

New Program Proposal
Master of Engineering in Industrial Engineering
Concentration in Supply Chain and Logistics
Clemson University

Clemson University requests approval to offer a new program leading to the Masters of Engineering degree in Industrial Engineering with a Concentration in Supply Chain and Logistics, to be implemented in January 2009. The proposed program will be offered solely by distance education through the internet.

The Clemson University Board of Trustees approved the proposal on February 8, 2008. The proposal was submitted to the Commission in May 2008. The proposal was reviewed and voted upon favorably by the Advisory Committee on Academic Programs on July 17, 2008.

According to the proposal, the purpose of the program is to provide a professional master's degree via the internet using the combined resources and expertise of the Department of Management in the College of Business and Behavioral Science, the Department of Industrial Engineering, and the Department of Civil Engineering. The proposed program will also serve to raise the visibility of the departments involved and the University as a whole as leaders in research and education in supply chain logistics.

The proposal states that the demands placed on supply chain professionals in industry have increased dramatically as manufacturing and the associated supply process have become increasingly complex. Research presented indicates that those few companies that effectively manage their supply logistics are rewarded with a disproportionate share of their industries' profits. According to the proposal, the proposed program is "targeted at providing practicing supply chain professionals with the necessary foundational and supply chain specific tools to identify opportunities for improving their supply chains and to execute effectively projects to take advantage of those opportunities." The proposal further states that several businesses, including the Fluor Corporation, have expressed strong support for this program. In addition, Clemson indicates that it has received questions about enrollment from working professionals who have heard rumors of the program.

The proposed program is directly linked to and strongly supported by Clemson University's Center for Economic Excellence in Supply Chain and Logistics, the Clemson Research Site of the Center for Engineering Logistics and Distribution, the Clemson Institute for Supply Chain Optimization and Logistics, and the Burlington

Industries Professor of Supply Chain Management. There are no comparable programs in the state.

Only one Supply Chain Management program is offered completely through the internet nationally. That program, offered by Arizona State University, leads to a Masters of Business Administration rather than an engineering degree.

The admissions criteria for the proposed program are: 1) an undergraduate degree from an accredited college or university; 2) A defined set of mathematical skills; and, 3) at least one year of relevant industrial experience.

The proposed program will consist of 30 credit hours of course work in ten courses newly created for the program. Of these, 15 credit hours are in core courses (IE 851 Data Collection; IE 852 Modeling and Decision Making; IE 853 Foundations in Quality; IE 854 Fundamentals in Supply Chain and Logistics; and IE 857 Industrial Safety and Risk Management), three credit hours are in management (MGT 856 Fundamentals for Supply Chain Management), and 12 credit hours are in the concentration (IE 850 Introduction to Capital Projects Supply Chain; IE 855 Capital Projects Supply Chain; IE 858 Case Studies in Capital Projects Supply Chain; and IE 859 Capstone Design Project). Courses will be taught over the internet to cohorts of students who will take one course (3 credit hours) per semester in a “lockstep” progression.

The program will be evaluated using an assessment plan derived from one approved by the faculty of the Master in Science in Engineering programs. This assessment uses a matrix of learning objectives and courses, and ensures that each learning objective for the program is evaluated for at least one course in each student’s course of study.

Based on interest expressed by local and national companies, Clemson University is confident that it will have more than sufficient demand to meet its goal to enroll a new 20-student cohort each year beginning in January 2009. If enrollment and program completion projections are met, the program will meet the Commission’s productivity standards.

The proposal states that in the first five years of the concentration no new faculty, administrative, or staff members will be hired for the proposed program. The proposal further states, however, that the program will make extensive use of adjunct faculty with current experience in Supply Chain Management and Logistics.

There is no specialized accrediting body for the proposed program.

The existing physical plant and classroom facilities are adequate to provide space for the proposed program. The only necessary physical space required for implementing the program is a small studio which already exists and for which equipment has been purchased.

According to the proposal, existing library holdings are adequate to support the proposed program. Many of the resources for the current Industrial Engineering, Civil Engineering, and Management degrees also support the new courses to be implemented for the proposed program. There are no funds allotted to upgrade library resources for the proposed program in the first five years of the program.

New costs for the proposed program include \$69,000 in the first year, decreasing to \$28,000 in the second year, and increasing to \$40,000 in years three through five. Categories of new costs in the first five years of the proposed program include graduate assistants (\$164,000) and equipment (\$53,000).

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 program for its first five years. Also shown are the estimated revenues 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				(G) Total Revenue - Total Costs (F-(A+B))
	(A) MRR Cost	(B) Other Costs*	(C) Actual State Funding	(D) Tuition	(E) Additional Revenue	(F) Total Revenue (C+D+E)	
Year 1	\$132,412	\$0	N/A	\$59,538	\$75,462	\$135,000	\$2,588
Year 2	\$264,825	\$0	\$70,659	\$119,800	\$150,200	\$340,659	\$226,034
Year 3	\$397,237	\$0	\$142,313	\$177,870	\$227,130	\$547,313	\$377,206
Year 4	\$397,237	\$0	\$212,538	\$177,870	\$227,130	\$617,538	\$447,431
Year 5	\$397,237	\$0	\$212,538	\$177,870	\$227,130	\$617,538	\$447,431

*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).

According to the proposal, this program is designed to be completely self-supporting through student tuition and fees. Clemson staff stated that this is due in large part to the differential tuition and fees for the proposed program. According to the proposal, tuition and fee revenue from the proposed program will amount to \$135,000 per year for each 20-student cohort admitted to the program, significantly higher than the tuition income allowed for in the MRR calculation. The differential between the standard tuition and fees and the tuition and required fees for this program are presented in the “Additional Revenue” column above. These data demonstrate that if Clemson University can meet the projected student enrollments and contain costs as shown in the proposal, the proposed program will be able to cover new costs with revenues it generates beginning in its first year.

In summary, Clemson University is proposing a program leading to the Masters of Science in Industrial Engineering with a concentration in Supply Chain and Logistics. This program and concentration is a response to increasing complexity in the manufacturing supply chain environment and to increasing demand among employers. The program will be offered is solely through the internet and is designed to be completely self-supporting.

Recommendation

The staff recommends that the Committee on Academic Affairs and Licensing commend favorably to the Commission the program leading to the Masters of Engineering degree in Industrial Engineering with a concentration in Supply Chain and Logistics at Clemson University, to be offered through the internet and to be implemented in Spring 2009, provided that no “unique cost” or other special state funding be required or requested.