make presentations about this project at meetings  
– Price and Lopez will apply to present at the national AMS-MAA meetings in Washington, D.C. in January 2009 and at least one will travel to the LA-MS Section meeting of the MAA in Mississippi in Spring 2009  
– Totaro will apply to present at The International Academy of Business and Public Administration Disciplines (IABPAD) Conference in Orlando, FL, January 3 - 6, 2009

Estimated Cost Breakdown for each Lopez and Price:

<u>National AMS-MAA Meetings</u>		<u>La/Ms MAA Section Meeting</u>	
Registration	\$ 214	Registration	\$ 20
Plane Fare	\$ 490	Motel	\$165
Hotel	\$ 888	Meals	\$ 74
Meals	\$ 255	<u>Mileage</u>	<u>\$ 105*</u>
<u>Airport shuttles</u>	<u>\$ 40</u>	Total	\$ 278
Total	\$1887		

(\* The cost of Section Meeting mileage is the cost of milage for one car divided by two since at the two presenters will car pool.)

**Estimated Cost Breakdown for Totaro:**

<u>National Business</u>	<u>Meetings</u>
Registration	\$ 275
Plane Fare	\$ 525
Hotel	\$ 630
<u>Meals and other</u>	<u>\$ 570</u>
Total	\$2000

Travel will only be covered if a person applies to speak at the meetings. (There is an excellent chance that our proposals to speak will be accepted but there is no guarantee.) The presenters will abide by state travel regulations and the amounts charged to the Support Fund will not exceed State rates.

(Total travel expenses is \$6330. The Department of Mathematics is providing \$2000 toward travel expenses for Price and Lopez and the Department of Business Systems, Analysis, and Technology is providing \$660 toward travel expenses for Totaro.)

<i>BoRSF Request:</i>	<i>\$3670</i>
<i>UL Lafayette Cost Share:</i>	<i>\$2660</i>
<i>Total Travel Costs:</i>	<i>\$6330</i>

**Total Support Fund Money Requested** **\$ 78,251**

**INSTITUTIONAL MATCH** **\$ 24,599**

**A. Equipment**

**By University:**

20% of equipment cost: 20% of \$23,181 = \$4,636 \$4,636 (in cash)

**By Department of Mathematics**

Classroom Storage Cabinet 80% of \$250 = \$200 (in cash) \$ 200 (in cash)  
\$ 4,836 (in cash)

**By Department of Mathematics**

TI-84+ Presenter package: \$ 230 (in kind) \$ 230 (in kind)  
 TI-84+ Silver Edition graphing calculator: \$115 (in kind) \$ 115 (in kind)  
\$ 345 (in kind)

**University Match for Equipment: \$5181**

**B. Software**

**By University:**

20% of software costs = 20% of \$370 = \$ 74

**University Match for Software: \$ 74**

**D. Shipping and Handling**

**By Department of Mathematics:**

Delivery charge for Storage Cabinet: \$20

**University Match for Shipping: \$ 20**

**E. Installation**

**By Department of Mathematics:**

Installation of white boards with labor  
provided by university and \$50 for  
miscellaneous parts

**University Match for Installation: \$ 50**

**G 2. Travel for UL Lafayette Faculty**

**By Department of Mathematics:**

Toward travel expenses for Price and Lopez \$2000 (in cash)

**By Department of Business Systems, Analysis, and Technology**

Toward travel expenses for Totaro: \$660 (in cash)

**University Match for Travel: \$2660**

**H. Indirect costs**

**By University:**

44% of faculty and student salaries = 44% of \$37,760 = \$16,614 (in kind)

**University Match for Indirect Costs: \$16,614**

**TOTAL INSTITUTIONAL MATCH: \$24,599**

## BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and consultants and collaborators. Begin with the principal investigator/program director. Photocopy this page for each person.

Name **Kathleen Lopez**

Position Title **Assistant Professor**

EDUCATION (Begin with baccalaureate or other initial professional education and include postdoctoral training.)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	FIELD OF STUDY
University of Louisiana at Lafayette	B.S.	1972	Mathematics
University of Louisiana at Lafayette	M.S.	1982	Applied Mathematics
University of Louisiana at Lafayette	Ph. D.	1993	Mathematics

RESEARCH AND PROFESSIONAL EXPERIENCE: Starting with present position, list, in reverse chronological order, previous relevant employment, experience, and honors. Key personnel includes the principal investigator and any other individuals who participate in the development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in reverse chronological order, the titles, all authors, and complete references to pertinent publications during the past five years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

### Teaching and Administrative Experience

- Assistant Professor, Department of Mathematics, UL Lafayette, August 2002 - present
- Department Head of Natural Sciences, Coordinator of Mathematics Component, Developer of Mathematics Curriculum, and Assistant Professor; South Louisiana Community College, June 1998 - August 2002
- Instructor in Department of Mathematics; UL Lafayette, 1982 - 1998 (Director of Freshman Mathematics and Supervisor of Mathematics Teaching Assistants, January 1988 - May 1995)

### Teaching Honors

- Louisiana-Mississippi Section MAA Award for Distinguished College or University Teaching of Mathematics, March 2001
- Nominee of the Department of Mathematics for the UL Lafayette Outstanding Teacher Award, 1995

### Research

- *Endomorphisms and the Lattice of Group Topologies*, Dissertation, May 1993

### Published Textbooks

- *A Mathematical Foundation for Elementary Teachers* (with P. Jones and L. Price), Addison - Wesley, Class-Test Edition; 1997 (was used at UL Lafayette and at several other universities)
- *Understanding Numbers: A Prelude to Algebra* (with P. Jones), Ginn Press; 1992 (Was textbook for a now discontinued course (MATH 91) and was used by local high school for remediation prior to algebra)

### Other Textbooks Also Used in UL Lafayette's Department of Mathematics

- *Proportional Reasoning and Problem-Solving for Teachers*, with P. Jones and V. Schneider, 2004 to present
- *Integrated Collegiate Mathematics* (with B. Clark); 1994 (Textbook for MATH 107 from 1994 - 2000)
- *Applications of Arithmetic for Elementary Teachers* (with P. Jones); 1986 (Was textbook for MATH 80 which is no longer offered)

### Grants

- Board of Regents Support Fund – Traditional Enhancement Enhancing the Mathematical Preparation of Pre-Service PK - 8 Teachers, P.D., UL Lafayette, 2005-2006, \$77,447
- Board of Regents Support Fund Education Enhancement "Project GAP (Gaining Academic Performance)", Senior Associate, UL Lafayette, 2005-2006
- Board of Regents Support Fund Education Enhancement: Developing Problem Solving in the Middle School and Secondary Mathematics Curricula, UL Lafayette, 2002-2003, P.D./co-P.I., \$63,382

- Board of Regents Support Fund Undergraduate Enhancement: Making Mathematics and Science Learning Resources Accessible, 2001-02, SLCC, P.D./co-P.I., funded \$97,000 (grant stayed at SLCC)
- UL Lafayette and SLCC LaSIP Mathematics Preservice Initiative 2001, co - P.I.
- SLCC Campus Renewal Project, LaCEPT (NSF and Board of Regents), 1999 - 2000, P.D.
- SLCC Campus Renewal Project, LaCEPT (NSF and Board of Regents), 1998 - 1999, P.D.
- UL Lafayette Campus Renewal Projects, LaCEPT (NSF and LA BoR), 1994 - 1997, senior associate
- 31<sup>st</sup> Annual Spring Topology and Dynamics Conference (NSF), 1997, co-P.I.

#### **Faculty Development Workshops Conducted**

- UL Lafayette/Board of Regents Workshop: "Mathematical Content Courses for PK-8 Teachers" (with L. Price, P. Jones and V. Schneider), May 22 -26, 2006
- UL Lafayette/Board of Regents Project GAP Workshop for In-Service Teachers
  - for Middle School Teachers in St. Martin Parish, Louisiana (with J. Cain), August 1 - 2, 2005
  - for Secondary School Teachers in St. Martin Parish, Louisiana (with J. Cain), August 3 - 4, 2005
- UL Lafayette/Board of Regents Workshop: "Problem-Driven Courses in the Mathematics Pre-Service Curricula", 2004
- "SLCC - LaCEPT Workshop on Reform Algebra in Two-Year Colleges", 2000
- "SLCC - LaCEPT Workshop on Reform Mathematics in Two-Year Colleges", 1999
- "UL Lafayette - LaCEPT Workshop for Supervising Teachers in Grades K - 8" (with P. Jones), 1997
- "Mathematics Courses for Elementary Teachers" (with P. Jones); LaCEPT sponsored, 1996
- "Reform of Freshman Mathematics" (with B. Clark); LaCEPT sponsored; May 21 - 26, 1995

#### **Presenter and Panel Participant**

- Presented at national meetings of MAA (2007, 2006, 2005, 2004), NADE (2000), AMATYC (1999, 1998), and AMS-MER (2003, 2002, 1998)
- Invited to participate as one of four speakers on the MAA Committee on Undergraduate Program Panel at MAA, LA/MS Section Meeting, March 5, 2004
- Invited to organize and to present at the LA/MS Project Next Panel on Teaching Pre-Calculus Courses, March 5, 2004
- AMS-MER, one of three UL Lafayette presenters of plenary session and one-hour break out session: "University of Louisiana at Lafayette: Opportunities and Challenges in Restructuring an Entire Teacher Prep Program" at "Workshop on Excellence in Undergraduate Mathematics: Mathematics for Teachers and Mathematics for Teaching", Ithaca College, Ithaca, NY, March 13-16, 2003
- AMS-MER, one of three UL Lafayette presenters of one-hour break-out session, "Three Upper-Level Mathematics Courses for Secondary Teachers and Others" at workshop on "Excellence in Undergraduate Mathematics: Diversification of Upper-Level Mathematics Programs", LSU, Baton Rouge, LA, Nov. 7-10, 2002
- MAA LA/MS Section Meeting, Invited opening speaker, one-hour, Natchitoches, LA, March 1, 2002
- Project NEXT Panel on "Developing a Course from Scratch" at AMS-MAA meetings in Baltimore, 1998
- Presented at local, state, and regional meeting of organizations such as ACTM, LATM, NCTM, LaMsMATYC, and MAA (1994 - 2007)
- LA/MS MAA Section Meeting, Lafayette, LA, (2000) organized and moderated panel - "Innovations in Courses for Secondary Teachers"
- "Using the TI-92 in Calculus", a two-and-a-half hour workshop for secondary mathematics teachers in Lafayette Parish as part of their staff development program (1999)

#### **Additional Professional Activities**

- President of Louisiana-Mississippi Mathematical Association of Two-Year Colleges, 2003-2004
- member of state-wide Mathematics Assessment Task Force to assist in the development of field-based assessment instruments for use with teacher candidates while they are practice teaching - May - June 2003
- member of UL Lafayette's Committee to Redesign the Pre-Service Curriculum for Grades 1 - 6 (2001-2002) and Grades 4-8 (2002) and the Secondary Master's Degree Program (2003)
- Community College faculty representative for the K-16+ Mathematics Consortium on mathematical content standards for teacher certification (1999 - 2000)
- Participant in the NSF's invitational "From Preparation to Practice: NSF Teacher Education PI Workshop" in Washington D.C. (1999)
- Member MAA, AMS, NCTM, LATM, and the Acadiana Council of Teachers of Mathematics (ACTM), AMATYC, LaMsMATYC (charter member)



## BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and consultants and collaborators. Begin with the principal investigator/program director. Photocopy this page for each person.

Name **Lee E. Price**

Position Title **Instructor of Mathematics**

EDUCATION (Begin with baccalaureate or other initial professional education and include postdoctoral training.)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	FIELD OF STUDY
University of Louisiana at Lafayette	Bachelor of Science	1980	Statistics
University of Louisiana at Lafayette	Master of Science	1983	Statistics

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Starting with present position, list, in reverse chronological order, previous relevant employment, experience, and honors. Key personnel includes the principal investigator and any other individuals who participate in the development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in reverse chronological order, the titles, all authors, and complete references to pertinent publications during the past five years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

### Employment:

UL Lafayette Mathematics Instructor 1987-present.

### Experience:

Louisiana Department of Education Math Science Partnership Instructor for St. Landry Parish, 2007-2009.  
 UL Lafayette LaSIP Project for LINC Schools in Region IV, Senior Associate, 2002-2007  
 Board of Regents Traditional Enhancement Grant, Senior Associate, 2005-2006.  
 UL Lafayette and South Louisiana Community College LaSIP Mathematics Preservice Initiative, Co-Principal Investigator, 2000-2001.  
 UL Lafayette LaCEPT Project, Senior Associate, 1999-2000.  
 LaSIP – University Collaborative Perspective for Algebra in Louisiana II, Senior Associate, 1997-1998.  
 UL Lafayette LaCEPT Campus Renewal Project, Senior Associate, 1996-1998.  
 UL Lafayette K-3 LaSIP Project, Mathematics Instructor, 1994-1996.

### Selected Professional Activities and Organizations:

Mathematical Association of America (MAA) member  
 National Council of Teachers of Mathematics (NCTM) member  
 Louisiana Association of Teachers of Mathematics (LATM) member  
 Acadiana Council of Teachers of Mathematics (ACTM) member  
 Chair of UL Department of Mathematics committee on Prospective Teachers, 2001-2007.  
 Member of UL College of Education Selective Admissions Committee, 1999-2007.  
 Member of UL Lafayette Preservice redesign committee for grades 1-6, 2001-2002.  
 Member of UL K-16+ Mathematics Consortium, 1999-2001.

### Recent Presentations on topics relating to teaching mathematics:

AMS/MAA National Joint Meetings, January 5-8, 2007.  
 ACTM meeting, January 20, 2007.  
 LaMsMATYC annual meeting, September 23, 2006.  
 UL Lafayette Board of Regents Faculty Development Workshop, May 22-26, 2006.  
 MAA Louisiana/Mississippi Section Meeting, February 16-18, 2006.  
 AMS/MAA National Joint Meetings, January 12-15, 2006.  
 Lafayette Parish School Board, six 5-hour workshops for 3<sup>rd</sup> and 5<sup>th</sup> grade teachers, Sept 2004 - Feb. 2005.  
 LATM annual meeting, December 2, 2005.  
 NCTM Southern Regional meeting, November 2004.  
 UL Lafayette Board of Regents Faculty Development Workshop, May 25-27, 2004.

St. John Parish School Board, three 8-hour workshops, May 17-19, 2004.  
Breaux Bridge High School monthly inservice, August 2003-May 2004.  
MAA Louisiana/Mississippi Section Meeting, March 2002.  
Diocese of Lafayette Mathematics Department Conference, August 2002.  
LATM annual meeting, November 2002.  
Louisiana Mathematics, Science and Technology Program, June 2000.  
South Louisiana Community College LaCEPT workshops, May 1999 and May 2000.

**Publications:**

*A Mathematical Foundation for Elementary Teachers – Class Test Edition*, (with P. Jones and K. Lopez), Addison Wesley, 1998. Revised March 2000.

"Topographic Mapping of Quantitative EEG Variables in Chronic Heavy Marihuana Users: Empirical Findings with Psychiatric Patients", (with F. Struve, J. Straumanis, and G. Patrick). Clinical Electroencephalography, 20 (1), 1989.

## BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and consultants and collaborators. Begin with the principal investigator/program director. Photocopy this page for each person.

Name **MICHAEL WAYNE TOTARO, PH.D.**

Position Title **ASSISTANT PROFESSOR**  
**BUSINESS SYSTEMS, ANALYSIS, AND TECHNOLOGY**

EDUCATION (Begin with baccalaureate or other initial professional education and include postdoctoral training.)

INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	FIELD OF STUDY
University of Louisiana at Lafayette	Bachelor of Science	1982	Computer Science
University of Louisiana at Lafayette	Masters	1988	Master of Business Administration (MBA)
University of Louisiana at Lafayette	Master of Science	1999	Telecommunications
University of Louisiana at Lafayette	Doctor of Philosophy	2007	Computer Science

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Starting with present position, list, in reverse chronological order, previous relevant employment, experience, and honors. Key personnel includes the principal investigator and any other individuals who participate in the development or execution of the project. Key personnel typically will include all individuals with doctoral or other professional degrees, but in some projects will include individuals at the masters or baccalaureate level provided they contribute in a substantive way to the development or execution of the project. Include present membership on any Federal Government public advisory committee. List, in reverse chronological order, the titles, all authors, and complete references to pertinent publications during the past five years and to representative earlier publications pertinent to this application. DO NOT EXCEED TWO PAGES.

**May 2007 to Present:** University of Louisiana at Lafayette, B. I. Moody III College of Business Administration  
Assistant Professor, Department of Business Systems, Analysis, and Technology

**August 2004 to May 2007:** University of Louisiana at Lafayette, B. I. Moody III College of Business Administration  
Visiting Lecturer, Department of Business Systems, Analysis, and Technology

**August 2002 to August 2004:** University of Louisiana at Lafayette, B. I. Moody III College of Business Administration  
Instructor, Department of Business Systems, Analysis, and Technology

**August 2001 to June 2002:** Information Technology Group, a Division of Broussard, Poché, Lewis & Breaux, LLP  
Director

**June 1996 to July 2001:** University of Louisiana at Lafayette, College of Business Administration  
Instructor, Department of Business Systems, Analysis, and Technology

**August 1999 to July 2001:** Information Technology Consulting  
*Concurrent with University of Louisiana at Lafayette, above*

**August 1994 to June 1996:** St. Thomas More Catholic High School, Lafayette, Louisiana  
Teacher/Computer Consultant

**August 1989 to August 1994:** University of Southwestern Louisiana, College of Business Administration  
Operations Manager, Microcomputer and Information Systems Laboratories  
Adjunct Instructor (Summer sessions), Management Information Systems

**April 1989 to August 1989:** Aquaculture Technologies, Ltd., Lafayette, Louisiana  
Manager, Computing and Information Systems

May 1986 to April 1989:	Lou Ana Foods, Inc., Opelousas, Louisiana Computer Programmer/Analyst
October 1984 to May 1986:	MCC Systems, Inc., Lafayette, Louisiana Computer Programmer
February 1985 to April 1985:	Acadia Parish School Board, Rayne, Louisiana <i>Concurrent with MCC Systems, Inc., above</i>
January 1984 to September 1984:	Chart House, Inc., Lafayette, Louisiana Programmer/Analyst
February 1983 to December 1983:	Medical Information Systems, Inc., Lafayette, Louisiana Programmer/Analyst
May 1982 to February 1983:	USL Conference Center, Lafayette, Louisiana Student Programmer (part-time)

#### **Selected Recent Publications**

- "Student Perceptions of the Online 'Classroom': An Update," with John Tanner, Thomas Noser, and Rachelle Birch, *International Business & Economics Research Journal*, Volume 5, Number 10 (October 2006).
- "Faculty Perceptions of Distance Education Courses: A Survey," with John Tanner, Thomas Noser, Jeanne Fuselier Fitzgerald, and Rachelle Birch, *Journal of College Teaching & Learning*, Volume 2, Number 7 (July 2005).
- "Factors Associated With Faculty Perceptions of MIS and IT Journal Quality," with Dan Hotard, John Tanner, and Stanley Smits, *Journal of Business and Economic Perspectives*, Volume XXX, Number 2, Fall/Winter 2004.
- "Differing Faculty Perceptions of Research and Teaching Emphasis," with Dan Hotard and John Tanner, *Educational Research Quarterly*, Volume 27, No. 4, June 2004.
- "The Online 'Classroom': Differences in Perception Between Business Students and Non-Business Students," with John Tanner, Thomas Noser, and Jeanne Fuselier, *Journal of College Teaching & Learning*, Volume 1, Number 3 (March 2004).
- "The Online 'Classroom': What Do Students Think?" with John Tanner, Thomas Noser, and Jeanne Fuselier, *Journal of Informatics and Educational Research*, Volume 6, Number 1 (Spring 2004).
- "Effects of Information Technology on the Business World," with Ihssan Alkadi and Ghassan Alkadi, *Human Systems Management*, Volume 22, Number 3 (2003).
- "CPA's and Electronic Survey Media," with Marc Giullian and Marcus Odom, *The Review of Business Information Systems*, Volume 7, Number 1 (Winter 2003).
- "Developing Essential Skills For Success In The Business World: A Look At Forecasting," with Marc A. Giullian and Marcus D. Odom., *The Journal of Applied Business Research*, Volume 16, Number 3, Summer 2000.
- "Accounting Students' Preparation and Skills: A Faculty Perspective," with John Tanner and Thomas E. Wilson, Jr., *Journal of Accounting and Finance Theory*, Volume 7, Number 2, Fall 1999.

## CURRENT AND PENDING SUPPORT

(From ALL sources, including Board of Regents Support Fund)

The following information MUST be provided for each investigator and other senior personnel. Use additional sheets as necessary.

NAME OF INVESTIGATOR: Kathleen Lopez

Status of Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title: Strengthening the Analytical Thinking and Mathematical Decision-Making Skills of Business Students in a Finite Mathematics Course

Source of Support: Board of Regents Support Fund – Traditional Enhancement

Award Amount (or Annual Rate): \$80,359 Period Covered: 2007-2008

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad 2.0 mos Summ

Status of Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title:

Source of Support:

Award Amount (or Annual Rate): \$ \_\_\_\_\_ Period Covered: \_\_\_\_\_

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad ☐ Summ

Status of Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title:

Source of Support:

Award Amount (or Annual Rate): \$ \_\_\_\_\_ Period Covered: \_\_\_\_\_

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad ☐ Summ

## CURRENT AND PENDING SUPPORT

(From ALL sources, including Board of Regents Support Fund)

The following information MUST be provided for each investigator and other senior personnel. Use additional sheets as necessary.

NAME OF INVESTIGATOR: Lee E. Price

Status of Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title: Strengthening the Analytical Thinking and Mathematical Decision-Making Skills of Business Students in a Finite Mathematics Course

Source of Support: Board of Regents Support Fund – Traditional Enhancement

Award Amount (or Annual Rate): \$80,359 Period Covered: 2007-2008

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad ☒ 2.0 mos Summ

Status of Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title:

Source of Support:

Award Amount (or Annual Rate): \$ \_\_\_\_\_ Period Covered: \_\_\_\_\_

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad ☐ Summ

Status of Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title:

Source of Support:

Award Amount (or Annual Rate): \$ \_\_\_\_\_ Period Covered: \_\_\_\_\_

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad ☐ Summ

## CURRENT AND PENDING SUPPORT

(From ALL sources, including Board of Regents Support Fund)

The following information MUST be provided for each investigator and other senior personnel. Use additional sheets as necessary.

NAME OF INVESTIGATOR: Michael Totaro

Status of Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title: Strengthening the Analytical Thinking and Mathematical Decision-Making Skills of Business Students in a Finite Mathematics Course

Source of Support: Board of Regents Support Fund – Traditional Enhancement

Award Amount (or Annual Rate): \$80,359 Period Covered: 2007-2008

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad 1.25 mos ☐ Summ

Status of Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title:

Source of Support:

Award Amount (or Annual Rate): \$ \_\_\_\_\_ Period Covered: \_\_\_\_\_

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad ☐ Summ

Status of Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future

Contract Number/Proposal Title:

Source of Support:

Award Amount (or Annual Rate): \$ \_\_\_\_\_ Period Covered: \_\_\_\_\_

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ Acad ☐ Summ

September 26, 2007

B. I. Moody III  
College of Business Administration  
Office of the Dean

P.O. Box 40200  
Lafayette, LA 70504-0200  
Office: (337) 482-6491  
Fax: (337) 482-1572

*Université des Acadiens*

Dear Board of Regents:

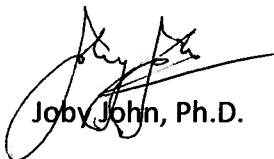
I respectfully offer my support to Dr. Michael Totaro, Co-PI, along with Dr. Kathleen Lopez and Ms. Lee Price, for a BORSF Traditional Enhancement Proposal entitled, *"Strengthening the Analytical Thinking and Mathematical Decision-Making Skills of Business Students in a Finite Mathematics Course."* MATH 201, required of all business students in the B. I. Moody III College of Business Administration, lays the foundation for subsequent quantitative courses, which include both business statistics and operations management.

As I am sure you are aware, the use of information technology – applications and hardware – continues to expand at an ever-increasing rate. Business schools across the United States are expected to graduate students who have considerable proficiency in the use of both spreadsheet and database applications, with a special emphasis on the former. Software applications like Microsoft Excel and Access are immensely important to business students, primarily for data and statistical analysis.

Enhancement of the Decision Mathematics course through the use of spreadsheet applications like Microsoft Excel, as well as newly-developed material (course content), should provide our business students with a more solid foundation both for later coursework and their work in industry following graduation. An added benefit to this proposal is its multi-disciplinary nature: Dr. Kathleen Lopez and Ms. Lee Price are members of the Mathematics faculty, and Dr. Michael Totaro is a member of the B. I. Moody III College of Business Administration faculty. This sort of multi-disciplinary collaboration should, at the very least, result in substantial enrichment of the learning experience by our business students.

In closing, I wholeheartedly embrace this proposal which will better prepare our students for their place in an increasingly competitive and global economy.

Thanking you in advance, I remain



Joby John, Ph.D.

Dean, B. I. Moody III College of Business Administration

*The B. I. Moody III College of Business Administration  
is fully accredited by AACSB International*