Wichita State University

Master of Science in Global Supply Chain Management

Date of Implementation: Spring, 2018 CIP: 52.1399

Master of Science in Global Supply Chain Management
Wichita State University
Program Narrative

1. Basic Program Information

Anticipated date of implementation:	Spring, 2018
Responsible departments:	Barton School of Business and College of Engineering
Point of Contact:	Richard D. Muma, Ph.D. Richard.Muma@wichita.edu
CIP:	52.1399 *Management Science and Quantitative Methods*

2. Global Concept

Global supply chains are complex and require utilization of advanced optimization and technologies in order to solve global supply chain issues. Improving efficiencies by utilizing quantitative techniques and business analytics in management of capacity, inventory, warehousing, and logistics is critical to being competitive in the global marketplace.

3. Program Description

This proposed Global Supply Chain Management (GSCM) degree is comprised of a mix of science, technology, and mathematics that is essential to improve the design and operation of global supply chains.

This interdisciplinary program will be housed at Barton School of Business and directed by coordinators (appointed faculty) in consultation with Program Supervisory Committee (PSC), consisting of at least three faculty members from industrial engineering at the College of Engineering or from the Barton School of Business. Both the coordinators and the PSC will manage the operations and logistics of the program. In relation to resources and direction of the program, both the coordinators and the PSC will regularly interact with:

- Industrial Advisory Board (IAB) for Supply Chain Management, consisting of at least nine senior executives from key global companies;
- The chairs of the department whose faculty are involved in teaching courses; and
- The Deans of Barton School of Business and College of Engineering.

This Master of Science degree in Global Supply Chain Management (GSCM) is interdisciplinary and collaboratively designed by both the School of Business and College of Engineering. The program targets a wide range of diverse domestic and international applicants. Through an innovative and dynamic curriculum, students will acquire mastery in managerial and analytical aspects of supply chain operations, and they will develop contemporary competencies via innovative hands-on activities and industry practices. To serve the needs of future professionals in the field, WSU's Master of Science in Global Supply Chain Management requires certain core courses as well as offers two tracks: Management and Analytics.

- **Management track** focuses on developing capabilities and mastery leading to value creation in global management of procurement, logistics, and operations.

- **Analytics track** aims in mastery use of innovative tools and techniques in decision making processes from design to planning phases.

Both core and track courses in the proposed Master of Science program in Global Supply Chain Management use science, technology and mathematics heavily. Qualification of the program as a STEM program will support the mission of the Wichita State University and serve KBOR's 2020 objectives.

Moreover, the proposed program will enhance the marketability of our graduates in pursuing related post-master's education (i.e., a Ph.D. degree). The creation of these two tracks within the proposed master's degree program will exclusively speak to issues within each discipline.

4. Learning Goals of the Program

WSU is committed to ensuring the necessary, educational processes are in place to provide a high-quality program. Following is a summary of the learning goals for the MS in GSCM. Each student is expected to:

- Demonstrate ability in critical thinking and problem solving.
- Develop managerial and leadership traits.
- Exhibit proficiency in use of decision making techniques and technologies.
- Develop effective communication skills.
- Demonstrate conceptual proficiency in supply chain management.

5. Procedures and Criteria for Admission into the Proposed Program

To be admitted into the GSCM Master's Degree program, the applicant must:

- Possess an undergraduate degree in business, engineering, science, or related field.
- Have a minimum grade point average of 3.00/4.00 cumulative or in the last 60 hours (whichever is better) of undergraduate coursework and in all graduate courses. Students with lower grade point average may apply with GRE or GMAT scores for consideration of probationary admission.
- Submit a personal goals statement, which articulates the applicant's reasons for seeking admission to the program (500 words maximum).
- English as a second language students must meet the minimum TOEFL and IELTS requirements as set by the Graduate School. Applicants needing an F1 visa must also provide documentation for financial support.
- Meet the application deadline (May 1st for the Fall Semester; October 1st for the Spring Semester).

6. Demand/Need for the Program:

The GSCM field covers diverse job opportunities, including managers in product transportation, storage and distribution; procurement and outsourcing; and the various processes involved in production. Widely cited, the logistics industry alone is making up 8.5% of the U.S. GDP and growing rapidly with its annual $1.3 trillion market. *Fortune.com* (May 2014) estimated that 1.4 million new supply chain employees will be needed by 2018. Per "Career Overview: Supply Chain Management," an article by the editor of *wetfeet.com* (December 2012), supply chain management has a healthy job outlook. The U.S. Roadmap report by *Material Handling and Logistics* indicates an annual growth rate of nearly 270,000 supply chain management positions[1]. The study by the *Georgia Center of Innovation for Logistics* reveals about 200,000 jobs in supply chain management field will be vacant on an annual basis through 2018 due to unqualified talent.[2]

Per the *25th Annual Logistics Management Report*[3] (Sep 20, 2016), the lifespan of corporations has dramatically shrunk from 61 years in the 1950s to 16 years in 2011. The report predicts that 75% of current

[1] http://www.mhlroadmap.org/downloads/mhl_roadmap.pdf , January 2014 Report

[2] http://www.bloomberg.com/news/articles/2013-06-28/supply-chain-management-the-new-b-school-must-have

[3] http://www.logisticsmgmt.com/article/25th_annual_masters_of_logistics

Fortune 500 companies may disappear and urges the corporations to consider supply chain to be a part of their survival make-up. The study reveals that companies that are masters of logistics have chief supply chain officers as a part of their leadership team and have higher profitability compared to competitors.

Bloomberg study also reports that since 2011, many business schools (such as Arizona State, University of Southern California, University of Texas, MIT, Penn State, Indiana, Michigan State, and Rutgers) have launched graduate programs to meet the proliferating demand for supply chain expertise.

To determine the demand for supply chain management, however, it is necessary to examine detailed descriptions of job openings, as this cross-functional and multi-disciplinary field does not distinguish between seniority and expertise in job titles. Firms are not looking for generalists, regardless of undergraduate and graduate level. Rather, they are looking for dedicated supply chain programs. *Glassdoor.com* provides rank, job openings, and base salary for job titles relevant to the field of supply chain management. Among the 25 highest-paying jobs with the most openings as of February 2015[4] are:

Rank	Job Title	# of Job Openings	Average Base Salary
8	Analytics Manager	1408	115,725
12	Product Manager	9918	113,959
14	Supply Chain Manager	1667	106,632

The *Bureau of Labor Statistics* reports employment and annual wages as of May 2015 for transportation, storage, and distribution managers and purchasing managers as follows:

		Annual Wage *(with percentiles)*					
Employment (1)	Employment RSE (3)	10%	25%	50% (Median)	75%	90%	Mean (2)
109,210	1.1 %	$50,840	$66,060	$86,630	$114,440	$149,770	$95,130
72,600	0.9 %	$60,830	$79,860	$108,120	$139,080	$172,950	$114,130

(1) Estimates for detailed occupations do not sum to the totals because the totals include occupations not shown separately. Estimates do not include self-employed workers.
(2) Annual wages have been calculated by multiplying the hourly mean wage by a "year-round, full-time" hours figure of 2,080 hours; for those occupations where there is not an hourly wage published, the annual wage has been directly calculated from the reported survey data.
(3) The relative standard error (RSE) is a measure of the reliability of a survey statistic. The smaller the relative standard error, the more precise the estimate.

7. Comparative/Locational Advantage:

The mission of Wichita State University is to “be an essential educational, cultural and economic driver for Kansas and the greater public good.” In relation to the University mission, faculty from both Barton School of Business and College of Engineering will collaboratively work with supply chain leaders from different industries to prepare learners for success in the global marketplace through an adaptive master’s program.

[4] https://www.glassdoor.com/blog/highest-paying-jobs-demand/

WSU's proximity to major global companies in aerospace; health; food/agribusiness; chemical, oil, and gas; recreation/amusement; and computer/electronics provides a unique position to offer learners unique opportunities to advance supply chain knowledge and business practices. According to *Graduate Management Admission Council*, the premier of market intelligence, the trend is up for specialized master's business degrees, as compared to a downward trend in MBA applications. Industries are now demanding managers who can optimize their supply chain planning and design efficiencies by utilizing data analytics and quantitative methods. This qualifies supply chain programs to be listed under STEM (Science, Technology, Engineering, and Mathematics) programs.

The proposed master's degree will not only provide recognition of the supply chain field, but it will also attract domestic and international applicants. WSU undergraduates have indicated an interest for a master's degree in supply chain. Supply chain managers and senior leadership have also indicated interests in a Global Supply Chain Management (GSCM) Master of Science degree and related certificates (possibly stackable towards master's degree). In response to this, both the college of engineering and the school of business have jointly offered a certificate in Enterprise Systems and Supply Chain Management, along with certificate of recognition from SAP, a global software company. Upon approval of this proposal, WSU will be able to offer an adaptive and innovative program that will further serve a diverse group of learners.

Additionally, the results of Wichita Regional Export Planning Initiative, as a joint project of Brookings – JPMorgan, indicate the need of educational support for local supply chain companies. Upon approval, the proposed Master of Science program in Global Supply Chain Management with management and analytics tracks will certainly create the needed interaction and collaboration between academic intellectuals and employees in town. This interdisciplinary curriculum is relevant and open for adaptability to each major industry in town, and the program possesses significant impact on improving practices of current supply chain management. The current faculty expertise and the advantage of industry leaders' involvements enable this proposed program to be self-sustainable, requiring minimal cooperation with other Regents Universities.

8. Ranking of the Program in WSU's List of Priorities

The development of the master's program for supply chain manager is consistent with WSU's seven strategic goals. The Barton School of Business strategic planning committee listed this proposal as a *high priority* new program. The proposed Master of Science program specifically supports applied learning, offers students an educational experience with interdisciplinary curricula between the School of Business and College of Engineering, and capitalizes on job opportunities in trending field. Furthermore, the curriculum will be dynamic and shaped by the feedback from senior leaders on the industry advisory board.

9. Similar Programs in Other Regents Institutions

Within the state of Kansas, there is one Master of Science in Business with supply chain management emphasis at the University of Kansas (KU). However, the KU program, offered in conjunction with the U.S. Army Command and General Staff College at Fort Leavenworth, is designed primarily for Army majors and major-eligible captains. Kansas State University offers an undergraduate major in Management with an operations & supply chain management specialization track.

10. Current Programs at Other Institutions

The majority of current peers' supply chain programs are either underdeveloped or a part of MBA concentrations. The trend of moving toward specialized M.S. programs can be observed among the aspiration peers. An assessment of the universities at major cities on the I-35 corridor indicates similar trend. Specialized supply chain graduate programs have been developed at major universities under business schools. The following two tables summarize the comparison of programs among peers and I-35 corridor universities.

Upon approval, this proposal will help WSU's strategic enrollment objective of increasing enrollment along the I-35 corridor by 18% yearly through Fall 2020.

		College/School	Degree Program
Current Peers	University of Massachusetts – Lowell	Manning Business School	Certificate in Supply Chain Mgt.
	University of Nevada Reno	College of Business	MBA with SCM Emphasis
	University of North Dakota		None
	Wright State University	College of Business	M.S. in Logistics & SCM
Aspiration Peers	Auburn University	School of Business	MBA with SCM Concentration
	Clemson University	College of Engineering	M.S. in SC Optimization & Logistics
	Oklahoma State University	School of International Studies College of Engineering	M.S. in Logistics & SCM M.S. in Industrial Eng with Enterprise Systems and Supply Chains track
	University of Akron	College of Business Admin	M.Sc. in Supply Chain Mgmt.
	University of Texas El Paso	College of Business Admin	MBA Operations/SCM concentration
I-35 Major City Universities	UT – Austin	School of Business	MBA with SCM Concentration Ph.D. in Supply Chain and Operations
	UT – Dallas	School of Management	M.Sc. in Supply Chain Mgmt.
	University of Dallas	College of Business	MS in Global Business with SCM concentration
	UT – San Antonio	College of Business	Graduate Certificate in SCM MS in Business Analytics (New)
	Texas A&M – San Antonio	College of Business	MBA with SCM Concentration
	Oklahoma State University	School of International Studies College of Engineering	M.S. in Logistics & SCM M.S. in Industrial Eng with Enterprise Systems and Supply Chains track
	University of Kansas	School of Business	MS in Business with SCM & Logistics concentration
	University of Missouri - KC	School of Business	MBA with SCM and Operations concentration
	Texas Christian University	School of Business	MS in SCM
	University of Minnesota	School of Management	MS in SCM

11. Program Curriculum

Degree Requirements

Students may earn a Master of Science degree in Global Operations and Supply Chain Management by choosing one of the following three options:

- ALL COURSE OPTION: 33 hours of coursework, or 30 hours of coursework and attainment of an external certification related to operations and supply chain management from ISM, ASQ, APICS, or SME ;
- PROJECT OPTION: Course work plus Industry Project, 30 semester credit hours of coursework plus at least 3 semester credit hours of degree project; or
- THESIS OPTION: 24 semester credit hours of coursework and at least 6 semester credit hours of master's thesis.

Students must submit a plan of study by the end of the first semester of enrollment.

The degree requires 15 credit hours of core courses, nine credit hours of courses from a track, and electives to satisfy the degree requirements. There is a maximum of nine credit hours of 500- or 600-level courses that can be taken in this program. The core courses and courses in each track are listed below:

Core Courses: Students are required to take the following courses (15 credits)

Course #	Course Title	Credit Hr.
DS 850 IME 553	Operations Management - OR Production Systems	3
DS 865 IME 783	Supply Chain Management - OR Supply Chain Management	3
DS 625	Global Procurement & Sourcing	3
IB 836	International Business & Competitiveness	3
MIS 750	Business Intelligence & Analytics	3

Tracks: Student must specialize in either management or analytics track.

Management Track Courses

A student specializing in the management track is required to take DS 790 (Global Logistics & Transportation Management or DS 890 (Risk Management in Global Supply Chains) and a minimum of six semester credit hours from the management track.

Course #	Course Title	Credit Hr.
DS 860	Enterprise Resource Planning	3
DS 790	Global Logistics & Transportation Management (New)	3
DS 890	Risk Management in Global Supply Chains (New)	3
BLAW 810	Law & Ethics for Business	3
ECON 804	Managerial Economics	3
FIN 625	International Financial Management	3
MKT 803	Marketing Analysis	3
ENTR 706	Seminar in New Product & Technology Development	3
MGMT 885	Strategic Management	3
IB 601	International Marketing	3

IME 790	Lean Supply Chains (New)	3

Analytics Track Courses

A student specializing in the analytics track is required to take IME 883 (Supply Chain Engineering) or IME 873 (Warehousing & Distribution Analytics) and a minimum of six credit hours from the analytics track.

Course #	Course Title	Credit Hr.
DS 875 IME 550	Spreadsheet Modeling for Decision Making– OR Operations Research	3
IME 960	Modeling & Computational Methods in Supply Chain	3
DS 755	Project Management	3
MIS 874	Management Information Systems	3
MIS 884	Database Planning & Management – OR	3
MIS 600	Database Management Systems	3
ECON 731	Applied Econometrics	3
IME 883	Supply Chain Engineering	3
IME 863	Facilities & Logistics Management (IME 880K)	3
IME 865	Modeling & Analysis of Discrete Systems	3
IME 724	Statistical Methods for Engineers	3
IME 756	Data Visualization & Analytics (New)	3
IME 873	Warehousing & Distribution Analytics (New)	3

Elective Courses: The remaining hours for the degree can be taken from either track.

Course Descriptions are provided in the Curriculum document.

12. Faculty Profile:

Faculties in both Barton School of Business and the College of Engineering possess appropriate degrees in supply chain management, information systems, economics, analytics, and international business that are relevant and essential for the proposed Master of Science in Supply Chain Management program. The core faculty of the program are: (Note: the percentage preceding the name indicates how much of their instructional time will be devoted to the program.)

Core Faculty from Barton School of Business

100 % Mehmet Barut, Ph.D., Professor, tenured, Supply Chain Management & Project Management
25% Khawaja Saeed, Ph.D., Professor, tenured, Information Systems and Analytics

Core Faculty from Industrial, Systems and Manufacturing Engineering, College of Engineering

50% Esra Buyuktahtakin, PhD, Assistant Professor, tenure track, Management Science
25% Krishna Krishnan, Ph.D., Professor, tenured, Production and Lean Operations
50% Gamal Weheba, Ph.D., Professor, tenured, Quality Control and Statistics
50% Mehmet Bayram Yildirim, PhD, Professor, tenured, Supply Chain Management & Economics

13. Student Profile:

Student demand for the program and characteristics of the students who will participate in the program

Students who will be drawn to this interdisciplinary degree will likely have interests in technology, engineering, mathematics, global awareness, and finance; similarly, students will have developing proficiencies in critical thinking, problem solving, managerial leadership, conceptualization, and

communication. Long-term goals would include a rewarding, interesting, well-paying career. [5] Among the potential career pathways are manager, trainer, consultant, and/or academician.

A survey was sent to all undergraduate and graduate students in the department of Industrial, Systems, and Manufacturing Engineering and in the Barton School of Business. With a return of 180 student responses, the 70.2% interest in this degree is quite promising. Of the 180 respondents, 108 are from engineering and 72 are from business school. The majority of the students (126 students) indicated a strong interest in the program. The interest level towards the Master of Science in Supply Chain Management degree is 66.7% among the engineers and 73.6% among the business students. The interest among the current undergraduate students (78 students) is 73.1%.

Characteristics of the pool from which the students will be drawn

The major characteristics of the pool is the need to specialize in supply chain management field. The business model for most Business schools was to offer MBA degree with tracks or concentrations in supply chain management. The industry was expecting to see a few supply chain courses on student transcripts; however, this popularity has changed and now specialized degrees are becoming the norm.

Employers are looking for employees who have the capability to identify underserved micro segments of their business and who have the creativity and the skills required to accomplish expected innovations in their order-fulfillment processes[6]. Per *Inbound Logistics*,[7] a skill set of supply chain managers can be categorized into two tracks: technical and leadership, with "deep knowledge in one or more supply chain disciplines and enough expertise in the others to lead a major portion business."

14. Academic Support:

All prospective and admitted students will interact with the program coordinators providing routine basic tasks, including advising for admission, registration, course offering and schedule, and orientation. Students choosing project or thesis option will be assigned to faculty advisors based upon the student's research goals and interests. The advisor assigned to a student at the time of admission will assist the student in completing plan of study by the end of the first semester of enrollment.

Students also benefit from WSU's One Stop services from enrollment to technical problems. The WSU Information Technology Services (ITS) also offers telecommunication services, computer labs, networking and data center operations, as well as web development and data warehousing.

All admitted and enrolled students will benefit from the WSU libraries services, including subject matter librarians, a welcoming environment for study, print and audio works, an interlibrary loan agreement with public and private university and non-university libraries, and numerous online databases for periodical literature.

15. Facilities and Equipment:

No new physical facility or equipment is needed. Currently, there is no need for separate lab spaces and computer rooms. WSU's meeting and conference rooms will be utilized. When new School of Business building is in place it is expected that the program will have its own physical facility and equipment.

16. Program Review, Assessment and Accreditation:

The Master of Science in Global Supply Chain Management is committed to ensuring that the necessary educational processes are in place to provide a high-quality program. A clear process will be in place that evaluates student learning and program outcomes on several levels. A preliminary assessment plan for the Master of Science in Global Supply Chain Management program is presented below. Teaching faculty, the

[5] http://www.gradschools.com/masters/operations-management/supply-chain-management
[6] http://www.supplychain247.com/article/10_supply_chain_trends_for_the_next_10_years/D2
[7] http://www.inboundlogistics.com/cms/article/career-solutions-supply-chain-graduates-now-what/

program coordinators, and the Office of Academic Affairs will assess the educational soundness of the program. Specialized accreditation is not available for this degree. The goals of this program are to provide graduates with:

- technical and business knowledge in the field of and supply chain management, logistics and global trade, and professional skills to get employment and to advance in their field;
- the technical knowledge and academic background necessary to be accepted to other advanced degree programs; and
- the abilities to communicate effectively via technical papers and presentations.

The MS in Global Supply Chain Management program goals are assessed on an annual basis using the following learner outcomes:

- Demonstrate ability in critical thinking and problem solving
- Develop managerial and leadership traits
- Exhibit proficiency in use of decision making techniques and technologies
- Develop effective communication skills
- Demonstrate conceptual proficiency in supply chain management

Assessment tools used for each outcome are summarized in the following table:

Learner Outcome	Assessment Tool	Target/Criterion	Result
Demonstrate ability in critical thinking and problem solving	Rubric score on MS project or MS thesis Research projects in courses	80%	
Develop managerial and leadership traits	Writing skills - via assignments and projects in the; graduate level courses that have writing component; and thesis or project Presentation skills - via graduate level courses that have presentation component; and thesis or project	80%	
Exhibit proficiency in use of decision making techniques and technology	Graduates will be assessed throughout core classes on production / operations management, supply chain management, global procurement / sourcing, business intelligence and analytics, and international business & competitiveness. Graduates will be assessed via exams in the classes which utilize the concepts developed in the core classes.	80%	
Develop effective communication skills	Graduates will be assessed throughout courses on supply chain systems using business, engineering and analytics.	80%	
Demonstrate conceptual proficiency in supply chain management	Graduate students will be assessed throughout specialized courses in the area of supply chain management.	80%	

Evaluation Areas/Measures	Minimum Frequencies				Responsibility
	Each Course	Every Year	Every 1-3 Years	Ongoing	
Course evaluations (e.g. SPTE or IDEA)	X				Program Coordinators / Faculty / Acad Affairs
Learning objective assessment	X				"
Curriculum/graduate exit surveys			X		"
Mission statement review			X		"
External advisory input				X	"
Admittance numbers		X			"
Admission policies review		X			"
Application materials review			X		"
Core competency evaluation			X		"
Thesis/capstone evaluation			X		"
Graduation number and rate			X		"
Curricular review of diversity			X		"
Student participation in on-campus business plan competitions			X		"
Internal program review			X		"

The evaluation areas, frequencies, and responsible entity are summarized in the following table:

17. Costs and Financing:

Students enrolled in the program will be charged $50 per credit hour program fee. The fee will be used to help fund initiatives related to the program as outlined below.

There will be two program coordinators and two graduate assistants. Program coordinators will be paid a stipend. The funding for the stipends and graduate assistants will be funded from internal reallocation in both Colleges and the program fee. The program will require the hiring of two new faculty members; one for the Business School and one for the College of Engineering. The funding for the new positions will be allocated from the Office of Academic Affairs and the program fee.

For the implementation of this program, stipends for duties as program coordinators (one each in the School of Business and in the College of Engineering) totals $6,000; salaries for two graduate assistants total $10,400 ($5,200 each). For the first year, costs total $16,400. In year two, it is expected that enrollment will necessitate the hiring of two additional faculty members ($250,000). Adding this amount to the expenses encountered in the implementation year, the total is $266,400. It is anticipated that no new faculty will be hired in the third year and the cost for the program will remain the same as in year two.

Master of Science in Global Supply Chain Management

Wichita State University

Program Summary

Criteria	Explanation
1. Program Identification CIP	Master of Science in Global Supply Chain Management (MS in GSCM) 52.1399
2. Academic Unit	Barton School of Business
3. Program Description	*Supply chain* refers to the sequence of processes involved in the production and distribution of a commodity. Collaboratively designed by both the School of Business and College of Engineering, this interdisciplinary Master's degree program offers mastery of supply chain operations through hands-on, academic activities and practical, industry experiences. This program will serve graduate students on the Wichita campus. To serve the needs of professionals in the field, WSU's Master of Science in Global Supply Chain Management offers two tracks, both of which rely heavily upon science, technology, and mathematics: 1) Management track -- focuses on procurement, logistics, and operations; and 2) Analytics track – focuses on innovative tools and techniques in the decision-making processes from design through planning. Moreover, the proposed program will enhance opportunities for our graduates to pursue related post-Master's education. Qualification of the program as a STEM program will support the mission of WSU and serve KBOR's 2020 objectives.
4. Demand/Need for the Program	A Global Supply Chain Management Offering Survey, administered by the Barton School of Business for both undergraduate and graduate students, resulted in 126 out of 180 respondents, or 70 percent, indicating a strong interest in the program. Survey data for just the undergraduate population was slightly over 73 percent in favor. The supply chain management field covers diverse job opportunities, including managers in product transportation, storage and distribution; procurement and outsourcing; and the various processes involved in production. The logistics industry alone is making up 8.5% of the U.S. GDP and growing fast with its annual $1.3 trillion market. Per Fortune.com (May 2014), approximately 1.4 million new supply chain employees will be needed by 2018. Locally, all major business organizations in and near Wichita are hiring for these positions. These include Koch Industries, Spirit Aerosystems, Textron, Cargill, and AGCO.

5. Comparative/Locational Advantage	Within other Board of Regents four-year universities, there is one Master of Science in Business degree with an emphasis on supply chain management at the University of Kansas. However, the KU program, offered in conjunction with the U.S. Army Command and General Staff College at Fort Leavenworth, is designed primarily for Army majors and major-eligible captains. KSU offers an undergraduate major in management with an operations and supply chain management specialization track. This proposed degree differs from many other programs in the following ways: 1) The degree is designed to provide students with three choices as to how they wish to attain completion of a Master's of Science in Global Supply Chain Management; 2) Students may choose a specialized track from either management or analytics; 3) This degree is interdisciplinary in nature, a joint effort between the schools of business and engineering. WSU has a distinct locational advantage. WSU's proximity to major global companies in aerospace, health, food/agribusiness, chemical, oil and gas, recreation and amusement, and computer/electronics provides a unique setting to offer students practical, hands-on academic opportunities. Results of Wichita Regional Export Planning Initiative, a joint project of Brookings – JPMorgan, indicate the need of educational support for local supply chain companies. Upon approval, the Master of Science in Global Supply Chain Management program will increase or create needed interaction and collaboration among WSU and area manufacturing businesses. Due to the interdisciplinary curriculum and the flexibility it affords in working directly with specific business needs, this program inherently possesses the potential to have significant impacts on improving current supply chain management practices.
6. Curriculum	Students are required to take 15 semester credit hours of core courses and specialize in one of two tracks: management or analytics. For either track, students are required to complete one of two baseline courses and a minimum of six additional semester credit hours from several options. Students have three options in their path to obtaining their Master of Science in Global Supply Chain Management degree: Option 1: *The All-Course Option* includes 33 semester credit hours of coursework, or 30 hours of coursework and receiving an external certification related to operations and supply chain management from ISM, ASQ, APICS, or SME (all are organizations that certify mastery of global supply chain management skills). Option 2: *The Project Option* includes 30 semester credit hours of coursework and at least an additional 3 semester credit hours of a degree project.

<table>
<tr><td></td><td>Option 3: The Thesis Option includes 24 semester credit hours of coursework and at least 6 semester credit hours of a master's thesis.</td></tr>
<tr><td>7. Faculty Profile</td><td>The faculty in both Barton School of Business and College of Engineering possess terminal degrees in supply chain management, information systems, economics, analytics, and international business that are relevant and essential for the proposed Master of Science in Supply Chain Management. The core faculty group consists of six diverse faculty members from multiple disciplines: two from School of Business (Drs. Barut and Saeed) and four from College of Engineering (Drs. Buyuktahtakin, Krishnan, Weheba, and Yildirim).

<table>
<tr><th>Faculty Name</th><th>Ph.D.</th><th>Faculty Rank</th><th>Devoted to the Program</th></tr>
<tr><td>Mehmet Barut</td><td>Yes</td><td>Professor</td><td>100%</td></tr>
<tr><td>Khawaja Saeed</td><td>Yes</td><td>Professor</td><td>25%</td></tr>
<tr><td>Esra Buyuktahtakin</td><td>Yes</td><td>Assistant Professor</td><td>50%</td></tr>
<tr><td>Gamal Weheba</td><td>Yes</td><td>Professor</td><td>50%</td></tr>
<tr><td>Krishna Krishnan</td><td>Yes</td><td>Professor</td><td>25%</td></tr>
<tr><td>Mehmet Bayram</td><td>Yes</td><td>Professor</td><td>50%</td></tr>
</table></td></tr>
<tr><td>8. Student Profile</td><td>Students who will be drawn to this interdisciplinary degree will likely have interests in technology, engineering, mathematics, global awareness, and finance; similarly, students will have developing proficiencies in critical thinking, problem solving, managerial leadership, conceptualization, and communication.

The potential student pool includes students with baccalaureate degrees as recent graduates interested in pursuing their education, as employees of companies with supply chain responsibilities, and/or as international students interested in the global perspective. Potential career pathways include corporate leadership, manager, trainer, consultant, or instructor.</td></tr>
<tr><td>9. Academic Support</td><td>All Global Supply Chain students will interact with program coordinators who provide routine basic tasks (advising, registration, course offering and scheduling, orientation, etc.). The WSU Information Technology Services (ITS) also offers telecommunication services, computer labs, networking and data center operations, web development, and data warehousing; WSU's library services provide a host of services, including research assistance, and printing and audio assistance.

Furthermore, the program will be supported by the administrative staff currently available in Business School. Each college will assign a faculty member to the role of program coordinator to assist with the details of each of the two tracks.</td></tr>
</table>

10. Facilities and Equipment	No new physical facility or equipment is needed. Currently, there is no need for separate lab spaces and computer rooms. WSU's meeting and conference rooms will be utilized. When the new School of Business building is in place it is expected that the program will have its own physical facility and equipment.
11. Program Review, Assessment, Accreditation	The Global Supply Chain Management program will be reviewed and assessed within the School of Business and the College of Engineering with a focus on content, expectations, and learning outcomes. Assessment of student learning outcomes will be measured along such measures such as graduation rates, graduate exit surveys, participation in program forums, knowledge and skills assessments, and thesis and project evaluations. Teaching faculty, the program coordinators, and the Office of Academic Affairs will assess the educational soundness of the program. Additionally, this program will be included in the Board of Regents program review schedule for assessment. Specialized accreditation is not available for this degree.
12. Costs, Financing	For the implementation of this program, stipends for duties as program coordinators (one each in the School of Business and in the College of Engineering) totals $6,000; salaries for two graduate assistants total $10,400 ($5,200 each). For the first year, these costs total $16,400. In year two, it is expected that enrollment will necessitate the hiring of two additional faculty members ($250,000). Adding this amount to the expenses encountered in the implementation year, the total is $266,400. It is anticipated that no new faculty will be hired in the third year and the cost for the program will remain the same as in year two. Funding for the two faculty hires in year two will come from reallocation in Academic Affairs and a program fee. The stipend for program coordinators will be funded from an internal reallocation in both Colleges. It is anticipated that students in the Master of Science in Global Supply Chain Management program will be charged $50 per credit hour program fee.

Master of Science in Global Supply Chain Management
Wichita State University
Curriculum

Students are able to earn Master degree in Global Operations and Supply Chain Management by choosing one of the following three options:

- ALL COURSE OPTION: 33 hours of coursework, or 30 hours of coursework and receiving an external certification related to operations and supply chain management from ISM, ASQ, APICS, or SME
- PROJECT OPTION: Course work plus Industry Project, 30 credit hours of coursework plus at least 3 credit hours of degree project
- THESIS OPTION: 24 credit hours of coursework and at least 6 credit hours of master's thesis

Students must submit a plan of study by the end of the first semester of enrollment.

The degree requires fifteen (15) credit hours of core courses, nine (9) credit hours of courses from a track, and electives to satisfy the degree requirements. There is a maximum of 9 credit hours of 500 or 600 level courses that can be taken in this program.

Course #	Title	Description
BLAW 810	Law & Ethics for Business	An understanding of the foundational principles of the legal system and the laws that impact business is essential to the business leader. Course provides an overview of the legal system and dispute resolution procedures, and covers specific legal topics of importance to business leaders, including contracts, torts, constitutional law, product liability, intellectual property, employment law, business entities and business regulation. It introduces students to ethical decision making processes, the major philosophical traditions in ethical theory, as well as principles of corporate governance, corporate responsibility and sustainability. The focus is on stimulating analytical thinking and class discussion about how to apply ethical principles to practical business situations.
DS 625	Global Procurement & Sourcing	This course is designed to expose learners to the latest supply chain trends and issues dealing with global purchasing and sourcing. Among the coverage are global sourcing management, purchasing management, financial and operational strategies for sourcing and procurement, diversity in sourcing and procurement, supplier base management, risks in sourcing and procurement, ethical and sustainable outsourcing. Life experience and practices by guest speakers from the area Multi-National Companies (Koch, Cargill, Spirit, Cessna and other Aviation companies, etc.) will be featured.
DS 875	Spreadsheet Modeling for Decision Making	Overview of decision making models used in various functions in business. Students learn to build and analyze the models in a spreadsheet and with different add-ins. Students acquire advanced analytical and spreadsheet skills that can make them better analysts regardless of their area of specialization. The course is example driven, covering various scenarios from business. Prerequisite: DS 850 or instructor's consent.
DS 755	Project Management	This hands-on and project-based technology course establishes fundamental guidelines for defining the process of project management and designing time-constrained projects. Covers core methodology for managing complex projects on time. Uses a software tool.

DS 790	Global Logistics & Trans Management (New)	This project based course offers experimental decisions to challenging problems with global implications of an industry. Among the topics student will acquire knowledge are intermodal transportation, route selection, transportation regulations, contingency planning, international business ethics and regulations on logistics and distribution. Prerequisites: DS850/IME 553 and DS 625
DS 850	Operations Management	Develops an understanding of the operations function in a business and how it interfaces with other major functions in business. Students gain an appreciation of the strategic importance of operations and how a firm can gain competitive advantage through world-class performance by operations in delivering high-quality, cost competitive products and services. Builds a knowledge base of the concepts, tools and techniques related to designing, managing and improving operations. Helps managers, regardless of functional specialization, gain an operations perspective. Prerequisites: calculus and statistics.
DS 860	Enterprise Resource Planning	Provides an overview of Enterprise Resource Planning (ERP) and related systems like CRM. E-commerce systems are designed to assist an organization with the integration and management of its business processes. ERP systems can be expensive and time-consuming to implement. Topics covered include the ERP life cycle for implementation and change management. Students get hands-on exercises with ERP software, like SAP, if available. Prerequisite: DS 850 or equivalent.
DS 865	Supply Chain Management	Introduces concepts, models and solution approaches critical to managing a supply chain. Focuses on understanding how supply chain design and operation impact the performance of the company and its competitive advantage. Topics include strategy development, profitability, demand forecasting, inventory management, facility location, warehousing, transportation, network design and information sharing. Prerequisite: DS 850 or instructor's consent.
DS 890	Risk Management in Global Supply Chains (New)	Focuses on risk identification, assessment of their effects, and risk treatments. This course is based on industry experience and learnings from executive workshops and uses global based cases. Prerequisite: Core courses or instructor's consent
ECON 731	Applied Econometrics	Studies regression techniques through business, finance and economics examples. Reviews the fundamentals of statistics and covers practical model building, data collection, use of statistical software packages, interpretation of regression results and various diagnostic tests.
ECON 804	Managerial Economics	A survey of theoretical and analytical tools of economics that are useful in decision making by managers. Prerequisites: ECON 201, 202, or 800; one course in statistics; one course in calculus.
ENTR 706	Seminar in New Product & Technology Development	Provides a form to the function of idea commercialization. Examines the product development practices of successful, innovative companies and focuses on how customer needs can be translated into products and innovations. Students explore idea generation, market validation, prototype development, product concept testing, product launch strategies, post launch product evaluation, and managing innovative teams. Students apply learning through developing and testing a product idea that solves a customer problem.
FIN 625	International Financial Management	A study of the international financial and monetary system, emphasizing currency markets. This course also examines market instruments and techniques, including

		synthetic and derivative securities and their application to management of currency risk in international trade and finance.
IB 836	International Business & Competitiveness	An introduction to international business administration with attention to the development of multinational business strategies considering the diverse economic, political, social and cultural dimensions of the environments that exist in both developed and developing areas of the world.
IB 601	International Marketing	Problems and procedures of marketing in foreign countries. Includes the effects of foreign cultures and marketing systems on the design of marketing programs. Course includes diversity content.
IME 550	Operations Research	Models and methods in operations research. Linear and quadratic programming. Network models and algorithms. Integer, dynamic and nonlinear programming. Unconstrained and constrained optimization. Prerequisite: MATH 511. Co-requisite: IME 254.
IME 553	Production Systems	Quantitative techniques used in the analysis and control of production systems. Includes forecasting, inventory models, operation planning and scheduling. Prerequisite: IME 254. Corequisite: IME 255.
IME 724	Statistical Methods for Engineers	For graduate students majoring in engineering. Students study and model real-life engineering problems and draw reliable conclusions through applications of probability theory and statistical techniques. Not available for undergraduate credit. Prerequisite: MATH 243.
IME 756	Data Visualization & Analytics (New)	Fundamentals of data visualization and how to communicate effectively with data; Using data, analysis, and systematic reasoning to make decisions that improve efficiency, risk-management, and profits
IME 783	Supply Chain Management	Quantitative and qualitative techniques used in the design and management of the supply chain. Includes distribution management, multi-plant coordination, optimal design of the logistics network, adequate safety stock levels and the risk pooling concept, and integrating decision support systems (DSS) in the management of the supply chain. Prerequisite: IME 553.
IME 790	Lean Supply Chains (New)	Covers lean opportunities and JIT in supply chain and logistics; Lean tools and warehouse; and Global lean supply chain and logistics. Understand methods to identify and eliminate waste in an organization's supply chain and logistics function
IME 863	Facilities &d Logistics Mgmt. (IME 880K)	Quantitative and qualitative approaches to problems in logistics, facilities planning and design, emphasizing activity relationships, space requirements, materials handling and storage, and plant layout.
IME 865	Modeling & Analysis of Discrete Systems	Covers analytical and experimental techniques for the modeling and analysis of discrete systems with a focus on discrete event simulation of terminating and nonterminating systems. Course material includes some discussion of Markov Chains and Queuing Theory as they pertain to systems simulation. Systems applications come from the manufacturing and service sectors. Students investigate issues through readings, lectures and hands-on projects. Prerequisites: IME 553, 724, or instructor’s consent.
IME 873	Warehousing & Distribution Analytics (New)	Understand the role warehousing and distribution in supply chains; introduction to material handling equipment and information technology tools in modern warehouses and distribution centers; provides today's state-of-the-art tools, metrics, and methodologies for dramatically increasing the effectiveness, accuracy, and overall productivity of warehousing operations

IME 883	Supply Chain Engineering	Provides state-of-the-art mathematical models, concepts, and solution methods important in the design, control, operation, and management of global supply chains by emphasizing a quantitative approach.
IME 960	Modeling & Computational Methods in SC	Enables students to understand the characteristic elements of integrated business logistics and supply chains; develop mathematical models; solve problems using operations research methods; develop optimization software professional optimization tools
MGMT 885	Strategic Management	An analysis of business problems from a strategic perspective. Builds on prior coursework to focus on a firm's ability to develop a sustainable competitive advantage. Firms studied represent a broad range of manufacturing and service, global and domestic, entrepreneurial and mature issues. Prerequisite: to be taken during last semester of student's program, or departmental consent.
MIS 600	Database Management Systems	Introduces various methodologies for conceptual data modeling including entity-relationship data modeling and object-oriented database design. Covers relational database management systems, the SQL standard and data administration issues. Students obtain hands-on development with SQL servers in a client/server environment in a required database programming project. Covers electronic commerce transaction processing, data warehousing, data mining and distributed database management.
MIS 750	Business Intelligence & Analytics	Introduces design and implementation of business intelligence systems for tactical, managerial and strategic level decision making. Addresses how organizational data and analytics support business performance management. Prepares managers for developing and implementing digital performance dashboards to monitor business processes and make informed decisions.
MIS 874	Management Information Systems	Explores the link between business strategy and information systems strategy. Addresses the organizational implications of investing in information systems and prepares managers with an understanding of the potential of information systems for value creation, while recognizing the uncertainties associated with it. Provides the necessary know-how to managers in using information systems for creating sustainable competitive advantage.
MIS 884	Database Planning & Management	Prepares students to deal with issues in planning and managing organization-wide integrated databases. Emphasizes logical database design and relational database implementation. Includes SQL, assuring database integrity, database conversion, database administration and data management.
MKT 803	Marketing Analysis	An application of the scientific method to the design and implementation of research procedures that support the need for management decision making, planning and strategy development in the marketplace.

Master of Science in Global Supply Chain Management
Wichita State University
Financial Statement

Part I Anticipated Enrollment *	**Implementation Year**		**Year 2**		**Year 3**	
	Full-Time	Part-Time	Full-Time	Part-Time	Full-Time	Part-Time
A. Full-time, Part-time Headcount:	10 (9 cr.		30 (9 cr. hr./sem)		40 (9 cr.	
B. Total SCH taken by all students in program	90 /semester		270 /semester		360 /semester	

Part II. Program Cost Projection

A. In implementation year one, list all identifiable General Use costs to the academic unit(s) and how they will be funded. In subsequent years, please include only the additional amount budgeted.

	Implementation Year	**Year 2**	**Year 3**
<u>Costs:</u> Program Coordinator (Business)	$3,000	$3,000	$3,000
Program Coordinator (Engineering)	$3,000	$3,000	$3,000
Faculty (Business)	$0	$125,000*	$125,000*
Faculty (Engineering)	$0	$125,000*	$125,000*
Graduate Assistants (2) *($5,200 each)*	$10,400	$10,400	$10,400
OOE	$0	$0	$0
Total	$16,400	$266,400	$266,400

*The amount does not include benefits which normally account for an additional 33% of the total salary. OOE provided by the College of Business/Dept., of Finance, Real Estate, and Decision Science