A. PROJECT SUMMARY

List of Project Elements: The project “Track 1, GK-12: National Science Foundation GK-12 Fellows Program at Louisiana State University” is submitted by Louisiana State University (LSU) in partnership with the East Baton Rouge Parish School System (EBRPSS). The PI is Frank Neubrander; the Co-PIs are Frank K. Cartledge, Su-Seng Pang, Leonard F. Richardson, and Isiah M. Warner. During the 3-year project, 8 Graduate and 8 Undergraduate Fellows as well as 16 teachers per year will be recruited (50% minorities and/or women). Graduate Fellows will serve at least 16 classes each year and participate in a statewide Science on Wheels program; Undergraduate Fellows will serve each year students in eight EBRPSS middle and high schools. The target audiences are middle and high school students and teachers. The project is in an urban setting. NSF supported disciplines involve Sciences, Mathematics, Engineering, and Technology (STEM).

Narrative Summary: The project aims (1) to better prepare students from the large and mostly underserved EBRPSS school system to meet high academic standards in collegiate STEM disciplines, (2) to foster the appreciation and capability of college students for high quality STEM teaching methods, and (3) to graduate first-rate U.S. research doctorates who are well-prepared for content-oriented training of prospective secondary math and science teachers at colleges and universities in the U.S. Supported by NSF’s STEM Teacher Preparation and R. Noyce Scholarship Programs, LSU’s newly redesigned secondary STEM certification program features extensive field-based preparation and broad-based collaboration among university faculty and a cadre of highly qualified STEM mentor teachers from EBRPSS. In this project, the mentor teachers will help to identify each year eight pairs of math and science teachers who welcome the support of GK-12 Fellows and the professional development opportunities provided. Each teacher pair will work with a Graduate Fellow and two Undergraduate Fellows throughout the academic year. Graduate Fellows will spend a minimum of ten hours a week providing direct assistance to the two teachers, with time given off for assignments for other GK-12 Tasks, such as presentations of “Discovery Kits” within the LSU Science on Wheels Program. Undergraduate Fellows will provide a wide range of instructional support in “Math Labs” they will organize. The intellectual merit of the proposal is based upon the extensive experiences of the participating STEM investigators in the project, the breadth and depth of leadership and infrastructure provided by LSU, and the strong partnership among the university faculty and a corps of dedicated middle and high school mentor teachers. The project allows the testing of a model to enhance the scope and quality of undergraduate and graduate education at a large state university by helping to improve mathematics and science education in a school district that embodies all of the challenges that are faced by many districts nationwide, including low-performing schools, a large minority population, and schools with a high proportion of economically disadvantaged students. The broader impact will include an increased interest of faculty in academic STEM departments in K-12 math and science education, an increase in recruitment rates of high school students into STEM disciplines, especially among minorities and/or women, and an increase in the number of strong research-doctorates in STEM disciplines that are better prepared to provide content-based instruction to prospective secondary teachers as well as to in-service secondary teachers. Through careful documentation and dissemination of the project results, this project will have applications across the country, particularly in research universities that are in close proximity to school systems plagued by low student performance and a dearth of students being offered challenging STEM curricula.