

32704

PROPOSALS 3270  
008 MATH-08

(Form 1-ENH, Rev. 2007)

## PROJECT SUMMARY

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

Louisiana State University and Agricultural and Mechanical College

Address (Include Department)

Department of Mathematics, Louisiana State University, Baton Rouge, LA 70803

Principal Investigator(s) Michael Tom (PI), Guillermo Ferreyra, Amha Lisan, Frank Neubrandner

Title of Project:

Minority Recruiting and Mentoring in Mathematics

Abstract (DO NOT EXCEED 250 WORDS)\*

The proposal seeks to establish a comprehensive undergraduate and graduate Minority Recruiting and Mentoring Program at the LSU Department of Mathematics. It will work with the LSU Admissions Office to help increase the overall undergraduate minority enrollment at LSU by creating a framework for intensive LSU ACT Prep Academies for minority applicants who have to bring their Math ACT scores up in order to be admitted to LSU. It will recruit high achieving minority high school students to participate in residential "Mathematics Summer Circle" programs and it will create a comprehensive mathematics mentoring and support system for minority STEM undergraduates at LSU. To increase graduate enrollment in mathematics, the proposal suggests offering a summer institute (bridge program) that provides support and encouragement to minority math majors who show promise of successful graduate studies in the mathematical sciences. This proposal is a revision of a previous proposal submitted to BoR in 2004 by Lisan and Tom, which was funded in the amount of \$25,000 mandating the investigators to visit and consult with other successful programs of the kind and resubmit an enhanced full proposal.

## **PROJECT SUMMARY**

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

Louisiana State University and Agricultural and Mechanical College

Address (Include Department)

Department of Mathematics, Louisiana State University, Baton Rouge, LA 70803

Principal Investigator(s) Michael Tom (PI), Guillermo Ferreyra, Amha Lisan, Frank Neubrandner

Title of Project: Minority Recruiting and Mentoring in Mathematics

Abstract (DO NOT EXCEED 250 WORDS)\*

The proposal seeks to establish a comprehensive undergraduate and graduate Minority Recruiting and Mentoring Program at the LSU Department of Mathematics. It will work with the LSU Admissions Office to help increase the overall undergraduate minority enrollment at LSU by creating a framework for intensive LSU ACT Prep Academies for minority applicants who have to bring their Math ACT scores up in order to be admitted to LSU. It will recruit high achieving minority high school students to participate in residential "Mathematics Summer Circle" programs and it will create a comprehensive mathematics mentoring and support system for minority STEM undergraduates at LSU. To increase graduate enrollment in mathematics, the proposal suggests offering a summer institute (bridge program) that provides support and encouragement to minority math majors who show promise of successful graduate studies in the mathematical sciences. This proposal is a revision of a previous proposal submitted to BoR in 2004 by Lisan and Tom, which was funded in the amount of \$25,000 mandating the investigators to visit and consult with other successful programs of the kind and resubmit an enhanced full proposal.

(Form 2, rev.2007)

## Table of Contents

1. Cover Page	(i)
2. Project Summary	(ii)
3. Table of Contents	(iii)
4. Narrative and Bibliography	1
<i>a. The Current Situation</i>	1
a.1 Institutional Description	1
a.2 Rationale for Project	
a.3 Impact on Existing Resources	3
<i>b. The Enhancement Plan</i>	4
b.1 Project Goals and Objectives	4
b.2 Work Plan of Proposed Project	4
b.3 Evidence of Potential to Achieve Recognized Eminence	12
b.4 Impact on Curriculum and Instruction	13
b.5 Impact on Quality of Students	13
b.6 Impact on Faculty Development	14
b.7 Performance Measures	14
<i>c. Equipment</i>	14
<i>d. Faculty and Staff Expertise</i>	14
<i>e. Economic and Cultural Development and Impact</i>	15
e.1 Relationships With Industrial/Institutional Sponsors	
e.2 Promotion of Economic Development and Cultural Resources	
<i>f. Additional Funding Sources</i>	15
5. Previous BoR Support Fund Awards	16
6. Budget and Budget Narrative	19
7. Biographical Sketches	24
8. Current and Pending Support	32
9. Proposal Appendix	A1
<i>a. Letters of Support</i>	



#### **4. NARRATIVE AND BIBLIOGRAPHY**

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

**a.1 Institutional Description.** Louisiana State University, Baton Rouge (LSU) is the major public research university in the state, with about 24,000 undergraduates and 5,000 graduate students. Louisiana is home to the second-largest proportion of African-Americans (32.5%) in the nation, behind neighboring Mississippi (36.3%). LSU currently has about an 11 % minority enrollment, with an African-American enrollment of about 9.1% (undergraduate programs) and 8.3% (graduate programs). Of the 1,346 full-time faculty, 56 are African-American (3.5%) and so are 77 of the 1802 graduate assistants (4.3%). With 51 professorial rank faculty (including two African-American professors, both PIs for this proposal) and 18 instructors, the LSU Math Department is the second largest department at LSU. It is also one of the largest mathematical research departments in the South. Presently, over 40% of the professorial faculty is supported by NSF-DMS research grants to support their research in pure and applied mathematics. In addition, the department's education programs are supported by over 10 major federal grants. In the last couple of years, the department has upgraded its undergraduate and graduate programs, both in quality and quantity. Aided by new Concentrations in Actuarial Science and Secondary Education, the undergraduate enrollment has more than doubled: from 86 majors in 2002/03 to 195 in 2007/08. Presently, about 10% of the undergraduate math majors are African-American. Since 2002/03, the Department's graduate programs have grown from an enrollment of 72 in 2002/03 to 97 in 2007/08, with an additional nine students being enrolled in a new professional masters degree program for in-service middle- and high school mathematics teachers (MNS program). During 2000-06, the Department's minority PhD graduates comprised 8.8% of its 45 PhD graduates. According to the 2002 Annual Survey of the Mathematical Sciences only 2.1% of PhD graduates are from minority groups. Thus, by having merely four minority PhDs during 2000-06, the LSU Math Department graduated minority PhDs at more than four times the national rate!<sup>1</sup> Presently, two of the 97 students (2%) in the department's regular graduate program and two out of nine students (22%) in the MNS program are African-American.

**a.2 Rationale for Project.** The LSU Math Department has been a "Foundation of Excellence" program since the establishment of LSU's Flagship agenda in 2002/03 that aims to bring LSU to a new level of excellence by 2010. Although in the last US News and World Report LSU Mathematics scored 2.9/5 (which is higher than any LSU science and engineering department and tied with LSU English and Fine Arts), the department has still ways to go before it can successfully secure a place within the Nation's top forty mathematics departments. One of the main steps necessary to continue to increase the competitiveness of the LSU Math Department among the top public universities in the country is a further upgrade of its undergraduate and graduate programs – and many of this year's Board of Regents Enhancement proposals put forward by the LSU Mathematics Department are addressing this issue.

This proposal addresses the entirely insufficient number of high caliber African-American students that choose to major in the mathematical sciences – at LSU or at any of Louisiana's colleges and universities. The Math Department understands that LSU has a vested interest in building a critical mass of African-American undergraduate and graduate students<sup>2</sup> and we realize that it is our responsibility to increase access and decrease institutional barriers for these students to thrive and grow. Considering the insufficient number of African-American mathematics teachers (and role models) in Louisiana middle and high schools, nowhere is the need for African-American mathematics majors more acute than in our department's new

---

<sup>1</sup> Although the Math Department was ranked 9th in the US by PhDs.org with respect to percentages of minority PhD graduates for 1986-92, only one African-American obtained a PhD from the LSU math department since 2001.

<sup>2</sup> See also Section a.3.

“Concentration in Secondary Education,<sup>3</sup>” LSU’s only pathway to secondary certification in mathematics. In the years to come, LSU will be graduating a non-trivial number of African-

**2006-07 Louisiana Enrollments in Mathematical Sciences:**

- Less than 0.3% (491) of the undergraduate population (172,729) in Louisiana's public colleges and universities are majoring in the Mathematical Sciences (math, applied math, statistics), compared to a national average of about 0.8%. In all public colleges and universities in Louisiana, there are 54 mathematics majors among the 50,102 African-American undergraduates enrolled (0.1%).
- Only 232 (1%) of the 22,641 graduate students enrolled in Louisiana's universities were in the Mathematical Sciences, compared to a national average of 2.8%. Of the 4,934 African-American graduate students, 23 were in the Mathematical Sciences (0.5%).

American mathematics teachers if and only if we can succeed in implementing an aggressive undergraduate recruitment and retention plan. And clearly, to substantially increase the number of African-American PhD's in the Mathematical Sciences we have to address the fact that presently in Louisiana only 54 African-American undergraduates major in mathematics.

To increase African-American undergraduate and graduate enrollment in math at LSU, we propose to establish a comprehensive undergraduate and graduate Minority Recruiting and Mentoring (MRM) Program at the LSU Department of Mathematics. We propose:

- [1] to increase the overall undergraduate minority enrollment at LSU by creating a framework for intensive LSU ACT Prep Academies for minority applicants who have to bring their Math ACT scores up in order to be admitted to LSU,
- [2] to recruit high achieving minority high school students to participate in residential “Mathematics Summer Circle” programs,
- [3] to create a comprehensive mathematics mentoring and support system for minority STEM undergraduates at LSU,
- [4] to increase graduate enrollment in mathematics by offering a summer institute (bridge program) providing support and encouragement to minority math majors who show promise of successful graduate studies in the mathematical sciences, and
- [5] to secure significant additional funding sources to support and scale-up the programs above.

**Remarks on two Sister BoR Enhancement Proposals:** (I): *Human Resource Development in Mathematical Sciences*. Baldrige, Cygan, Madden, McAnelly, Neubrandner, Smolinsky. Without a drastic enhancement of the Louisiana enrollments in the Mathematical Sciences in general and at LSU in particular, our department can not hope to create and sustain nationally significant undergraduate and graduate programs. Since our department is already home to 40% of all undergraduate and graduate students in Louisiana, we can only do better if the secondary schools in Louisiana do better. Thus, in a separate “sister” proposal we are proposing activities to better prepare the state’s college-bound high school students for math-intensive undergraduate programs and to promote enrollment in Mathematical Sciences in general. Although both programs are similar in nature, the target audiences have different backgrounds. From our experience we have seen that minority recruitment and retention issues require focused and sustained programs specially tailored to the needs of the community. The proposals are conceived so that they strengthen each other if both are funded and that they can be successfully implemented if one is funded but not the other. It has to be emphasized that the budgets are lean and that there would be no “double-dipping” if both were funded.

(II): *“Professional Master Degrees for Teachers,”* Baldrige (Math), Cherry (Physics), Kirshner (Education), Madden (Math), Maverick (Chemistry), McAnelly (Math), Neubrandner (Math),

<sup>3</sup> This concentration leads to a B.S. in math and to secondary certification as well, all within a 4-year program.

*Wischusen (Biology)*. The department is participating in a multidisciplinary sister proposal that seeks support for professional Master's programs, one from the Colleges of Arts and Sciences and Basic Sciences, and one from the College of Education. These new programs intend to provide teachers with a deep understanding of the math and science that is taught in high-school and early-college. The programs will serve teachers with many backgrounds, ranging from veteran teachers to recent math and science majors who have just started their teaching careers. The programs will strongly encourage the participation of minority teachers, thereby effectively supporting many of the goals of this proposal. It has to be emphasized again that there would be no "double-dipping" if both proposals were funded.

**Remarks on a Previous BoR Enhancement Grant:** This proposal is a (major) revision of a previous proposal submitted to BoR in 2004 by Dr. A. Lisan and Dr. M. Tom. See Section 5.

**a.3 Impact on Existing Resources.** The proposal is based on the premise that the LSU administration is serious, very serious in fact, about supporting departmental recruitment and retention initiatives geared towards minority students. It will complement and improve upon several existing university resources. LSU's "Pelican Promise" is a new program offering grants averaging \$3,000 annually to qualified low-income students from Louisiana. LSU's National Scholars' Award is purely merit based and will give about \$3,300 to in-state students and more than \$10,000 to out-of-state students who are charged higher tuition. The Pelican Promise will help to recruit and retain more low-income minorities who never thought they could attend LSU<sup>4</sup>. The LSU investment in the "Pelican Promise" will be about \$1 million for 320 students initially and \$4 million in four years for 1,300 students, while the scholars' award will cost \$300,000 at first for about 70 students and \$1.1 million in four years for 200 students.

It is the goal of this proposal to make the most of these programs that both present unique opportunities to increase African-American undergraduate enrollment in Mathematics at LSU.<sup>5</sup> The proposed budget would allow the LSU Math Department to design and implement template programs that, if successful, can be scaled up and be institutionalized. We are confident that their scale-up and/or permanent implementation will be an attractive proposition to the many national funding agencies supporting an increased production of STEM graduates and an adequate supply of effective STEM teachers.

Among the variety of support systems in place at LSU are the LSU Center for Academic Success and student chapters of professional organizations such as the National Society of Black Engineers (NSBE), National Organization of Black Chemists and Chemical Engineers. LSU is increasing the number of minorities in administrative positions with the presence of African-American faculty in important roles throughout the university.<sup>6</sup> In addition, LSU has taken a multitude of steps to develop scholarships that target minorities. Two of the Co-PIs of this

---

<sup>4</sup> Presently, about 80 percent of high-income college students earn degrees while only 20 percent of low-income students graduate. Some of that can be attributed to poor students dropping out because of financial problems.

<sup>5</sup> At the time of submission of this proposal, we received word that the National Math and Science Initiative (NMSI) has awarded \$2.4 million to LSU to provide, among others, stipends to math majors participating in GeauxTeach, LSU's secondary certification program that is modeled on the path-breaking UTeach program at the University of Texas, Austin. Initiated in 2003 with support from NSF STEMTP and Noyce Fellowship Grants, GeauxTeach is a four-year undergraduate program leading to a Bachelor's degree in a content area (e.g., Math, English, Physics, Chemistry, Biology, History) together with secondary teacher certification. Current enrollment is nearing 400, of which about 150 are math or science majors. The availability of a substantial amount of stipends through the NMSI grant will greatly enhance our ability to recruit minority students into mathematics.

<sup>6</sup> E.g., Dr. Warner, Vice-Chancellor for Strategic Initiatives; Dr. Collins, Associate Vice-Chancellor and Dean of University College; M. Caillier, Director of Human Resources; and Dr. McGuire, Associate Dean of University College and Director of the Center for Academic Success.

proposal, Dean Ferreyra and Neubrander, serve as Co-PIs on NSF funded programs providing scholarships to minority students at LSU and the Ronald E. McNair Research Scholars program is dedicated to enhancing student's skills for entry into graduate studies and acquiring a PhD. The Cooperative Assistance Program (CAP), an agreement with Southern University and with other Louisiana Historically Black Colleges and Universities (HBCUs), guarantees financial support for African-American students admitted into LSU's graduate programs. Another LSU-Southern University agreement established the Huel Perkins Doctoral Fellowship program for African-American graduate students.

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

**b.1 Project Goals and Objectives.** Louisiana faces a serious shortfall in the number of individuals entering the fields of science and mathematics. This is especially true for African-American students. Since the African-American community represents one-third of Louisiana's population, the State can hardly afford not to pay attention to this pool of students from which the highly skilled workforce needed in the years ahead will have to be drawn.

This proposal seeks to establish a comprehensive undergraduate and graduate Minority Recruiting and Mentoring Program at the LSU Math Department. Its goals are to ensure that Louisiana minorities, and especially African-Americans, have improved opportunities and greater encouragement to participate fully in postsecondary science and mathematics programs at Louisiana institutions of higher learning. The project aims to foster enthusiasm, interest, and competence both for pursuing careers in the field and for the acquisition of skills and knowledge demanded by an increasingly technological society. Building upon and enhancing the existing capabilities of the LSU Mathematics Department, the project aims to triple the African-American graduate enrollment and double the minority undergraduate enrollment in mathematics at LSU by fall of 2010, and advance the department's minority initiatives to a stage where major funding from federal grants or private foundations is within reach, if not in hand. To do so, we propose to (1) create a framework for intensive ACT Prep Academies for minority applicants who have to bring their Math ACT scores up in order to be admitted to LSU and recruit minority high school students to participate in residential "Summer ACT Mathematics Circles," (2) create a comprehensive mathematics mentoring and support system for minority math freshmen at LSU, and (3) establish a summer undergraduate mathematical sciences research institute geared towards minority undergraduates, especially African-Americans.

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

**b.2.1 Create a framework for intensive LSU ACT Prep Academies for minority applicants who have to bring their Math ACT scores up in order to be admitted to LSU.** This part of the proposal attempts to expand a recent initiative of Dr. Ferreyra (Dean of Arts and Sciences and Co-PI for this proposal) that created a public service program for improving the ACT scores of African-American students in the Baton Rouge area. We ask for the support of the BoR to add another layer to this program targeting African-American students that have already expressed interest in attending LSU but are denied admission because insufficient ACT scores. According to the LSU Admissions Office, 577 African-American students were denied admission to LSU for fall of 2007, about one third of the total number of African-American applicants. Of these students, 144 had ACT composite scores of 23 and 24 and would have been admitted to LSU if they would have scored 25 or higher. In order to help to increase the African-American undergraduate enrollment at LSU, the Math Department seeks to create a framework for a LSU ACT Academy for Minority Applicants to improve their ACT scores in order to be admitted to

LSU<sup>7</sup>. In particular, the PIs will pay special attention to those African-American applicants with Math ACT scores above 25 (roughly 1/3 of the 144 African-American applicants with ACT composite scores of 23 and 24 fell into this group). The goal is to help 10% of those with denied admission to make it into LSU after all and, equally important, to develop mentoring structures that can effectively support these students during their freshman year at LSU.

The LSU ACT Prep Academy would be offered to minority LSU applicants in two distinct formats, (a) during the spring semester (March/April) as a 30-hour weekend/ evening program to prepare for the April ACT test date, and (b) during the summer semester (May/June) as an intensive two-week program (3 hrs/day for a total of 30 hrs) at LSU to prepare for the June ACT. Participants who do not make adequate progress in their ACT scores would also be provided access to an online ACT test preparation program to prepare them for the LSU-internal ACT test in August (a student that scores a 25 ACT in August will be immediately admitted). The funds requested would allow the program to develop, and thereby creating a platform to successfully apply for follow-up funding. This would allow for the expansion of the program and to provide basic mentoring, advising, and tutoring services minority freshmen year at LSU.

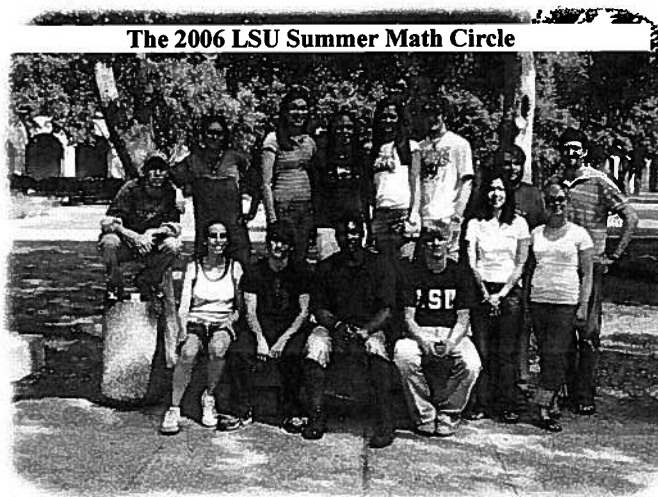
Task Leaders	ACT Prep: Ferreyra and Neubrandner; Mentoring: Lisan, Neubrandner, Tom
Schedule of Activities	Fall, Spring 08-09, Mentoring of Minority Freshmen in Math
	March, April 09, ACT Prep Academy (30 hrs)
	May/June 09, ACT Prep Academy (30 hrs)
	Fall, Spring 09-10, Mentoring of Minority Freshmen in Math
	March, April 10, ACT Prep Acad. (30 hrs)
Benchmarks	10% of African-American applicants which were denied admissions to LSU will be admitted to LSU after completing the ACT Prep program successfully.
Evaluation	Student evaluations, retention rate of students admitted to LSU through the ACT Prep program, Institutionalization of program, participation and success rates.
Linkages	Top students admitted to Summer ACT Math Circle program and to the Transition to LSU Program; BoR supported African-American graduate student and project personnel serve as mentors. Recruitment of participants supported by Math Circuit.
BoR Enhancement	Graduate Student support (1 academic year and 2 for summer), summer salaries, stipends for participants, supplies. Part time coordinator will help with the considerable administrative tasks to run the ACT Prep programs.

**b.2.2 Recruit high achieving minority high school students to participate in residential “Summer ACT Math Circle” programs.** Whereas the LSU ACT Prep Academies are designed for regional LSU minority applicants who have to improve their ACT scores to be admitted to LSU, the proposed “Summer ACT Math Circle” program would be available to Louisiana minority high school students independent of their admission status at LSU. This option would

<sup>7</sup> Presently, about 40% of the 1,000 African-American high school students admitted decide not to enroll at LSU after all. The project personnel will work with the LSU Admissions Office to (a) identify those minority applicants with a strong potential for undergraduate studies in the mathematical sciences, and (b) work hand in hand with the LSU Admissions Office to recruit them into a STEM discipline (and hopefully into math). One of the tools to be used to attract high performing minority students into math or into a LSU undergraduate program with a strong math component will be the offerings of stipends for one of our Department’s Math Summer Circle programs. If successful, the sister proposal (I) (see Section a.2) will provide additional funding for such Summer Math Circle programs, with priority given to minorities and underrepresented groups.

be a residential, 3-week summer enrichment program geared towards minority high school juniors and seniors who (a) wish to improve on their ACT scores, and (b) are interested in investigating concepts in mathematics, engineering, and physics that are not usually introduced at the high school level. This “LSU Summer ACT Math Circle” will be described next.

During the last two summers, the LSU Summer Math Circles were designed and implemented by NSF and US-DoE supported mathematics graduate fellows. The LSU Math Department is actively engaged in various education outreach and support initiatives serving the school systems of East Baton Rouge Parish (EBRPSS) and the surrounding parishes. Since many public schools in these school systems are in some form of corrective action, our K-12 outreach sites are mostly at low performing schools. Many of our participating faculty, graduate and undergraduate students are often shocked by the lack of rigor and expectations at these schools and all of them have stories about “beautiful minds” that are left behind because teachers have to fight endless battles to lift the bulk of their students over standardized tests and exit exams. In 2006, in response to these experiences, some graduate students of the LSU Math Department initiated a program to bring high performing students from low performing schools for three weeks to LSU where they work



with LSU graduate and undergraduate students on “scaled-down” problems connected to their dissertation research. These three week summer institutes focus on developing problem solving abilities, critical thinking, and logical reasoning by introducing the students to interesting problems in areas closely related to the fellows’ research interests. The students work in small groups and are guided by the fellows through the process of logically thinking about methods for solving these problems. In addition to working on problems, participants also get to hear guest lectures by LSU professors, enjoy recreational breaks and go on field trips to local industries and research centers. At the end of the program, the high school students join hundreds of undergraduates participating in one of the many REUs at LSU in presenting posters about their work at a daylong science exposition, workshop, and conference at LSU. In this proposal, we ask for 15 “2009 Summer ACT Math Circle Scholarships” to support (housing, meals, transportation, etc.) mathematically talented minority high school students with composite ACT scores below 25.

Since the project builds heavily on the active involvement of graduate and undergraduate students, the inclusion of a public service and minority recruitment program of this nature would enhance almost all proposals seeking support for high achieving graduate and undergraduate students. During 2008-09, additional grant funds will be applied for to secure funding for mentoring, advising, and tutoring of ACT Prep participants during their 2009-10 freshman year at LSU and allow the continuation and expansion of the program in 2010 and beyond.

If the sister proposal (I) (see a.2) is funded, the 2009 Summer ACT Math Circle runs parallel to its Math Circles Programs I and II. While the ACT Math Circle is designed exclusively for minority high school seniors and juniors who are interested in mathematical explorations and want to improve their ACT scores, the Sister Program I is geared toward high

performing advanced high school juniors and seniors with ACT scores of 27 +, and the Sister Program II is geared towards mathematically talented high school freshmen and sophomores. Though these programs are targeted to best serve the participants, we will use them as much as possible to create a vibrant mathematical community.

Task Leaders	Summer ACT Math Circle: Amha Lisan, Frank Neubrandner, Michael Tom
Schedule of Activities	Fall, Spring 08-09, Recruitment
	June 09, Summer ACT Math Circle (three weeks)
	Fall, Spring 09-10, Mentoring, Follow-Up, Recruitment
Benchmarks	15 students participate in the 2009 Summer ACT Math Circle program.
Evaluation	100% of participants will enroll in college, with a vast majority seeking majors in STEM areas; 15-20% of the participants will declare math as their major in college.
Linkages	Students recruited while participating in 08-09 ACT Prep workshops and their names are added to recruitment database. The ACT Math Circle is linked to Sister Proposal I (see a.2). Students recruited through Math Circuit and general recruitment efforts.
BoR Enhancement	Graduate Student support (1 academic year and 3 for summer), summer salaries, stipends for participants. Part time coordinator will help with the administrative tasks to run the ACT Math Circle. Math Circuit travel support for ACT Prep Academies

**b.2.3 Create a comprehensive mathematics mentoring and support system for minority STEM undergraduates at LSU.** Various studies have documented that a large percentage of the losses suffered by STEM disciplines occur in the freshman year when students make the transition from high school to college. Johnson (1997)<sup>8</sup> found that the most distinguishing characteristics between retained and dropout students were faculty- and staff-student interaction and connection. Professor Tinto from Syracuse University states<sup>9</sup> that (a) setting high expectations for student success, (b) providing clear and consistent advice, (c) providing for academic, social and personal support, and (d) promoting active learning stand out as being supportive of retention. Brown (2005)<sup>10</sup> noted: “It is clear from the literature that social integration into the community, both academic and extra curricular, is vital to both the personal development and retention of students in higher education”. He further observed the lack of community in early engineering education may be particularly negative for minority students. The results of his study indicated the importance of positive interactions with faculty, peers and advisors to enhance retention and the adverse effect of the “weed-out “culture in many STEM disciplines. He specifically suggested active and cooperative learning in-class practices and a variety of out of class experiences including service learning and learning communities. Beckett and Marrero (2005)<sup>11</sup> described a *Freshman Interest Group* (FIG) seminar was conducted at the University of Missouri-Columbia as a means to successfully improve engineering student retention by integrating social and academic issues. They confirmed earlier findings that FIGs had a substantial positive effect on student-faculty interaction and positive effects on social integration and institutional commitment. Levitz, et.al<sup>12</sup> (1999) concluded: “Getting students started right on the path through the institution to graduation begins with anticipating and meeting their transition and adjustment needs when they enter. Freshmen need a prevention plan. Intrusive, proactive strategies must be used to reach freshmen before the students have an

<sup>8</sup> [www.bgsu.edu/downloads/finance/file19271.pdf](http://www.bgsu.edu/downloads/finance/file19271.pdf)

<sup>9</sup> [www.pellinstitute.org/tinto/TintoOccasionalPaperRetention.pdf](http://www.pellinstitute.org/tinto/TintoOccasionalPaperRetention.pdf)

<sup>10</sup> Brown, T. (2005, April 26). Presentation made at California State University, East Bay.

<sup>11</sup> A. Beckett and T. Marrero, 6/05, American Society for Engineering Education’s Annual Conference, Portland.

<sup>12</sup> Levitz, R. S., Noel, L., & Richter, B. J. (1999). *New Directions for Higher Education*, 108, 31–50.

opportunity to experience feelings of failure, disappointment, and confusion.” While not exhaustive, this brief review does point to the fact that a sense of community and collaborative spirit are keys to the successful retention of undergraduates in STEM disciplines.

In this part of the project, the principal investigators in collaboration with LSU’s Center for Academic Success<sup>13</sup> and LSU’s Office of Strategic Initiatives<sup>14</sup> will implement a departmental template for an easily accessible, transparent, and comprehensive academic advising, counseling, and mentoring package for first semester minority mathematics students at LSU. To improve student retention, a BoR funded minority graduate student will implement and run a *Mathematics Interest Group (MIG)* where students can talk about the challenges in their courses, their frustrations and disappointments, as well as their emotional and personal issues. Under the leadership of the BoR funded graduate student and with active support of the project personnel, the MIG’s will offer peer counseling, workshops in learning skills, tutoring, and study peer groups. We will make sure that incoming mathematics minority students will live in the same residence hall (this will be aided by LSU’s new residential requirement for incoming freshmen<sup>15</sup>), will be co-enrolled in the same core courses, and will meet consistently in the MIG.

The MIG’s will be established prior to the start of the fall semesters 08 and 09 within a 5-day “Transition to LSU Program” (*Tiger Prep*) for incoming minority students (this program component will run parallel to the departmental Tiger Prep program that is proposed in the sister proposal I). Again, although the minority *Tiger Prep* program is designed to best serve the needs of the minority participants, we will integrate the *Tiger Prep* programs as much as possible to create a sense of community among all incoming math freshmen.

In the *Tiger Prep* program, incoming math minority students will learn about campus life and LSU services and programs available to minority students. They will receive academic exposure and training in challenging 1st year courses (e.g., Calculus, Physics) and will learn skills and strategies for survival and academic success in a university setting. Most importantly, much earlier than in the past, they will become more closely connected with math faculty mentors, students, and LSU staff that will help them in all ways possible to excel in their first year at LSU. Students will be recruited in collaboration with the LSU Admissions Office, through the other venues outlined in this proposal, and throughout LSU’s Spring Invitational and summer orientation programs. We anticipate 5 minority students in the first year and 10 in the second year, and are prepared to expand capacity sufficient to accommodate all interested minority math freshmen. *Tiger Prep* will be coordinated with similar programs in Biology (BIOS)<sup>16</sup> and Engineering<sup>17</sup> to help with the logistics (dorms, meals, recreation, etc.). It will eventually be self-funded (the other programs charge \$450 per applicant). BoR support will be used to develop a sustainable infrastructure and to cover participant costs. Corporate and Foundation sponsorships for creating and sustaining scholarships will be applied for.

Based on the successes of other programs of this kind, a strong positive effect is anticipated with this program.<sup>18</sup> BIOS student surveys indicate an appreciation for helpful skills learned, study group friends found, and becoming familiar with the campus culture. A similar assessment protocol will be followed to gauge *Tiger Prep*’s impact.

This part of the proposal is in preparation for a true “Mathematics Residential College

---

<sup>13</sup> <http://appl003.lsu.edu/slas/cas.nsf/index>

<sup>14</sup> <http://appl003.lsu.edu/stratinit.nsf/index>

<sup>15</sup> <http://appl003.lsu.edu/unv002.nsf> Press release from 10/05/2007

<sup>16</sup> [www.biology.lsu.edu/intro/bios/home.htm](http://www.biology.lsu.edu/intro/bios/home.htm)

<sup>17</sup> [/www.step.eng.lsu.edu/programs.htm](http://www.step.eng.lsu.edu/programs.htm)

<sup>18</sup> The BIOS’s students average roughly a letter grade higher on the semester exams and final grades (3.05 versus 2.57 of 4.00) than the control group and they have a lower percentage of D’s, F’s and W’s (5.17% versus 18.57%).



(MRC)” program that will complement the “LSU Freshman Residency Requirement” to be implemented in 08-09. Based on the experiences gained in this pilot program, the PIs will seek state, federal and foundation funding to support a true MRC in 10-11.<sup>19</sup>

Task Leaders	Amha Lisan, Michael Tom
Schedule of Activities	Summer 2008: minority students invited or recruited into the <i>Tiger Prep</i> program. Special 1 week course created specifically for minority math freshmen to help them get a jump-start in their courses. Lisan and Tom, together with 2 BoR summer graduate students, run the courses for one week before students move into their dorms. Co-enrollment in core courses taken by participating students. Academic year mentoring and follow-up activities in a focused <i>Mathematics Interest Group (MIG)</i> by project personnel and math graduate and graduate students. Same for 2009 – 10.
Benchmarks	5 students sign up for Tiger Prep in 08, at least 10 in 09. MIG’s run consistently.
Evaluation	See paragraph on assessment above.
Linkages	Top performing seniors in ACT Prep programs and Summer ACT Math Circle participants invited to attend. Students from recruitment database invited to attend (see b.2.4). Math Circuit will help to recruit.
BoR Enhancement	Lisan and Tom will receive summer support for year 1 for development and implementation. Two BoR funded summer graduate students help run the program in the summer, and one BoR funded minority graduate student will provide the academic year support within the MIG. Stipends for minority students. The part-time project coordinator will assist the task leaders in recruiting students and help with the considerable administrative aspects of the <i>Tiger Prep</i> program (dorms, meals, etc.)

**b.2.4 Summer Graduate Prep Institute: a summer undergraduate mathematical sciences research institute geared towards minority undergraduates, especially African-Americans.** In this part of the project, we intend to identify mathematically talented undergraduates, primarily from underrepresented minority groups, and provide a support system to encourage them to pursue graduate studies and advanced careers in the mathematical sciences.

It has for long been a daunting fact and a fundamental national characteristic that very few minority students pursue careers in mathematics. A report by the American Mathematical Society (AMS) on new doctoral recipients shows that there were 15 African-Americans among a total of 1119 doctoral degree recipients nationwide during the 99 - 00 academic year, a paltry 1.3%. African-American graduates of the LSU Math Department at one time accounted for about 2% of the total LSU math PhD graduates. This alarming situation has rendered it necessary to double efforts to recruit, support and retain minority students in the mathematical sciences. In recognition of this urgency, national efforts in awareness campaigns and various projects are being supported by local, regional and national associations and funding agencies.

Among the efforts in this direction one can cite the annual Mathfest conferences organized by the National Association of Mathematicians (NAM) and the Summer Undergraduate Mathematical Science Research Institute (SUMSRI) based in the Math Department at Miami University in Oxford, Ohio. The Mathfest conferences of NAM are short conferences where minority senior math students are invited for a weekend to attend informative workshops on various facets of graduate mathematics ranging from the application process to the mathematical requirements for success. SUMSRI, on the other hand, addresses this problem by intervening early and recruiting students among sophomores and juniors to come to the institute for a longer duration. This successful institute has been funded primarily by the National Science Foundation, whereas the National Security Agency(NAS) funds the Mathfest conferences.

<sup>19</sup> LSU is expanding its Residential College program. By 08, more than 50 %of LSU’s on-campus residents will live in Residential College communities, where students live and take classes with those who have similar interests.

Although the Mathfest conferences and SUMSRI are playing important roles in addressing the problems surrounding the shortage of minorities in the mathematical sciences, they remain limited since they cannot reasonably be expected to adequately accommodate the national need. Thus, more regional and/or state presence of institutes like SUMSRI is needed to reach a wider class of students. The proposed institute would start out as a statewide effort to deal with the problem and emulates SUMSRI in Miami University. The LSU Math Department is well suited to undertake the proposed institute. The effort is also in league with the earnest effort the universities in the state have embarked on to attain adequate diversity at every level.

The proposed institute will identify and recruit talented students by intervening early in the sophomore and junior years of the identified students. It is anticipated that this will attract high quality students from Louisiana to the LSU math graduate program and ease the transition from the undergraduate setting to graduate studies. The proposed institute will benefit from - as well as enrich - programs like the LSU Math *Research Experiences for Undergraduates* (REU) and the LSU Pre-Doctoral Institute which are already in place.

Funded by LEQSF and NSF since 1993, the LSU Math REU is primarily designed to involve participants in focused current research interests of the directors. The proposed institute, however, aims to introduce participants to more basic concepts in higher mathematics which would benefit the students in the initial years of graduate study. It will also focus on attracting minority students. However, these cardinal differences notwithstanding, the REU and the proposed institute would cooperate and share common activities like joint seminars, colloquia, and informative forums on common themes pertaining to graduate studies and careers in mathematical sciences. Moreover, it can safely be assumed that these formal and informal interactions between the participants of these programs will enrich both the existing REU and the proposed institute by providing broader mathematical and social perspectives.

The other natural partner that can support the aims and goals of the proposed institute is the LSU Pre-Doctoral Institute<sup>20</sup> that is offered through the LSU Graduate School. This four-week institute invites African-American students to come to LSU and participate in general curricular activities which are designed to encourage them to pursue doctoral studies. Its curriculum consists of writing and orientation seminars with a focused research component. As such, this general and broad structure does not allow dealing with the above mentioned crucial specific needs of graduate mathematics which the proposed institute strives to address. However, the technical writing and orientation seminars of the Pre-Doctoral Institute will contribute to the aims of the proposed institute and cooperation in these aspects will be actively pursued.

The department had some success in attracting a few students during the nineties. However, most either dropped out or cut short their studies at the masters' level. The main obstacle these students face is the challenge to pass the mandatory comprehensive exam which is based on the first year series of graduate algebra, topology and analysis courses. Lack of adequate preparation, as well as lack of orientation and information about the demands and rigors of graduate studies in math is an apparent issue. Although we will do our best to ensure that our students will pass the comprehensive exams, some will not. Thus, we will work actively with the PIs for sister proposal II and with various alternative certification providers in the Baton Rouge area, to provide venues for these students to work (a) towards secondary certification, and (b) towards a professional masters degree (like the one proposed in sister proposal II).

The proposed institute would start out by recruiting talented students from the state colleges and universities in consultation with and recommendation from the respective faculty of these institutions. The number of students admitted to the institute in June 2009 will be limited to

---

<sup>20</sup> [http://appl003.lsu.edu/grad/gradschool.nsf/\\$Content/PDSIoverview/\\$file/PDSI%20Overview.pdf](http://appl003.lsu.edu/grad/gradschool.nsf/$Content/PDSIoverview/$file/PDSI%20Overview.pdf)

fifteen. To be admitted, a student is expected to have completed at least his/her sophomore year, have at least one math course beyond calculus, have a GPA of at least 3, complete an application form, and to provide two letters of recommendation from his/her recent professors.

Timetable	Daily Schedule of Proposed Institute
9/08: Recruiting starts	8.00-9.00 Breakfast
9/08: Program Website becomes active.	9.00-11.30 Session 1
3/09: Deadline for receipt of application.	12.00-1.30 Lunch
4/09: Students are informed of their selection.	1.30-4.00 Session 2
5/09: Inform alternate students if necessary.	4.30-6.00 Lectures, discussions,
5/09: Finalize student participants.	6.00-7.00 Dinner
6/09: Student report to LSU campus.	7.00-9.00 Problem session or group study
6/1/09-6/29/09: Summer institute	Friday evenings will be devoted to mathematical enrichment.
06/29/09: Closing ceremony.	Saturdays and Sundays are free for study and relaxation.

A strong commitment has been given by the Mathematics Chairmen at both Xavier University of New Orleans and Southern University to assist in the recruitment process. We hope to recruit mostly undergraduates who are juniors, but might also choose talented sophomores. We will not restrict our pool of candidates to math majors, and will also consider students minoring in math and engineering. It is the hope of this proposal that by offering a stipend and funds for living expenses, students might forgo the attraction of working during the summer months. Those who will be admitted into the institute will have the choice of either staying on the LSU campus or to commute. The training activities for the summer program will consist of:

**(a) Research and education:** Due to the fact that many new graduate students find the transition from an undergraduate major to more rigorous and research oriented graduate studies to be a major stumbling block, the institute will anchor its sessions on short workshops in introductory graduate/senior level analysis and algebra. In these workshops, the students will be introduced to some advanced materials and would also be provided with a research environment to improve their research abilities by completing projects to be presented at seminars. The workshops would involve proving some theorems as well as tackling interesting problems in the application of mathematics. The PIs Lisan and Tom will have overall supervision of this part of the program, including recruiting and establishing mentoring activities. Dr. Tom, an expert in mathematical analysis and partial differential equations, will coordinate the activities in the analysis workshops. Topics from advanced calculus, ordinary differential equations and a little bit of partial differential equations will be covered. Some simple applications to fluid dynamics will also be presented. Dr. Lisan, an expert in topology and algebra, will handle the algebra workshops. Topics in linear algebra, abstract algebra and number theory will be introduced.

**(b) Motivating and preparing scholars for graduate studies:** A mentoring relationship will provide the exposure and modeling needed to help the student more fully understand the opportunities available to them. It will help the student's self-perception and heighten his/her level of personal and academic expectations, and thus increase the students' likelihood of success. We believe that mentoring and providing professional role models to students should form an integral component of any effort to recruit and retain students in higher education. The proposed institute will invite prominent mathematicians and/or advanced graduate students to give talks and interact with the students. We anticipate LSU Professor I. Warner, Professor D. Bagayoko of Southern University and Professor D. Davenport of Miami University to be among

those who would visit the institute.<sup>21</sup> These casual interactions with professionals in the field are anticipated to broaden the students' perspectives and provide professional role models. The institute will also remain engaged with the students well after the end of the sessions following up on their mathematical needs and progresses as an ongoing mentoring process.

**(c) Providing general information:** Information pertaining to graduate schools and career opportunities in the mathematical sciences will be provided. Information sessions regarding admission requirements and available sources of financial aid and scholarships will be organized. Field trips to area facilities where mathematical sciences are utilized will be organized to give the students a broader view of career opportunities for mathematicians.

**(d) General preparation for graduate school:** Seminars and trips will be organized to acquaint the students with graduate libraries, scientific journals and online resources for research careers. The seminars will include presentation of relevant and appropriate scholarly articles as a way of familiarizing students with literature surveys and contemporary works. Experiences in technical writing and general information in preparation for the GRE will also be provided.

It is hoped that the PIs will be able to attract additional funding and subsequently expand the program both in scope and content. The program will be managed using a method that measure achievement of the stated goals. It consists of specific program objectives and their relation to the purpose of the program. This will clearly specify how resources will be utilized to accomplish each activity in relationship to how the goals are being met. The two staff members are assigned responsibility for verification, monitoring and reporting the progress of the activities. The annual evaluation measure is based on the degree to which target goals are being met. Evaluation forms will be developed for participants to judge and improve program services. These evaluations will help monitor and implement any changes needed to meet stated goals.

Task Leaders	Amha Lisan, Michael Tom
Schedule of Activities	Fifteen minority students recruited for the June 2009 Summer Graduate Prep Institute for juniors majoring in math.
Benchmarks	At least 1/3 of the participants enroll in math graduate programs, 2/3 of the participants enroll in graduate programs
Evaluation	See paragraph on assessment above.
Linkages	Math Circuit (recruitment), Sister Proposal II (alternate graduate degree programs), BoR funded minority assistantships for 2009-10 provide recruiting tools
BoR Enhancement	Lisan and Tom will receive summer support for year 1 for development and implementation. Two BoR funded summer graduate students help run the program in the summer of 2009. Stipends for minority students. The part-time project coordinator will assist the task leaders in recruiting students and help with the considerable administrative aspects of the program (dorms, meals, etc.)

**b.3 Evidence of Potential to Achieve Recognized Eminence at the Regional, National, or International Level Commensurate with Degree Offerings and/or Functions.** As mentioned earlier, the overall goal is to increase the number of minority math graduate students, especially those that go into teaching careers. In Louisiana, African-Americans make up 31.8% of the

<sup>21</sup> Professor Warner, a vice-chancellor and professor of chemistry at LSU-BR, has earned much acclaim for his effort and success in educating and mentoring a large number of prominent minority chemists. Professor Bagayoko is the director of Timbuktu Academy at Southern University offering summer science institutes as well as summer bridge institutes catering to high achieving science students from middle school through college. Professor Davenport was the director and founder of the above mentioned SUMSRI.

population, but the number of American-Africans receiving a Masters degree or a PhD in mathematics is negligible and does not even begin to meet the increased demands on human resources in mathematics. Of course, in many cases, foreigners are recruited to meet the US immediate needs. However, we believe that a far better solution is to effectively use the large pool of minority students in Louisiana to increase the output of minority graduate degrees in mathematics. To achieve national eminence, this project is aided by the following factors.

**Funding environment.** According to the House Committee on Science and Technology<sup>22</sup>, the “America COMPETES Act” will provide increased support for programs that address the problems with the Nation’s STEM workforce pipeline on the graduate and undergraduate level.

**Capacity for performance.** As one of LSU’s “Foundation of Excellence” programs, the Math Department is eligible to receive extra resources to recruit the very best faculty and graduate students. With the help of Dean Ferreyra (co-PI for this proposal), the Department will locate resources to provide additional support for minority math graduate students. Supported by over \$20 M in current state and federal grant funding, the LSU Cain Center (represented here by the co-PI Neubrandner) provides services to Louisiana schools in an effort to improve STEM teacher professional development and student attainment. Through the Cain Center, the project personnel have access to teachers, school administrators and school district leaders across Louisiana. These support structures will be an invaluable asset to the project’s success.

**Serves recognized local needs.** Situated in (now) the largest city in the state, LSU is surrounded by school systems with critical needs and a high minority population. Many projects address low performance but sometimes neglect developing systems to support achievement at the advanced levels. Creating an environment that encourages, builds, and nurtures academic achievement for minority students allows opportunities for the entire system to rise to a new level.

**Answers Louisiana’s statewide needs.** The proposed programs are portable to other universities and colleges in the state of Louisiana. LSU’s math department can be a role model to other math departments in Louisiana, leading and encouraging other departments to build similar programs.

**b.4 Impact on Curriculum and Instruction.** The major problem LSU has encountered in the past is that outstanding minority students often prefer to leave the state. LSU has included in its mission statement, and as a top priority, the recruitment of minority students and faculty – and the proposed project will certainly aid the University to attain this goal. Details are apparent in the rest of this proposal. For emphasis, let us say that the premise of the project is that recruitment and retention of minority math majors begins with (a) a commitment to high-quality teaching and mentoring and by (b) a commitment of mathematics faculty to personally participate in minority recruitment efforts. The programs in this proposal are meant to encourage earlier interaction of professors of mathematics with potential minority math majors and graduate students. This interaction is meant to transform the way the LSU Math Department teaches and recruits its own majors: ACT Prep Programs, Math Circles, Tiger Prep, MIG’s, and Summer Graduate Prep Institutes are all meant to bring our (potential) students together sooner with our faculty to work on mathematics, help math faculty to identify underlying root problems limiting student performance and comprehension in mathematics, and to provide students with an early glimpse into the multitude of career opportunities for those with degrees in the mathematical sciences. Thus, the aim of the project is to transform the way our mathematics departments conceives its teaching tasks, boost the status of recruiting and mentoring activities, and providing new opportunities in the mathematical sciences for Louisiana minority students.

**b.5 Impact on Quality of Students.** African-Americans are not adequately contributing to the mathematics talent pool in Louisiana (or in the US as a whole), and they are not enjoying the

benefits of careers that advance mathematics degrees provide. This is especially true in academia where only a handful of African-Americans occupy mathematics faculty positions at Louisiana research institutions. (This is certainly also true for all major research universities in the nation.) The proposed project is to provide opportunities and incentives for minority students, especially African-Americans, to pursue advanced degrees in mathematics, and encourage them to pursue long-term careers as faculty members in higher education or K-12, thus helping them serve as role models, as well as educators, for future college students. As in the previous section, we trust that the reader will have no trouble recognizing specifics in other parts of this proposal.

**b.6 Impact on Faculty Development.** It should be apparent from the project description that this proposal will provide our faculty with resources to ensure that more minority students have improved opportunities and greater encouragement to participate fully in science and mathematics education. It will contribute and support efforts within the mathematics faculty to update curricular and instructional methodologies to include cooperative learning and accommodate alternative learning styles, to foster enthusiasm, interest, and competence both for pursuing careers in the mathematical sciences and for the acquisition of skills and knowledge demanded by an increasingly technological society. Working on undergraduate recruitment, retention and mentoring activities offers new perspectives to teaching math that enrich the trained professional skills of our mathematics faculty.

**b.7 Performance Measures.** The project will be deemed successful if the goals for each activity are met (see "evaluation" in each activity). Ultimately, the long term success of the proposal will be measured by the rise in the quality and numbers of minority undergraduates and graduate students at LSU. A second measure of long term success is whether the PI's can secure funding to continue the programs in this proposal indefinitely. This measure is readily achievable but requires showing funding agencies that our programs are successful and, therefore, deserving of the agency's support.

#### c. EQUIPMENT

"Does not apply"

**d. FACULTY AND STAFF EXPERTISE.** The Project Directors are experienced administrators, researchers, and teachers of national and international reputations in their fields of expertise. In 1999, *Michael Tom* was an invited panelist at the Forum on Mathematics in Africa: Problems and Solutions at the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy. *Amha Lisan* is an active member of National Association of Mathematicians (NAM) and a regular panelist at the annual Mathfest Conferences organized by NAM. Such forums will no doubt prove very useful in identifying and recruiting very talented students for the Summer Graduate Prep Institute. *Tom* served a three year term on the Committee on Human Rights of Mathematicians of the American Mathematical Society (AMS). *Lisan and Tom* have unique experiences in the difficulties and challenges of learning mathematics from a disadvantaged background. *Lisan* is a graduate of Howard University, a historical black university (HBCU). He was honored in 1998 as the most distinguished alumnus of the department of mathematics of the university. *Tom* has the added perspective of having taught at the University of Jos, Nigeria, for two years before returning to LSU in 1994. *Guillermo Ferreyra* is Professor of Mathematics and Dean of the LSU College of Arts and Sciences. As dean, he has worked diligently to improve the college's diversity and breadth of intellectual inquiry. New faculty is being hired, drawing on and developing LSU's and Louisiana's position as a multi-lingual, multi-cultural crossroads. *Ferreyra* intends to continue these improvements by having a superb student counseling office; facilitating the introduction of innovative courses and curricula; supporting minority recruitment efforts at all levels, and by providing quality staff support with problem-solving attitude; fundraising; and optimizing the allocation of resources. *Frank Neubrander* is the Demarcus D.

Smith Alumni Professor of Mathematics. He is a key contributor to LSU's Cain Center where he leads programs in which high school students, undergraduates, graduate students, professors, and teachers interface with each other. He is a chief architect of GeauxTeach, LSU's secondary education program, and has helped build a successful professional development programs for math teachers throughout the state. Presently, *Neubrandner* is PI and Co-PI on 17 federal and state grants that provide \$10M in support for the educational mission of the LSU Math Department and K12 outreach activities of the Cain Center.

**e. ECONOMIC AND/OR CULTURAL DEVELOPMENT AND IMPACT.** One of the principal goals of this project is to increase the enrolment of minority graduate students in the mathematical sciences and most importantly to retain these students long enough so that they can earn an advanced degree either in the mathematical sciences or mathematics education. These graduates will be able to contribute greatly to the teaching of mathematics in Louisiana either in four year colleges or community colleges where enrollments have skyrocketed the last few years and where the need for very good teachers of mathematics is great. This will in turn help promote the technological advancement of the State of Louisiana in the 21st century. Depending on how successful we are with this project, we anticipate broadening our pool to include the southeastern region of the US and applying for federal funding, probably through the US Department of Education or the National Science Foundation. The project has the potential to strengthen the relationships with other colleges and universities in the region, historically black colleges and universities in particular. It responds directly to Louisiana's Vision 2020 Master Plan for Economic Development, whose goals are, among others, to develop a highly trained workforce for the IT-intensive workplaces of the new century. Again, we hope that it is self-evident from the project description that the project would positively impact educational structures that are necessary for positive economic and cultural development, and that it would directly support the state's efforts to build a better qualified STEM work force in more appropriate numbers.

**f. ADDITIONAL FUNDING SOURCES.** For this project, the University committed to provide an institutional match of \$164,990. In addition, the projects would be heavily supported by the Department of Mathematics without being able to attach an exact dollar amount. The R2R Advanced Math/College Algebra & Trig program for high schools (see Sister Proposal I) and many aspects of the proposed project will require substantial time commitments from faculty, staff, graduate and undergraduate students. The undergraduate recruitment efforts of this project will receive support from several large-scale federal scholarship grants for which Neubrandner serves as Co-PI, from LSU's "Pelican Promise" and from LSU's "National Scholars' Award." The "Pelican Promise" is a new LSU program offering grants averaging \$3,000 annually to qualified low-income students from Louisiana (on top of TOPS). LSU's National Scholars' Award is merit based and will give about \$3,300 to in-state students (on top of TOPS). The Pelican Promise will help to recruit and retain students who never thought they could attend LSU. The LSU investment in the "Pelican Promise" will be about \$1 million for 320 students initially and \$4 million in four years for 1,300 students, while the scholars' award will cost \$300,000 at first for about 70 students and \$1.1 million in four years for 200 students. It is the goal of this project to make the most of these programs that both present unique opportunities to increase math undergraduate enrollment at LSU. The proposed budget will allow the LSU Math Department to design and implement template programs that can be scaled up and institutionalized. We are confident that their scale-up and/or permanent implementation will be an attractive proposition to the many national funding agencies supporting an increased production of STEM graduates and an adequate supply of effective STEM teachers.

## 5. PREVIOUS BOARD OF REGENTS SUPPORT FUND AWARDS

### 5.1 Previous Awards with No Connection to the Present Project.

**LEQSF (1996--97)--ENH--TR--12:** F. Neubrander, \$26,200, 1996-99, Preprints in Evolution Equations and Related Fields of Analysis. PI established an electronic preprint series covering the mathematical theory of evolution equations.

**LEQSF (1993-94)--ENH--TR--10:** F. Neubrander, \$26,775, 1993-94, International Bulletin Board, Archive and Preprint Series for Evolution Equations and Applications. PI established the information sources listed in the title.

**LEQSF (1992--94)--RD--A--08:** F. Neubrander and L. Weis, \$26,775, 1993-94, Banach space valued Laplace transforms and evolution equations. This research award led to the monograph *Vector-Valued Laplace Transforms and Cauchy Problems*, published by Birkhäuser Verlag.

**LEQSF(1995-97)-RD-A-12:** M. Tom, \$28, 066, *Nonlinear Dispersive Models*. This project was concerned with the existence of global solutions for the generalized Kadomtsev-Petviashvili equations. Some of the research results obtained appeared in *Contemporary Mathematics*, 200, 193-210, 1996, *SIAM Proceedings of the Fourth International Conference on Mathematics and Numerical Aspects of Wave Propagation*, 220-224, 1998 and *Journal of Mathematical Analysis and Applications*, 243, 64-84, (2000).

**LEQSF(1999-02)-RD-A-16:** M. Tom, \$27, 273, *Non-Kadomtsev-Petviashvili Models*. Results of this research project have been published in the *AMS/IP Studies in Advanced Mathematics*, 16, 393-405, (2000), *Differential and Integral Equations*, 16, 1131-1152 (2003), and the *Journal of Differential Equations*, 185, 437-482 (2002).

**LEQSF (2002-04)-ENH-TR-26:** P. Wolenski, M. Chari, F. Neubrander and P. van Wamelen, \$214,271, 2002- 2004, Enhancement of Interdisciplinary, Industrial, and Applied Mathematics Education at LSU. Funds provided support to the Mathematics Consultation Clinic and Math Summer Tune-Up Workshop. Support for summer internships and graduate assistants.

**LEQSF (2002-04)-ENH-TR16:** J. Madden and F. Neubrander, \$306,464, 2000 - 04; no-cost extension until 2005, In-School Math Labs. This is a collaboration between LSU, Southeastern Louisiana University and five schools: Sherwood Middle School (Baton Rouge), Springfield Middle (Livingston Parish), Hammond West Side Upper (Hammond) , Scotlandville Magnet High and McKinley Magnet High (Baton Rouge). We were equipping each of the four schools with a mathematics learning laboratory. Personnel from the mathematics departments of the two participating universities assist the schools in operating the labs. They recruit mathematics, science and engineering undergraduates for the labs, and provided a program of professional development that included a full-time 5-week summer mathematics institute for twelve teachers (three from each school), and on-site professional development.

**LEQSF(2005-07)-ENH-TR27:** P. Wolenski, R. Estrada, A. Harhad, F. Neubrander. The Math Clinic, Tune-Up, and Outreach at LSU, \$225,833, 05-07. The funds enhanced operations of the Mathematics Consultation Clinic (purchase of computer equipment and software), provided graduate student support, and supported the Math Summer Tune-Up Workshop for beginning STEM students, and the "Interdisciplinary and Industrial Mathematics Speaker Series."

**LEQSF (2006-09)-ENH-PSR-01:** J. Madden, N. McAnelly, B. Nixon, F. Neubrander, M. Pitre, E. Willis. K-16 Partnership for School Reform: Glen Oaks Middle School, \$1,000,000, 06-09. This proposal provides funding to enable LSU's Cain Center and Southern University to take on an active role in the reconstitution process of Glen Oaks Middle School. The two overarching goals of this systemic partnership are to help GOMS exceed the growth targets set forth by the Louisiana Accountability System, and to build university capacity to supply successful templates of action that can be employed at other low performing across the state.



## **5.2 Previous Awards Related to the Present Project.**

**LEQSF (2002-04)-ENH-TR17:** J. Madden and F. Neubrander, \$186,061, 2000 -04; no-cost extension until 2005, *LSU MathVision: K-16 Mathematics Education Research and Development Laboratory*. The LSU MathVision Laboratory leads a number of initiatives in educational outreach that fall outside the traditional research mission of the LSU Mathematics Department yet fall within the broader departmental mission that includes, along with research, the dissemination of knowledge and service based on departmental expertise. Through intensive collaborations with scholars, practitioners, other academic units, universities, and private providers working in math education, the MathVision Laboratory project brought in over \$5,000,000 in external funding to LSU and the local K-16 communities. Supported by LEQSF Education Enhancement grants, MathVision supported the creation distance education initiatives piloting the delivery of dual credit and/or articulated Advanced Math/ College Algebra & Trig courses, AP Calculus courses, student support, and PD to several regional high schools and operates “In-School Mathematics Labs” at regional middle and high schools. These activities led to many substantial federal grants that provided continuing funding for LSU undergraduates and graduates working with MathVision K12 outreach and support initiatives (NSF GK-12 Fellows Program at LSU, \$1,558,502, 205 – 08; NSF Scholarships, Mentoring, and Academic Enhancement Training for Science and Mathematics Undergraduate Students, \$492,560, 06-10; NSF Technology Training and Acad. Enhancement Program for Computer Science, Engineering, and Math Undergrad Students, \$396,604, 2003 – 07). The successes of the many projects started with the support of this enhancement grant and the resulting permanent partnerships with teachers, principals, and school system administrations provide the foundation for this project.

**LEQSF (2004-05)-ENH-TR\_73:** J. Meynsse (Southern University) and F. Neubrander, \$88,527, 2004 – 05, *Enhancement of Advanced Placement Opportunities*. To better prepare students meet high academic standards in collegiate math, and to attract more students into pre-service programs in math and sciences, the Departments of Mathematics at Southern University and LSU initiated in 2003 an Advanced Placement (AP) project that included several school districts, the Louisiana Resource Center for Educators, and Cox Communications. The AP project utilized Louisiana’s compressed video and Internet connectivity to bring a comprehensive “real time” AP curriculum to seven regional high schools and enabled the LSU Math Department to support high schools willing to implement a rigorous, vertically integrated Algebra II - Advanced Math/Trigonometry – AP Calculus sequence. The ongoing collaborations that were started with this grant will be a valuable asset in our minority recruitment efforts.

**LEQSF (2005-06)-ENH-TR-64:** J. Meynsse (Southern University) and F. Neubrander, \$139,891, 2005-06; no-cost extension until 2008, *Enhancement of Math Preparedness for Postsecondary Education*. The project aims to bring together mathematics educators from across Louisiana that are committed to support a large-scale, statewide, three year effort to implement and support a vertically integrated Algebra, Advanced Mathematics and Trigonometry, and AP Calculus course sequence at all Louisiana high schools by 2009. Again, the ongoing collaborations that were started with this grant will be a valuable asset in our minority recruitment efforts.

**LEQSF Dual Enrollment Pilot:** R2R Dual Credit Advanced Math with College Algebra and College Trig. F. Neubrander, B. Martin, Ph. Rouse and L. Smolinsky, Funded (approx. \$7,000), 06 – 07. This grant provides tuition for students taking R2R Advanced Math/College Algebra & Trig dual credit classes at our pilot sites in St. James Parish and Avoyelles Public Charter School. Again, the ongoing collaborations that were started with this grant will be a valuable asset in our minority recruitment efforts.

**LEQSF (2005-07)-ENH-TR-19:** J. Madden, N. McAnelly, F. Neubrandner, D. Kirshner, S. Baldrige, \$229,946, no-cost extension until 2008, *Overcoming Louisiana's Math Gap: From Algebra to Calculus*. This project has been instrumental in securing over \$10 million of external funding for its initiatives, a significant portion of which is from federal sources. With these additional funds, several BoR-funded Math Gap initiatives were scaled up to large regional or statewide programs (GeauxTeach secondary teacher preparation program, Math Master's degree for in-service teachers, math alternative certification pathways, AP Incentive Program, PD initiatives). At the time of submission of this proposal, we received word that the National Math and Science Initiative awarded \$2.4 million to a regional GeauxTeach consortium (started by a Math Gap project) for curriculum development and stipends for undergraduate students. These funds will have a measurable, positive impact on the recruitment efforts suggested here. In addition, several large-scale federal proposals to support Math Gap initiatives (as outlined in the original proposal) are still pending and Math Gap personnel will seek additional federal and foundation funds in 2007-08. Among the potential additional funding sources is a pending proposal to National Math and Science Initiative who, if funded, will provide over \$13M in additional funds for Math Gap AP projects initiated with BoR Enhancement support. Although a fully funded LMSEI project would provide substantial additional funding for STEM minority recruitment projects that are closely related to some of those proposed here, none of the LMSEI funds could be used to for purposes suggested in this budget.

**LEQSF (2005-07)-ENH-TR-24:** A. Lisan and M. Tom, \$25,000, 2005-07, *Summer Institute for Minority Students*. The proposal suggested starting a summer mathematical sciences institute for minority students at LSU. It was funded in the amount of \$25,000 mandating the investigators to visit and consult with other successful programs of the kind and resubmit an enhanced proposal. The investigators visited with the EDGE 2005 Summer Program at North Carolina A & T University in Greensboro, NC from June 20-25, 2005. This successful model program, sponsored by the Andrew W. Mellon Foundation and NSF, is designed to increase the number of women minority students who successfully complete graduate programs in mathematical sciences. The investigators also consulted with Professor Dennis Davenport, the organizer of the well known Summer Undergraduate Mathematical Summer Research Institute (SUMSRI) at Miami University of Ohio. This ambitious program seeks out talented undergraduate students in the mathematical sciences who are interested in pursuing advanced degrees. It takes in 15 students per year and has an annual budget of about a quarter million dollars, with 15% of the funding coming directly from the University. Another noteworthy visit was with the NAM MATHFest at Texas Southern University in Houston where math majors (mostly seniors) were introduced to a unique community of mathematical science professionals: minority mathematicians who have established exemplary careers, minority mathematics graduate students and representatives from doctoral granting institutions who are ready to assist, nurture, guide and support undergraduate minority mathematics majors who are willing to meet the admirable challenge of doing graduate work in mathematics. The main objectives of NAM are to promote excellence in mathematical sciences and to promote the mathematical development of underrepresented minorities. To achieve these objectives, NAM conducts, supports, and/or sponsors several activities on a regular basis, including an annual national Regional Faculty Conference on Research and Teaching Excellence, an annual Undergraduate MATHFest Conference and publishes newsletter and an annual proceeding. In addition, the investigators had several extensive discussions with the chairs of the mathematics departments at Southern University and Xavier. This proposal incorporates many of the successful program elements at these institutions.

**BOARD OF REGENTS SUPPORT FUND  
TRADITIONAL AND UNDERGRADUATE ENHANCEMENT, FY 2007-08**

**Budget and Budget Justification Pages**

Project Year ① 2 Composite

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: Minority Recruiting and Mentoring in Mathematics

Project Director(s): Guillermo Ferreyra, Amha Lisan, Frank Neubrandner, Michael Tom (PI)

Institution(s) of Higher Education: Louisiana State University and Agricultural and Mechanical College

**PROPOSED BUDGET:**

	Support Fund Money Requested <sup>a</sup>	Institutional Match <sup>1b</sup>	Private/Other Match <sup>2</sup>
A. Equipment <sup>3</sup>			
B. Software			
C. Supplies	\$2,000		
D. Shipping/handling			
E. Installation			
F. Personnel training			
G. Other			
1. Project Directors + Fringe	\$44,448	\$59,305	
2. Graduate Assistants	\$32,000		
3. Coordinator + Fringe	\$6,700		
4. Participant Cost	\$83,200		
5. Math Circuit	\$1,000		
H. Indirect costs	Not Allowed	\$29,059 <sup>c</sup>	\$0 <sup>c</sup>
I. Maintenance	Strongly discouraged		
J. Total costs (A-I)	\$169,348	\$88,364	\$0

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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).

<sup>a</sup> Support Fund monies will not supplant state funds, and full time employees will not, under any circumstances, receive funds in excess of 100% of their regular salaries

<sup>b</sup> This match (In-cash) will be funded through Departmental or College operating budgets

<sup>c</sup> Indirect costs (F&A) at a rate of 49% of Modified Total Direct Costs (MTDC) has been applied based on current negotiated rate.  
(TR and UG Enhancement Program Budget and Budget Justification, Rev. 8/2007)

## **Budget Narrative: Year 1**

As explained in the narrative, we are requesting funds to support minority recruiting and mentoring in Mathematics, here at LSU-BR. We are also requesting funds for the project directors, graduate assistant and coordinator who will execute the program.

The first residential Summer ACT Math Circle program will be held in early June 2008 and will be for 3 weeks. A Transition/ Induction program will be for one week and be held two weeks before the fall semester 2008 begins. An academic year ACT will be in March 2009 and will be mostly local junior and senior high schools. The summer graduate program for juniors majoring in math will be held for the four weeks of June 2009. Accordingly, we included the cost in the first year budget.

**C. Supplies:** \$2,000 are requested for supplies, copies, brochures, and other miscellaneous instructional materials.

### **G. Other Expenses**

**1. Project Directors:** Funds are requested to support 2 project directors (Tom and Lisan) each for 2 summer months (June 2008 and June 2009) and Neubrander for .25 summer months (2008). For the first year, for Tom, 2/9ths of \$73,450 is \$16,322; for Lisan 2/9ths of \$63,200 is \$14,044, for Neubrander 1/36 of \$100,949 is \$2,804. Total is \$33,170.

**Fringe Benefits:** 34% of \$33,170 is \$11,278.

**Institutional Match:** The project directors Lisan and Tom will contribute 25% of their time during the 2008-2009 academic year to recruit and oversee the program during the academic year. Frank Neubrander will contribute 10% of his time during the 2008-2009 academic year to oversee the ACT Prep Academies and prepare and recruit for the Math Circles. 25% of Tom's salary is \$18,363; 25% of Lisan's salary is \$15,800; 10% of Neubrander's salary of \$100,949 is \$10,095. Total direct cost institutional match is \$44,258. With 34% fringe benefits, the total is \$59,305. With 49% indirect costs, the total institutional match is \$88,364.

**2. Graduate Assistant:** Funds are requested for 1 graduate assistant who will be paid \$16,000 during the academic year 2008-2009, \$12,000 for 2 graduate students (\$8,000 for 2 summer months in 2008, plus \$4,000 for June 2009), \$4000 will be paid to graduate and undergraduate students to support the academic year ACT Prep Academies.

**3. Coordinator:** \$5,000 are requested to pay a part-time coordinator who will be assisting with the correspondence with recruits and all other administrative and promotional aspects of the program. Including fringe, the total is \$6,700.

**4. Participants Cost:** Funds are requested for student participants in the Summer Graduate Institute, in the Summer ACT Math Circles, and in the Tiger Prep Transition program. *Summer Graduate Institute:* Summer stipend for 4 weeks for 15 students at \$2000 per person is \$30,000. Requested expenses include subsistence and housing for 4 weeks at \$1500 per student for a total \$22,500. Total participant support costs for 2009 Summer Graduate Institute is \$52,500. *Summer ACT Math Circles:* For the Math Circle (June 2008), funds are requested for 15 students (7 local students around the Baton Rouge area and 8 nonlocal students); 7 local students at \$100 each per week for 3 weeks is \$2100, 8 nonlocal students (food and lodging) at \$1500 per student is \$12000. For the Math Circle (May/June 2009), funds are requested for 15 students (7 local students around the Baton Rouge area and 8 nonlocal students); 7 local students at \$100 each per week for 3 weeks is \$2100, 8 nonlocal students (food and lodging) at \$1500 per student is \$12000. Total participants costs for ACT Math Circles are \$28,200. *Transition to LSU Program:* for 5 students at \$500 for a week in August 2008. Total is \$2,500.

**5. Math Circuit:** \$1,000 are requested to support faculty and graduate student travel to recruit minority students within the Department's Math Circuit program.

**BOARD OF REGENTS SUPPORT FUND  
TRADITIONAL AND UNDERGRADUATE ENHANCEMENT, FY 2007-08**

**Budget and Budget Justification Pages**

Project Year 1 ② Composite

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: Minority Recruiting and Mentoring in Mathematics  
0

Project Director(s): Guillermo Ferreyra, Amha Lisan, Frank Neubrandner, Michael Tom (PI)

Institution(s) of Higher Education: Louisiana State University and Agricultural and Mechanical College

**PROPOSED BUDGET:**

	Support Fund Money Requested <sup>a</sup>	Institutional Match <sup>1b</sup>	Private/Other Match <sup>2</sup>
A. Equipment <sup>3</sup>			
B. Software			
C. Supplies			
D. Shipping/handling			
E. Installation			
F. Personnel training			
G. Other			
1. Project Directors + Fringe			
2. Graduate Assistants	\$12,000	\$52,935	
3. Coordinator + Fringe			
4. Participant Cost	\$14,600		
5. Math Circuit	\$1,000		
H. Indirect costs	Not Allowed	\$25,938 <sup>c</sup>	\$0 <sup>c</sup>
I. Maintenance	Strongly discouraged		
J. Total costs (A-I)	\$27,600	\$78,873	\$0

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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).

<sup>a</sup> Support Fund monies will not supplant state funds, and full time employees will not, under any circumstances, receive funds in excess of 100% of their regular salaries

<sup>b</sup> This match (In-cash) will be funded through Departmental or College operating budgets

<sup>c</sup> Indirect costs (F&A) at a rate of 49% of Modified Total Direct Costs (MTDC) has been applied based on current negotiated rate.  
(TR and UG Enhancement Program Budget and Budget Justification, Rev. 8/2007)

## **Budget Narrative: Year 2**

**Institutional Match:** The project directors Lisan and Tom will contribute 25% of their time during the 2008-2009 academic year to recruit and oversee the program during the academic year. Frank Neubrandner will contribute 5% of his time during the 2008-2009 academic year to oversee the ACT Prep Academies and prepare and recruit for the Math Circles. 25% of Tom's salary is \$18,363: 25% of Lisan's salary is \$15,800: 5% of Neubrandner's salary of \$100,949 is \$5,048. Total direct cost institutional match is \$39,211. With 35% fringe benefits, the total is \$52,935. With 49% indirect costs, the total institutional match is \$78,873.

**2. Graduate Assistant:** Funds are requested for 1 graduate assistant who will be paid a  $\frac{1}{2}$  (50%) assistantship for \$8,000 during the academic year 2009-2010, \$4,000 for 2 graduate students 1 summer months for July/August to support activities.

**4. Participants Cost:** Funds are requested for student participants in the Summer ACT Math Circles and in the Tiger Prep Transition program. *Summer ACT Math Circles:* For the Math Circle (June 2010), funds are requested for 12 students (7 local students around the Baton Rouge area and 5 nonlocal students); 7 local students at \$100 each per week for 3 weeks is \$2100, 5 nonlocal students (food and lodging) at \$1500 per student is \$7,500. Total participants costs for ACT Math Circles are \$9,600. *Transition to LSU Program:* for 10 students at \$500 for a week in August 2009. Total is \$5,000.

**5. Math Circuit:** \$1,000 is requested to support faculty and graduate student travel to recruit minority students within the Department's Math Circuit program.

**BOARD OF REGENTS SUPPORT FUND  
TRADITIONAL AND UNDERGRADUATE ENHANCEMENT, FY 2007-08**

**Budget and Budget Justification Pages**

Project Year    1    2    Composite

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: Minority Recruiting and Mentoring in Mathematics

0

Project Director(s): Guillermo Ferreyra, Amha Lisan, Frank Neubrandner, Michael Tom (PI)

Institution(s) of Higher Education: Louisiana State University and Agricultural and Mechanical College

**PROPOSED BUDGET:**

Support Fund Money

	Requested <sup>a</sup>	Institutional Match <sup>1b</sup>	Private/Other Match <sup>2</sup>
A. Equipment <sup>3</sup>	\$0	\$0	\$0
B. Software	\$0	\$0	\$0
C. Supplies	\$2,000	\$0	\$0
D. Shipping/handling	\$0	\$0	\$0
E. Installation	\$0	\$0	\$0
F. Personnel training	\$0	\$0	\$0
G. Other			
Fringe	\$44,448	\$59,305	\$0
2. Graduate Assistants	\$44,000	\$52,935	\$0
3. Coordinator + Fringe	\$6,700	\$0	\$0
4. Participant Cost	\$97,800	\$0	\$0
5. Math Circuit	\$2,000	\$0	\$0
H. Indirect costs	Not Allowed	\$54,997 <sup>c</sup>	\$0 <sup>c</sup>
I. Maintenance	Strongly discouraged	\$0	\$0
J. Total costs (A-I)	\$196,948	\$167,237	\$0

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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).

<sup>a</sup> Support Fund monies will not supplant state funds, and full time employees will not, under any circumstances, receive funds in excess of 100% of their regular salaries

<sup>b</sup> This match (In-cash) will be funded through Departmental or College operating budgets

<sup>c</sup> Indirect costs (F&A) at a rate of 49% of Modified Total Direct Costs (MTDC) has been applied based on current negotiated rate.

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

## 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.

<b>Name</b> FRANK NEUBRANDER Louisiana State University, Baton Rouge, LA 70803	<b>Position Title:</b> Demarcus D. Smith Alumni Professor of Mathematics
---	--

**Education:**       Diplom, University of Tübingen, Germany, 1981  
                           Ph.D., University of Tübingen, Germany, 1984

**Positions:**

- Demarcus D. Smith Alumni Professor, 2005 -
- Professor, Louisiana State University, 1996 – 2005
- William Evans Fellow, University of Otago, New Zealand, Spring 2004
- Visiting Professor, Karl-Franzens University Graz, Austria, Spring 1996.
- Associate Professor, Louisiana State University, 1991 - 96
- Assistant Professor, Louisiana State University, 1989 -91
- Habilitand, University of Tübingen, Germany, 1987-89
- Adjunct Research Professor, Georgetown University, 1987-88
- Visiting Assistant Professor, Georgetown University, 1984-88

**Awards:** LSU Distinguished Faculty Award (2001); Alumni Professorship (2005)

**Recent Publications (for a complete list, see <http://www.math.lsu.edu/~neubrand>)**

- (with Sarah McAllister) Stabilized Approximations of Strongly Continuous Semigroups, *Journal of Mathematical Analysis and Applications*, to appear, 2007
- (with M. Kovacs) On the inverse Laplace-Stieltjes transform of A-stable rational functions. *New Zealand Journal of Mathematics*, to appear, 2007
- (with S. Flory and L. Weis) Consistency and Stabilization of Rational Approximation Schemes for Co-semigroups. In: *Evolution Equations*, Birkhäuser, 2003
- (with W. Arendt, C. Batty, and M. Hieber) *Vector-Valued Laplace Transforms and Cauchy Problems*, Birkhäuser Verlag, 2001. See also *Amer. Math. Soc. Featured Review*, 2003g: 47072.

**Names of Ph.D. Graduate Advisees:** Bernd Straub (1995, now Univ. of New South Wales, Australia), Mihi Kim (1995, now Ewha Womans Univ., Korea), Boris Bäumer (1997, now Univ. of Otago, New Zealand), Yu Zhuang (2000, now Texas Tech Univ.), Simone Flory (2002, now Wells Fargo, San Francisco), Claudiu Mihai (2004, now Daemen College, NY), Mihaly Kovacs (2004, now University of Otago, New Zealand), Sarah McAllister (2005, now IBM T.J. Watson Research Center, Scott Champagne (M.S. 2005, now River Parishes Community College and St. James High School), Patricio Jara, Koray Ozer, Armin Reiser, William Harrison, Lee Windsperger, Kevin Zito

**Grants (since 2001):** (principal investigator or co-principal investigator for the following projects)

1. National Math and Science Initiative, Inc. (with W. Wischusen, S. Besson, N. McAnelly, B. Nixon) Geaux Teach: A Replication of UTeach at LSU, SELU, and SU; \$1.4M, 2008-12 (plus \$1M for an endowment match in 2012).
2. National Science Foundation (NSF); (with F. Cartledge, S. Pang, L. Richardson, I. Warner), NSF GK-12 Fellows Program at LSU, \$1,558,502, 2005 – 08.
3. NSF (with S-S Pang, L. Smolinsky, E. Triantaphyllou, I. M. Warner): Scholarships, Mentoring, and Academic Enhancement Training for Science and Mathematics Undergraduate Students, \$492,560, 2006-10.
4. NSF (with S.S. Iyengar, C. Stelly, S. McGuire, E. Woldesenbet): Technology Training and Acad. Enhancement Program for Computer Science, Engineering, and Math Undergrad Students, \$396,604, 2003 – 07.
5. NSF (with D. Kirshner, F. Cartledge, J. Madden, W. Wischusen): R. Noyce Scholarships at LSU, \$499,850, 04-08.
6. U.S. Department of Education, AP Incentive Program: LA AP Academy (with K. Bradford, N. Honore, R. Duhon), \$999,291, 2006-09.
7. Mathematical Sciences Research Institute (MSRI): LSU Math Circle (with Carolyn Chun, Jeremy Aikin, Matt Bennett), \$1,000, 2007-08.
8. Louisiana Board of Regents, K-16 Partnership for School Reform: Glen Oaks Middle School, with N. McAnelly, B. Nixon, J. Madden, M. Pitre, E. Willis, \$1,000,000, 2006-09.



9. Louisiana Department of Education: Math and Science Partnership (LDE MSP): Iberville/LSU (with J. Marionneaux and N. McAnelly), \$450,000, 2004-07.
10. LDE MSP: EBR/LSU (with H. Brister and N. McAnelly), \$450,000, 2004-07.
11. LDE MSP: EBR/LSU Cohort II (with H. Brister, N. McAnelly), \$450,000, 2005-08.
12. LDE MSP: EBR/LSU Algebra I/Physical Science (with N. McAnelly, J. McCann), \$450,000, 2006-09.
13. LDE MSP: Iberville/LSU Algebra I/Physical Sci. (with J. Marionneaux and N. McAnelly), \$450,000, 2006-09.
14. Louisiana Education Quality Support Fund (LEQSF): (with P. Wolenski, R. Estrada, A. Harhad). The Math Clinic, Tune-Up, and Outreach at LSU, \$225,833, 2005-07.
15. LEQSF (with J. Meynsse), Enhancement of Math Preparedness for Postsecondary Education, \$139,891, 2005-08.
16. LEQSF Dual Enrollment Pilot: R2R Dual Credit Advanced Math with College Algebra and College Trig. F. Neubrander, B. Martin, Ph. Rouse and L. Smolinsky, Funded (approx. \$7,000), 2006 – 07.
17. LSU Tech Fee Grant, with N. McAnelly, P. Sheppard, W. Wischusen, 2006-07. Math and Science Teaching Labs for LSU's Teacher Prep programs, \$33,399.
18. Louisiana Systemic Initiatives Program (LaSIP) and LA GEAR UP (with J. Madden and B. Brand): Establishing Long-Term On-Site Academic Support Systems, \$480,000, 2004-07.
19. LEQSF (with J. Madden, N. McAnelly, D. Kirshner, S. Baldridge). Overcoming Louisiana's Math Gap: From Algebra to Calculus, \$229,946, 2005-08.
20. LEQSF (with J. Meynsse). Enhancement of Advanced Placement Opportunities. \$88,527, 2004-05.
21. Louisiana Biomedical Research Network, Summer Research Programs, with P. Aku, J. Carr, R. Estrada, G. Ferreyra, 2003. Trophic interactions and contaminant transfer in the Black Bayou Lake food web, \$100,712
22. Louisiana State University, Student Technology Fee Grant, with N. McAnelly, 2003-04. Technology for Instruction, Teacher Preparation and Online Instructional Support in Math and Science, \$46,200.
23. LaSIP, with J. Madden, 2003-04. Adapting the TEXTTEAM Model to Louisiana. \$152,000.
24. LEQSF, with P. Wolenski, M. Chari, P. van Wamelen, 2002- 04. Enhancement of Interdisciplinary, Industrial, and Applied Mathematics Education at LSU, \$214,271.
25. LEQSF, with J. Madden, 2002-05. LSU MathVision: Math Education Research and Development Lab, \$186K.
26. LEQSF, with J. Madden, 2002-05. In-School Mathematics Laboratories, \$306,464.
27. LaSIP (1302LSUBR), with J. Madden, 2002-03. Assessing Standards-Based Learning in K-5 Mathematics (A LINC'S Professional Development Workshop for K-5 Teachers in East Baton Rouge), \$147,320.
28. National Science Foundation (CCLI-Adaptation and Implementation 99-53), with J. Madden, 2000-03, Using the LaCEPT Model to Reform an Elementary Statistics Course, \$74,603.
29. LaSIP, 2001. Creating Teacher Honors Sections and a Math Major with a Concentration in Education at LSU.

**Other Scholarly Activities (since 2000):**

- Member of the Advisory Board of the LSU Office of Strategic Initiatives, 2002-
- Member, Advisory Board, LSU Gordon A. Cain Center for STEM Literacy , 2000-
- Co-director of the LSU MathVision Laboratory, an educational research and development center.
- Co-organizer of the Mathematics Consultation Clinic, the outreach program of the LSU Math. Department
- Co-organizer of the Department's Analysis and PDE Research Seminar (1989- ).
- Co-organizer of a special session on Integral Transforms, AMS Annual Meeting , New Orleans, 2001; co-organizer of a special session on Operator Semigroups and Applications, Joint International Meeting of AMS-UMI , Pisa, Italy, 2002, co-organizer of special sessions on Asymptotic Analysis and on The Role of Mathematics Departments in K-12 Education, AMS Regional Meeting, LSU, 2003.
- Member of scientific committees for Evolution Equations 2000, Levico Terme, Italy (2000) and for Evolution Equations 2006: In Memory of Gunter Lumer, Mons, Belgium (2006)
- Invited Lectures (since 2000) Partial Differential Equations 2000, Clausthal, Germany (00); Evolution Equations 2000, Trento, Italy (00). Special Session on Semigroups, American Math Society, Columbia SC (01) and Bowling Green (05); Functional Analysis and Applications. A conference in memory of Ioana Cioranescu, Puerto Rico (03); Evolution Equations 2006: In Memory of Gunter Lumer, Mons, Belgium (2006), Tübingen-Budapest Workshop on Evolution Equations, Budapest, Hungary (2007).

**Guillermo Ferreyra**  
**Professor of Mathematics**  
**Dean of the College of Arts and Sciences**

**Education:**

Ph.D., Rutgers University, 1983.

Licenciado, Universidad de Cordoba, Argentina, 1977.

**Academic Positions:**

- Professor, Louisiana State University, 1996 – present.
- Associate Professor, Louisiana State University, 1989 – 1996.
- Research Assistant Professor, Brown University, 1986-1987.
- Assistant Professor, Louisiana State University, 1983 -1989.

**Administrative Positions:**

- Chairman, Department of Mathematics, LSU, Jul 2000-Dec 2003.
- Interim Dean, Arts and Sciences, LSU, Jan. 2004 – June 2004.
- Dean, Arts and Sciences, LSU, Jul. 2004 – present.

**Major areas of research interest:**

Control Theory, Partial Differential Equations, Probability Theory and Applications to Economic Theory and Finance.

**Most significant achievements of Guillermo Ferreyra**

**As Chair of the Mathematics Department:**

- Led the Mathematics Department into an unprecedented position within the University in teaching, research, outreach and service.
- External grants increased from around \$252,000 in FY 1999-2000 to \$750,000 in FY 2000-2001, and increased again to \$1,381,000 in FY 2001-2002. PI's from the Department have over eight million dollars in pending grants in FY 2003-2004.
- Led the hiring of a new group in Applied Mathematics (Materials Science). This group of four members has received significant research funding from the Air Force, the National Science Foundation and the Louisiana Board of Regents.
- Filled junior positions in areas of traditional research strength.
- Created the Elementary and Secondary Mathematics Education Committee of the Mathematics Department. The K-12 outreach and grant activities of the committee members have undergone a breathtaking growth.
- Have fostered the activities of the Mathematics Consultation Clinic.
- Proposed and received funding from LSU CAPITAL to hire three interdisciplinary post-docs. The Math Dept had not had post-docs in over twenty years.
- Planned, with the Associate Chair, the redesign of pre-calculus math courses with more intensive use of computer labs. Reduced the number of non-research instructors and increased the number of professorial and graduate assistant lines. Negotiated the plans

with the Department faculty and the University administration.

- Initiated the Graduate Student Orientation Day which is held each Fall in a State Park.
- Initiated the High School Math Competition which is held each Spring.

**As a scholar:**

- Co-editor of two proceedings books.
- Author or coauthor of seventeen papers in refereed journals and thirteen papers in refereed conference proceedings.
- Co-author of a paper selected for a Featured Review by the editors of Mathematical Reviews.
- Forty-seven presentations at national and international conferences and universities.
- Presenter of several invited plenary conference talks at professional meetings.
- Substantial activity in research, educational and interdisciplinary grants.
- Elected to two positions of leadership in the two largest and most important US-based societies for mathematicians.
- Member of the international review panel for the last five years for CIMAT, one of the two most prominent mathematics research institutes in Mexico.
- Organized and co-organized a substantial number of conferences and sessions at national and local conferences.
- Major advisor for five PhD's in Mathematics. (One US Caucasian, one US Hispanic, two foreign Hispanics, and one Black African)

**As Dean of Arts and Sciences:**

- Reallocated funds used in the past to hire adjuncts to hire new professorial faculty and graduate assistants.
- Planned and lead college departments to hire of eighty new outstanding professorial faculty in four years. The new faculty has increased to racial, gender, and religious diversity along with breadth and depth of research expertise.
- The number of teaching assistantships increased substantially (actually, by 30%) for the first time in twenty years in the college.
- Introduced a set of new college policies intended to improve the research productivity of the professorial cadre, and to increase grant activities. The college faculty is attracting over five million dollars per year in extramural grants.
- Participating with interest, dedication, and success in fundraising activities.
- Organized and hosted three regional meetings of Deans of Arts and Sciences.

**ADVISOR AND COLLABORATORS:**

**PhD Advisor** – Hector Sussmann, Rutgers University.

**Postdoc Advisor** – Wendell Fleming, Brown University.

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 M. Tom		Position Title: Professor	
EDUCATION INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	FIELD OF STUDY
University of Jos, Nigeria	B.S	1981	Mathematics
Pennsylvania State University	PhD	1990	Mathematics

**Positions:**

- Louisiana State University, Professor, August 2004-present
- Louisiana State University, Associate Professor, August 1998-August 2004
- Louisiana State University, Assistant Professor, 1994-1998
- University of Jos, Nigeria, Lecturer 1, 1992-1994
- Louisiana State University, Assistant Professor, 1991.

**Publications (since 2000):**

1. Comparison of KP and BBM-KP models (with Gideon Daspan), International Journal of Mathematics and Mathematical Sciences, ID 37274, 20 pages (2007).
2. Blow-up and instability of a regularized long wave-KP equation (with Yue Liu), Differential and Integral Equations, 16, 1131-1152 (2003).
3. The Cauchy problem and stability of solitary-wave solutions for RLW-KP-type equations (with Jerry L. Bona and Yue Liu), Journal of Differential Equations, 185, 437-482 (2002).
4. Some generalizations of the Kadomtsev-Petviashvili equations, Journal of Mathematical Analysis and Applications, 243, 64-84 (2000).
5. Regularized long wave-KP models, AMS/IP Studies in Advanced Mathematics, 16, 393-405 (2000).

**Name of PhD Graduate Advisee:** Gideon P. Daspan (2007, now Xavier University of New Orleans).

**Honors:**

1. Texas Institute for Computational and Applied Mathematics (TICAM) Fellowship, 1998.
2. Fulbright Scholar, 1984-1990.
3. Invited panelist at the Forum on Mathematics in Africa: Problems and Solutions at the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, Oct 5-6, 1999.

**Grants:** (principal investigator or co-principal investigator for the following projects)

1. Louisiana Board of Regents, Summer Institute for Minority Students (with Amha Lisan), \$25,000, 2005-07.
2. Louisiana Board of Regents, Non-Kadomtsev-Petviashvili Models, \$27,273, 1999-02.
3. Louisiana Boards of Regents, Nonlinear Dispersive Models, \$28,066, 1995-97.

**Other Scholarly Activities:**

1. Associate Editor for International Journal of Mathematics and Mathematical Sciences.
2. Reviewer for Mathematical Reviews of the American Mathematical Society (AMS).
3. Member of AMS Committee of Human Rights of Mathematicians (2001-03).
4. Member of Fiscal Integrity Subcommittee of the 2003-04 NCAA Certification Self-Study Committee for the review of the LSU Athletic Department.
5. Member of the Mathematics department Hiring Committee (2002-present).
6. Member of Mathematics department Executive Committee (1996-98, 2002-04).
7. Member of Mathematics department Undergraduate Committee (2001-03).
8. Member of college of Arts and Sciences Faculty Senate (2000-03).
9. Member of Mathematics department Internal Review Committee (1996).

---

(Form 4, rev. 2007)

### 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     Amha Lisan	Position Title     Associate Professor		
EDUCATION (Begin with baccalaureate or other initial professional education and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE	YEAR CONFERRED	FIELD OF STUDY
Howard University	BS	1982	Mathematics
Howard University	MS	1984	Mathematics
Howard University	PhD	1988	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.**

LSU, Associate Professor, 1995 - present  
 LSU, Assistant Professor, 1988 - 1995  
 Howard University, Inst., 1986 - 1988  
 Named the most distinguished PhD alumnus of the department of math by the graduate school of Howard University (1998)

**Publications:**

- Isotropy Groups and Group Topologies (with J. Lawson), ADJM 4 (2), (2007), 93 - 101
- Quasifactors, Proximal Extensions and other structures of Minimal Flows, HJM 32(3), (2006), 775 - 782
- Groups associated with Minimal Flows (with J. Lawson), Czechoslovak Math. Journal, 55(130), (2005), 471 - 477
- Flows, Congruences and factorization (with J. Lawson), Topology and its applications 58, (1994), 35 - 46
- Separating points of BN by minimal Flows (with N. Hindman and J. Lawson), Canadian Journal of Math 46(4), (1994), 758 - 771
- Points very close to the smallest ideal of BS (with N. Hindman), Semigroup Forum 49, (1994), 137 - 141
- Multidimensional Ramsey Theorems - An Example, Combinatorica 12

(3), (1992)

- Transitive Flows: A semigroup approach (with J. Lawson),  
Mathematika 38, (1991), 348 - 361

- Ultrafilters on a discrete set with two binary operations,  
Semigroup Forum 43, (1991), 77 - 81

- Does  $N^*$  contain a topological and algebraic copy of  $BN$ ? (with  
N. Hindman), Topology and its applications 35, (1990), 291 - 297

- Free Groups in  $BN$  which miss the closure of the minimal ideal,  
Semigroup Forum, 37, (1988), 233 - 239

**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:** Frank Neubrandner (1/6)

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

Contract Number/Proposal Title: Geaux Teach: A Replication of UTeach at LSU, SELU, and SU;

Source of Support: **National Math and Science Initiative, Inc.**

Award Amount (or Annual Rate): \$ 2,400,000    Period Covered: 1/2008 – 12/2011

Location of Activity: Baton Rouge

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

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

Contract Number/Proposal Title: LSU Math Circle

Source of Support: **Mathematical Sciences Research Institute (MSRI)**

Award Amount (or Annual Rate): \$1,000    Period Covered: 2006-07

Location of Activity: LSU

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

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

Contract Number/Proposal Title: : EBRPSS/LSU-BR Mathematics Partnership Project – Cohort I

Source of Support: **Louisiana Department of Education, Mathematics and Science Partnership Program,**

Award Amount (or Annual Rate): \$ 450,000    Period Covered: 04 – 07

Location of Activity: East Baton Rouge and nearby parishes

Person-Months or % of Effort Committed to the Project: nothing past 07

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

Contract Number/Proposal Title: 2804MP-24 Iberville Parish/LSU-BR/SU-BR Mathematics Partnership Program

Source of Support: 1. Louisiana Department of Education, Mathematics and Science Partnership Program

Award Amount (or Annual Rate): \$: \$ 450,000    Period Covered: : 04 – 07

Location of Activity: Iberville Parish

Person-Months or % of Effort Committed to the Project: nothing past 07



**NAME OF INVESTIGATOR: Frank Neubrandner (2/6)**

<p>Status of Support: <input checked="" type="checkbox"/> Current    <input type="checkbox"/> Pending    <input type="checkbox"/> Submission Planned in Near Future</p> <p>Contract Number/Proposal Title: East Baton Rouge Parish/LSU-BR Mathematics Partnership – Cohort 2</p> <p>Source of Support: Louisiana Department of Education, Mathematics and Science Partnership Program</p> <p>Award Amount (or Annual Rate): \$ 450,000    Period Covered: 4/1/05 – 9/30/08</p> <p>Location of Activity: East Baton Rouge</p> <p>Person-Months or % of Effort Committed to the Project: nothing past 07</p>
<p>Status of Support: <input checked="" type="checkbox"/> Current    <input type="checkbox"/> Pending    <input type="checkbox"/> Submission Planned in Near Future</p> <p>Contract Number/Proposal Title: Overcoming Louisiana's Mathematics Gap: From Algebra to Calculus</p> <p>Source of Support: LA BoR</p> <p>Award Amount (or Annual Rate): \$229,946    Period Covered 2005 – 07 (no cost extension to 08)</p> <p>Location of Activity: LSU</p> <p>Person-Months or % of Effort Committed to the Project: nothing past 07</p>
<p>Status of Support: <input checked="" type="checkbox"/> Current    <input type="checkbox"/> Pending    <input type="checkbox"/> Submission Planned in Near Future</p> <p>Contract Number/Proposal Title: Enhancement of Mathematics Preparedness for Postsecondary Education</p> <p>Source of Support: LA BoR</p> <p>Award Amount (or Annual Rate): \$ _____139,890____    Period Covered: 2005-06 (no cost extension to 08)</p> <p>Location of Activity: Louisiana State University</p> <p>Person-Months or % of Effort Committed to the Project: _____ nothing past 07</p>
<p>Status of Support: <input checked="" type="checkbox"/> Current    <input type="checkbox"/> Pending    <input type="checkbox"/> Submission Planned in Near Future</p> <p>Contract Number/Proposal Title: NSF Graduate Fellows in K-12 Education (GK-12)</p> <p>Source of Support: National Science Foundation</p> <p>Award Amount (or Annual Rate): \$ _____1,558,502_____    Period Covered: _____6/05 –5/08_____</p> <p>Location of Activity: Louisiana State University</p> <p>Person-Months or % of Effort Committed to the Project: nothing past 07</p>

**NAME OF INVESTIGATOR: Frank Neubrandner (3/6)**

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

Contract Number/Proposal Title: Robert Noyce Scholarships at LSU

Source of Support: National Science Foundation

Award Amount (or Annual Rate): \$ 499,850    Period Covered: 2004-08

Location of Activity: Louisiana State University

Person-Months or % of Effort Committed to the Project: 0 Cal Yr    0 Acad    0 Summ

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

Contract Number/Proposal Title: Technology Training and Academic Enhancement Program for Computer Science, Engineering, and Mathematics Undergraduate Students

Source of Support: National Science Foundation

Award Amount (or Annual Rate): \$ 396,604    Period Covered: 03-07 (no cost extension to 08)

Location of Activity: LSU

Person-Months or % of Effort Committed to the Project: 0 Cal Yr    0 Acad    0 Summ

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

Contract Number/Proposal Title: Iberville/LSU Algebra I/Physical Science

Source of Support: Louisiana Department of Education, Mathematics and Science Partnership Program

Award Amount (or Annual Rate): \$ 450,000    Period Covered: 2006-09

Location of Activity: Iberville Parish

Person-Months or % of Effort Committed to the Project: 0 Cal Yr    0 Acad    0 Summ

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

Contract Number/Proposal Title: Dual Enrollment Pilot: R2R Dual Credit Advanced Math with College Algebra and College Trig

Source of Support: LA BoR

Award Amount (or Annual Rate): \$ approx. \$7,000    Period Covered: 2006-07

Location of Activity:

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

**NAME OF INVESTIGATOR: Frank Neubrander (4/6)**

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

Contract Number/Proposal Title: Scholarships, Mentoring, and Academic Enhancement Training for Science and Mathematics Undergraduate Students

Source of Support: **National Science Foundation**

Award Amount (or Annual Rate): \$ 492,560 Period Covered: 2006-10

Location of Activity: Louisiana State University

Person-Months or % of Effort Committed to the Project: 0 Cal Yr 0 Acad 0 Summ

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

Contract Number/Proposal Title: Louisiana Advanced Placement Academy

Source of Support: **U.S. Department of Education**

Award Amount (or Annual Rate): \$ 999,291 Period Covered: 06-09

Location of Activity: LDE/LCET/LVS

Person-Months or % of Effort Committed to the Project: Cal Yr Acad 0.5 Summ

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

Contract Number/Proposal Title: *K-16 Partnership for School Reform: Glen Oaks Middle School*

Source of Support: **Louisiana Board of Regents**

Award Amount (or Annual Rate): \$ 1,000,000 Period Covered: 06-09

Location of Activity: EBR

Person-Months or % of Effort Committed to the Project: 0 Cal Yr 10% Acad Summ

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

Contract Number/Proposal Title: EBR/LSU Algebra I/Physical Science

Source of Support: **Louisiana Department of Education, Mathematics and Science Partnership Program**

Award Amount (or Annual Rate): \$ 450,000 Period Covered: 06-09

Location of Activity: EBR

Person-Months or % of Effort Committed to the Project: 0 Cal Yr 0 Acad 0 Summ

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

Contract Number/Proposal Title: The Louisiana Math, Science, and English Initiative

Source of Support: **National Math and Science Initiative, Inc.**

Award Amount (or Annual Rate): \$13,200,000 Period Covered: 2008-12

Location of Activity: Louisiana (state wide)

Person-Months or % of Effort Committed to the Project: ☐0 ☐Cal Yr ☐0 ☐Acad ☐0 ☐Summ

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

Contract Number/Proposal Title: Professional Master's Degree Programs for K-12 STEM Teachers

Source of Support: **LA BoR**

Award Amount (or Annual Rate): \$ \$192,095.00 Period Covered: 2008-10

Location of Activity: LSU

Person-Months or % of Effort Committed to the Project: ☐0 ☐Cal Yr ☐10 ☐Acad ☐1 ☐Summ

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

Contract Number/Proposal Title: Human Resource Development in Mathematical Sciences

Source of Support: **LA BoR**

Award Amount (or Annual Rate): \$ \$187,659 Period Covered: 2008-10

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐0 ☐Cal Yr ☐10 ☐Acad ☐1 ☐Summ

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

Contract Number/Proposal Title: Minority Recruiting and Mentoring in Mathematics

Source of Support: **LA BoR**

Award Amount (or Annual Rate): \$ \$194,948 Period Covered: 2008-10

Location of Activity:

Person-Months or % of Effort Committed to the Project: ☐0 ☐Cal Yr ☐10 ☐Acad ☐0.25 ☐Summ

**NAME OF INVESTIGATOR: Frank Neubrander (6/6)**

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

Contract Number/Proposal Title: Graduate Fellowships for Teachers (GFT) Program

Source of Support: LA BoR

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

Location of Activity: LSU

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

**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 Tom

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

Contract Number/Proposal Title: Minority Recruiting and Mentoring in Mathematics

Source of Support: Louisiana Board of Regents

Award Amount (or Annual Rate): \$ 196,948 Period Covered: 2008-10

Location of Activity: LSU-Baton Rouge

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ 25% Acad ☐ 100% 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

**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: Amha Lisan

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

Contract Number/Proposal Title: Minority Recruiting and Mentoring in Mathematics

Source of Support: Louisiana Board of Regents

Award Amount (or Annual Rate): \$ 196,948 Period Covered: 2008-10

Location of Activity: LSU-Baton Rouge

Person-Months or % of Effort Committed to the Project: ☐ Cal Yr ☐ 25% Acad ☐ 100% 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

## 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: Guillermo Ferreyra

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

Contract Number/Proposal Title: LEQSF(2003-08)-GF-01: BOARD OF REGENTS FELLOWSHIPS IN THE HUMANITIES

Source of Support: Louisiana Board of Regents

Award Amount (or Annual Rate): \$ 198,000 Period Covered: 8/1/03-7/31/08

Location of Activity: LSU-Baton Rouge

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: LEQSF(2003-08)-GF-02: BOARD OF REGENTS FELLOWSHIPS IN THE SOCIAL SCIENCES

Source of Support: Louisiana Board of Regents

Award Amount (or Annual Rate): \$ 66,000 Period Covered: 8/1/03-7/31/08

Location of Activity: LSU-Baton Rouge

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: LEQSF(2004-09)-GF-01: BOARD OF REGENTS FELLOWSHIPS IN THE HUMANITIES

Source of Support: Louisiana Board of Regents

Award Amount (or Annual Rate): \$ 112,500 Period Covered: 8/1/04-7/31/09

Location of Activity: LSU-Baton Rouge

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





DEPARTMENT OF MATHEMATICS  
P.O. BOX 9757  
Baton Rouge, LA 70813-9757  
Phone: (225) 771-5180  
FAX: (225) 771-4762

Dr. Michael Tom  
Professor of Mathematics  
Department of Mathematics  
Louisiana State University  
Baton Rouge, Louisiana 70803

Dear Dr. Tom:

By way of this communication, I express my full support and cooperation for the program, "Minority Recruiting and Mentoring Program," being proposed by the Department of Mathematics at Louisiana State University – BR.

As a mathematics professor and chair, I can attest to the importance of mentoring undergraduate students in research experiences for further studies and successful careers. It is common knowledge to all mathematics teachers that one of the reasons for the low enrollment of minority students in graduate programs is the lack of systemic mentoring. I believe that your program which aims to invite undergraduates for summer sessions to LSU and immerse them in preparatory work to graduate school is a worthy component of the effort in that direction.

The other aspect of your program which aims to increase the overall undergraduate minority enrollment at LSU by creating a framework for intensive ACT Prep Academies and Mathematics Summer Circle programs for orienting high school students is also a well thought out comprehensive approach for a successful recruiting, mentoring and support system.

As a sister department standing to be positively impacted by your program, we highly appreciate your consideration of this request and look forward to a rewarding effort and continual cooperation.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Joseph Meynsse', is written over a horizontal line.

Joseph Meynsse, Chair

Department of Mathematics



LOUISIANA STATE UNIVERSITY

Enrollment Management  
Office of Undergraduate Admissions

October 23, 2007

Guillermo Ferreyra, Dean  
College of Arts and Sciences  
132 Hodges Hall  
LSU  
Baton Rouge, LA 70803

Dear Dean Ferreyra,

We are very interested in helping you to create a program for improving the ACT scores of African American students whose low ACT scores are the determining factor in their being denied immediate admission to LSU. To substantially increase minority enrollment at LSU is one of the central goals of our University and this project seems to have all the right elements to help us move towards this goal. My office will fully support the ACT Prep program outlined in the Enhancement proposal "*Minority Recruiting and Mentoring in Mathematics*" and we will provide assistance in any way we can to help this important project to succeed.

Sincerely,

Cleve Brooks, Ph.D.  
Director