

**COVER PAGE FOR TRADITIONAL AND UNDERGRADUATE ENHANCEMENT PROPOSALS**  
**BOARD OF REGENTS SUPPORT FUND, FY 2007-08**

1. This Proposal Involves: <input checked="" type="checkbox"/> One Institution <input type="checkbox"/> More Than One Institution		2. Enhancement Subprogram: (check one) <input type="checkbox"/> TRADITIONAL ENH Program (Includes all multidisciplinary proposals) <input checked="" type="checkbox"/> UNDERGRADUATE ENH Program	
3. This Proposal Is: (check one) <input checked="" type="checkbox"/> Primarily an Equipment Request <input type="checkbox"/> Not Primarily an Equipment Request			
4. Name(s) of Submitting Institution(s) of Higher Education (Include Branch/Campus/Other Components)		Southern University at New Orleans	
5. Address of Institution of Higher Education (Include Dept/Unit, Street Address/P.O. Box Number, City, State, Zip Code)		6801 Press Drive Department of Natural Sciences (in Mathematics) New Orleans, Louisiana 70126	
6. Title of Proposed Project Enhancing the Mathematics Curriculum at Southern University at New Orleans			
7. First-Year Support Fund Money Requested \$190,729.28	8. Second-Year Support Fund Money Requested (if applicable) \$0.00	9. Proposed Duration (Circle # of Yrs.) 1 2	
10. Category In Which Proposal Is Being Submitted (check one only) <input type="checkbox"/> BUSINESS <input checked="" type="checkbox"/> MATHEMATICS <input type="checkbox"/> CHEMISTRY <input type="checkbox"/> PHYSICS/ASTRONOMY <input type="checkbox"/> EDUCATION <input type="checkbox"/> Special Multidisciplinary (See Section III.B.2.c of the RFP.) NOTE: If you check this category, you must also check at least one other eligible discipline.)		11. Using the Taxonomy in Appendix A of the RFP, Identify All Specific Subcategories of the General Category That Apply to This Proposal and Provide Taxonomy Numbers:  Subcategory(ies): Mathematics Taxonomy Number(s): 0703	
12. This Proposal Is a: <input checked="" type="checkbox"/> New Request <input type="checkbox"/> Request for Continuation of a Previously-Funded Support Fund Project (check one) Provide previous contract number:			
By signing and submitting this proposal, the signators are certifying that: (1) the proposed project has not already been funded/is not currently being funded/has not been promised funding; (2) this proposal has been reviewed and approved by an Institutional Screening Committee; and (3) the institution and the proposed project are in compliance with all applicable Federal and State laws and regulations, including, but not limited to, the required certifications set forth in: (a) Grants for Research and Education in Science and Engineering, NSF Grant Proposals Guide (GPG), NSF 03-2, effective 10/1/02, and (b) 45CFR 620, Subpart F (Requirements for a Drug-Free Workplace).			
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## PROJECT SUMMARY

Name of Institution (Include Branch/Campus and School or Division)

**Southern University at New Orleans**

Address (Include Department)

**Department of Natural Sciences (in Mathematics)**

**6801 Press Drive, New Orleans, Louisiana 70126**

Principal Investigator(s)

**Cynthia M. Singleton**

Title of Project

**Enhancing the Mathematics Curriculum at Southern University at New Orleans (SUNO)**

Abstract (DO NOT EXCEED 250 WORDS)\*

The goal of this project is to rebuild the instructional capability of the Natural Science Department (in Mathematics) at SUNO by expanding the use of computers as a teaching tool and upgrading the mathematics classrooms and lab equipment. We found that students lack adequate resources to excel in mathematics. The objectives of the proposal are as follows: 1) use computer lab and electronic classroom to enhance mathematics teaching by integrating the new technology into the curriculum via syllabi and course plan (Fall 2008); 2) develop Math 403 computer software course designed for upper level mathematics students, which involves computation, simulation, and graphing (Fall 2007); 3) establish a computer lab specifically for mathematics faculty and majors to provide tutoring and fill student specific needs (Fall 2008); 4) conduct workshops to assist mathematics faculty, students, and K-12 teachers' learning of computer application (Summer 2008); 5) hold a competition with students to conduct a research project using mathematics computer software under the supervision of their professors. This program will enhance student understanding of the interrelationship of applications to real life situations through the increased use of computers as an aid to learning. Ms. Cynthia Singleton, acting as Director, will work with Dr. Zheng Chen, acting as Co-Director, to modify course materials and coordinate the logistical aspects of lab setup and workshop implementation. As a result, instructors will be able to engage with students often. In a city struggling to reestablish itself, these facilities are necessary to make our students competitive and influential in technological fields.

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**TITLE**  
**Enhancing the Mathematics Curriculum at Southern University at New Orleans**

**NARRATIVE AND BIBLIOGRAPHY**

**4a. THE CURRENT SITUATION**

**4a.1 Institutional Description**

Southern University at New Orleans is a senior state institution of higher learning. It was founded as a branch of the Southern University Agricultural and Mechanical College, Baton Rouge by Act 28 of the Extraordinary Session of Louisiana Legislature of September 4, 1956, and began its initial year of operation on a seventeen acre site on the perimeter of Pontchartrain Park. Since the original freshman class of 158 students, the university had grown to awarding 450 undergraduate and 70 graduate degrees annually and serviced 3,600 students each semester prior to Hurricane Katrina. Immediately following the storms of Fall 2005, the Spring 2006 enrollment reached 2,100 students and increased by 17% for the Fall 2006 semester. Strategic enrollment expectations include 4,000 students in 3 to 5 years.

A range of degree programs in the liberal arts and sciences, substance abuse, social work, and education as well as graduate degree programs in Social Work, Criminal Justice, Management Information Systems, Museum Studies, and Urban Education are among the offerings. The University has maintained a highly qualified faculty of 70, with 50% of the full-time faculty holding the earned doctorate. The University's mission is to create and maintain an environment conducive to learning and growth, to promote the upward mobility of diverse populations by preparing them to enter into new as well as traditional careers, and to equip them to function optimally in the mainstream of the global society. Having served as a beacon light of inspiration to its constituency, Southern University at New Orleans continues to make a meaningful contribution to the upward mobility of the people of the community which it serves.

SUNO has always been driven by a need to serve students where they are (academically) when they enter the University. Consequently, programs of instruction (from remediation to honors) exist on the campus. Having served as a beacon light of inspiration to its constituency, Southern University at New Orleans continues to make a meaningful contribution to the upward mobility of the people of the community which it serves.

The mathematics unit at SUNO consists of a chairperson and six faculty members, of which five have doctorate degrees. The department offers several advanced degrees Mathematics, Applied Mathematics/Computational Mathematics, Mathematics Education, and Engineering. The faculty of mathematics teaches approximately 2000 students per semester, including on average: 40 sections of traditional college mathematics and 8 sections of online college mathematics.

Due to a need for additional practice and instruction, SUNO Center for Comprehensive Communication (CCC) was created to assist with reading, writing, and mathematics. It was outfitted with computers and includes one full-time mathematics tutor to assist students in all levels of mathematics and help them study for standardized tests such as Graduate Record Examination (GRE), PRAXIS, and Graduate Management Admission Test (GMAT). However,

the CCC must service each department equally and carries the load for the entire university. The mathematics unit's desire to integrate computers as learning aides requires greater manpower and more specific resources that are more accessible to the natural sciences department (in mathematics) as a whole.

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

Now more than ever the proposed project is needed because we have experienced a significant disruption in our programs. We seek to re-establish a mathematics lab and electronic classroom that were lost due to the effects of Hurricanes Katrina and Rita. This project is a part of the plan to rebuild SUNO, and it will allow students to work at their own pace and progress as quickly as they can.

This project is a part of the mathematics unit plan to enhance the use of computer software as an aid to learning and bring about a deeper understanding of mathematical concepts and procedures. The inclusion of computers and computer software will provide a redesigned instructional intervention and affect both student scores and student attitudes, which are a strategy supported by the National Council of Teaching of Mathematics's (NCTM) mathematics standards. According to the NCTM (2000) and the Mathematical Association of America (MAA, 2003), computers should be available to all students and faculty both in and out of the classroom. Furthermore, the changes in the curriculum, textbooks, and testing will provide students with the opportunity to develop skills that are becoming more and more essential to compete internationally. In addition students studying to become teachers will receive in-depth training on the implementation of software in the curriculum. The rationale for this project can be summarized as follows: This project provides access to computers and mathematics computer software. It allows students and faculty to implement this aspect of mathematics education with the hope that it will have a positive effect on students' performance. It answers our need to provide students with the opportunity to develop skills that are becoming more and more essential to keep up a home environment and compete in corporate training and academic settings. Colleges and universities must also maintain financial efficiency; therefore, it is economically wise to use multimedia because it is low cost and reusable (Wilson, 1992; McMillan, Parke & Lanning, 1997). In order to enhance learning, almost all new editions of mathematics textbooks are accompanied by (1) multimedia programs and (2) tutorial materials. It also has the potential to enhance the department's faculty development and students' access to learning by providing an around-the-clock tutorial tool.

Mayer (2001) defined a multimedia instructional message as a communication using words (printed or spoken text) and pictures (graphics, animation or video) that are intended to promote learning. Traditional learning methods typically focus on one learning style at a time, but the integration of multimedia in the classroom may address the issues of learning differences and styles. Mathematics often suffers from a reputation that labels it boring and unconnected to real life situations. By using graphics, audio, and interactive activities, multimedia instruction can fit a range of interests and learning styles, including the visual, the auditory and the experimental. Students may be more likely to pursue mathematics and expand their understanding if they are not intimidated by mathematics formulas and functions. This will provide a pedagogical model for student-centered learning that engages all learning styles.

This proposal has very strong implications for our institution. It supports and validates the mission of our university, which is to create and maintain an environment conducive to learning and growth, to promote the upward mobility of all people by preparing them to enter into new as well as traditional careers and equipping them to function optimally in the mainstream of American society. It benefits the faculty by providing them a new resource that will allow them to connect to their students and discuss real life applications more easily. Students would also benefit greatly from this proposal if it is funded because they will have services 24 hours a day and the freedom to work at their own pace within their own time. It may give students a higher sense of purpose because they can move on when ready instead of wasting time with repetitive exercises.

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

The proposed project will complement or improve the quality of teaching in the mathematics unit because it will allow instructors to spend more time helping students develop their understanding of concepts as they manipulate functions on the computer. The resources will therefore improve the mathematics unit's ability to design a curriculum that affectively prepares students for life after college, which will invariably include technology. The requested resources address the need for individual practical instruction, which is currently missing from our present curriculum. Specifically, the resources in this project will impact students by providing them with a more relevant curriculum with adequate facilities in which to study. This project is expected to increase the passing rate of students in mathematics courses and enhance the university's reputation as a technologically competitive institution.

### **The Enhancement Plan**

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

The goal of this project is to enhance the mathematics curriculum through the use of interactive math software, to address individual concerns, and to strengthen each student's overall understanding of mathematics concepts and procedures. The measurable objectives to accomplish the goal are: a) establish an electronic classroom to enhance the way mathematics is taught by integrating new technology into the curriculum via syllabi and course plan (Fall 2007); b) develop Math 403 a computer software application course designed for high level mathematics students which involve computation, simulation, and graphing (Fall 2007); c) conduct workshops to assist mathematics faculty, students, and K-12 teachers' learning of computer application (Summer 2008); d) establish a computer lab specifically for mathematics faculty and majors to provide tutoring and students specific need (Fall 2008-Spring 2009); e) hold competition with students to conduct a research project using mathematics computer software under the supervision of their professors (Fall 2008).

#### **Objectives**

#### **Schedule of Activities**

- (a,b) In order to accomplish the objective of enhancing mathematics teaching by integrating new technology into the curriculum, Ms. Cynthia Singleton will consult with Dr. Zheng Chen to:

- Modify syllabi and course plans by selecting software that will complement student need by October 2007.
  - Develop a handbook which will include complete description of selected activities found in the textbook and software by July 2008.
- (a,d) In order to achieve the objective of re-establishing the electronic classroom and computer lab specifically for the mathematics unit, Ms. Singleton and Dr. Zheng Chen will:
- Obtain approval for mathematics lab by April 15, 2008.
  - Work with SUNO stores department to coordinate the details of delivery for computers, software, printers, server, tables and chairs for computer workstations, Walk and Talk Presentation Board and projector by May 1, 2008.
  - Coordinate with Information Technology Center (ITC) department regarding the set up of computers, software, printers, tables and chairs for computer workstations by May 1, 2008.
  - Coordinate with Pelican Computer Inc. to install the Walk and Talk Presentation Board, projector, and server by May 1, 2008.
  - Purchase the following software: Adobe Acrobat 8 Professional, Mathematica, Maple, Scientific Workplace, Matlab, Geometry Sketchpad, and Minitab by May 15, 2008.
  - Purchase the following hardware: computers, printers, server, Walk and Talk Presentation Board and projector by May 15, 2008.
  - Order the textbook publishers' free software such as videos, animations, and tutorials that are aligned with the selected textbooks from the mathematics faculty by May 15, 2008.
  - Purchase tables for printers, chairs and tables for computer workstation for students and instructor by May 15, 2008.
- (c) In order to achieve the objective of assisting faculty with the learning of computer applications and program applications:
- Pamphlets will be produced and distributed by May 1, 2008 to introduce this project to university mathematics faculty, students, and high school teachers. Dr. Chen and Ms. Singleton from the Mathematics Unit will prepare and distribute the pamphlets to selected schools.
  - Ms. Singleton will conduct a 1-day workshop by June 30, 2008 for training mathematics faculty on the implementation of the new curriculum and the navigation

of the online course tools in MyMathLab and Blackboard, which are mathematics software for online courses.

- Ms. Singleton and Dr. Chen will consult with software publishers to conduct a free 2-day workshop by June 30, 2008 to train SUNO mathematics faculty and adjuncts, and math lab staff (SUNO students) on the use of the selected software and the Walk and Talk Presentation Board. Fifteen extra spaces in the workshop will be offered to high school teachers of surrounding schools on a first-come-first-served basis, provided that they can consent to run their own smaller workshop to train other K-12 teachers under the supervision of Ms. Singleton and Dr. Chen.
- (e) In order to achieve the objective of holding a competition with undergraduate students to conduct a research project using mathematics computer software with the supervision of their professors, Ms. Singleton and Dr. Chen will:
- Teach mathematics modeling; give students two or three examples from biology, engineering, financial mathematics or actuarial mathematics and familiarized students with ordinary differential equations and modeling ideas. Students will learn how to build mathematical modeling for a real problem and the other procedures to the final target during Fall semester (August 18, 2008 through November 30, 2008).
  - Teach students how to program using Matlab or Maple during Fall Semester (August 18, 2008 through November 30, 2008).
  - Demonstrate two or three modeling problems from mathematics or other fields and allow students to select one of the three problems, work as a team, and address the problem before September 1, 2008.
  - Evaluate the results including data, simulation and graphs along with other mathematics faculty, and reward first two teams by December 1, 2008.
  - Professors and students will present papers at conference and submit for publication by May 30, 2009.
  - Provide reward for winners of mathematics competition by December 15, 2008.

The schedule of activities with related benchmarks is June 1, 2008, through June 30, 2009. The measurable objectives will be evaluated using formative measurements throughout the grant period and summative measures at the end of the grant period.

#### **4b.2 Work Plan**

Ms. Singleton Director of the Project and Dr. Chen, Co-Director of the Project, will meet weekly to discuss the project, plan for future activities, and evaluate progress towards project completion. Ms. Singleton and Dr. Chen will prepare and distribute project update to the SUNO faculty and to BoR representatives. The Project Director will approve and process all requests



for funds for all project related expenditures (equipment, software, award etc.). Dr. Chen will keep a journal of all project related activities. To comply with SUNO's policy, the Project Director and Co-Director will report to their supervisors, with the ultimate responsibility of oversight resting with the university administration.

#### **4b.3 Evidence of Potential to Achieve Recognized Eminence**

This proposed project will catapult the mathematics unit into attaining a high level of regional, national, or international eminence commensurate with degree offerings by putting the mathematics unit in the position to conduct studies regarding the use of technology in the classroom which can lead to national eminence for the mathematics unit. As a result, the university will be in a better position to publish papers and present information at both regional and national conferences as well as is specific affect on learning in mathematics.

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

Currently, SUNO employs a full time mathematics tutor who assists students in all mathematics courses, from remedial through upper level mathematics, as well as help students to prepare for standardized tests such as GRE, PRAXIS, and GMAT. Another important goal of this project is to bring the university closer to National Council of Teaching Mathematics's standards of available computer access for all instructors and students, and to use those computers as an aid to deepen students' understanding of mathematical and physical concepts in on-line and on-campus courses with concentration on Math 403 computer course. For this effort to be effective, we need more than the CCC's 30 computers to enable us to implement the new curriculum. The activities of this project will be planned in harmony with departmental course offering. Students will be led from simple pencil and paper solutions to more complex problems requiring the use of a computer. Teacher preparation is impacted in that mathematics faculty are encouraged to re-design their curriculum and master the technology that will enable them to address multiple learning styles.

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

The proposed project will enhance the ability of the mathematics unit to attract and retain high quality students from Louisiana by using technology comparable to those found at prestigious universities. The project will provide current and future SUNO students the opportunity to be more competitive in the technological fields that require skills in the use of computers as well as formulas and mathematical concepts.

More so, provide the mathematics unit with additional resources to expand and enhance the services provided for the Natural Sciences Departments including Chemistry, Physics, and Biology. During College Day Programs, a seminar for interested high school students could be structured to stimulate their interest in mathematics or science careers. The use technology should provide instructors the opportunity to bring excitement to the courses and stimulate student to higher achievement.

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

The proposed project will contribute to improvement of the quality of teaching effectiveness of faculty by providing the tools that will allow them to reach a wider range of audio, visual, and tactile learners. Faculty pedagogical practices will be improved regarding undergraduate education reform and teacher preparation in that the software and electronic classroom setup will enhance the student-centered quality of every mathematics classroom.

Also, this plan serves as a basis for research. Faculty could build a database that could be used over time to access the mathematics performance and achievement. The ability to prepare the students for a computer oriented workforce will be greatly enhanced and monitored.

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

The Board of Regents or other entity will determine whether this project has been a success and the degree to which it achieved the goal by using quantitative and qualitative data are as follows:

- Timely acquisition and installation of equipment and software.
- Effectiveness of the equipment and software provided to the Mathematics unit will be evaluated by the Chairperson of Natural Sciences Department (in Mathematics) and Mathematics faculty who will consider the impact of the equipment and software on overall mathematics unit performance.
- Effectiveness of the Electronic Classroom will be evaluated by Mathematics faculty who will consider the progress and performance of the students using the facilities.
- Effectiveness of the computer lab will be evaluated by mathematics faculty who will consider the progress and performance of the students using the facilities.
- Effectiveness of the Faculty Handbook and Workshop will be evaluated by the Director of project who will consider the number of participants and degree to which the participants implemented the knowledge gained in the workshop. The effectiveness of the faculty computer application workshop will also be evaluated by the participants themselves.
- Effectiveness of making the Electronic Classroom available to K-12 teachers and students will be evaluated by the Project Director who will consider the number of participants and evaluation by the participants.
- Effectiveness of the mathematics competition will be evaluated by math faculty. The paper presented will be submitted for publication and peer reviewed.
- The overall project success will be evaluated by the Board of Regents when the Final Evaluation Report is submitted by Ms. Singleton.

### **4c. EQUIPMENT**

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

The items of equipment required for the proposed project include:

<b>Equipment</b>	<b>Cost</b>	<b>Cross Ref to Budget Page</b>	<b>Objective</b>
<b>(1)</b> Gateway E-4601D desktop computers (\$1,500 * 30 computers = \$37,500), Product # 1014268R for the electronic classroom	\$45,000.00	A	a

(2) Gateway E-4601D desktop computers (\$1,500 * 20 computers = \$30,000), Product # 1014268R for mathematics lab	\$30,000.00	A	c
(3) 1-Walk and Talk Presentation Board and Projector for Electronic Classroom all parts are listed below  1-Ceiling Mount for Projector, item # 204-68; 1-Pelican Extension Pole for Projectors, item #204-68 5-Pelican Cable Extension Package for Projection, item # 204-68-031032; 1-Pelican Flush Mount Kit, item # 204-68-03103; 1-Pelican WT1800 Interactive Series; 1-Pelican Power & Data Track 8' Base Unit, item # 204-68-031032; 1-Pelican Power & Data Track 8' Extension Unit, item # 204-68-031032; 1-Pelican Power & Data Track End Caps Kit, item # 204-68-031032; 1-Pelican CPX260 Projector XGA, LCD, 2500 ANSI Lumens, item #204-68-031032	\$6,612.00	A	c
(4) Aspira Workstation Desk (\$183.96 * 50 desks = \$9,198), Black, item # ICE-92201 (Electronic Classroom and computer lab workstation for students)	\$9,198.00	A	a,c
(5) Boss Leather Adjustable Task Chair (\$36.23 * 51 chairs = \$1,847.73) without arms, Black, item # 444686 (chairs for Electronic classroom and mathematics lab)	\$1,847.73	A	a,c
(6) Aspira computer work station for instructor Iceberg Enterprises Aspira Desk (\$399.40), Black, Item # ICE-92401 Iceberg Enterprises Aspira Peninsula Table(\$297.00), Black, Item # ICE-92491; Iceberg Enterprises Aspira Square Corner Connection (\$274.00), Black, Item # ICE-94101; Iceberg Enterprises Aspira Utility Drawer (\$29.60), Black, Item # ICE-95451	\$1,000.00	A	a
(7) 1-Brother Model dcp-8065dn duplex network-ready digital laser copier/color scanner/printer (\$440.99), item # BRT-DCP-8065DN (Printer for Electronic Classroom) 1-Brother HL6050D Laser Printer (\$391.99), item # BRT-HL-6050D (Printer for Mathematics Lab); 2-Aspira printer stand (\$263.81 * 2= \$527.62), Black, item # ICE-93001 (printer stands for computer lab and electronic classroom)	\$1,360.60	A  A  A	a  c  a,c
(8) Server  Pel Xeon 2.4Ghz Serv, 512Mb DDR 266 ECC Ram, \$2,210 36Gb Scsi Hdd, On Board Adaptec Controller, Fdd, CdR, Integrated Vid, Integrated Dual Intel Gigiabit	\$5,353.00	A	a

Nic, Kbd, Mou; item # 204-68 -031032 Pelican 36Gb U320 10K Scsi Hdd Upgrade \$230; item # 204-68 -031032 Pelican 73Gb U320 10K Scsi Hdd \$380; item # 204-68 -031032 Pelican Server Upgrade to 2Gb ECC Ram \$352; item # 204-68 -031032 Pelican Adaptec 2120S PCI Raid \$558; item # 204-68 -031032 Pelican SCSI Ultra 2 Wide Controller \$333; item # 204-68 -018659 Misc Per & Pre-Loaded Software not Itemized \$200; Elsewhere in the Contract. *Not to Exceed \$500 per ;Order * Item Descriptions are as follows: ARCSERVE FOR NOVELL; item # 204-68 -031032 Pelican DDS3 Internal Tape Drive \$612; item # 204-68-031032 Pelican Power Management Upgrade Level 6 Battery 478 Backup Equipment			
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The above listed equipment was chosen for the project because it will enhance the mathematics curriculum by providing training and software that student are likely to encounter in the working world. The alternative equipment that was considered or reject included other programs such as AutoCAD, Scientific Word, SAS, Maya 3D, Viso Professional, and Agent Sheets because we are setting up a basic mathematics lab and will add more software as the need arises and funds permit. Each item of equipment will affect the enhancement plan by enabling students to master basic application and fulfill the university mission in promoting upward mobility.

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

The current equipment has been surveyed and the major equipment on hand includes seven computers for the mathematics faculty and chairperson, and a printer. This project will make use of the following on hand equipment: six computers for the mathematics faculty, computer for chairperson, and a printer.

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

The maximum lifetime for the equipment will be ensured by the following housing and maintenance plan. The requested equipment will be housed in building 40 mathematics lab and building 12 Electronic Classroom at Southern University at New Orleans. The requested equipment will be maintained by the university's Information Technology Center (ITC).

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

The project will be conducted and administered by the personnel described below. The role of the project director will be responsible for budget management, coordination of workshops and lab setup, modification of course materials, submission of reports to Board of Regent (BoR), and coordination of the proposed activities for the overall success of the project. The role of the co-director is to modify course materials and coordinate the logistical aspects of lab setup and workshop implementation. Dr. Chen will support all activities of this project and make recommendations for necessary improvements. We do not intend to hire new faculty for the mathematics lab or to teach in the electronic classroom. We have highly qualified mathematics faculty members in the Mathematics Unit at SUNO who are familiar with the curriculum and equipment.

**Special training of existing personnel will be required. If required, explain.**

There will be two workshops conducted over a period of three days. The first will be conducted by Ms. Singleton to train mathematics faculty on the implementation of the new curriculum and the navigation of the online course tools in MyMathLab and Blackboard, which are mathematics software for online courses. The second workshop will be conducted with the help of software publishers' representatives to train SUNO mathematics faculty and adjuncts, and math lab staff (SUNO students) on the use of the selected software and the Walk and Talk Presentation Board.

As much as possible we will utilize the services of existing faculty and free presentations options provided by the software and equipment manufactured.

**Acquisition of additional support personnel will be required. If required, explain.**

No, additional support personnel will be required.

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

The proposed project and project benefits will be disseminated through campus meetings, local, state, and national meetings, conferences, and seminars, publication and presentations, workshops, web sites and emails. Project information will be provided electronically to higher education boards of regents and other colleges and universities.

**4e.1 Relationship with Industrial/Institutional Sponsors**

The proposed project will assist in strengthening the relationship between SUNO local K-12 teachers. By providing them with free training on new equipment and software as participants in this project they will agree to share their knowledge by training other K-12 teachers in this new technology in the new electronic classroom and mathematics lab under the supervision of Ms. Singleton and Dr. Chen. It will also establish a new relationship with the software publisher and attempt to contribute to the use of multimedia by providing a handbook that will facilitate the integration of technology in the classroom. When not in active use by the mathematics faculty the propose mathematics lab and electronic classroom may provide an additional external source funding because it can be rented out for conferences and workshops.

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

The proposed project will assist the mathematics unit in promoting or enhancing the economic development of the State of Louisiana by attracting and maintaining higher achievers and funneling them into the local workforce. The short-term benefits include keep students in Louisiana. The long-term benefits include increasing computer workforce that has the potential to make Louisiana more competitive nationally. \*If not a science project, then the proposed project will contribute to and benefit the cultural resources of Louisiana in by providing more formidable students workforce and industry which will stave off the erosion of our higher achiever and make Louisiana more prominent in the national arena.

**4f. ADDITIONAL FUNDING SOURCES**

Additional funds will be sort from the National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), and other grant funding references in the future.

**5. Previous Board of Regents Support Fund Awards**

The Project Director or Co-Project Director has not previously received support from Support Fund Programs.

**6. Form 5-ENH (fill out)**

**BOARD OF REGENTS SUPPORT FUND  
TRADITIONAL AND UNDERGRADUATE ENHANCEMENT, FY 2007 - 2008  
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: Enhancing the Mathematics Curriculum at Southern University at New Orleans

Project Director(s): Cynthia M. Singleton

Institution(s) of Higher Education: Southern University at New Orleans

**PROPOSED BUDGET:**

	<b>Support Fund \$ Requested</b>	<b>Institutional Match<sup>1</sup></b>	<b>Private/ Match<sup>2</sup></b>
A. Equipment <sup>3</sup>	\$100,371.33	\$2,000.00	
B. Software	\$30,892.45		
C. Supplies		\$500.00	
D. Shipping/handling	\$3,561.00		
E. Installation	\$30,750.00		
F. Personnel training			
G. Other (Salaries)			
1. Summer Salaries for Project Director & Co Projector Director	\$19,028.44	\$8562.80	
2. Fringe Benefits on summer Salaries for Project Director & Co-Projector Director	\$5,326.06		
3. Reward for Students' Competition	\$800.00		
4. Work Study for Student		\$1,800.00	
5. Mathematics Tutoring performed by Faculty		\$9,000.00	
6. Administration Assistant		\$5,000.00	
H. Indirect costs	Not allowed	\$6,755.10	
I. Maintenance	Strongly discouraged	\$7,500.00	
J. Total costs (A-I)	\$190,729.28	\$41,117.90	

## **6a. BUDGET AND BUDGET NARRATIVE**

**Budget Narrative – Fully explain every item for which Support Fund money is used. The budget must be itemized by year. Equipment purchases must be listed by item and cost in the budget narrative.**

### ***A. Equipment***

- (1) Forty five thousand dollars is requested for Gateway desktop computers ( $\$1500 * 30$  computers =  $\$45,000$ ) in support of electronic classroom. Desktop computers are necessary for students and an instructor to work individually. The average class size is thirty students and we must be able to accommodate each student equally. The Gateway is standard computer used by state institutions and will be able to run the proposed software.
- (2) Thirty thousand dollars is requested for Gateway desktop computers ( $\$1500 * 20$  computers =  $\$30,000$ ) in support of mathematics lab. Twenty additional computers will make the mathematics lab useful during all operating hours and provide students with consist availability schedule even when a class occupies the electronic classroom.
- (3) Six thousand six hundred twelve dollars is requested for a Walk and Talk Presentation Board and Projector – enables instructor to present visual instruction to a large number of students and provide relevant class wide examples.
- (4) Nine thousand one hundred ninety eight dollars is requested for Aspira Workstation Desks ( $\$183.96 * 50$  desks =  $\$9,198$ ) for mathematics electronic classroom and computer lab for students. It will provide workspace for students' computer, monitor, keyboard, mouse, and class materials.
- (5) One thousand eight hundred forty seven dollars and seventy three cents is requested for Boss leather adjustable task chairs ( $\$36.23 * 51$  chairs =  $\$1,847.73$ ). Chairs are used to sit at work stations for the electronic classroom and mathematics lab.
- (6) One thousand dollars is requested for an Aspira Workstation (desk  $\$399.40$ , square corner connector  $\$274$ , mobile pedestal table  $\$297$ , utility drawer  $\$29.60$ ) for instructor. It will provide workspace in the electronic classroom for instructor computer, monitor, keyboard, mouse, and class materials.
- (7) One thousand three hundred sixty dollars and sixty cents is requested for three items: 1) 1- Brother Model network-ready digital laser copier/color scanner/printer ( $\$440.99$ ). Students and instructor will use printer for Electronic Classroom to print test scores and other course materials; 2) 1- Brother Laser Printer ( $\$391.99$ ) will be used for students to print course documents located in the mathematics lab; and 3) 2 - Aspira printer stands ( $\$263.81 * 2 = \$527.62$ ) will be used to sit printers on stands in the computer lab and electronic classroom.
- (8) Five thousand three hundred fifty three dollars is requested for a server – connect individual computers to the school server. Enable students to print test scores and other course

materials so that they can take them home and reference them if they do not have personal computers.

## ***B. Software***

- (1) One thousand seven hundred seventy one dollars and fifty cents is requested for Minitab perpetual user license. This software is used to analysis data for Math 250 and Math 350 statistic courses, research, and other projects.
- (2) Twenty five thousand four hundred dollars is requested for the following software: 1) Mathematica perpetual user license (\$13,000.00), 2) MATLAB perpetual user license (\$6,100.00), and 3) Scientific Workplace perpetual user license (\$6,300.00). These software functions are unique used in academia and workplace for mathematicians and biologists, chemists, engineers, and physics. Each of the software will be discussed below separate.
  - Mathematica software is based on sets of algorithms that are unique in nature. Mathematica is not just any math and science software program.
  - MATLAB is a numerical computing environment and programming language. It is part of a full computer algebra system.
  - Scientific Workplace software is powerful allowing users to calculate very complex expressions in an analytical form; perform numerical simulation; engineer instruments; and write scientific articles.
- (3) One thousand eleven dollars and ninety five cents is requested for Geometer's Sketchpad perpetual user license. The Geometer's Sketchpad is a dynamic construction, demonstration, and exploration tool that adds a powerful dimension to the study of mathematics. Instructors and students can use this software program to build and investigate mathematical models, objects, figures, diagrams, and graphs.
  - With Sketchpad, instructors can give their students a tangible, visual way to explore and understand abstract concepts in algebra, geometry, trigonometry, pre-calculus, and calculus. Concepts that may be initially difficult for your students to understand become very clear when they see visual representations on the screen and interact with them using Sketchpad.
- (4) One thousand six hundred nine dollars and fifty cents is requested for Dream weaver perpetual user license. Dreamweaver software is used to design, develop, and maintain websites applications from start to finish.
- (5) One thousand ninety nine dollars and fifty cents is requested for Adobe Acrobat 8 Professional perpetual user license. This software enables educators to reliably create, combine, and control Adobe PDF documents for easy, more secure distribution, collaboration, and data collection. It is excellent for online courses. This software is superior for submitting technical papers for publication.



#### ***D. Shipping and Handling***

The payment of shipping and handling is requested for the following: 1) twenty five dollars for Maple software; 2) thirty five hundred dollars for fifty Gateway desktop computers (\$50 computer \* \$70 each = \$3,500); 3) twelve dollars for Geometer's Sketchpad software; and 4) twenty four dollars for MATLAB software.

Shipping and handling – non-negotiable cost is associated with the delivery of some project materials.

#### ***E. Installation***

- (1) Seven hundred fifty dollars is requested for ten Pelican Computers Inc. on-site installation of all internal & external components ordered & initial set up & diagnostic for Walk and Talk Presentation Board and projector used for the Electronic Classroom.
- (2) Ten thousand dollars is requested for connectivity and services for electronic classroom (\$5,000.00) and mathematics lab (\$5,000.00).
- (3) Twenty thousand dollars is requested for portal in regards to telecommunication electric connectivity for computers (\$400 @ 50 computers = \$20,000.00) in the mathematics lab and Electronic Classroom.

#### ***G. Other (Salaries)***

- (1) Eight thousand nine hundred seventeen dollars and thirty three cents is requested for Director, Ms. Singleton salary (\$40,128 yearly salary/9 months \* 2 months = \$8,917.33) for two summer months (June 1, 2008 through July 30, 2008). She will be responsible for budget management; coordination of workshop; purchasing computers, Walk and Talk Presentation Board, projector, software, printers and stands, chairs and desks for computer workstations for mathematics lab and Electronic Classroom setup; provide pamphlet to mathematics faculty, students, and K-16 teachers; modify course materials; develop a handbook which will include complete description of selected activities found in the textbook and software, mentor competition for mathematics major; submission of reports to Board of Regents (BoR), and coordination of the proposed activities for the overall success of this project.

Ten thousand one hundred eleven dollars and eleven cents is requested for Co-Director, Dr. Chen salary (\$45,500 yearly salary/9 months\* 2 months = \$10,111.11) for two summer months (June 1, 2008 through July 30, 2008). He will be responsible for coordination of workshop, modify course materials, provide pamphlet to mathematics faculty, students, and K-16 teachers; develop a handbook which will include complete description of selected activities found in the textbook and software, mentor competition for mathematics major; submission of reports to Board of Regents (BoR), and coordination of the proposed activities for the overall success of this project.

- (2) Five thousand three hundred twenty six dollars and six cents is requested for Fringe Benefits on Summer Salaries for Project Director & Co-Project Director ( $\$19,028.44 * 27.99\%$  base salary = \$5,326. 06)
- (3) Eight hundred dollars is requested for first and second place mathematic competition award (2 winners per team \* \$200 per student \* 2 pairs of winners = \$800.00) issued by December 15, 2008.

**Any matching funds/resources must also be listed on the budget page and explained in the budget justification section.**

- A. **Equipment** – SUNO will match two thousand dollars for office computers used by Ms. Singleton and Dr. Chen for handling BoR grant responsibilities (September 2007 – June 2009).
- C. **Supplies** – SUNO will match five hundred dollars for office supplies. It entails paper, binding of handbook, pens, pencils, pamphlets, and ink cartilage for printers used by Ms. Singleton and Dr. Chen during September 2007 through June 2009.
- G. **Other (Salaries)** – SUNO will match twenty four thousand three hundred sixty two dollars and eighty cents for salaries including Ms. Singleton, Director ( $\$40,128 \text{ yearly} * 10\% = \$4,012.80$ ) and Dr. Chen, Co-Director ( $\$45,500 \text{ yearly} * 10\% = \$4,550$ ); Administration Assistance \$5,000; work study for student (  $\$10 \text{ per hour} * 20 \text{ hours per week} * 9 \text{ months} = \$1,800$ ); and mathematics tutoring performed by faculty ( $\$50 \text{ per hour} * 4 \text{ hours per week} * 5 \text{ faculty members} * 9 \text{ months} = \$9,000$ ) for Fall 2008 and Spring 2009.
- H. **Indirect Cost** – SUNO will match six thousand seven hundred fifty five dollars and ten cents from Board of Regents regarding Project Director and Co-Project Director salaries ( $\$19,028.44 * 35.5\% = \$6,755.10$ ).
- I. **Maintenance** – SUNO will match seven thousand five hundred dollars for maintaining equipment ( $\$1,500 * 30 \text{ computers for electronic classroom} + \$1,500 * 20 \text{ computers for mathematics lab}$ ) \* 10% = \$7,500 for computer network over a period of time, cost of repairs, replacement and upgrades (when funds are available), and software purchases (when funds are available).

**6.b. Project Activation Date and Anticipated Date of Completion**

The project activation date is June 1, 2008 and the termination date is June 30, 2009 for one-year projects or June 30, 2010 for two-year projects.

7. **BIOGRAPHICAL SKETCH (FORM 4)**
8. **CURRENT AND PENDING SUPPORT (FORM 3)**
9. **PROPOSAL APPENDIX**

**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 **Cynthia Singleton**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
Southern University at New Orleans, New Orleans, LA	B.S.	1985	Accounting (Minor in Mathematics)
Loyola University, New Orleans, LA	M.S.	1996	Mathematics
Southern University A & M College, Baton Rouge, LA	Ph. D.	2008	Mathematics and Science Education

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.

**A. PROFESSIONAL EXPERIENCE**

- Assistant Professor of Department of Natural Sciences (in Mathematics), Southern University at New Orleans (SUNO), 1996- present
- District Assessment Team Member (Consultant), Milestone Academy of Learning Experience Skills, New Orleans, Louisiana 2001-2003
- Project Instructor: SCIENCE & MATH SUMMER WORKSHOP FOR MIDDLE & HIGH SCHOOL TEACHERS, NSF/LaSEPT, SUNO, 1997
- Instructor for Mathematics, High School and Higher Learning Students, NASA/SUNO Partnership Grant, 1997
- Instructor of Mathematics, TRIO/Upward Bound/SUNO, 1997-1999
- Visiting Lecturer in Department of Mathematics, Delgado Community College, New Orleans, Louisiana, 1998-1999
- Jefferson Parish Public Schools, High School Teacher, 1988-1996

**B. MAJOR RESEARCH INTERESTS (Short list)*****Selected Research Interests and Presentations***

- Omar, A., Singleton, C., Cammon, C., & Kwanburbumpen, A. (2007). Quality Enhancement Program (QEP) E-learning, Southern University at New Orleans, Southern Association of Colleges and Schools (SACS) report

- Singleton, C., Houston, J., Hill-House, D., Brehon, C., Halimatu, F. (2006). Renewable and Non-Renewable Energy Consumption in the USA for the Past 25 Years: Projection of Needs for the Next 25 Years. ECSU-NAM, Journal of ECSU'S Computational Science Scientific Visualization, Elizabeth City North Carolina
- Singleton, C. and Gordon, J. (2004). An Overview of Praxis II Mathematics and SUNO Mathematics Courses: The Alignment of Test at an Glance Elementary, Middle, and Secondary Schools Mathematics (Praxis II), with SUNO Mathematics Courses and Course Syllabus's, Southern University at New Orleans, Sponsored by LAMP
- Singleton, C., Legget, C., and Burns, S. (2004). Quality Education for Minorities (QEM) Network HBCU-UP Mathematics Curriculum Workshop: Identify the Development (Barriers, Academic Preparedness, Pedagogical Strategies, Assessment Strategies, Core Concepts, and Core Skills) that could be used to develop a series of mathematics modules designed to assist students in accelerating their understanding of these concepts in Developmental Mathematics, Algebra, Geometry or Pre-Calculus, Washington, D. C.
- Singleton, C., Alexander, S., Arthur, C. Johnson, R., McCray, J., Robinson, S. and Anderson, P. (2003) The Significance of Network Security to Data Assurance in Computational Research Design, ECSU-NAM, Journal of ECSU'S Computational Science Scientific Visualization

#### **C. PUBLICATIONS (short list)**

- Singleton, C. (2007). E-learning for College Mathematics: What Works and What Does Not Work, Fourth Annual J.K. Haynes Teacher Preparation Conference, Southern University System, *Journal of Urban Education Focus on Enrichment, Southern University at New Orleans, Volume 4, Issue 3*
- Singleton, C., Omar, A., & Kwanbunbumpen, A. (2007) Hurricane Katrina's Aftermath: The Advancement of E-learning, *Information Systems Education Journal, Tracking Number Paper ID: 2007/664*
- Singleton, C., Kambhampati, M., Omojola, J., Omar, A. Miranda, D. (2005). Interdisciplinary Science, Mathematics, and Technology Course Modules for Praxis II, Southern University at New Orleans, *Journal of Urban Education Focus on Enrichment, Southern University at New Orleans, Volume 2, Issue 1*
- Singleton, C., (2004). A Historical Overview that led to the Fragmentation of College Mathematics Curriculum, *Educational Resources Information Center (ERIC) Document Reproduction Reference Tracking Number SE 067984 or ED 477 311*

#### **D. Fundamental Tools, Educational Enhancements, and Implementing Research Investigations**

- Statistics Software: Minitab, SPSS, and Excel
- Electronic Learning: MyMathLab and Blackboard
- Scientific Visualization: Mathematica, Maple, and Scientific Workplace
- Visualization Techniques: Geometry Sketchpad and Visio Professional
- Programming Languages: Visual C++ and JAVA
- Website Development Tools: MS 2000 FrontPage, Dream weaver, and HTML
- Presentation/Publication Tools: MS 2000: Word, PowerPoint, Publisher, Photo Editor, & Access

## 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	Position Title		
<b>Zheng Chen</b>	<b>Assistant Professor</b>		
EDUCATION (Begin with baccalaureate or other initial professional education and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	FIELD OF STUDY
Sichuan Normal University (Chengdu, China)	B.S.	1984	Mathematics
Northwest University (Xian, China)	M.S.	1990	Mathematics
Fudan University (Shanghai, China)	Ph. D.	1994	Mathematics
Florida State University	Ph. D.	2007	Applied and Computational Mathematics

**RESEARCH AND PROFESSIONAL EXPERIENCE:** Starting with present position, list, in reverse chronological order, previous relevant employment, experience, and honors. Key personnel include 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.

### PROFESSIONAL EXPERIENCE

- a. **Assistant Professor** at Department of Natural Sciences (in Math), Southern University at New Orleans, New Orleans, LA. Aug. 2007 –present
- b. **Research Assistant** in School of Computational Science and **Teaching Assistant in Department of Mathematics**, Florida State University, Tallahassee, FL, Aug. 2002 to Aug. 2007
- c. **Teaching Assistant**, Department of Mathematics, Iowa State University, Ames, IA, Aug. 2000-Aug. 2002
- d. **Assistant Professor** (1995-2000),  
**Lecturer** (1993-1995)  
Department of Mathematics, Sichuan University, Chengdu, China

### Research Interests

- Numerical analysis and scientific computation
- Stochastic partial differential equations
- Finite element methods
- Navier-Stokes equations
- Complex analysis, Geometric function theory in several complex variables

## Computing Skills

- Operating Systems: UNIX/Linux, Windows.
- Programming Languages: Fortran 90, C/C++, Matlab, and Unix Shell.
- Parallel Environments: MPI (Message Passing Interface).
- Others: Maple, SAS, S-Plus, Latex, Vi, Emacs, Excel.

## Honors/Awards

- Program for Instructional Excellence (PIE) Certificate issued by FSU Center for Teaching and Learning, 2006
- Support provided by North Carolina State University to join IMSM Workshop (7/26/2004-8/3/2004), North Carolina State University, 2004.
- Project: write a textbook on Complex Analysis with emphasis on its interaction with other math branches, funded by Sichuan University, Chengdu, China, 2000.
- Project “ $C^*$  algebra and application to Operator Theory ” funded by National Natural Science Foundation of China (NSFC), China, 1999-2001. (with principal investigator Prof. Sun Shunhua, Prof. Yu Dahai, and etc.)
- Research Funding for young faculty provided by Sichuan University, Chengdu, China, 1994-1997.
- “Yuanwang” Award for excellent teaching, Sichuan University, Chengdu, China, 1995.
- “Nine Chapters” Award for excellent graduate students, Fudan University, Shanghai, China, 1992.

## Publications

1. Y. Cao, Z. Chen and M. Gunzburger, The ANOVA expansion and efficient sampling methods for parameter dependent nonlinear PDEs (submitted and under revision)
2. Y. Cao, Z. Chen and M. Gunzburger, Solutions of Stochastic Stokes equations with numerical simulation (preprint)
3. M. Breen, Z. Chen et al, Identifying Respiratory Parameters from Plethysmography Data, CRSC Technical Report edited by H. T. Banks et al , CRSC-TR04-41, December 2004.
4. Z. Chen, The semigroup of fractional iterates of holomorphic mappings in the unit ball  $B^n$ . Sichuan Daxue Xuebao 33 (1996), no. 1, 31-36.
5. Z. Chen, Characterizations of biholomorphic and starlike mappings on a class of bounded, strictly balanced domains in  $C^n$ . Chinese Ann. Math. Ser. A 16 (1995), no. 2, 230–237.
6. Y. L. Zhang, and Z. Chen, On two subclasses of Bazilevic functions. Pure Appl. Math. (Xi'an) 10 (1994), no. 2, 39–48. 30C45
7. Z. Chen, Distortion theorems for holomorphic mappings between convex domains in Banach spaces. J. Fudan Univ. Natur. Sci. 32 (1993), no. 4, 437-441.
8. Z. Chen, A Landau-type theorem for holomorphic endomorphisms of polydiscs. Sichuan Shifan Daxue Xuebao Ziran Kexue Ban 17 (1994), no. 1, 23–25.
9. Z. Chen, Distortion theorems for holomorphic mappings between convex domains in Banach spaces. Sichuan Shifan Daxue Xuebao Ziran Kexue Ban 16 (1993), no. 6, 34-36.

**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: **DOES NOT APPLY (DNA)**

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

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

## Proposal Appendix



## REFERENCES

- Mayer, R. (2001). *Multimedia Learning*. Cambridge University Press.
- McMillan, V., Parke, S., & Lanning, C. (1997). "Remedial/Developmental Education Approaches for the Current Community College Environment." *New Directions for Community Colleges*, 25 (4), 21-32.
- National Council of Teachers of Mathematics (NCTM). (2000). *Principles and Standards for School Mathematics*. Reston, VA: Author
- National Research Council (NRC) (1991). *Moving beyond myths: Revitalizing undergraduate mathematics*. Washington, DC: National Academy Press.
- Wilson, A. (1992). "The INVEST Program: A Computer-Based System for Adult Academic Upgrading. A Pilot Study." Research report, Cumberland Campus of Nova Scotia Community College. (*Education Resource Information Center (ERIC)* ED 377 896).