

# TRANSPORTATION AND SUPPLY CHAIN INSTITUTE

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## Master of Science in Transportation and Supply Chain Management

The University of Denver's Transportation and Supply Chain Institute offers an MS in Transportation and Supply Chain Management designed to prepare transportation and supply chain professionals for leadership roles in the transportation, supply chain, and logistics industries.

This professionally oriented degree combines a rigorous academic program one might find in an MBA program, delivered by highly qualified industry practitioners and faculty with insight from a board of directors composed of transportation and supply chain industry leaders, thereby ensuring that course content remains relevant and current. Throughout the program, students learn to effectively address the wide-ranging management and business challenges facing the global transportation industry while gaining an understanding of the broad range of transportation modes, supply chain, and leadership competencies needed to meet these challenges.

The program's unique format—a week-long residency held each quarter for five consecutive quarters and a week-long domestic or international trip—allows students to continue working full-time while earning their graduate degree. It also affords students professional networking opportunities that offer significant professional advantages for the future. Upon earning a Master of Science in Transportation and Supply Chain Management from the Transportation and Supply Chain Institute at the University of Denver, program participants join a group of distinguished alumni who have gone on to play pivotal roles in industry.

### This degree prepares students to:

- Develop strategies to enhance professional and personal management skills in career settings.
- Compare transportation and supply chain operational and managerial processes to make informed process-related decisions.
- Solve real-world problems by applying principles from core management disciplines of transportation and supply chain contexts; analyzing, evaluating, and responding to global supply chain and logistics challenges within and between modes; and measuring, theorizing, and assessing financial and operational management problems using quantitative methods.
- Create strategies to build and actively contribute to professional networks consisting of executive cohort members, board, and alumni.

## Master of Science in Transportation and Supply Chain Management

### Degree and GPA Requirements

- Bachelor's degree: All graduate applicants must hold an earned baccalaureate from a regionally accredited college or university or the recognized equivalent from an international institution.
- Grade point average: The minimum undergraduate GPA for admission consideration for graduate study at the University of Denver is a cumulative 2.5 on a 4.0 scale or a 2.5 on a 4.0 scale for the last 60 semester credits or 90 quarter credits (approximately two years of work) for the baccalaureate degree. An earned master's degree or higher from a regionally accredited institution supersedes the minimum standards for the baccalaureate. For applicants with graduate coursework but who have not earned a master's degree or higher, the GPA from the graduate work may be used to meet the requirement. The minimum GPA is a cumulative 3.0 on a 4.0 scale for all graduate coursework undertaken.
- Program GPA requirement: The minimum undergraduate GPA for admission consideration for this program is a cumulative 2.5 on a 4.0 scale.

### Other Required Materials

Applicants may be contacted by a Transportation and Supply Chain Institute representative to schedule an admission interview.

### English Language Proficiency Test Score Requirements

The minimum TOEFL/IELTS/C1 Advanced/Duolingo English Test score requirements for this degree program are:

- Minimum TOEFL Score (Internet-based test): 80 with minimum of 20 on each subscore
- Minimum IELTS Score: 6.5 with minimum of 6.0 on each band score
- Minimum C1 Advanced Score: 176
- Minimum Duolingo English Test Score: 115 with individual subscore minimum of 105 for Literacy, Comprehension, and Conversation and minimum subscore of 95 for Production.

English Conditional Admission: No, this program does not offer English Conditional Admission.

# Master of Science in Transportation and Supply Chain Management

## Degree Requirements

Students must complete 55 quarter hours of coursework credit.

Code	Title	Credits
<b>Leadership and Organizational Excellence</b>		
TRAN 4400	Excellence in Leadership	2
TRAN 4410	Executive Management Practices in Organizations	1
TRAN 4420	Leading with Integrity	1
TRAN 4870	Individual Leadership Development Project	4
<b>Finance Accounting and Economics</b>		
TRAN 4430	Applied Micro Economics & Pricing	4
TRAN 4460	Financial & Managerial Accounting	2
TRAN 4470	Financial Analysis & Capital Structures	2
TRAN 4480	Capital Decision Making and Capital Markets	2
TRAN 4490	Global Trade & Economics	4
<b>Marketing and Sales</b>		
TRAN 4440	Marketing, Sales, Procurement & Customer Management Strategies	4
<b>Legal and Compliance</b>		
TRAN 4450	Legal Studies: Contracts & Regulation	2
TRAN 4840	Policy and Regulatory Effects in Transportation & Supply Chain	2
<b>Advanced Global Transportation &amp; Supply Chain Management</b>		
TRAN 4800	Advanced Concepts of Transportation & Supply Chain	2
TRAN 4810	Innovation and Technology in Global Transportation and Supply Chain	4
TRAN 4415	Data Laboratory	1
TRAN 4820	Principles of Supply Chain Management	4
TRAN 4830	Advanced Supply Chain Management	4
<b>Capstone: Applied Business Planning and Value Creation</b>		
TRAN 4860	Senior Management: Executives & Issues Seminar	4
TRAN 4880	Business Planning Thesis	4
TRAN 4890	Global Transportation & Supply Chain Seminar	2
<b>Total Credits</b>		<b>55</b>

### TRAN 4100 Fundamentals of Supply Chain Management (4 Credits)

This course will provide an overview of the basic principles of supply chain management, giving students an understanding of supply chain processes from sourcing to finished goods and customers to suppliers, identifying the six core supply chain processes and examining the role that transportation and logistics play in the supply chain. Students will learn the key operating and financial measures of supply chain management that impact the users and providers of services. Additionally, current trends in the technology of supply-chain management, including applicable global trends will be covered.

### TRAN 4110 Fundamentals of Supply Chain Planning (4 Credits)

According to the Six Pillars of Supply Chain program design at the University of Denver, the system can only succeed if it acts as an integrated system. This course focuses on the first three pillars of the supply chain management system, design, source, and schedule, the steps that are taken before a product is made. Supply Chain Planning is focused on how agents in the front end of the supply chain system are centered on how to create, procure, and plan/forecast within the overall process within and across companies. Students are exposed to concepts and practical examples of how front-end activities are achieved within the overall supply chain model. The course introduces concepts and tactics in product and supply chain design, strategic sourcing, forecasting, demand planning, and supplier management. Prerequisite: TRAN 4100.

### TRAN 4120 Fundamentals of Supply Chain Execution (4 Credits)

This course focuses on the last three pillars of the supply chain management system: make, deliver, and sustain. Make, or manufacturing, is the production process of the product based on the planning steps in the supply chain. Distribution focuses on what happens between the product being made, and purchased by the consumer. Sustain, the last step, is focused on how these materials can be reused in the supply chain rather than wasted. In this course, students will be able to build upon their knowledge of the front-end of the supply chain to evaluate what makes supply chain strategies successful in the marketplace. Real-life examples will be applied related to global supply chains and the changing nature of retailing, including the impact of e-commerce, to demonstrate how successful execution must follow supply chain strategies and plans for success. Prerequisite: TRAN 4100.

**TRAN 4130 Structured Problem Solving in Supply Chain Management (4 Credits)**

This course provides opportunities for students to apply concepts covered in the first three courses of the program to an individual project through the completion of a structured problem-solving exercise in an area of study related to the student's specific area of interest. Potential topics will either relate to one of the six pillars in the SCM model, or a specific area of interest as a special topic, such as sustainable supply chains, supply chain structure, supply chain risk management, etc. Upon completion of this course, the student will possess a deeper understanding in an area of focus related to application of the student's future interests. The student will be introduced to how this topic area can be applied in a company in a real market setting. Prerequisites: TRAN 4100, TRAN 4110, TRAN 4120.

**TRAN 4140 Supply Chain Technology and Systems (4 Credits)**

This course provides a fundamental definition of the role of technology and systems in supply chain management, demonstrating how "people and processes" intersect with these increasingly important tools. Students will learn how system and technology strategy can become key differentiators in the field across the six pillars of the supply chain and are required to integrate disparate suppliers and partners. Specific current and future trends will be explored, including the implications across local, national, and global systems. The focus will be related to the strategic, operational, and tactical design and execution of technology and systems related to how supply chains operate. TRAN 4100, 4110, 4120, 4130.

**TRAN 4150 Supply Chain Cost Management (4 Credits)**

A successful supply chain strategy must be effective not just in its material flow within the six pillars and the information flow from its systems, but its financial flow as well. Companies and their corresponding supply chains can achieve improved cost management that leads to greater top line revenue growth through improvements in financial flows achieved waste reduction, inventory carrying cost, capital investment and management and terms with suppliers and customers, to name a few. How the financial flow of the company and its supply chain is dependent on the entity's material and information flows, and vice versa. This course will provide an understanding of how these flows work in conjunction with one another, and how supply chain professionals must understand the role of financial management fundamentals in the process. Prerequisite: TRAN 4130.

**TRAN 4160 Analytic Methods for Supply Chain Management (4 Credits)**

Because Supply Chain Management is built off of structured problem-solving techniques across suppliers and partners requiring rapid and precise decision making, analytical methods are a requirement for success. In this course, the student will be presented with advanced techniques in quantitative analytics that are critical for today's largest companies and innovators. Upon completion of the course, the student will be familiar with how to apply these techniques under various situations across the supply chain and within the firm. Prerequisite: TRAN 4130.

**TRAN 4170 Industrial Engineering and Operations Management (4 Credits)**

Industrial Engineering and Operations Management is the application of engineering, logistics, finance and analytics, and structured problem-solving techniques to achieve the goals of today's global supply chains. In this course, the student will be introduced to the concept of Industrial Engineering, including critical methodologies such as Six Sigma, Lean, and the Toyota Production System. Upon completion of the course, the student will be able to apply these structured problem-solving techniques to an advanced level across the six pillars of supply chain management. Prerequisite: TRAN 4100 & Advisor approval.

**TRAN 4180 Sustainability and Supply Chain Management (4 Credits)**

Sustainability in Supply Chain Management is founded upon the principles of Six Sigma and Lean to not only reduce waste within the system, but also to solve some of the world's greatest challenges in relation to the environment. Through an understanding of the supply chain across the six pillars and through the use of finance, industrial engineering, logistics, and analytics, the student will be capable of defining, measuring, analyzing and solving the balance required between industry and the environment. Prerequisite: TRAN 4100 or MKTG 4380.

**TRAN 4190 Import/Export Supply Chain Management (4 Credits)**

Today's supply chain is global, and this means that companies must understand how to buy and sell goods across national boundaries. In this course, the strategic, operational, and tactical requirements of importing and exporting will be presented to the student in order to understand how the global supply chain operates. A specific focus will be on freight forwarding and customs requirements into and out of the U.S. territory through various ports and entry and egress. Prerequisites: TRAN 4130.

**TRAN 4330 Principles of Supply Chain: Management and Technologies (4 Credits)**

This course will assist students in gaining awareness, knowledge, and understanding of the distribution patterns and relationships that play a key role in determining company success. We will view perspectives within the context of the global marketplace and across both freight and passenger transportation. We will address external value chains and internal value chains; stakeholder relationship management; the supply chain and the demand chain complexities; strategies of E-business; the strategic use of IT; strategic planning to gain a competitive advantage; end-to-end supply chain visibility and the strategic use of technologies in the enterprise-wide system.

**TRAN 4400 Excellence in Leadership (2 Credits)**

This course will provide an integrated exploration of current topics most important for leadership success within the transportation industry. Current best leadership practices will be reviewed, and common leadership challenges within transportation will be analyzed for successful resolution.

**TRAN 4410 Executive Management Practices in Organizations (1 Credit)**

This course will provide a comprehensive view of best practices for executive management in transportation workplaces. Organizational situations will be assessed from a variety of viewpoints and policies analyzed for optimal execution of strategy.

**TRAN 4420 Leading with Integrity (1 Credit)**

This course will explore ethical decision making and values-based leadership. Values, ethics and organizational philosophies will be assessed for best application in various corporate settings within the transportation industry.

**TRAN 4430 Applied Micro Economics & Pricing (4 Credits)**

The course will involve fieldwork and U.S. site visits observing and discussing the physical elements underlying the long-term and marginal economics of the firm and its pricing strategies and policies. In addition, the course will discuss basic microeconomic concepts used in the analysis of business services, including the concepts of market size; marginal, average, short-run, and long-run costs; and production levels as they relate to revenue and contribution with a focus on pricing for the firm relative to its fixed and variable costs, market share framework, and competitive issues both within the mode and between modes.

**TRAN 4440 Marketing, Sales, Procurement & Customer Management Strategies (4 Credits)**

Within the context of Transportation and Supply Chain, this course will explore the strategies related to the Sales and Marketing process and strategies from the seller perspective and the related perspective of Procurement from the buyer perspective. Additionally, the strategies and measures used for Customer Management will be explored including customer setup, advancing customer excellence practices, customer valuation and segmentation, and other related concepts. Further, the concepts of establishing, building, and maintaining trust will be explored as a key strategy and practice, which appears throughout each of the four main components of the course.

**TRAN 4450 Legal Studies: Contracts & Regulation (2 Credits)**

This course will focus on the fundamentals of creating and implementing effective contracts, whether with customers, suppliers, or labor. The contract discussion will be framed by regulatory and policy realities both in domestic and international contexts, including an understanding of federal and international laws, liability, regulations, policies, programs, and agencies impacting contracts.

**TRAN 4460 Financial & Managerial Accounting (2 Credits)**

This course will cover the basic theory, principles and practice of financial accounting and examine accounting statements including income and cash flow statements and balance sheets. Discussions include managerial use of accounting data useful in making investment and cost decisions, assessing cash flows, and the use of the organization resources to produce profit. Additional topics will include reading and understanding the 10-K, basic accounting standards and practices, and assessing the quality of financial information found in the accounting reports.

**TRAN 4470 Financial Analysis & Capital Structures (2 Credits)**

Complementing 4460, this course will use ratio analysis to determine relative performance of companies and the industry to enable management to assess operating efficiency, profitability and effective use of capital. Capital structure concepts, fixed and variable cost considerations, the use of operating and financial leverage and the concepts of business and financial risk will be discussed. The course also includes a basic review of the principle of time value of money.

**TRAN 4480 Capital Decision Making and Capital Markets (2 Credits)**

This course will examine the management decision process for making capital expenditures that enhance the value of the firm, cash flow estimation for capital budgeting purposes, decision models for capital budgeting, weighted average cost of capital, decisions in capital constrained situations, sensitivity analysis, and a review of the capital markets.

**TRAN 4490 Global Trade & Economics (4 Credits)**

This course will examine the World Trade F15 Organization and the regional trade agreements, such as NAFTA, EU, and ASEAN, with regard to their impact on North American transportation, trade, and economy overall including their relationship to account deficits and their N20; and their impact on disputes and how trade disputes are settled. In addition, the course will address the global economy and economics and its drivers, comparing and contrasting North America, China/Asia, the European Union and selected emerging economies to include impacts on global trade, such as trading patterns, outsourcing, and changing production areas.

**TRAN 4701 Topics in Supply Chain (1-4 Credits)**

The content of this course varies each time it is offered. Topics may include time-sensitive issues in the field of Supply Chain Management, elective courses that are not scheduled regularly during the course of the year, or advanced inquiry into core-course subjects. Each time the course is offered, the specific content is announced in the quarterly course schedule. Depending on the subject matter, students may be required to have completed prerequisite courses.

**TRAN 4702 Topics in Transportation Management (4 Credits)**

The content of this course varies each time it is offered. Topics may include time-sensitive issues in the field of Transportation Management, new courses being piloted, elective courses that are not scheduled regularly during the course of the year, or advanced inquiry into core-course subjects. Each time the course is offered, the specific content is announced in the quarterly course schedule. Depending on the subject matter, students may be required to have completed prerequisite courses.

**TRAN 4710 Transportation Finance (4 Credits)**

This finance course focuses on the transportation managers ability to understand and analyze financial statements. Topics covered will be the basics of major accounting statements, income and balance sheets, use of operating leverage, ratio analysis to determine relative performance of companies and the industry individual modes and across modes. An emphasis will be placed on time value of money and capital expenditure analysis and decision models for capital budgeting. Exploring markets and the sources of financial capital, securities, public and private financing will be discussed.

**TRAN 4800 Advanced Concepts of Transportation & Supply Chain (2 Credits)**

This course is a program-wide survey course in which each of the primary learning outcomes of the Executive Masters' program are reviewed: Leadership, Economics & Finance, Technology & Optimization, Supply Chain, Trade & Legal concerns, and more, are all explored within the context of current trends in Transportation and Supply Chain space.

**TRAN 4810 Innovation and Technology in Global Transportation and Supply Chain (4 Credits)**

Innovation and change are prevalent in the global supply chain and transportation industrial structure. This course exposes students to an array of technology trends and innovative ideas for boosting competitive advantage, predicting disruptions, and preparing for new forces emerging from GIS, the Internet of Things, artificial intelligence and machine learning, and cloud-based products. The advantages and security issues related to big data and analytics are investigated as they relate to compliance and decision-making for managers and leaders. Understanding analytics helps managers and leaders identify and implement new technology in real-world applications. Students will explore what it means to have an innovation mindset and how it is applied while making decisions that maximize asset utilization and control wastage and/or redundancy and how to successfully apply emerging technologies to their careers and organizations.

**TRAN 4820 Principles of Supply Chain Management (4 Credits)**

This course will provide an overview of the basic principles of supply chain management, as well as current trends in supply chain technology and global value chains. Students will learn the six core pillars of supply chain processes and how suppliers, customers and other stakeholders are linked in these processes. The course will examine the role that transportation and logistics play in the supply chain. Students will learn the key operating and financial measures of supply chain management, apply the problem solving framework known as DMAIC (Define, Measure, Assess, Innovate, Control) to a real-world supply chain problem.

**TRAN 4830 Advanced Supply Chain Management (4 Credits)**

Building on foundation of Supply Chain Management from TRANS 4820, this course enables the business leader to gain a customer centric system view of supply chain management that is achieved by today's top companies. A more advanced view of the six pillars of supply chain management will be studied as it relates to a stakeholder model of both customers and suppliers. In this course, the goal is to understand how a stakeholder's (customer, supplier, partner, etc.) supply chain operates across three flows (physical, logical/system, and financial) related to a transportation provider. The goal of this course is to provide the student a process and functional understanding of supply chain management in order to achieve success from a process, financial and strategic standpoint. The course will offer particular emphasis on industrial engineering skills related to supply chain operations.

**TRAN 4840 Policy and Regulatory Effects in Transportation & Supply Chain (2 Credits)**

The purpose of this course is to explore how public policy and regulation manifest in transportation and supply chain systems and how companies can effectively navigate that process. Students will learn about the history of transportation and supply chain regulation and how it has changed over time. They will review how infrastructure and systems are planned, operated, and financed and what roles the public and private sectors play. Additionally, the course explores safety, security, and trade concerns, Environmental Social & Governance (ESG), and how to develop strategies for their companies to engage in the policymaking process in ways that maximize value for their enterprises.

**TRAN 4850 Transportation & Supply Chain Strategies for the 21st Century (4 Credits)**

Today's supply chain and transportation markets are rapidly evolving across localities and the definition of what global means. In the 21st century, supply chains will become exponentially more fluid, and transportation providers will need to understand and incorporate these changes. In this course, the 21st century supply chain expectations will be discussed from a people, process, and technology standpoint. Students will determine how transportation providers will need to respond to these changes, and how emerging technologies will be incorporated in emerging supply chain strategies and supplier/provider processes. Supply chains will become more local and global concurrently - and this course will evaluate what is required to respond successfully to these trends.

**TRAN 4860 Senior Management: Executives & Issues Seminar (4 Credits)**

Through the use of transportation executives in the classroom, this course will explore in-depth some of the key concepts covered during the course of the degree program, to include topics such as applied transportation finance, merger and acquisition issues, shipper transportation metrics/requirements, global freight flows to/from North America, and government/military transportation. In addition, in case studies, students will propose options for real-world challenges using knowledge and data from current events, degree program courses, case material, and guest executive presentations.

**TRAN 4870 Individual Leadership Development Project (4 Credits)**

This course will guide students through the process of developing and executing individualized leadership development projects to enhance specific leadership skills and goals within their current management structure or an assigned organization. Through work over the six quarters of the program, the leadership projects will provide a unique opportunity for each student to hone critical aspects of her/his leadership, which, in turn, benefits the students, their organizations, and the larger transportation, logistics, and supply chain community.

**TRAN 4880 Business Planning Thesis (4 Credits)**

This course will guide students through the creation of a comprehensive business development and/or productivity improvement-oriented business plan, with a preferred focus on the transportation industry, to develop a new revenue growth or new service opportunity for their organization or an assigned organization. Through work over the six quarters of the program, this project provides each student with important business planning and development skills to create an implementable business plan, which may provide tangible benefits to their sponsoring organization as well.

**TRAN 4890 Global Transportation & Supply Chain Seminar (2 Credits)**

This international travel seminar will build from learning objectives encountered throughout the Executive Masters program. Students will examine the management and operation of transportation and supply chain operations in other countries, and compare them to their own home county-based operations. During the travel event, students will meet with executives, government leaders, and local managers of these systems to learn directly about the challenges of serving the global economy, and will learn how to recognize and navigate international cultural differences in a business setting.

**TRAN 4901 Capstone Project (4 Credits)**

The Capstone Project provides students the opportunity to research a topic, problem, or issue within their field of study, and work individually with a Capstone advisor. Similar in weight to a thesis, but more flexible, this final project will synthesize and apply core concepts acquired from the program. The student will select an appropriate Capstone advisor who is knowledgeable in the field of study to work closely with and whom can guide the research project. Evaluation will be focused on the quality and professionalism of applied research and writing; critical and creative thinking; problem-solving skills; knowledge of research design, method, and implementation; and contribution to the field and topic of study. Please see the Capstone Guidelines for additional details. Prerequisites: A Capstone Proposal that has been approved by both the Capstone Advisor and the Academic Director, acceptance as a degree candidate, completion of at least 40 quarter-hours (including all core courses) with a cumulative GPA of 3.0 or better.

**TRAN 4902 Capstone Seminar (4 Credits)**

The Capstone Seminar is a graduate seminar in which students utilize the knowledge and skills gained through the degree program to create a culminating work that critically addresses a problem in their degree field of study. The students produce a Capstone of 7000-8000 words that presents a position on a relevant problem, supports the position with professional and academic literature, analyzes and tests the proposed solution, and discusses the findings as related to the field of study. The seminar is dependent upon the quality, collegial discussion, and feedback of students' research and work products, under the facilitation of a faculty member. The course structure guides the students through the process of independent, secondary research and writing of a Capstone. No primary research is allowed. Students generate the course content through ongoing discussion and peer feedback on the Capstone process and individual topic areas under investigation. Students professionally and academically communicate through written work and oral presentations. Students must have acceptance as a degree candidate, completion of at least 40 quarter-hours (including all core courses) with a cumulative GPA of 3.0 or better. Students must complete the Capstone Seminar in one quarter; no incomplete grades are assigned.

**TRAN 4980 Internship (0-4 Credits)**

The Supply Chain Management Internship is designed to offer students a purposeful experience in a practical, industry related setting. The internship is an individualized learning experience. A training plan is created for each student in conjunction with the internship site supervisor to provide experiences related to the skills and knowledge covered in the certificate and master's programs as well as professional goals. Students are responsible for finding their own internship site and proposing their internship ideas. University College will send notification to all SCM students if they hear of internship possibilities. Students may also work through the DU career center, to explore opportunities for internship experiences. To be eligible for an internship, completion of a minimum of 28 hours of graduate coursework in the field of specialty is required OR Academic Director approval for students with previous work experience in the field.

**TRAN 4991 Independent Study (1-10 Credits)****Courses****TRAN 4100 Fundamentals of Supply Chain Management (4 Credits)**

This course will provide an overview of the basic principles of supply chain management, giving students an understanding of supply chain processes from sourcing to finished goods and customers to suppliers, identifying the six core supply chain processes and examining the role that transportation and logistics play in the supply chain. Students will learn the key operating and financial measures of supply chain management that impact the users and providers of services. Additionally, current trends in the technology of supply-chain management, including applicable global trends will be covered.

**TRAN 4110 Fundamentals of Supply Chain Planning (4 Credits)**

According to the Six Pillars of Supply Chain program design at the University of Denver, the system can only succeed if it acts as an integrated system. This course focuses on the first three pillars of the supply chain management system, design, source, and schedule, the steps that are taken before a product is made. Supply Chain Planning is focused on how agents in the front end of the supply chain system are centered on how to create, procure, and plan/forecast within the overall process within and across companies. Students are exposed to concepts and practical examples of how front-end activities are achieved within the overall supply chain model. The course introduces concepts and tactics in product and supply chain design, strategic sourcing, forecasting, demand planning, and supplier management. Prerequisite: TRAN 4100.

**TRAN 4120 Fundamentals of Supply Chain Execution (4 Credits)**

This course focuses on the last three pillars of the supply chain management system: make, deliver, and sustain. Make, or manufacturing, is the production process of the product based on the planning steps in the supply chain. Distribution focuses on what happens between the product being made, and purchased by the consumer. Sustain, the last step, is focused on how these materials can be reused in the supply chain rather than wasted. In this course, students will be able to build upon their knowledge of the front-end of the supply chain to evaluate what makes supply chain strategies successful in the marketplace. Real-life examples will be applied related to global supply chains and the changing nature of retailing, including the impact of e-commerce, to demonstrate how successful execution must follow supply chain strategies and plans for success. Prerequisite: TRAN 4100.

**TRAN 4130 Structured Problem Solving in Supply Chain Management (4 Credits)**

This course provides opportunities for students to apply concepts covered in the first three courses of the program to an individual project through the completion of a structured problem-solving exercise in an area of study related to the student's specific area of interest. Potential topics will either relate to one of the six pillars in the SCM model, or a specific area of interest as a special topic, such as sustainable supply chains, supply chain structure, supply chain risk management, etc. Upon completion of this course, the student will possess a deeper understanding in an area of focus related to application of the student's future interests. The student will be introduced to how this topic area can be applied in a company in a real market setting. Prerequisites: TRAN 4100, TRAN 4110, TRAN 4120.

**TRAN 4140 Supply Chain Technology and Systems (4 Credits)**

This course provides a fundamental definition of the role of technology and systems in supply chain management, demonstrating how “people and processes” intersect with these increasingly important tools. Students will learn how system and technology strategy can become key differentiators in the field across the six pillars of the supply chain and are required to integrate disparate suppliers and partners. Specific current and future trends will be explored, including the implications across local, national, and global systems. The focus will be related to the strategic, operational, and tactical design and execution of technology and systems related to how supply chains operate. TRAN 4100, 4110, 4120, 4130.

**TRAN 4150 Supply Chain Cost Management (4 Credits)**

A successful supply chain strategy must be effective not just in its material flow within the six pillars and the information flow from its systems, but its financial flow as well. Companies and their corresponding supply chains can achieve improved cost management that leads to greater top line revenue growth through improvements in financial flows achieved waste reduction, inventory carrying cost, capital investment and management and terms with suppliers and customers, to name a few. How the financial flow of the company and its supply chain is dependent on the entity's material and information flows, and vice versa. This course will provide an understanding of how these flows work in conjunction with one another, and how supply chain professionals must understand the role of financial management fundamentals in the process. Prerequisite: TRAN 4130.

**TRAN 4160 Analytic Methods for Supply Chain Management (4 Credits)**

Because Supply Chain Management is built off of structured problem-solving techniques across suppliers and partners requiring rapid and precise decision making, analytical methods are a requirement for success. In this course, the student will be presented with advanced techniques in quantitative analytics that are critical for today's largest companies and innovators. Upon completion of the course, the student will be familiar with how to apply these techniques under various situations across the supply chain and within the firm. Prerequisite: TRAN 4130.

**TRAN 4170 Industrial Engineering and Operations Management (4 Credits)**

Industrial Engineering and Operations Management is the application of engineering, logistics, finance and analytics, and structured problem-solving techniques to achieve the goals of today's global supply chains. In this course, the student will be introduced to the concept of Industrial Engineering, including critical methodologies such as Six Sigma, Lean, and the Toyota Production System. Upon completion of the course, the student will be able to apply these structured problem-solving techniques to an advanced level across the six pillars of supply chain management. Prerequisite: TRAN 4100 & Advisor approval.

**TRAN 4180 Sustainability and Supply Chain Management (4 Credits)**

Sustainability in Supply Chain Management is founded upon the principles of Six Sigma and Lean to not only reduce waste within the system, but also to solve some of the world's greatest challenges in relation to the environment. Through an understanding of the supply chain across the six pillars and through the use of finance, industrial engineering, logistics, and analytics, the student will be capable of defining, measuring, analyzing and solving the balance required between industry and the environment. Prerequisite: TRAN 4100 or MKTG 4380.

**TRAN 4190 Import/Export Supply Chain Management (4 Credits)**

Today's supply chain is global, and this means that companies must understand how to buy and sell goods across national boundaries. In this course, the strategic, operational, and tactical requirements of importing and exporting will be presented to the student in order to understand how the global supply chain operates. A specific focus will be on freight forwarding and customs requirements into and out of the U.S. territory through various ports and entry and egress. Prerequisites: TRAN 4130.

**TRAN 4330 Principles of Supply Chain: Management and Technologies (4 Credits)**

This course will assist students in gaining awareness, knowledge, and understanding of the distribution patterns and relationships that play a key role in determining company success. We will view perspectives within the context of the global marketplace and across both freight and passenger transportation. We will address external value chains and internal value chains; stakeholder relationship management; the supply chain and the demand chain complexities; strategies of E-business; the strategic use of IT; strategic planning to gain a competitive advantage; end-to-end supply chain visibility and the strategic use of technologies in the enterprise-wide system.

**TRAN 4400 Excellence in Leadership (2 Credits)**

This course will provide an integrated exploration of current topics most important for leadership success within the transportation industry. Current best leadership practices will be reviewed, and common leadership challenges within transportation will be analyzed for successful resolution.

**TRAN 4410 Executive Management Practices in Organizations (1 Credit)**

This course will provide a comprehensive view of best practices for executive management in transportation workplaces. Organizational situations will be assessed from a variety of viewpoints and policies analyzed for optimal execution of strategy.

**TRAN 4420 Leading with Integrity (1 Credit)**

This course will explore ethical decision making and values-based leadership. Values, ethics and organizational philosophies will be assessed for best application in various corporate settings within the transportation industry.

**TRAN 4430 Applied Micro Economics & Pricing (4 Credits)**

The course will involve fieldwork and U.S. site visits observing and discussing the physical elements underlying the long-term and marginal economics of the firm and its pricing strategies and policies. In addition, the course will discuss basic microeconomic concepts used in the analysis of business services, including the concepts of market size; marginal, average, short-run, and long-run costs; and production levels as they relate to revenue and contribution with a focus on pricing for the firm relative to its fixed and variable costs, market share framework, and competitive issues both within the mode and between modes.

**TRAN 4440 Marketing, Sales, Procurement & Customer Management Strategies (4 Credits)**

Within the context of Transportation and Supply Chain, this course will explore the strategies related to the Sales and Marketing process and strategies from the seller perspective and the related perspective of Procurement from the buyer perspective. Additionally, the strategies and measures used for Customer Management will be explored including customer setup, advancing customer excellence practices, customer valuation and segmentation, and other related concepts. Further, the concepts of establishing, building, and maintaining trust will be explored as a key strategy and practice, which appears throughout each of the four main components of the course.

**TRAN 4450 Legal Studies: Contracts & Regulation (2 Credits)**

This course will focus on the fundamentals of creating and implementing effective contracts, whether with customers, suppliers, or labor. The contract discussion will be framed by regulatory and policy realities both in domestic and international contexts, including an understanding of federal and international laws, liability, regulations, policies, programs, and agencies impacting contracts.

**TRAN 4460 Financial & Managerial Accounting (2 Credits)**

This course will cover the basic theory, principles and practice of financial accounting and examine accounting statements including income and cash flow statements and balance sheets. Discussions include managerial use of accounting data useful in making investment and cost decisions, assessing cash flows, and the use of the organization resources to produce profit. Additional topics will include reading and understanding the 10-K, basic accounting standards and practices, and assessing the quality of financial information found in the accounting reports.

**TRAN 4470 Financial Analysis & Capital Structures (2 Credits)**

Complementing 4460, this course will use ratio analysis to determine relative performance of companies and the industry to enable management to assess operating efficiency, profitability and effective use of capital. Capital structure concepts, fixed and variable cost considerations, the use of operating and financial leverage and the concepts of business and financial risk will be discussed. The course also includes a basic review of the principle of time value of money.

**TRAN 4480 Capital Decision Making and Capital Markets (2 Credits)**

This course will examine the management decision process for making capital expenditures that enhance the value of the firm, cash flow estimation for capital budgeting purposes, decision models for capital budgeting, weighted average cost of capital, decisions in capital constrained situations, sensitivity analysis, and a review of the capital markets.

**TRAN 4490 Global Trade & Economics (4 Credits)**

This course will examine the World Trade F15 Organization and the regional trade agreements, such as NAFTA, EU, and ASEAN, with regard to their impact on North American transportation, trade, and economy overall including their relationship to account deficits and their N20; and their impact on disputes and how trade disputes are settled. In addition, the course will address the global economy and economics and its drivers, comparing and contrasting North America, China/Asia, the European Union and selected emerging economies to include impacts on global trade, such as trading patterns, outsourcing, and changing production areas.

**TRAN 4701 Topics in Supply Chain (1-4 Credits)**

The content of this course varies each time it is offered. Topics may include time-sensitive issues in the field of Supply Chain Management, elective courses that are not scheduled regularly during the course of the year, or advanced inquiry into core-course subjects. Each time the course is offered, the specific content is announced in the quarterly course schedule. Depending on the subject matter, students may be required to have completed prerequisite courses.

**TRAN 4702 Topics in Transportation Management (4 Credits)**

The content of this course varies each time it is offered. Topics may include time-sensitive issues in the field of Transportation Management, new courses being piloted, elective courses that are not scheduled regularly during the course of the year, or advanced inquiry into core-course subjects. Each time the course is offered, the specific content is announced in the quarterly course schedule. Depending on the subject matter, students may be required to have completed prerequisite courses.

**TRAN 4710 Transportation Finance (4 Credits)**

This finance course focuses on the transportation managers ability to understand and analyze financial statements. Topics covered will be the basics of major accounting statements, income and balance sheets, use of operating leverage, ratio analysis to determine relative performance of companies and the industry individual modes and across modes. An emphasis will be placed on time value of money and capital expenditure analysis and decision models for capital budgeting. Exploring markets and the sources of financial capital, securities, public and private financing will be discussed.

**TRAN 4800 Advanced Concepts of Transportation & Supply Chain (2 Credits)**

This course is a program-wide survey course in which each of the primary learning outcomes of the Executive Masters' program are reviewed: Leadership, Economics & Finance, Technology & Optimization, Supply Chain, Trade & Legal concerns, and more, are all explored within the context of current trends in Transportation and Supply Chain space.

**TRAN 4810 Innovation and Technology in Global Transportation and Supply Chain (4 Credits)**

Innovation and change are prevalent in the global supply chain and transportation industrial structure. This course exposes students to an array of technology trends and innovative ideas for boosting competitive advantage, predicting disruptions, and preparing for new forces emerging from GIS, the Internet of Things, artificial intelligence and machine learning, and cloud-based products. The advantages and security issues related to big data and analytics are investigated as they relate to compliance and decision-making for managers and leaders. Understanding analytics helps managers and leaders identify and implement new technology in real-world applications. Students will explore what it means to have an innovation mindset and how it is applied while making decisions that maximize asset utilization and control wastage and/or redundancy and how to successfully apply emerging technologies to their careers and organizations.



**TRAN 4820 Principles of Supply Chain Management (4 Credits)**

This course will provide an overview of the basic principles of supply chain management, as well as current trends in supply chain technology and global value chains. Students will learn the six core pillars of supply chain processes and how suppliers, customers and other stakeholders are linked in these processes. The course will examine the role that transportation and logistics play in the supply chain. Students will learn the key operating and financial measures of supply chain management, apply the problem solving framework known as DMAIC (Define, Measure, Assess, Innovate, Control) to a real-world supply chain problem.

**TRAN 4830 Advanced Supply Chain Management (4 Credits)**

Building on foundation of Supply Chain Management from TRANS 4820, this course enables the business leader to gain a customer centric system view of supply chain management that is achieved by today's top companies. A more advanced view of the six pillars of supply chain management will be studied as it relates to a stakeholder model of both customers and suppliers. In this course, the goal is to understand how a stakeholder's (customer, supplier, partner, etc.) supply chain operates across three flows (physical, logical/system, and financial) related to a transportation provider. The goal of this course is to provide the student a process and functional understanding of supply chain management in order to achieve success from a process, financial and strategic standpoint. The course will offer particular emphasis on industrial engineering skills related to supply chain operations.

**TRAN 4840 Policy and Regulatory Effects in Transportation & Supply Chain (2 Credits)**

The purpose of this course is to explore how public policy and regulation manifest in transportation and supply chain systems and how companies can effectively navigate that process. Students will learn about the history of transportation and supply chain regulation and how it has changed over time. They will review how infrastructure and systems are planned, operated, and financed and what roles the public and private sectors play. Additionally, the course explores safety, security, and trade concerns, Environmental Social & Governance (ESG), and how to develop strategies for their companies to engage in the policymaking process in ways that maximize value for their enterprises.

**TRAN 4850 Transportation & Supply Chain Strategies for the 21st Century (4 Credits)**

Today's supply chain and transportation markets are rapidly evolving across localities and the definition of what global means. In the 21st century, supply chains will become exponentially more fluid, and transportation providers will need to understand and incorporate these changes. In this course, the 21st century supply chain expectations will be discussed from a people, process, and technology standpoint. Students will determine how transportation providers will need to respond to these changes, and how emerging technologies will be incorporated in emerging supply chain strategies and supplier/provider processes. Supply chains will become more local and global concurrently - and this course will evaluate what is required to respond successfully to these trends.

**TRAN 4860 Senior Management: Executives & Issues Seminar (4 Credits)**

Through the use of transportation executives in the classroom, this course will explore in-depth some of the key concepts covered during the course of the degree program, to include topics such as applied transportation finance, merger and acquisition issues, shipper transportation metrics/requirements, global freight flows to/from North America, and government/military transportation. In addition, in case studies, students will propose options for real-world challenges using knowledge and data from current events, degree program courses, case material, and guest executive presentations.

**TRAN 4870 Individual Leadership Development Project (4 Credits)**

This course will guide students through the process of developing and executing individualized leadership development projects to enhance specific leadership skills and goals within their current management structure or an assigned organization. Through work over the six quarters of the program, the leadership projects will provide a unique opportunity for each student to hone critical aspects of her/his leadership, which, in turn, benefits the students, their organizations, and the larger transportation, logistics, and supply chain community.

**TRAN 4880 Business Planning Thesis (4 Credits)**

This course will guide students through the creation of a comprehensive business development and/or productivity improvement-oriented business plan, with a preferred focus on the transportation industry, to develop a new revenue growth or new service opportunity for their organization or an assigned organization. Through work over the six quarters of the program, this project provides each student with important business planning and development skills to create an implementable business plan, which may provide tangible benefits to their sponsoring organization as well.

**TRAN 4890 Global Transportation & Supply Chain Seminar (2 Credits)**

This international travel seminar will build from learning objectives encountered throughout the Executive Masters program. Students will examine the management and operation of transportation and supply chain operations in other countries, and compare them to their own home county-based operations. During the travel event, students will meet with executives, government leaders, and local managers of these systems to learn directly about the challenges of serving the global economy, and will learn how to recognize and navigate international cultural differences in a business setting.

**TRAN 4901 Capstone Project (4 Credits)**

The Capstone Project provides students the opportunity to research a topic, problem, or issue within their field of study, and work individually with a Capstone advisor. Similar in weight to a thesis, but more flexible, this final project will synthesize and apply core concepts acquired from the program. The student will select an appropriate Capstone advisor who is knowledgeable in the field of study to work closely with and whom can guide the research project. Evaluation will be focused on the quality and professionalism of applied research and writing; critical and creative thinking; problem-solving skills; knowledge of research design, method, and implementation; and contribution to the field and topic of study. Please see the Capstone Guidelines for additional details. Prerequisites: A Capstone Proposal that has been approved by both the Capstone Advisor and the Academic Director, acceptance as a degree candidate, completion of at least 40 quarter-hours (including all core courses) with a cumulative GPA of 3.0 or better.

**TRAN 4902 Capstone Seminar (4 Credits)**

The Capstone Seminar is a graduate seminar in which students utilize the knowledge and skills gained through the degree program to create a culminating work that critically addresses a problem in their degree field of study. The students produce a Capstone of 7000-8000 words that presents a position on a relevant problem, supports the position with professional and academic literature, analyzes and tests the proposed solution, and discusses the findings as related to the field of study. The seminar is dependent upon the quality, collegial discussion, and feedback of students' research and work products, under the facilitation of a faculty member. The course structure guides the students through the process of independent, secondary research and writing of a Capstone. No primary research is allowed. Students generate the course content through ongoing discussion and peer feedback on the Capstone process and individual topic areas under investigation. Students professionally and academically communicate through written work and oral presentations. Students must have acceptance as a degree candidate, completion of at least 40 quarter-hours (including all core courses) with a cumulative GPA of 3.0 or better. Students must complete the Capstone Seminar in one quarter; no incomplete grades are assigned.

**TRAN 4980 Internship (0-4 Credits)**

The Supply Chain Management Internship is designed to offer students a purposeful experience in a practical, industry related setting. The internship is an individualized learning experience. A training plan is created for each student in conjunction with the internship site supervisor to provide experiences related to the skills and knowledge covered in the certificate and master's programs as well as professional goals. Students are responsible for finding their own internship site and proposing their internship ideas. University College will send notification to all SCM students if they hear of internship possibilities. Students may also work through the DU career center, to explore opportunities for internship experiences. To be eligible for an internship, completion of a minimum of 28 hours of graduate coursework in the field of specialty is required OR Academic Director approval for students with previous work experience in the field.

**TRAN 4991 Independent Study (1-10 Credits)**