

Master of Science Transport & Logistics

TUM Asia



Technische Universität München



At A Glance

DEGREE BY

Technische Universität München (TUM)

18 MONTHS FULL TIME PROGRAMME

Coursework in Singapore

PRACTICAL KNOWLEDGE

Compulsory Internship & Thesis

GLOBAL PROSPECTS

Internationally Recognized Degree

INTAKE

August Every Year

TO APPLY

Apply online from 1st November at
www.tum-asia.edu.sg

1

TUM is ranked as the #1
University in Germany⁺

8

TUM ranked #8 in the
Global Employability
Survey[^]

13

TUM has produced
13 Nobel Laureates

50

TUM is ranked
among the world's
Top 50 Universities[#]





TUM Asia

Through TUM's unwavering commitment to the betterment of society, TUM Asia was set up in 2002 as the first academic venture abroad by a German university. Today, TUM Asia offers standalone and joint Bachelor and Master programmes in Singapore together with partner universities such as National University of Singapore (NUS), Nanyang Technological University (NTU) and Singapore Institute of Technology (SIT).

A close cooperation with key industry players helps to ensure that the curriculum stays relevant and practical to the needs of the industry. Together with the unique combination of German engineering with Asian relevance, TUM Asia's graduates are equipped to enter both industry and research sectors on a global level. With over a decade of experience, TUM Asia continues to provide quality higher education programmes suited to the needs of the industry in Asia.

In 2015, over one thousand students have come through the doors of TUM Asia and currently ply their trades in top research institutes and companies across the globe.

Technische Universität München (TUM)

Technische Universität München (TUM) is one of Europe's leading research universities, with around 500 professors, 10,000 academic and non-academic staff, and more than 37,000 students. Its focus areas are the engineering sciences, natural sciences, life sciences and medicine, reinforced by schools of management and education.

TUM acts as an entrepreneurial university that promotes talents and creates value for society. In that it profits from having strong partners in science and industry. It is represented worldwide with a campus in Singapore as well as offices in Beijing, Brussels, Cairo, Mumbai, and São Paulo.

Nobel Prize winners and inventors such as Rudolf Diesel and Carl von Linde have done research at TUM. In 2006 and 2012 it won recognition as a German "Excellence University." In international rankings, TUM regularly places among the best universities in Germany.



Master of Science

Transport & Logistics



TUM Asia's **Master of Science in Transport & Logistics** (MSc in TL) will provide graduates with the necessary knowledge and skills to employ a diverse range of technologies that leverage on state-of-the-art computer communications technologies. One will learn to implement sophisticated and far-reaching solutions to transportation challenges that characterize modern economies.



MASTER DEGREE

Conferred by Technische Universität München (Germany), the #1 University in Germany.⁺



3 SEMESTERS

Full-time research and application focused programme, inclusive of internship experience and Master Thesis writing



INDUSTRY RELEVANCE

Our professors are actively involved in research and cooperation projects with leading industrial companies, allowing them to base the curriculum around the latest technological trends and knowledge



GLOBAL OPPORTUNITIES

You are able to complete your Internship and Thesis in Munich, Singapore or anywhere in the world, to look for job opportunities globally

COURSE OUTLINE

17

The student has to complete 17 modules in 2 semesters

(8 Core Modules, 4 Specialised Modules, 3 Non-Technical Modules & 2 Soft Skills)

2

Specialisations to choose from:
Transport or **Logistics**

45

Contact hours for every Core & Elective Module

Duration of the Programme: 18 months

August



Arrival in Singapore

4 Months



- Business & Technical English
 - Core Modules
 - Cross Discipline Modules

6 Months ^{*}



- Core Modules
- Elective Modules
- Cross Discipline Modules

2 Months



Internship

6 Months



Master Thesis at TUM a relevant company, or research institute

Graduation



End of Programme

^{*} Students may complete an additional semester in TUM, resulting in an addition of a 3 month break and a 6 month semester at TUM prior to the internship. The student can choose any module from all faculties in TUM, subject to the approval from the faculties and registration process via TUM Asia, and visa approval. To find out more, please write to us at graduate@tum-asia.edu.sg.



Core Modules

Statistical Methods for Transportation and Logistic Processes

Transportation science involves analysis of empirical data. The students will learn to apply the most common methods in statistics used to analyse data in practical applications.

Traffic Impacts, Evaluation of Transport and Logistic Processes

This module introduces the basic principles and concepts of an assessment and evaluation of transport and logistic systems. The interrelation between traffic and environment will be discussed.

Basics of Traffic Flow and Traffic Control

This module provides the students with theoretical knowledge of traffic flow. The main topics covered are: traffic stream models, car following and continuum theory for road segments, queuing theory for signalised and unsignalised intersections, etc.

Transport and Urban Planning

The module provides the basic knowledge about transport, mobility and urban planning. The main topics are: travel demand modelling, dependencies between supply and demand, relationships between transport and urban planning, etc.

Railway and Road Design

The module introduces the fundamental aspects of rail and road design. It covers the planning, design and construction of rail and road systems.

Introduction to Business Logistics and Supply Chain Management

“Footprint” of logistics in the global economy, the evolution of logistical thinking and terminology, sketch of current logistics market structures and their volumes, basics of logistics system design and rationalisation, elementary logistical activities.

Decision Support for Logistics Management

Principles of management decision support, overview on relevant operations research tools and algorithms. Principles of modelling logistical systems (data collection issues).

Design and Applications of Material Handling Systems

The lecture covers the issue of the movement, storage, control and protection of materials, goods and products throughout the process of manufacturing, distribution, consumption and disposal. The focus is on the methods, mechanical equipment, systems and related controls used to achieve these functions.

Specialised Modules* (Select 4 From Transportation OR Logistics)

Transportation

Traffic Operation and Control (ITS)

The module provides insights into the state-of-the-art control measures for optimising traffic flows. The main topics are: the principles of urban, extra-urban and integrated systems, the objectives, measures, methods and algorithms, systems and technologies used in intelligent transportation systems, etc.

Transportation Modelling and Simulation Tools

The module provides detailed knowledge about software tools for traffic and system simulation. Microscopic and macroscopic simulation will be dealt with in this lecture.

Public Transport Planning

The students will learn how to plan and operate different public transport modes. The main topics are: the geometry of transit lines, transit networks types and their characteristics, public transport scheduling, transit fares, etc.

Airport and Harbour Design

This module gives an insight into the necessary components of airports and harbours and the planning processes for developing these sites. Besides that it offers several methods for operating airports and harbours.

Construction and Maintenance of Traffic Infrastructure

Main principles of pavement and railway track design together with the respective construction procedures for sustainable roads, airfields and railway lines. Discussion of latest developments and experiences in pavement and railway track technology.

Urban Road Design

Provides in-depth knowledge on planning, designing and organizing urban streets as spaces for living and coming up with ways to organize transportation in an efficient way for various transport modes and mobility needs.

Logistics

Industrial Logistics

The lecture covers the issues of logistics and supply chain management from the perspective of global industrial producers and suppliers, such as from the electronics, electrical appliances, automotive, machinery industries (“assembly industries”).

Consumer Industry Supply Chain Management

This lecture addresses the issues of logistics and supply chain management from the perspective of national and international consumer goods producers, wholesalers, retail chains and direct marketers, such as from the food and non-food branded goods industries, fashion and luxury goods, home supplies etc.

Logistics Service Provider (LSP) Management

This lecture focuses on the “life cycle” issues of logistics service provider. Management such as market selection and analysis, transport mode choices. Overview of the important LSP markets, such as parcels/express, LTL, truckload, air and seaway forwarding, container shipping, etc.

Health Care Logistics

Aim and scope of this course are the special aspects of logistics and supply chain management in the health care industry. This course offers at first an introduction to the fundamentals of health care management. Furthermore students learn to understand the basic mechanisms of the health care value chain, develop a sound knowledge of appropriate tools and techniques how to management supply chain management activities and learn how to evaluate logistic processes in this special field of application.

Green Supply Chain Management

Green supply chain covers the background of green philosophy and studies the major elements and methods for companies to go green and improve environmental performance of all supply chain members. Resilient supply chain covers the analysis of various supply chain interruptions like natural disasters, turbulent markets with global sourcing, lean production, and so on.

Construction Logistics

This module is designed to provide some insight to the logistical aspects of complex large construction projects. In infrastructure projects as well as in modern turnkey construction a fairly large number of subcontractors, trades, providers, planning and executing engineers etc. need to be coordinated in order to work coherently and efficiently, which is the major task of construction management.

Non-Technical Modules

• Cross-Discipline Modules

Selected Topics in Management Methods, Aspects of European and Asian History and Culture, Selected Topics in Business Administration.

• Soft Skills

Business & Technical English, Excursion Practical Experience in Warehouse & Distribution

*Disclaimer: Specialization modules available for selection are subject to availability. Unforeseen circumstances that affect the availability of the module include an insufficient number of students taking up the module and/or the unavailability of the professor. TUM Asia reserves the right to cancel or postpone the module under such circumstances.

ADMISSION CRITERIA*

- Hold a relevant Bachelor's Degree or its equivalent in any of the following areas (but not limited): *Civil Engineering, General Engineering, Economics.*
- Submit **one (1) copy of Official or Provisional Bachelor Degree Certificate**** and **one (1) copy of Official or Provisional Academic Transcript**** (Documents must be a certified true copy or notarised / attested copy format)
- Submit **two (2) Recommendation Letters** from two (2) different Professors or Employers
- Submit **one (1) A4-page Letter of Motivation** that indicates the reason(s) you are interested in the programme you applied for
- Submit **one (1) Curriculum Vitae / Resume**
- Submit **one (1) Passport-sized photograph**** and **one (1) Passport Biodata Page photocopy** (the passport page with your personal particulars)
- **TOEFL / IELTS** (Required for applicants whose native tongue or medium of instruction from previous studies is **not in English**)
- **Akademische Prüfstelle (APS) certificate** (Required for applicants who hold a degree from **China, Vietnam, or Mongolia**)

TOEFL Requirements: Minimum 605 for the Paper-Based test / 234 for the Computer-Based test / 88 for the Internet-Based Test
IELTS Requirements: Overall IELTS results of at least 6.5

Important: Documents that are not in English must be translated by a certified translator

*Find out about the full application process on www.tum-asia.edu.sg/application-process

** All applicants are required to submit an additional of two (2) certified-true copies of Official or Provisional Bachelor Degree Certificate, two (2) copies of Official or Provisional Academic Transcript, and three (3) passport-sized photographs when you have accepted the offer of admissions and are being matriculated into our programme

TO APPLY

Applications open 1st November every year. Apply online at www.tum-asia.edu.sg.

TUITION FEES

APPLICATION FEE	PAYMENT OF TUITION FEES
S\$79 (inclusive of GST) or Euro 52 is payable for each application per programme	A Total of Euro 18,500* Tuition fees includes teaching fees, examination fees, internet access on campus, and cost of mandatory events. Expenses excluded from this fee and to be borne by students include: airfare, accommodation, and living expenses. The tuition fee will be paid in 3 installments.

* Tuition fees are accurate as of 1 September 2015. Tuition fees are subject to revision due to currency fluctuations, at the discretion of TUM Asia. Fees quoted are inclusive of 7% Singapore's Government Goods & Services Tax. Please refer to www.tum-asia.edu.sg/MScfees for the latest tuition fees.





Studying at the Technische Universität München Asia

“Talents Are Our Assets, Reputation Is Our Return”

Entrepreneurial Thinking and Engagement

Globalization is now an inevitable force that is here to stay. At TUM Asia, our classroom reflects this diversity with an enrolment of over 28 nationalities. This means that we foster a vibrant learning environment where the student learns not only from the textbook but also through the lives of their counterparts. Classroom ideas are synthesized across the diverse economic realities and students learn to see from multiple vantage points, creating a capacity to solve problems in creative ways. The unique 18 month degree equips the student with not only technical and scientific knowledge, but with an enriched curriculum composed of business and cultural modules.

TUM CREATE - Centre for Electromobility

TUM is known for its research capabilities and strength in innovation. As such, TUM Asia spearheaded the set up of TUM CREATE as a base of research in Singapore. TUM Create is a joint programme between Technische Universität München (TUM) and Nanyang Technological University (NTU). The electromobility institute brings together the expertise and innovation of Germany and Singapore, to drive innovation to shape the future of sustainable mobility by tackling issues ranging from the molecules to the megacity. **Graduates from the TUM Asia Master programmes have the opportunity to apply for positions at TUM Create, especially if your interest lies in research/electromobility.**

Highest International Standards

You will be studying with the world's best professors from TUM, as well as experts from the industry. Not only will the student benefit from professors who are actively involved in research, one will also receive a holistic learning experience with the engagement of local lecturers from academia and industry. Majority of our modules are covered by professors who fly in from Germany on an exclusive teaching basis, to ensure that students get the undivided attention of their lecturers.

TUM Asia's Transport & Logistics programme, with its multi-cultural atmosphere, prepares students for international careers in the wide field of transport and logistics. Focusing on strategies, topic-interactions and creativity, the students are able to develop skills to successfully lead multi-disciplinary projects.

Dr. Bernhard Lechner

Senior Researcher & Lecturer at Technische Universität München, Collaborating Scientist at TUM CREATE

DID YOU KNOW THAT SINGAPORE IS THE PREFERRED LOGISTICS & SUPPLY CHAIN MANAGEMENT HUB FOR LEADING MANUFACTURERS DUE TO EXCELLENT GLOBAL CONNECTIVITY?



Heart of Southeast Asia: Singapore's Strategic Location

Singapore's strategic position on the crossroads of the world and at the nexus of major shipping lanes has earned it the reputation of being an important logistics hub and conduit for world trade. Singapore is well-positioned to help logistics companies build on their manufacturing leadership and develop higher value adding services. Furthermore, Singapore is the leading aviation hub, a world class integrated chemical hub, and has a robust electronics industry. Therefore, Singapore's demand for an efficiently structured and managed transportation and logistics system will only continue to grow.

The Transport & Logistics Industry in Singapore

Singapore is the leading Transportation & Logistics hub in the world. Singapore's global connectivity and its secure and business-friendly import/export procedures provides companies greater efficiencies in conducting business. Singapore provides world class infrastructure to help support the growth of the logistics industry, such as the Airport Logistics Park of Singapore (ALPS) in the airport's free-trade zone, the Changi International LogisPark, which facilitates regional distribution, and the Banyan LogisPark on Jurong Island that caters to chemical and oil companies.

Our Graduates



Our graduates in Transport & Logistics are employed all over the world, such as in **Singapore (95.2%), Europe (4.8%)**



The most commonly accepted positions are **Air Freight Analyst, Logistics Analyst, Transport Analyst, and Import & Export Coordinator**



Our graduates are expected to be able to find job opportunities with **DHL, Pan Asia Logistics, RedMart**. In the past year, Pan Asia Logistics hired **23.8%** of our total graduates

1

The World Bank ranked Singapore as the #1 Logistics Hub amongst 155 countries globally in the 2012 Logistics Performance Index

2

Singapore's Changi Airport is one of Asia's largest cargo airports and handles close to 2 million tonnes of cargo annually

7

Singapore's location is also proximate to the world's major markets as it is situated within a 7-hour flight radius to half the world's population in Asia Pacific

20

Singapore is a prime location for major logistics firms, with 20 of the top 25 global logistics players conducting operations in Singapore

31

Singapore is one of the world's busiest transshipment hub, handling about 1 out of 7 of the world's container transshipments; more than 31 million TEUs of containers in 2012

123

Singapore is connected by 200 shipping lines to 600 ports in 123 countries

TUM Asia, combining the tradition in education and the dynamics of one of the most important hubs in Asia, does provide students with the skills and exposure needed for the successful realization of their dreams and ambitions!

Kalin Stoyanov

Alumni, Master of Science in Transport & Logistics Planning and Control, Rolls-Royce

Ambitious, motivated, open-minded & hardworking - this is how the TUM Asia graduates are excellently contributing to live up to Pan Asia Logistics' core values: Knowledge driven, Integrity, Personal Relationship and Service Excellence.

Pan Asia Logistics Singapore Pte Ltd

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German Institute of Science & Technology - TUM Asia Pte Ltd

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All information is accurate at the time of printing and is subject to change without prior notice.
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⁺ As rated by Academic Ranking of World Universities (Shanghai Ranking) 2011, 2012 and 2013 and 2012/2013 QS World University Ranking

[^] As ranked in the 2014 Global Employability Survey by The New York Times

[#] As ranked by Academic Ranking of World Universities (Shanghai Ranking) 2013 and 2013/2014 QS World University Ranking