DEPARTMENT OF LOGISTICS

STELLENBOSCH UNIVERSITY

POSTGRADUATE DIPLOMA:

TRANSPORT AND LOGISTICS

2024

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5 February 2024

POST GRADUATE DIPLOMA IN TRANSPORT AND LOGISTICS: MODULES

Anchor programme:

PGDip (Transport and Logistics)
Programme module

Code	Module	Credits	Module Name
13760	778	120	Transport and Logistics Studies

Student profiles (the programme content will vary dependent on the prior learning of the student):

A	Students with **NO** previous (undergraduate) qualifications or exposure to Logistics Management or Transport Economics
B	Students **WITH** previous (undergraduate) qualifications or exposure to **Logistics and Supply Chain Management** (in 3rd year) but **NO** Transport Economics undergraduate exposure/ experience.
C	Students **WITH** previous (undergraduate) qualifications or exposure to **Transport Economics** (in 3rd year) but **NO** Logistics and Supply Chain Management undergraduate exposure/ experience.
D	Students **WITH** previous (undergraduate) qualifications or exposure to **Logistics and Supply Chain Management AND Transport Economics** (in 3rd year).

All students must register for and pass a total of at least 8 modules (for a total of 120 credits). Depending on the undergraduate background, the number of compulsory and elective modules will differ. The tables below outline the compulsory modules per student profile listed above, as well as the elective modules that can be followed in both the Logistics and Supply Chain (LSCM) Management and Transport Economics focus areas.

COMPULSORY MODULES FOR 2024					
Module acronym	**Module [profile compulsory for]**	**Code**	**Semester**	**Lecturer**	**Credits**
Intr_TE	Intro to Transport Economics [A] [B]	13474 711	1	Mr Melrick October	15
Intr_LM	Intro to Logistics Management [A] [C]	13475 711	1	Prof. Johan Louw	15
An.T&T.	Analysis Tools and Techniques [A] [B] [C] [D]	13477 711	1	Prof. Hanneli Nel	15
SM	Supply Management [A] [B] [C] [D]	11480 771	1	Prof. Leila Goedhals-Gerber & Ms Chuma Lalendle	15

NOTE: *Analysis Tools and Techniques* cannot be taken by students that had *Business Analytics* as a major for their undergraduate degree, or that passed *LSCM 344* at Stellenbosch University.

ELECTIVE MODULES FOR 2024 – LOGISTICS AND SUPPLY CHAIN MANAGEMENT FOCUS					
Module acronym	**Module**	**Code**	**Semester**	**Lecturer**	**Credits**
Intr_Forc.	Introduction to Forecasting	10911 723	1	Mr Heinri Freiboth & Prof. Johan Louw	15
Viz_SCDA	Visual Supply Chain Data Analysis*	14227 743	1.2 & 2.1	Prof. Johan Louw & Mr Heinri Freiboth	15
Cust.S&L	Customer Service and Logistics Interface Management	11485 722	2	Ms Anneke de Bod	15
Ware_OM	Warehouse Operations Management	13472 741	2	Prof. Johan Louw	15
A, B, C & D: Choose at least two (but not more than three) of the above modules * Selection criteria will be applied (computer literacy & computational thinking)					

ELECTIVE MODULES FOR 2024 – TRANSPORT ECONOMICS FOCUS					
Module number	**Module**	**Code**	**Semester**	**Lecturer**	**Credits**
Road_TM	Road Transport Management	59145 744	1	Mr Johann van Rensburg	15
Maritime	Maritime Economics	14024 773	1	Prof. Stephan Krygsman	15
ITTL	International Trade Transport Infrastructure and Logistics	13076 744	2	Mr Johann van Rensburg	15
Urban_TE	Urban and Regional Transport Economics	59153 742	2	Mr Melrick October	15
A & B: Choose at least one of *Road_TM* or *ITTL* **C & D:** Choose at least two of the above modules					

ADDITIONAL ELECTIVE MODULE FOR 2024					
Module number	**Module**	**Code**	**Semester**	**Lecturer**	**Credits**
Forec.	Forecasting [Operations Research]**	10933 753	2	Prof. Hanneli Nel	15
**Forecasting (OR)* can be chosen if a student passed the *Introduction to Forecasting* module in the first semester. This module has a very strong quantitative focus and is only recommended to students that had *Business Analytics* as a major at undergraduate level.					

DETAILED MODULES

13474 711 Introduction to Transport Economics (*Intr_TE*)

Course objective

Transportation plays a critical role in the economic development of societies. In many instances, countries with well-developed transport industries and infrastructures have seen faster rates of economic development and have become highly competitive in the global market. Therefore, it is imperative that those involved in the operational, tactical and strategic sectors of the transport industry possess a thorough background of appropriate knowledge required to achieve the benefits associated with transportation. In this module a selection of topics relevant to the functions of transport, elements of transport demand, infrastructure provision, sustainable transport and technology, transport policy and regulation, modal cost structures and the economic evaluation of transport projects will be covered.

Course Content

CHAPTER 1: TRANSPORT, ECONOMY, AND SOCIETY
Introduction
The functions of transport
The components of transportation
Transportation and space
The economic characteristics of transport

CHAPTER 2: TRANSPORT SYSTEM AND MODES
The elements of a transport system
Transport modes
Intermodal transportation and modal competition

CHAPTER 3: TRANSPORT PLANNING AND DEMAND ANALYSIS
Transport planning and governance
Transport safety and security
The factors influencing the demand for transport
Transport demand analysis

CHAPTER 4: TRANSPORT AND ECONOMIC EVALUATION
Income distribution aspects
Transport economic project evaluation

CHAPTER 5: URBAN TRANSPORT AND INNOVATION
Transportation and the urban form
Urban land use / urban form and transportation
Urban mobility
The urban transport challenges and solutions
Transport, sustainability, and innovation

Remarks

- The module is presented during the first semester.
- The module carries 15 credits.
- This module is compulsory for students with NO previous (3rd year) qualifications or exposure to Transport Economics.
- This module cannot be taken by students that had Transport Economics as a major for their undergraduate degree.

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13475 711 Introduction to Logistics Management (*Intr_LM***)**

Course objective

The student should be able to describe the basic functioning of a logistics channel. It is important to identify, illustrate and appreciate the contribution of all the major activities involved in logistics. The student should be able to articulate the major differences between the inbound and outbound logistics systems.

Course content

1. Introduction to Logistics & Supply Chain Management
2. Dimensions of Logistics
3. The Inbound Logistics System
4. The Outbound Logistics System
5. Major Activities involved in Logistics (Inventory Management, Transport, Storage, Packaging, Handling, Documentation, etc.)

Remarks

- This module is presented during the first semester.
- The module counts 15 credits.
- This module is offered residentially only.
- This module is compulsory for students with NO previous (3rd year) qualifications or exposure to Logistics or Supply Chain Management.
- This module cannot be taken by students that had Logistics or Supply Chain Management as a major for their undergraduate degree.

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13477 711   Analysis Tools and Techniques (*An.T&T.***)**

Course objective

The increasing availability of data and computational power, combined with the general tendency of managers to base decisions on proper analysis of data, increases the demand for employees with analytical skills. This course aims to introduce students to analytical tools and techniques to be able to solve basic problems as well as recognise the opportunities for improvements in the operational environment, through the application of the learnt knowledge and skills or by related but more advanced techniques.

Course content

1.   Business mathematics and Excel
2.   Linear programming
3.   Network modelling
4.   Queueing Theory
5.   Simulation

Remarks

- This module is presented during the first semester.
- The module counts 15 credits.
- This module is offered residentially only.
- This module is compulsory for students with NO previous (3rd year) qualifications or exposure to Quantitative Management or Business Analytics.
- This module cannot be taken by students that had Business Analytics or LSCM344 as a major for their undergraduate degree.

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11480 771   Supply Management (*SM*)

Course objective

It is important for a business to analyse logistics processes and to focus on streamlining the processes. The business should consider practises to minimise logistics environmental impact and waste. Aspects such as warehousing, packaging and materials handling activities should be considered. Product delivery through transport service providers should be coordinated.

Course content

1. Global procurement and sourcing
2. Supplier management
3. In-house and outsourced production operations and supply chain execution
4. Warehousing
5. Materials handling
6. Packaging
7. Transportation (inbound and outbound)
8. Reverse logistics

Remarks

- This module is presented during the first semester.
- The module counts 15 credits.
- This module is compulsory for all PGDip (Transport & Logistics) students.

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10911 723   INTRODUCTION TO FORECASTING (*Intr_Forc.***)**

Course objective

Customers and business organisations are increasingly generating data – massive amounts of data. At the same time, we have seen increases in computer processing power that allows us to connect to, clean, structure and analyse large data sets with relative ease. This holds exciting possibilities from economic and management perspectives, if we can utilise this data to search for trends, patterns, and relationships, to make better decisions and plan for the future.

The aim of this module is to familiarise you with the data analytics process, specifically focussing on real-world data from the supply chain, logistics and transportation disciplines. Not necessarily "big data", but hopefully larger datasets than you would have dealt with during your undergraduate studies. You will also learn how to use suitable software packages to clean datasets and to perform appropriate analysis on the data, whether it is descriptive, diagnostic, or predictive analysis, and ultimately interpret and share the results in appropriate ways.

Course content:

1. Statistics and data, data types, data classification, data analytics process
2. Data collection, -connection, -preparation, and -exploration
3. Descriptive techniques (numerical and graphical)
4. Diagnostic techniques (hypothesis testing, correlation- and regression analysis)
5. Predictive techniques (time series analyses and forecasting)
6. Communicating results

Remarks

- The module is presented during the first semester.
- The module carries 15 credits.
- This module is available to residential students only.
- Passing this module is a pass prerequisite for Module 25 (Forecasting).

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14227 743 VISUAL SUPPLY CHAIN DATA ANALYSIS (*Viz_SCDA***)**

Course objective

Students following this module, can develop important analytical competences and be able to visually present and communicate supply chain (SC) related data more effectively. Students will be introduced to the structured process of "exploratory data analysis"; with a time-efficient progression from raw SC data to information to insight. This module covers inter alia the different ways to connect to a variety of types of data sources, doing exploratory data analyse and visualisation, and answer the questions at hand. The foundation of data visualization techniques and -principles, effective data analysis techniques and visualization best practices will be covered. Although an overview of current analytical tools will be done, this module will only focus on the correct use of one or two of the prominent data visualization software packages.

Course content

1. Visualization theory, related concepts, terminology and different visualization types.
2. The structured "exploratory data analysis" process (e.g. data collection, pre-processing, definition, structuring, organizing, simplifying, cleaning, coding, hierarchies, formatting, testing, exploring).
3. Dealing with different data sources (doing joins and blends; working with relational data tables).
4. Proficiency with basic and slightly advanced quantitative and qualitative SC data analysis.
5. Computer-supported, interactive, visual representation of abstract data to amplify human cognition (sensitive to the human's pre-attentive visual processing).
6. Building simple to complex visualizations and how to combine them in interactive dashboards.
7. Establishing effective story boards and sharing visualizations.

Remarks

- This module is presented across the first and second semester, starting in the 2nd academic quarter and ending in the 3rd academic quarter.
- This is an elective module in the Logistics Management honours programme.
- Students from other postgraduate programmes, with appropriate computer, analytical proficiency and have done at least some basic logistics and SC management introductory modules, can also be considered for the module. The module *Introduction to Forecasting* (10911 723) is a prerequisite for this module.
- Due to computer lab constraints, the class size may be limited; students that want to follow this module are screened and selected primarily based on the criteria mentioned in point 3 above (preliminary selection will take place during the period 12 – 16 Feb 2024; the class list will be finalised by 16 Feb 2023)
- The module counts 15 credits.
- The module is offered residentially only.

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11485 722   CUSTOMER SERVICE AND LOGISTICS INTERFACE MANAGEMENT

Course objective

The ultimate effect of logistics and supply chain activities / processes should meet the targeted customer requirements. Managing the interface between sales and logistics is of vital importance. Balancing the performance-related and cost-related targets remains a challenge.

Customer service is the source of customer information. It also provides the customer with real-time information on scheduling and product availability through interfaces with the company's production and distribution operations. Customer service is also a process for providing significant value-added benefits to the supply chain in a cost-effective way.

Course content

1.   Introduction to Customer Service and Logistics Interface Management
2.   Customer service dimensions and measurement
3.   Customer Service's role in demand management
4.   Customer Service strategy development
5.   Customer service performance management
6.   The customer service and customer relationship process across the value chain
7.   Reverse marketing or Supplier Development

Remarks

- The module is presented during the second semester.
- The module counts 15 credits.
- The module is offered residentially only.
- This module is a potential elective for all PGDipl (Transport & Logistics) students.

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13472 741   Warehouse Operations Management (*Wareh_OM***)**

Course objective

The operational management of warehouses typically oversee the distribution and storage of inventory for a manufacturing company (or where the function is also outsourced to a logistics service provider). Although students studying in the field of logistics and supply chain management focus on process integrating principles and cost analysis, students can also prepare to become more knowledgeable in warehousing/distribution activities (establishing functional excellence in specialised focal areas).

Students will be exposed to the key aspects of inventory control and materials handling. They can develop their knowledge of receiving and storing materials with a focus on contributing to greater profitability. Lecturers will also guide the students through the processes of material processing, including the picking and shipping of goods. Case studies and a site visit(s) will complement the learning. Students will get exposure to the technologies and computer systems used to assist operational management in maintaining inventory, scheduling, operating, monitoring and controlling operations, and forecasting supply needs. Since warehouse operations also require the management of people in fulfilling numerous key functions, the concepts and practices of sound supervision and labour relations will also be covered. Warehouses are fixed installations that need compliance to specific legislation (Acts and Regulations). An overview of the applicable governing legislation will also be covered (e.g. OSH act, Labour Relations Act.).

Course content

1. ***Inbound Warehouse Operations*** related to product receipt, material handling, inspection & quality control, put-away, storage and replenishment.
2. ***Outbound Warehouse Operations*** related to product picking, checking, packing, compliance labelling, staging and despatch to customers.
3. ***Warehouse Operational Support*** related to inventory control, order entry, order processing and inventory replenishment, performance management, automated and enabling warehousing technology (e.g. bar code scanning and radio frequency (RF) data communication, resulting in a paperless distribution environment).

Remarks

- This module is offered during the second semester.
- This module counts 15 credits.
- The module is offered residentially only.
- This module is a potential elective for all PGDipl (Transport & Logistics) students.

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59145 744   ROAD TRANSPORT MANAGEMENT

Course objective

The module is concerned with providing the student with a practical overview of the functions of freight and passenger transport management and recommend practices that can ensure efficiency, quality and effective delivery of service to customers. The purpose of this module is to enable students to comprehend the integrated nature of transport management so that they can contribute to the implementation of sound transport management principles in a transport environment. The road transport industry is highly competitive. Therefore, it is imperative to have a thorough understanding of the appropriate management aspects in transport operations. In this module a selection of topics relevant to strategic, tactical and operations management are covered which are essential for successfully running a road transport firm. These core components of learning include knowledge of transport logistics, routing and scheduling, basic principles of road transport management and occupational health, safety and environmental protection that is applied in operating successfully in a road transport logistics environment.

Course content

1.   The South African road network
2.   Planning the transport function
3.   Organising the transport function
4.   Staffing the transport function
5.   Transport operations
6.   Monitoring transport operations
7.   Transport operations costing and reporting
8.   Finance and external relations
9.   Compliance with legislation

Remarks

- This module is offered during the first semester.
- This module counts 15 credits.
- This module is a potential elective for all PGDipl (Transport & Logistics) students.

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14024 773   MARITIME ECONOMICS (*Maritime***)**

Course Objectives

Almost 90 per cent of the volume of international trade is seaborne. The globalisation of economic activities has led to fierce competition, resulting in lower freight rates to which the shipping business has had to adapt. This module focuses on the demand for shipping, with specific reference to South African imports and exports, as well as on the supply of shipping and the changes in the behaviour of shipping markets.

Course content

1. The main features of the ship
2. Ship design, construction & operation
3. Types of ships around the globe (cargoes, trades and future trends)
4. Maritime canals, inland waterways & seaports
5. Liner conferences & charter parties
6. Containerisation
7. Ship financing, management & governance
8. The blue economy

Remarks

- This module is presented during the first semester.
- The module counts 15 credits.
- Transport Economics 318 & 348 are pass prerequisites for this module.

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13076 744   INTERNATIONAL TRADE, TRANSPORT INFRASTRUCTURE AND LOGISTICS (*ITTL*)

Course objective

The growth of the South African economy is dependent on the current and future trade of resources with neighbouring and international countries. This entails the import and export of various commodities, including human capital, based on sound theoretical principles in political environments that are cost effective. This module focusses on various topics relevant to the export and import trade market and the optimal transport infrastructure to be used for these trade activities, including the correct logistical processes to be undertaken.

Course content

1. Introduction and Trade in the Global Economy
2. Evolution of Trade Theories
3. Import Tariffs, quotas and export subsidies
4. International Infrastructure
5. Ocean Transportation
6. International Air Transportation
7. International Land and multimodal Transportation
8. International Terms of sale and payment
9. International trade documentation
10. Custom Clearance

Remarks

- The module is presented in the second semester.
- This module counts 15 credits.
- This module is a potential elective for all PGDipl (Transport & Logistics) students.

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59153 742 URBAN AND REGIONAL TRANSPORT ECONOMICS (*Urban_TE***)**

Course objective

The South African economy is largely dependent on the production of goods and services, and commercial activities in the metropolitan areas. These activities cannot be efficiently carried out without an effective urban transport system. In this module the economic aspects of urban transport are explained and analysed. The knowledge thus obtained is important for urban planners, administrators, transport economists and a career in applied economics.

Course content

1.   The relationship between urban land use and transport provision
2.   The urban transport problem and proposed solutions
3.   The urban transport planning process
4.   Urban transport systems and technology
5.   The urban transport investment decision
6.   Pricing and subsidies
7.   Urban transport policy and legislation in South Africa

Remarks

- The module is presented during the second semester.
- The module counts 15 credits.
- Transport Economics 318 & 348 are pass prerequisite for this module.

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10933 853 FORECASTING (*Forec.***)**

Course objective

In addition to the general problems in time series data considered in Module 11 (Introduction to forecasting), there are several more intricate problems related to time series data which require more intricate techniques for the identification and forecasting process. Students are familiarised with these techniques in order to identify and solve these problems.

Course content

The module comprises three sections:
1. Section I – Revision of …
   a. Basic inferential statistics
   b. The linear regression model and the method of least squares
   c. Diverging from basic assumptions
   d. Dummy and lag variables
   e. Test and evaluation criteria
2. Section II – Advanced forecasting techniques:
   a. Stationarity of time series
   b. Moving average and exponential smoothing models
   c. ARIMA models
   d. Short and long term models
3. Section III – Applications of Forecasting:
   a. Data gathering and related problems
   b. Single and multivariate functions
   c. Modelling
   d. Presenting and interpreting modelling results

Remarks

- The module is presented during the second semester.
- The module counts 15 credits.
- *Introduction to Forecasting* (10911 723) or Operations Research 3 is a pass prerequisite for this module.
- This module is available to residential students only.

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