

**Program Proposal
Institute for Inquiry in Motion
Clemson University**

Summary

Clemson University requests approval to create a new Institute for Inquiry in Motion, to be implemented in Spring 2009 and located in Greenville.

The proposal was approved by Clemson University's Board of Trustees on February 27, 2008. The program planning summary was reviewed by the Advisory Committee on Academic Programs on March 20, 2008. At that meeting the Clemson University representative explained that the name of the Institute was derived from Clemson University's collaboration with the International Center for Automotive Research (ICAR) and the study of how mathematics and science can be taught in relation to motion. The final proposal was submitted to the Commission on August 13, 2008, but was deferred for consideration until the February 5, 2009, meeting of the Committee on Academic Affairs and Licensing.

According to the proposal, the Institute will provide professional development courses to practicing mathematics and science teachers who strive to improve teaching through the promotion of research-based, content-embedded inquiry. The proposed Institute will function as a local, statewide and regional resource, but the facility will be located in the Greenville area. The goal of the Institute will be to provide a national model for students and teachers with an interest in improving their content and pedagogical knowledge to deliver effective content-embedded inquiry. According to the proposal, to address this goal in the K-12 classrooms, the Institute for Inquiry in Motion will:

1. increase the graduation rate, decrease the dropout rate, and narrow the achievement gap;
2. increase student interest in and knowledge of mathematics and sciences;
3. increase teacher motivation and retention;
4. increase student and teacher awareness of STEM career; and
5. prepare mathematics and science teachers in an environment that promotes inquiry.

The proposed Institute will work in collaboration with several education programs in South Carolina such as the Greenville School District and Clemson University's International Center for Automotive Research (CU-ICAR) to complement current efforts being made across the state. According to the proposal, the Institute will also work

collaboratively with the following existing programs at Clemson University: *SC Center of Excellence in Mathematics and Science Education, SC LIFE, SC MAPS, SC DNA Learning Center, Institute for Modeling and Simulation, Center of Excellence for Instructional Technology Training, and Center for Inquiry in Mathematics and Science.*

The proposed Institute will not serve as a degree-granting academic unit. The courses offered will be a combination of traditional and online delivery methods. The students accepted into the professional development courses will either be practicing mathematics or science teachers with an interest in improving their content and pedagogical knowledge or students enrolled in the M.Ed. and MAT programs that Clemson plans to offer in the Greenville area. The Institute will serve as an umbrella organization for the Centers and Institutes listed above.

The Institute will employ a total of nine faculty members (1.25 FTE), one administrator (0.50 FTE), and one staff member (0.50 FTE). According to the proposal, the Institute will have five mathematics and four science education faculty members within the Eugene T. Moore School of Education who will have additional duties. These faculty members will not be located full-time at the Institute. Also, several faculty members from the University's departments of Mathematical Sciences, Biological Sciences, Physics, Chemistry, and other fields will contribute time and resources to the Institute.

The University is considering at least two physical plant options for the Institute, either of which will depend on the funding streams. The first option is to integrate the Institute with a new middle-grades facility constructed by Greenville County School District, one of the initial partners for the Institute for Inquiry in Motion. The second option would be to build a facility of approximately 8000 square feet with two classrooms, a laboratory, a meeting room, and four offices. The facility costs will be incurred only if the funding sources are identified and approved.

The library resources at Clemson University are adequate for the Institute. The proposal states that the library and learning resources services are currently able to provide a variety of materials for this program because of the significant numbers of sophisticated electronic databases which are available to students and faculty members through PASCAL.

The proposal states that several items will need to be purchased for students to conduct effective research such as the following: state of the art equipment essential for conducting educational research; laboratory equipment for mathematical and scientific inquiry; microphones; video-recording equipment; computers; projectors; data analysis software; data collection equipment; and probes for measuring attributes such as voltage, light, and sound.

New costs for the program are estimated to begin in the first year at \$260,374, and will increase to \$896,385 in the second year and to \$1,772,578 in the third year, decrease

to \$378,954 in the fourth year, and increase to \$385,523 in the fifth year of the program’s implementation. Total new costs for the first five years of the program’s implementation are estimated by the institution at \$3,693,814. The categories for these costs include program administration (\$212,365), faculty salaries (\$451,277), graduate assistants (\$262,133), clerical support personnel (\$132, 729), supplies and material (\$5,310), equipment (\$600,000), facilities (\$1,700,000), and travel and training (\$330,000). Additional revenue will be generated through federal funding (estimated to be around \$2,100,000) and “other” (i.e., institutional endowment and institutional auxiliary funds, estimated to be around \$1,600,000). However, the purpose of receiving Commission approval for centers and institutes is so that the institution can request state funding for these entities. Accordingly, Clemson has indicated that upon Commission on Higher Education approval of this proposal it intends to request state funds for this Institute by the sixth year of the Center’s operations although the specific amount and purpose of this request is not known at this point in time.

Shown below are the estimated Mission Resource Requirement (MRR) costs to the State and new costs not funded by the MRR associated with the implementation of the proposed institute for its first five years. Also shown are the estimated revenue projected under the MRR and the Resource Allocation Plan as well as student tuition.

Estimated Program Costs and Revenue

	Estimated Program Costs		Estimated Program Revenue				
	(A) MRR Cost	(B) Other Costs*	(C) Actual State Funding	(D) Tuition	(E) Additional Revenue	(F) Total Revenue (C+D+E)	
Year 1	\$14,165	\$0	N/A	\$16,869	\$0	\$16,869	\$2,704
Year 2	\$17,706	\$0	\$9,307	\$22,323	\$0	\$31,630	\$13,924
Year 3	\$17,706	\$0	\$11,302	\$22,323	\$0	\$33,624	\$15,918
Year 4	\$17,706	\$0	\$11,302	\$22,323	\$0	\$33,624	\$15,918
Year 5	\$17,706	\$0	\$11,302	\$22,323	\$0	\$33,624	\$15,918

*Includes costs of an extraordinary nature not otherwise included in the MRR cost calculation (e.g., costs for a new building required to support a program).

These data demonstrate that if Clemson University can meet the projected student enrollments and contain costs as they are shown in the proposal, the program will be able to cover MRR costs with revenues it generates beginning in its first year.

However, in discussion at the Committee on Academic Affairs and Licensing meeting on February 5, 2009, Clemson University representatives clarified that they are seeking several streams of funding opportunities to cover major costs for equipment, supplies, materials, facilities, etc. The School of Education has received a small National Science Foundation Discovery and Research grant, DRK12, which aims to strengthen K-12 science, technology, engineering, and math education. Also, the School of Education has submitted a \$3.4 million grant proposal to the National Science Foundation to help fund the programs and facilities associated with the Institute for Inquiry in Motion.

In summary, Clemson University proposes to offer a new institute within the School of Education, to be called the Institute for Inquiry in Motion. The Institute aspires to provide a national model for improving the motivation, realization of potential and achievement of students and teachers through sustained engagement in science, mathematics, engineering, and technology. Sources of funding for the Institute will initially be generated from contract courses fees, federal funding, and other funding (endowment, auxiliary, etc.). Within six years after CHE approval of the Center, Clemson intends to request state funds for the Institute's operations although that request is not endorsed in the recommendation approved by the Committee on Academic Affairs and Licensing.

Recommendation

The Committee on Academic Affairs and Licensing commends favorably to the Commission approval of the Institute for Inquiry in Motion at Clemson University, to be implemented in Spring 2009, provided that no "unique cost" or other special state funding be required or requested.