B.S. in Supply Chain Management – Concept Paper

Title/Department/College/Proposer Contact Name and Contact Information

B.S. in Supply Chain Management program is proposed by Saunders College of Business in association with the Kate Gleason College of Engineering.

For additional information, contact: Manlu Liu, Saunders College of Business, manluliu@saunders.rit.edu, (585) 475-3984.

Introduction

The proposed BS program in Supply Chain Management (SCM) is a collaborative effort of Saunders College of Business (SCB) and Kate Gleason College of Engineering (KGCOE).

The BS program in SCM is designed to address a vital and growing market need in SCM. The interdisciplinary major in SCM focuses on providing students with the knowledge to assist in developing and implementing efficient global supplier systems in order to maximize customer value. Supply chain management is focused on the coordination of the inter-related processes required both within a business and with other businesses, including suppliers, to deliver products and services - from raw materials to customer delivery and sometimes, at the end of product life, return and recycle. The objective of this major is to provide students with a background in areas commonly needed to support SCM roles, including business strategy, information systems, lean/quality management, customer service, purchasing, negotiations, contracts, forecasting, inventory management, logistics, and project management.

This program has several unique features: (1) the program draws upon resources from business and engineering, (2) the program addresses ***global*** supply chain management, (3) the program offers enhanced analytical and information systems skills to increase students' preparation and marketability.

Learning Goals

- Understand how different business functions cooperate and contribute to support efficient and effective supply chains.

- Apply the proper tools to design a global supply chain and manage supply chain-related issues, such as risk, cost, and time by using ERP, database management tools, and statistical tools.

- Identify sources of efficiency and implement solutions by applying appropriate operational methodologies, such as forecasting, supplier relations, and process improvement techniques (e.g., Lean Six Sigma).

Justification

Summary of Market Demand

Today, many companies and organizations are involved in making products readily available for users so they can have them where they want them, how they want them, when they want them, and at the price that they can afford. Coordinating all the organizations, and suppliers, that are involved in activities to get products to the users at the right time, right place, and right quantity/quality and at the right price is what we call supply chain management (SCM). Besides business operations, SCM also plays a critical role in medical missions, disaster relief operations, and other types of service industries. SCM activities touch almost every business function, including product development, sourcing, marketing, global issues, logistics/distribution, operations management, information systems, and finance.

Almost every business organization is a part of at least one supply chain, which makes SCM a very critical business discipline that needs to be managed effectively. James Alampi, President, Van Waters & Rogers said:

"Frankly, the cost of making a product is almost irrelevant. You have far more opportunity to get cost out of the supply chain than you do out of manufacturing. There's so much duplication and inefficiency."

Companies are doing more outsourcing (which includes international partners), and thus as Alampi indicates, there are many issues associated with supply chains that need close attention. Companies feel more competitive pressure to reduce product development time, enhance customization, and improve efficiency, that requires coordination and management of many organizations and functional areas across their supply chain.

All these factors necessitate that future managers must be ready to work in a dynamic environment. Graduates of business schools who are educated to recognize and manage supply chain issues have a significant advantage in the job market, since the talent shortage is significant. The supply chain industry will need to fill about 1.4 million new jobs between 2014 and 2018, according to a study by the logistics trade group MHI. That's roughly 270,000 jobs per year. The talent shortage is one of the "major barriers preventing innovation in the supply chain". Furthermore, the U.S. Bureau of Labor Statistics (BLS) indicates that, the number of logisticians (those who analyze and coordinate an organization's supply chain) was 125,900 in 2012. The numbers are expected to grow by 27,600 (22 percent)—much faster than other occupations-- by 2022. The BLS indicates that "many logisticians have a bachelor's degree in business, industrial engineering, process engineering, or supply chain management." RIT is well-positioned to offer a supply chain management degree, given its complementary strengths in business and engineering.

Summary of Employers Feedback

Market research was conducted using a focus group and survey to learn about employers' expectations and to get their suggestions about a B.S. program in SCM, including Bendix, Boeing, Cummins, GE, Gleason, Harris RF, Raymond, Thermo Fisher, Toyota, UPS, Wegmans, and Xerox.

Key characteristics of employers' most successful supply chain employees are foundational business skills, interpersonal skills, technical skills, problem-solving skills, and teamwork. Specific skills that were indicated included: data analysis, database management, excel, operations management, supply chain strategy, and supplier relations management. Global issues were also noted, including matters related to export control. The typical positions for supply chain management graduates are broad and include Procurement, Excel Modeling, SAP/Oracle, Database, Cost Modeling, Materials Planning, and Supplier Relations.

Program Summary and Curriculum

The program is expected to be an eight semester program, and require one semester of cooperative education. The anticipated elements are listed below.

1. Required business core (required of all business students):
   - ACCT-110 Financial Accounting
   - ACCT-210 Management Accounting
   - DECS-310 Operations Management
   - FINC-220 Corporate Finance
   - MGIS-101 Computer-based Analysis
   - MGIS-130 Information Systems & Technology
   - MGMT-101 Business 1: Ideas and Business Planning
   - MGIS 102/103 Business 2/2T: Technology-Enabled Launch
   - MGMT-215 Organizational Behavior
   - MGMT-560 Strategy and Innovation
   - MKTG-230 Principles of Marketing
   - MGMT-035 Careers in Business (0 credit)

2. Six additional existing courses would be required:

   - DECS-435 Supply Chain Management Fundamentals
   - DECS-445 Managing Supplier Relations
   - ISEE-582 Lean Six Sigma Fundamental
   - MGIS-320 Database Management Systems
   - MGIS-450 Enterprise Systems
   - MGIS-550 MIS Capstone, or ISEE497 Multidiscipline Senior Design 1, or ISEE 498 Multidiscipline Senior Design 2

3. Two SCM electives:

- BLEG-300 Business Law II
- INTB-310 Regional Business Studies
- INTB-300 Cross-cultural Management
- INTB-550 Global Entry and Competition Strategies
- MGIS-330 Systems Analysis and Design
- MGMT-450 Negotiations
- ISEE-350 Engineering Management
- ISEE-626 Contemporary Production Systems
- ISSE-703 Supply Chain Management
- ISEE-728 Production Systems Management

Table 1: Undergraduate Program Schedule: Supply Chain Management

Term: fall 1		Check course classification (s)			
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
-MGMT-101-Business I: Ideas and Business Planning	3		X		Co-req MGIS 101
MGIS-101-Computer-based Analysis	1		X		
MGIS-130-Information Systems & Technology	3		X		
LAS-Perspective 3 (Global): COLA-ECON-101- Principles of Microeconomics	3	X			
ACCT-110-Financial Accounting	3		X		
LAS-Perspective 7A (Mathematical) COS-STAT-145-Introduction to Statistics I	3	X			
Term credit total:	16	6	10		
Term: fall 2		Check course classification (s)			
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
GE elective 2: COS-MATH-161-Applied Calculus	4	X			
MKTG-230- Principles of Marketing	3		X		sophomore status
FINC-220-Corporate Finance	3		X		ECON-201, STAT-145, ACCT-110
MGMT-035-Careers in Business	0		X		sophomore status
LAS-Perspective 2 (Artistic)	3	X			
LAS-Perspective 4 (Social)	3	X			
Term credit total:	16	10	6		
Term: fall 3		Check course classification (s)			
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
LAS-Perspective 1 (Ethical): SCB-MGMT-340-Business Ethics and Corporate Social Responsibility	3	X			sophomore status
DECS-310- Operations Management	3		X		STAT-145 or equivalent, junior status
MGIS-450 Enterprise Systems	3		X		
LAS Immersion 1	3	X			
LAS Perspective 5 (Natural Science Inquiry-with lab)	3	X			
Term credit total:	15	9	6		
Term: fall 4		Check course classification (s			
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
ISEE-582 Lean Six Sigma Fundamental	3		X		
Supply Chain Management Elective 2	3		X		
LAS Immersion 3	3	X			
DECS-445 Managing Supplier Relations	3		X		
GE elective 6	3	X			
Term credit total:	15	9	3		

Term: spring 1		(Check course classification (s)			
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
MGIS-102-Bus 2: Technology-enabled Launch	3		X		MGMT 101 and MGIS 101
COLA-ENGL-150-Writing Seminar	3	X			
GE Elective 1: COLA-ECON-201-Principles of Macroeconomics	3	X			COLA-ECON-101
ACCT-210-Management Accounting	3		X		ACCT-110
LAS-Perspective 7B (Mathematical) COS-STAT-146-Intro. to Statistics II	4	X			
Term credit total:	16	10	6		
Term: spring 2		(Check course classification (s)			
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
MGIS-320 Database Management Systems	3		X		INTB-225, junior status
MGMT-215-Organizational Behavior	3		X		sophomore status
University elective 1	3				LAS, Maj, or other
GE elective 3: SCB-INTB-225 Global Business Environment-	3	X			
GE elective 4: COLA-COMM-253-Communication	3	X			
Term credit total:	15	6	6		
Term: spring 3		Check course classification (s)			
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
DECS-435 Supply Chain Management Fundamentals	3		X		DECS-310 or equivalent
GE Elective 5	3	X			
Supply Chain Management Elective 1	3		X		
LAS Immersion 2	3	X			
LAS Perspective 6 (Scientific Principles)	3	X			
Term credit total:	15	6	9		
Term: spring 4		Check course classification (s)			
Course Number & Title	CR	LAS	Maj	New	Prerequisite(s)
MGMT-560- Strategy and Innovation	3		X		MGMT-215 MKTG-230, FINC-220, DECS-310, senior status
MGIS-550 MIS Capstone, or ISEE497 Multidiscipline Senior Design 1, or ISEE 498 Multidiscipline Senior Design 2	3		X		
University elective 2	3				LAS, Maj, or other
GE elective 7	3	X			
GE elective 8	3	X			
Term credit total:	15	6	3		

Program Totals:	Credits: 123	Liberal Arts & Sciences: 62	Major: 49	Electives: 12; also Wellness, and a one-semester co-op education requirement

Supplement to Table 1 (**Listing of Courses in Table 1**):

Term: Fall 1	**Credits**
MGMT-101-Business I: Ideas and Business Planning	3
MGIS-101-Computer-based Analysis	1
MGIS-130-Information Systems & Technology	3
ECON-101- Principles of Microeconomics	3
ACCT-110-Financial Accounting	3
STAT-145-Introduction to Statistics I	3
Term: Spring 1	
MGIS-102-Bus 2: Technology- enabled Launch	3
COLA-ENGL-150-Writing Seminar	3
GE Elective 1: COLA-ECON-201- Principles of Macroeconomics	3
ACCT-210-Management Accounting	3
LAS-Perspective 7B (Mathematical) COS-STAT-146-Intro. to Statistics II	3
Term: Fall 2	
COS-MATH-161-Applied Calculus	4
MKTG-230- Principles of Marketing	3
FINC-220-Corporate Finance	3
MGMT-035-Careers in Business	0
LAS-Perspective 2 (Artistic)	3
LAS-Perspective 4 (Social)	3
Term: Spring 2	
MGIS-320 Database Management Systems	3
MGMT-215 Organizational Behavior	3
University elective 1	3
GE elective 3: SCB-INTB-225 Global Business Environment	3
GE elective 4: COLA-COMM-253- Communication	3
Term: Fall 3	
MGMT-340-Business Ethics and Corporate Social Responsibility	3
DECS-310- Operations Management	3
MGIS-450 Enterprise Systems	3
LAS Immersion 1	3
LAS Perspective 5 (Natural Science Inquiry-with lab)	3
Term: Spring 3	
DECS-435 Supply Chain Management Fundamentals	3
Supply Chain Management Elective	3
GE elective 5	3
LAS Immersion 2	3
LAS Perspective 6 (Scientific Principles)	3
Term: Fall 4	
ISEE-582 Lean Six Sigma Fundamental	3
Supply Chain Management Elective	3
LAS Immersion 3	3
DECS-445 Managing Supplier Relations	3
GE elective 6	3
Term: Spring 4	
MGMT-560- Strategy and Innovation	3
MGIS-550 MIS Capstone, or ISEE497 Multidiscipline Senior Design 1, Or ISEE 498 Multidiscipline Senior Design 2	3
University elective 2	3
GE elective 7	3
GE elective 8	3

Program's Fit with RIT Academic Portfolio Blueprint Characteristics and Criteria

Academic Portfolio Blueprint Characteristics	B.S. Supply Chain Management
Scholarship, Research, and Creativity	Efforts will be made to establish relationships with companies that will generate co-ops for students and research opportunities for students and professors.
Innovative Teaching and Learning	The program will use a variety of technological resources (a variety of software, data sources, etc.) to achieve program goals.
Experiential Learning	The students will be required to co-op.
International and Global Education	Supply chains today are global in nature; the curriculum acknowledges this and prepares students accordingly.
Synergy and Interdisciplinarity	Coursework in international business, operations management, and industrial engineering, and management, among other areas, are all components of the program.
Inclusive Excellence	Supply chain management potentially includes relationships with supplier, producers, and customers of all nationalities.

Academic Portfolio Blueprint Criteria	B.S. Supply Chain Management
Centrality	As a career-oriented program for an ever-changing function typically global in nature, the program is in complete accord with RIT's vision and mission. Its emphasis on analysis (critical thinking), global interconnectedness, integration of communication, technological possibilities, and business practices are fully consistent with RIT's Academic Program Profile. It will be particularly effective in helping to achieve RIT's KRA goals 3 (increase student participation in global initiatives) and 4 (increase percentage of graduating students with employment offers or graduate school acceptances).
Marketability	The previous justification section indicates that strong demand exists for graduates of supply chain programs. The expectation is that while some substitution may occur—especially for the management program and perhaps for the international business program—most of the enrollment is expected to come from students who are coming to RIT because this program is offered. It is expected that many students in other business and industrial engineering programs will enroll in these courses.

Quality	The program will follow the existing RIT guidelines for curriculum, assessment, teaching, and research. At the outset it will include courses from the business and engineering colleges, and may include courses from other areas such as international studies and public policy.
Financial Viability	The program is designed to leverage some existing resources from SCB and KGCOE.

Curricular Linkages with Other Academic Programs and Interdisciplinary Connections

The program integrates various business disciplines (especially operations management, management information systems, and international business) with industrial engineering concepts. In addition to the collaboration with KGCOE, there are other potential collaborations that can further strengthen the uniqueness of this SCM program. Students may take additional elective courses offered by the College of Liberal Arts to prepare themselves to address additional global as well as policy issues associated with SCM. This program may also serve as a platform for complementary coursework in the liberal arts through minors and double majors in areas such as economics, public policy, or a language.

Administrative Structure for the Program

The program will be administered through the Saunders College of Business. It will use the existing infrastructure for undergraduate programs within the college.

Projected Enrollment, Program Marketability, Sustainability of the Program (from Edward A Lincoln)

The following assumptions were used in the development of the enrollment projection below:

1. *The program will attract new students from both freshmen and transfer markets with the majority of new students entering in the fall. Given RIT's recent conversion to a semester calendar, spring semester is an even more opportune time for new students to enroll, especially transfer students.*
2. *Most of the students will come from the Middle Atlantic and New England regions – the traditional market base for the Saunders College.*
3. *The Office of Undergraduate Admissions will work with the college to determine appropriate academic profile parameters for entering students with final authority for admission decisions resting in the Office of Undergraduate Admissions.*
4. *The Saunders College of Business will work with the Office of Undergraduate Admissions to maintain and enhance RIT's relationships with two-year schools to promote the new*

program and develop articulation agreements to facilitate the recruitment and enrollment of transfer students into the programs. Flexibility in the application of transfer credits will be critical to enrolling those students.

5. *The projections are based upon an assessment of the College Board's Student Search Service data using the following parameters to determine the level of interest in the student market: Combined PSAT scores at 110 or higher and high school grades of B+ or higher. Entering transfer students would generally present a GPA of 3.2 or higher for admission.*

6. *The program will attract internal transfers from other RIT colleges, the University Studies program, as well as other programs in the Saunders College of Business. For purposes of these projections, however, we are including only students who are new to RIT.*

Once the program has been approved and incorporated into a full marketing cycle, we project that 14 new freshmen would enroll each fall and that 10 new transfer students (3 second-year and 7 third-year) would enroll each September. It is projected that the proposed program would attract and retain the following numbers of new students over a five-year period:

	Student Year Level				
Fall Quarter	Year 1	Year 2	Year 3	Year 4	FTE
Fall 2017	14	3	7	0	24
Fall 2018	14	16	9	5	44
Fall 2019	14	16	19	7	56
Fall 2020	14	16	19	18	67
Fall 2021	14	16	19	18	67

Resource Impact

A. Cost Model Analysis (5-year revenue and cost projections) – attached

B. Utilization of Existing Resources - The proposed program is designed to leverage existing resources from SCB and KGCOE. No new courses are required. 24 credit hours courses as existing courses already offered in support of other programs in SCB and KGCOE. However, DECS435 (3 credits) and DECS445 (3 credits) have not been offered over the last several years. Additional resources are needed to reactivate these two courses as well as potentially support additional sections of some existing courses. Existing SCB and KGCOE classrooms and labs, and the associated software, should be sufficient for this program.

R·I·T

Rochester Institute of Technology

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February 29, 2016

Jacqueline R. Mozrall, Dean
Saunders College of Business
Rochester Institute of Technology

Dear Jacquie:

I have reviewed your concept paper for a proposed B.S. degree program in Supply Chain Management (SCM) in the Saunders College of Business. As we both know, this program fills a critical industry need that our corporate partners have been strongly encouraging us to address for many years. Furthermore, it will expand RIT's program portfolio in this important interdisciplinary area beyond the interdisciplinary minor that was launched last year. Given RIT's combined strengths in foundational business areas, management information systems and industrial engineering, across the Saunders College of Business and the Kate Gleason College of Engineering, we are well positioned to deliver a strong program in this area. I know that John Kaemmerlen, a faculty member in Industrial & Systems Engineering (ISE), has been working closely with your team to develop the concept paper and proposed curriculum. I enthusiastically endorse the plan to include one required industrial engineering course, as well as additional elective offerings in ISE in support of this program. I trust that incremental faculty resources will be provided in industrial engineering, consistent with student enrollment growth.

Speaking on behalf of the Kate Gleason College and its Industrial & Systems Engineering Department, I fully support this proposed program leading to a B.S. in Supply Chain Management.

Sincerely,

Harvey J. Palmer

Harvey J. Palmer, Ph.D., P.E.
Dean

Karel Shapiro

From: Edward A Lincoln
Sent: Tuesday, November 17, 2015 3:15 PM
To: Manlu Liu
Cc: Jacqueline Mozrall; James G. Miller (EMCS VP); Daniel Shelley; Leanne Hill
Subject: Proposed BS in Supply Chain Management Enrollment Projection

Manlu,

We have reviewed your proposal for a new Bachelor of Science degree program in Supply Chain Management, and are pleased to provide the following information in support of the proposed program.

The following assumptions were used in the development of the enrollment projection below:

1. The program will attract new students from both freshmen and transfer markets with the majority of new students entering in the fall. Given RIT's recent conversion to a semester calendar, spring semester is an even more opportune time for new students to enroll, especially transfer students.
2. Most of the students will come from the Middle Atlantic and New England regions – the traditional market base for the Saunders College.
3. The Office of Undergraduate Admissions will work with the college to determine appropriate academic profile parameters for entering students with final authority for admission decisions resting in the Office of Undergraduate Admissions.
4. The Saunders College of Business will work with the Office of Undergraduate Admissions to maintain and enhance RIT's relationships with two-year schools to promote the new program and develop articulation agreements to facilitate the recruitment and enrollment of transfer students into the programs. Flexibility in the application of transfer credits will be critical to enrolling those students.
5. The projections are based upon an assessment of the College Board's Student Search Service data using the following parameters to determine the level of interest in the student market: Combined PSAT scores at 110 or higher and high school grades of B+ or higher. Entering transfer students would generally present a GPA of 3.2 or higher for admission.
6. The program will attract internal transfers from other RIT colleges, the University Studies program, as well as other programs in the Saunders College of Business. For purposes of these projections, however, we are including only students who are **new** to RIT.

Once the program has been approved and incorporated into a full marketing cycle, we project that 14 new freshmen would enroll each fall and that 10 new transfer students (3 second-year and 7 third-year) would enroll each September. It is projected that the proposed program would attract and retain the following numbers of **new students** over a five-year period:

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Fall 2018	14	16	9	5	44
Fall 2019	14	16	19	7	56
Fall 2020	14	16	19	18	67
Fall 2021	14	16	19	18	67

Please let me know if you have any questions regarding this information.

Sincerely,

Ed Lincoln

Edward A. Lincoln
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Supply Chain Management
SUMMARY REPORT *(Updated 3/2/16)*

Fiscal Year	2018	2019	2020	2021	2022	Total
Avg Enrollment: Students (FT + PT)	24	44	56	67	67	257
Part-time Faculty expense	$ 16,200.00	$ 16,524.00	$ 16,854.48	$ 17,191.57	$ 17,535.40	$ 84,305.45
Full-time faculty expense	$ 310,738.23	$ 633,905.99	$ 808,230.14	$ 824,394.74	$ 840,882.64	$ 3,418,151.74
Total Expenses	$ 536,832.32	$ 956,218.60	$ 1,199,634.88	$ 1,223,264.25	$ 1,247,366.20	$ 5,163,316.24
Revenue (Net of Aid)	$ 609,787.74	$ 1,145,501.51	$ 1,522,818.81	$ 1,812,685.13	$ 1,819,761.68	$ 6,910,554.87
CONTRIBUTION MARGIN Surplus/(Deficit)	$ 72,955.42	$ 189,282.91	$ 323,183.93	$ 589,420.88	$ 572,395.48	**$ 1,747,238.62**

Note : This sheet is password protected to maintain the formulas.