MASTER OF SCIENCE IN

Logistics Engineering and Management

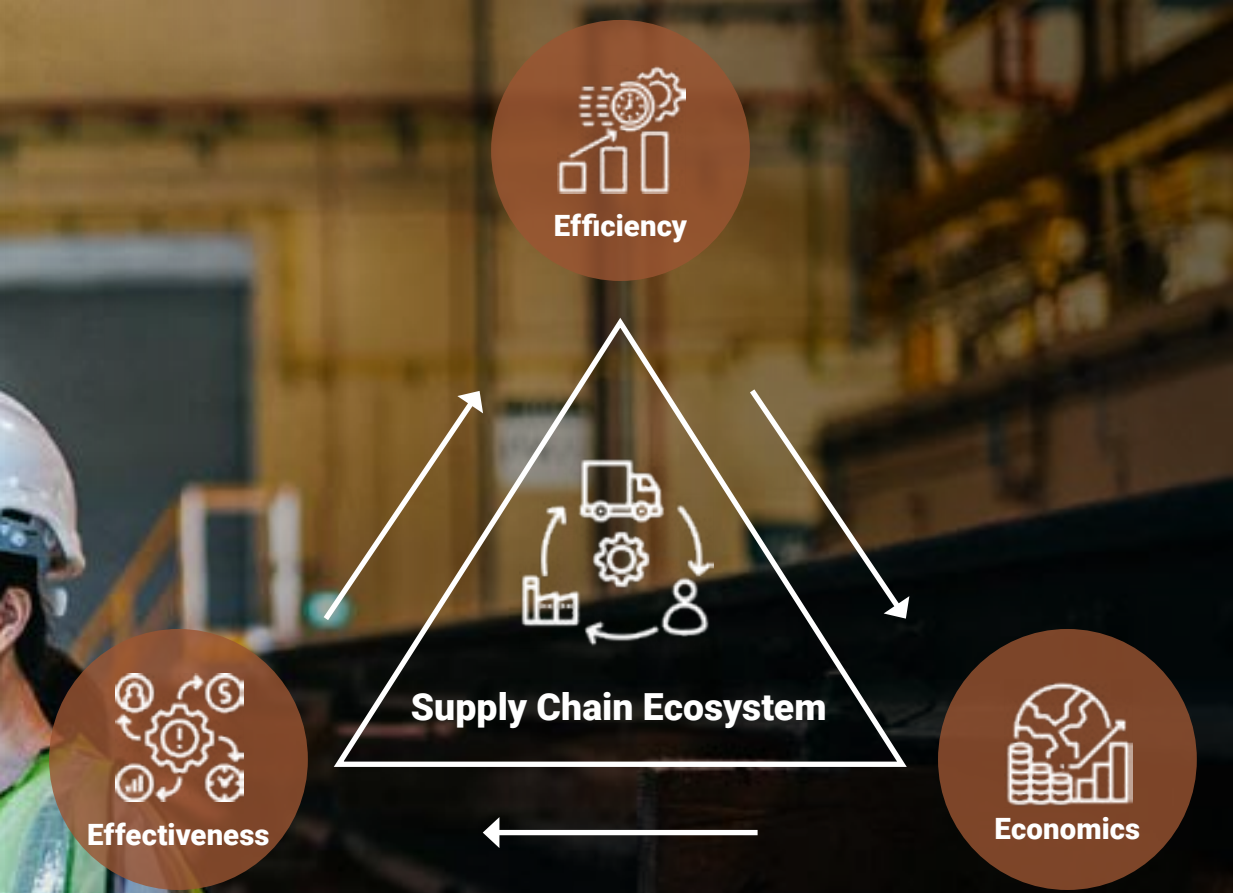
TUM Asia

Technische Universität München

Engineering the Future of Supply Chains

The Master of Science in Logistics Engineering and Management integrates the fields of supply chain management, logistics, engineering, and management, providing students with a broad spectrum of knowledge and cross-functional skills. This programme empowers students to plan, organise, and control the international flow of goods in a dynamic world.

The programme offers students an opportunity to take an in-depth study through the lens of transport and logistics systems includes intralogistics. The insights will foster the critical discourse necessary to deepen their understanding of the limitations of the current methodological approaches to address global logistics challenges.



Driving Efficiency in Supply Chain

Students will learn in-depth the latest mathematical modelling approaches and computer-based support solutions, cutting through multiple sacks of disparate data to deploy real-time tracking, predictive analytics, and enhanced decision-making to address formal problem models and achieve an efficient supply chain system.an efficient supply chain system.

Developing Effective Supply Chain Systems

The module deep dives into the planning, designing, and managing of a logistics system for materials and goods while cultivating a deep understanding of the dynamics in transport and logistics, which is essential to developing an effective supply chain system for the flow of goods and materials in the whole value chain.

Defining Economics Sustainable in Supply Chains

Focusing on strategies to optimise the economic value of supply chains in the human, digital, and resource areas, students will gain the know-how to empower people, mobilise resources, and leverage technology to increase productivity and respond to the shifting environment to implement an economically sustainable supply chain.

Learning Outcomes

Employ expert knowledge in the integrative planning, organisation, control, handling, and monitoring of goods and materials flow to establish an efficient, effective and economically sustainable supply chain system

Develop proficiency in complex statistical methods to design and evaluate systems, mechanical equipment and related controls deployed in the end-to-end supply chain

Gain in-depth insights into the management of high-stakes supply chains experiencing disruptive changes.

Demonstrate high level of capability in deploying state-of-the-art mathematical modelling approaches and computer-based support solution to make scientifically founded decisions to address current and emerging logistics decision problem

Exercise a high level of interdisciplinary thinking by evaluating transport and logistics systems and planning of intralogistics systems to achieve the required mobility in a modern and dynamic society

Develop ability to analyse and synthesis insights gathered through utilising multiple tools and applications across various transport and logistics systems and process to develop scientific-based solutions and strategies

Gain an appreciation and proficiency in basing decisions on scientific and evidence-based rigour to address issues and challenges at the intersection of multiple disciplines of a supply chain

Develop ability to design and apply research inquiries, statistical and analysis methods to advance theories and practice of implementing an agile and efficient supply chain system

Programme Structure

The Master of Science (MSc) in Logistics Engineering and Management programme is crafted in consultation with academic and industry experts to equip the next generation of supply chain leaders with the competencies to design, develop, and implement efficient, effective , economically sustainable supply chain ecosystems that are in tune with the global landscape's current and emerging demands.

SEMESTER 1 & 2

Core Modules

- Introduction to Business Logistics
- Introduction to Supply Chain Management
- Industrial logistics
- Planning of Intralogistics Systems
- Consumer Industry Supply Chain Management
- Logistics Service Provider (LSP) Management
- Health Care Logistics
- Decision Support for Transport and Logistic Processes
- Traffic Impacts, Evaluation of Transport and Logistic Processes
- Statistical Methods for Transport and Logistic Processes
- Soft Skills

Technical Elective Modules (Choose 3)

- Green Supply Chain & Risk Management
- Design and Application of Material Handling Systems
- Airport and Harbour Design
- Transport and Urban Planning

Non-Technical Elective Modules (Choose 1)

- Business Administration
- Innovation and Technology Management
- Project Management Principles

SEMESTER 3 & 4

- Internship
- Master's Thesis

Programme Modules

Awarded by TUM, the MSc in Logistics Engineering and Management programme is a two-year full-time research and application-focused programme (120 credits) comprising 15 modules (eleven core modules and four elective modules) delivered across four semesters.

Core Modules

INTRODUCTION TO BUSINESS LOGISTICS

The course will provide basics in the core principles of business logistics, where students gain insights into the functional logistics process and the pivotal role logistics play in a competitive landscape. Providing an incisive portrait of the various aspects of logistics processes, students engages in discussions and lessons to explore ways of optimising logistics in small groups working with real-life case studies to apply theory in practice, including also the opportunity to develop their critical thinking on the potential of information technology and digitisation in logistics.

INTRODUCTION TO SUPPLY CHAIN MANAGEMENT

This module provides students with an insightful overview of supply chains' fundamental concepts, theories, and applications, covering its main challenges and planning methods. It aims to stimulate critical thinking and equips students with the strategic ability to find the insights behind theories that will help them to match the right supply chain for different types of products, align their supply chain planning in inventory management, procurement and sourcing as well as risk management to create value in supply chains.

INDUSTRIAL LOGISTICS

This module deepens students' understanding of the distinct characteristics of global industrial manufacturers and suppliers as well as their main activities within their supply chain. Students will gain a comprehensive knowledge of the various process models, methods and technologies employed in supply chains such as lean management methods, enabling them to illustrate how these elements can be optimised that gives businesses a competitive advantage.

Core Modules

PLANNING OF INTRALOGISTICS SYSTEMS

This module provides students with a solid foundation of some of the key methods and procedures in material flow and logistics planning. Students will learn to apply the range of tools and assessment methods to develop different planning alternatives by beginning the module with the actual collection of data for detailed analysis. Students will also learn to apply qualitative and quantitative evaluation methods to select the best planning alternative. The course will also place an emphasis on intensifying students' theoretical foundation through working on a practical case study conducted in small groups.

CONSUMER INDUSTRY SUPPLY CHAIN MANAGEMENT

The transformation that the consumer industry underwent over the past years has ushered in a new wave of technologies, such as analytical demand planning or integrated sales and operations planning, to ensure their operations are well integrated from suppliers through to customers with decisions made from an end-to-end perspective. This module addresses the key issues of logistics and supply chain management from the perspective of national and international consumer goods producers, wholesalers, retail chains and e-commerce companies from the fast-moving consumer goods, lifestyle and retail sectors. Students will be able to gain a solid understanding of the logistics framework across the value chain by analysing each step from the producer to the consumer. Students will also closely examine and analyse the possibilities of designing and integrating supply, engaging in close discussions on real-life case studies to apply theory in practice.

LOGISTICS SERVICE PROVIDER (LSP) MANAGEMENT

With an increasing number of logistics functions being outsourced to third-party logistics service providers (LSPs), a new set of challenges emerge that are different from traditional industrial management practices in many respects. The successful management of one's supply chain is critical to understanding LSP's complementary role in a company and how it can make a positive impact by improving efficiency and generating economic value. This module offers a critical insight into the global LSP industry, its key players and best management practices. Students are also introduced to the relevant theoretical concepts of advanced service management. In addition, students will understand the typical business models and management issues relevant to successful dealings with logistics outsourcing partners, thus preparing them for a successful career in the logistics services arena.

Core Modules

HEALTH CARE LOGISTICS

High stakes in nature, managing healthcare logistics is practically a life-and-death scenario. This module emphasises the multifaceted and unique aspects of managing logistics and the supply chain in the healthcare industry undergoing disruptive changes by first introducing students to the fundamentals of healthcare management before deep-diving into the strategic aspects of procurement and logistics in healthcare. The industry is currently undergoing a phase of deregulation, which leads to privatisation, professionalisation and internationalisation. This framework will be intensively discussed, raising several pertinent decision situations that enable students to appreciate the sophistry in planning its logistics. In addition, students will also advance their understanding of the mechanisms of the healthcare value chain, develop a sound knowledge of appropriate tools and techniques in managing the slew of supply chain activities and evaluate the logistics processes in this particular field.

DECISION SUPPORT FOR TRANSPORT AND LOGISTIC MANAGEMENT

This module equips students with the latest mathematical modelling approaches and computer-based support to address common logistical decision problems companies face today. Students will gain the necessary proficiency in problem-solving models and algorithms to represent different problem types and address real-world situations. They will be able to discern problem types, understand the limits of optimisation and appreciate the importance of having a decision support system in logistics.

TRAFFIC IMPACTS, EVALUATION OF TRANSPORT AND LOGISTIC PROCESSES

The module focuses on sustainable transport solutions by deepening students' understanding of the intimate relationship between transport and its environment. Through interactive discussions, hands-on exercises and group activities, students will learn more about the various strategies for achieving a sustainable transport system. In addition, students will also acquire the necessary knowledge of the principles and concepts to assess and evaluate transport and logistics systems while gaining deeper insights into the advantages and drawbacks of different assessment methods, including application areas and constraints of assessment procedures.

STATISTICAL METHODS FOR TRANSPORT AND LOGISTIC PROCESSES

This module introduces students to transportation science, which involves analysing empirical data and applying statistical methods in real-world situations. Students learn to analyse data by deploying the suite of analytical tools and software to identify patterns, gaps, and opportunities to make scientifically founded business decisions. Through this module, they would be able to gain a deep level of understanding of probability and statistical concepts.

SOFT SKILLS

This module aims to enhance students' communication and writing skills to enable them to communicate with confidence that is understandable and engaging for a wide variety of target audiences. Students will be equipped with various writing techniques for thesis, technical and scientific papers, motivation letters and technical presentations and acquaint themselves with various business communication styles. Lastly, the module will also cover the fundamentals of the German language to provide them with an insight into German culture.

Technical Elective Modules

GREEN SUPPLY CHAIN AND RISK MANAGEMENT

At the intersection between sustainability and productivity, organisations find their competitive edge as they navigate the new revolutionary wave of business in this 21st century. This module aims to provide students a rigorous insight into green supply chains, their drivers and objectives emphasising on innovative methodologies and techniques to reduce its carbon footprint while increasing the company's short- and long-term profits. Students will also gain an in-depth understanding of the threats and growing vulnerability of global and local supply chains and strategies for mitigating and avoiding these risks.

DESIGN AND APPLICATION OF MATERIAL HANDLING SYSTEMS

This module provides an incisive portrait of the issues that happen throughout the various stages of the supply chain. From the movement, storage, handling, and control to the protection of materials, goods, and products throughout the manufacturing, distribution, consumption and disposal process, students will closely study every stage of evaluating and selecting systems, mechanical equipment, systems and related controls. In addition, the module will also cover the principles of material handling systems and gain appreciation of leveraging internet of things technologies and ambient intelligence to optimise processes.

AIRPORT AND HARBOUR DESIGN

This module gives an in-depth insight into the necessary components of airports and harbours and the planning processes for developing these sites. Students will enjoy the intellectual stimulation as the module reviews the various methods for operating airports and harbours through the lens of multiple aspects of the pre-planning process, such as environmental impacts leading to the ultimate choice of the location. Students will also learn about the essential components of airports, including the fundamental design concepts and operation and maintenance procedures necessary to manage key infrastructures successfully.

TRANSPORT AND URBAN PLANNING

This module offers the foundational knowledge of transport, mobility, and urban planning, in which students advance their understanding of the reasons for traffic, spatial and temporal traffic distribution, the relationship between infrastructure planning and design, the assignment of functions in cities and conurbations, and dependencies between supply and demand. Students will also learn to apply travel demand modelling using the 4-step algorithm to estimate travel demand.

Non- Technical Elective Modules

BUSINESS ADMINISTRATION

This module provides students with a solid business foundation for the theory and practice of managing different forms of enterprises, focusing on the various financing instruments, capital budgeting methods, corporate valuation procedures, methods and requirements of internal and external accounting, and human resource management and theories. Through this module, students can create a business plan and harness the suite of financing instruments to determine the profitability of investments and the value of firms.

INNOVATION AND TECHNOLOGY MANAGEMENT

This module provides students with the foundational knowledge of developing technologies and innovation by combining business theory with practical guidance. Through engaging in discussions on the dynamics of technological development through innovation and related management issues and practices, students will be able to proficiently navigate the various dynamics in technology- or innovation-based business environments. Students will also be able to demonstrate the principles of the primary four forces of innovation and identify finance's critical role in innovation to lead to job creation and economic growth.

PROJECT MANAGEMENT PRINCIPLES

This module introduces Project Management principles, which address the critical aspects of the project management processes and frameworks for successful projects. The skills and understanding of project management principles are key for the project manager to lead, plan, and implement projects to help their organisations succeed by achieving the common objectives within the designated scope, cost, and timeline. The module introduces tools, techniques, and frameworks to engage effective stakeholders' communication, monitor the project life cycle, and consistently develop the project with its deliverables. The student will learn how to initiate, manage, monitor, and close the project in this course. This module will also include a basic understanding of predictive and adaptive approaches commonly used in various projects and industries.

Internship & Master's Thesis

Internship

The internship programme is one of the hallmarks of all TUM Asia's master's programmes designed to provide structured and supervised work experiences, bridging theoretical knowledge with practical application. Beyond academic pursuits, the internship serves as an excellent platform for soft-skill development in a real-world setting, aiding students in attaining the required management and scientific proficiencies to realise their career aspirations.

Students complete a three-month internship with the industry or an academic institution of choice related to his or her field of study at TUM Asia.

Students are empowered and given the freedom to pursue internship in their desired fields anywhere in the world and explore the possible career pathways developed from their field of study based on their career goals and aspirations. Students who have secured a scholarship with their sponsoring company will undergo their internship in the company, which can be conducted in any branch of the company worldwide).

Master's Thesis

The six-month master's thesis is a culmination of graduate work and an opportunity to apply the knowledge and skills that students have acquired through course work and research assistant-ships.

Through this guided learning experience, students work in collaboration with industry partners or other researchers on a project of mutual interest and gain the opportunity to publish manuscripts resulting from the thesis.

The master's thesis is fully practical-based. Theoretical frameworks or conceptual models are used to guide research questions.

Scholarships

At TUM Asia, we are committed to fostering academic excellence by supporting students in their pursuit of knowledge to unlock potential, and empowering them to make enduring contributions for the future.

We offer a variety of scholarships and grants designed to recognise students who have demonstrated exceptional achievements and aptitude, ensuring talented individuals the opportunity to pursue their aspirations regardless of their financial situation.

Academic Distinction Scholarship	Awarded to high-calibre candidates enrolled in any of TUM Asia's master's programmes who have demonstrated outstanding academic achievements
ASEAN Scholarship	Awarded to exemplary candidates from ASEAN countries enrolled in any of TUM Asia's master's programmes who have exhibited outstanding leadership qualities, good character and exceptional academic performance
Women in STEM Scholarship	Awarded to exceptional female candidates enrolled in any of TUM Asia's master's programmes who have demonstrated strong leadership qualities and potential in personal endeavours
TUM Asia-DAAD MSc Scholarship	Awarded to students from ASEAN countries and Timor-Leste who are enrolled in selected MSc programmes, the scholarship is free of bonds and can be used to cover up to 100 per cent of the tuition fees.
TUM Asia-DAAD Scholarship	Funded by German Academic Exchange Service and awarded on a per-semester basis to TUM Asia's students who have achieved academic excellence and demonstrated strong aptitude

Disclaimer: All scholarship applications that have fulfilled the respective eligibility criteria are subject to evaluation by the Scholarship Committee. Terms and conditions apply.

Career Prospects

Among the many extraordinary aspects of globalisation is the fluidity with which goods and materials move through their supply chains without glitches—a feat that is getting harder to achieve.

With customer demands changing in light of greater customer sophistication, higher sensitivity to environmental consciousness, and a dizzying array of technological innovations to enhance productivity, priorities of supply chains across different sectors are being redefined. At the same time, global supply chains are hard hit by network defragmentation and increasing global dynamics driven by geopolitical changes. At the intersection of a new revolution brought about by a slew of disruptive technologies, supply chain professionals have a lot to juggle – not only to survive, but also to thrive.

Anchored in scientific rigour and industry insights, the MSc in Logistics, Engineering and Management programme draws connections between traditional disciplines of logistics and multiple interrelated disciplines of environmental science, sociology, and economics that equip students with the foresight and business acumen to orchestrate strategies that are highly sensitive to the currents of the landscape the supply chain is operating in.

Whether is it operating the high-stakes logistics in healthcare industry or managing fast-moving consumer goods logistics in the consumer industry, graduates are not only knowledgeable of the unique characteristics of each industry, they are well equipped to command appropriate mathematical modelling approaches and computer-based solutions to integrate the transport, storage and handling of goods and products throughout the process of manufacturing, distribution, consumption and disposal.


Inventory Analyst
Process Engineer
Managing Director Logistics
Supply Chain Manager
Warehouse Design and Management Planner
Supply Chain Solutions Architect
Logistics and Distribution Engineer
Supply Chain Analyst
Procurement Specialist

Industry Outlook

USD54.49 billion

Projected growth of global supply chain management market size at a compound annual growth rate (CAGR) of 11.10% by 2028 [1]

USD2.18 billion

Forecasted growth of Third Party Logistics (3PL and 4PL) market experiencing a CAGR of 9.25% during the forecast period. [2]

Asia: Global Hub of Logistics

Asia will contribute about 50% of world's trade growth by 2030 [3]

1st

The Port of Singapore is the world's busiest trans-shipment port, handling 37mil TEUs of containers [4]

1. GII Research
2. Fortune Business Insights
3. TMcKinsey & Company
4. Maritime Port Authority

1st

Globally according to the World Bank's Logistics Performance Index 2023[6]

1st

Globally in efficiency of customs clearance, out of 139 countries.[6]

5th

Changi Airport ranked 5th busiest airports in the world by airline seat capacity. [5]

50 million

Twenty-foot equivalent units (TUEs) Tuas Port's annual handling capacity expected to increase by 65mil TEUs and will be the largest fully automated container terminal in the world by 2040s[6]

4.5mil

Expected increase of Changi Airport's annual handling capacity of cargo by 2050s from 3million.[6]

5. The Straits Times
6. Economic Development Board

Singapore

The Gateway to Global Success

A RICH PORTFOLIO OF KEY ENABLING INDUSTRIES

Singapore remains one of Asia's economic powerhouses, boasting a diversified portfolio of thriving industries from aerospace, energy and chemicals to logistics and supply chains.

>130 Aerospace Players

Home to one of Asia's largest and most diverse aerospace ecosystems with over 130 players, the country also plays host to 30 aerospace firms, such as Inmarsat.

Ranked Asia's Top Logistics Hub

Singapore offers world-class connectivity to the region and is consistently ranked Asia's top logistics hub by the World Bank.

World's Leading Energy and Chemical Hubs

Singapore is also one of the world's leading energy and chemical hubs, with over 100 global chemical firms operating here.

A Diverse Community of Semiconductor Firms

From foundries to manufacturing plants, small and mid-sized firms to global giants, Singapore brings together a diverse community of semiconductor firms. With an output of US$64.8billion the electronics sector accounts for 31.6% of Singapore's total manufacturing output.

Leading Hub for Agri-Food Technology and Innovation

As Singapore moves towards its national "30-by-30" goal to produce 30 per cent of its nutritional needs locally by 2030, Singapore's strong governmental support to establish an ecosystem of food technology and innovation has propelled the country as an ideal location to connect with like-minded food innovation partners, design food products to cater to Asian palates, safeguard intellectual property, scale technology-intensive infrastructure and a launchpad for tech start-ups in the alternative proteins arena.

DID YOU KNOW?

Innovators can fast track their entrepreneurial journey and professional connections by plugging into Enterprise SG's Startup SG Network, a platform dedicated to local tech players to connect to a global community of more than 3,000 startups, 500 investors, 200 incubators and accelerators.

TUM ASIA

Launchpad to Global Opportunities

TAKING THE FIRST STEP TO GLOBAL SUCCESS

World's Top 30 University

Consistently ranked world's top 50 university in global rankings such as Quacquarelli Symonds (QS), and Times Higher Education (THE), TUM is also ranked as #1 university in Germany and the EU, with 18 Nobel Laureates under its belt.

ONLY OVERSEAS CAMPUS OF Technical University of Munich (TUM)

Nestled in the economic epicentre of Asia, TUM Asia is the only overseas campus of TUM where students get to immerse and develop an appreciation of a decades-long legacy of German education, while gaining the experience of living in a cosmopolitan city not too far from home.

A CONFLUENCE OF East and West

Taught by professors and industry veterans from Germany and Singapore, our programmes are designed to equip students with deep academic knowledge connected to real-world contexts in Asia and Germany.

Global Network

Widely connected with industry partners in Asia and Germany, students are able to tap into TUM and TUM Asia's industry network to find their ideal launchpad to greater and wider opportunities.

Small Student-Teacher Ratio

At TUM Asia, classes are intentionally designed in small clusters of less than 40 students to enable students to gain the full and dedication attention of our professors while thrive in a lively in-depth discussion with their peers.

Block Learning

Condensed in teaching blocks, students learn one specialised topic, enabling students to immerse and deepen their understanding of the subject.

About TUM

#1 University in Germany[1]

#4 University in Europe[2]

#28 in the World[1]

#12 in Global Employability Survey[4]

#1 in Germany for 5 academic subjects[3]

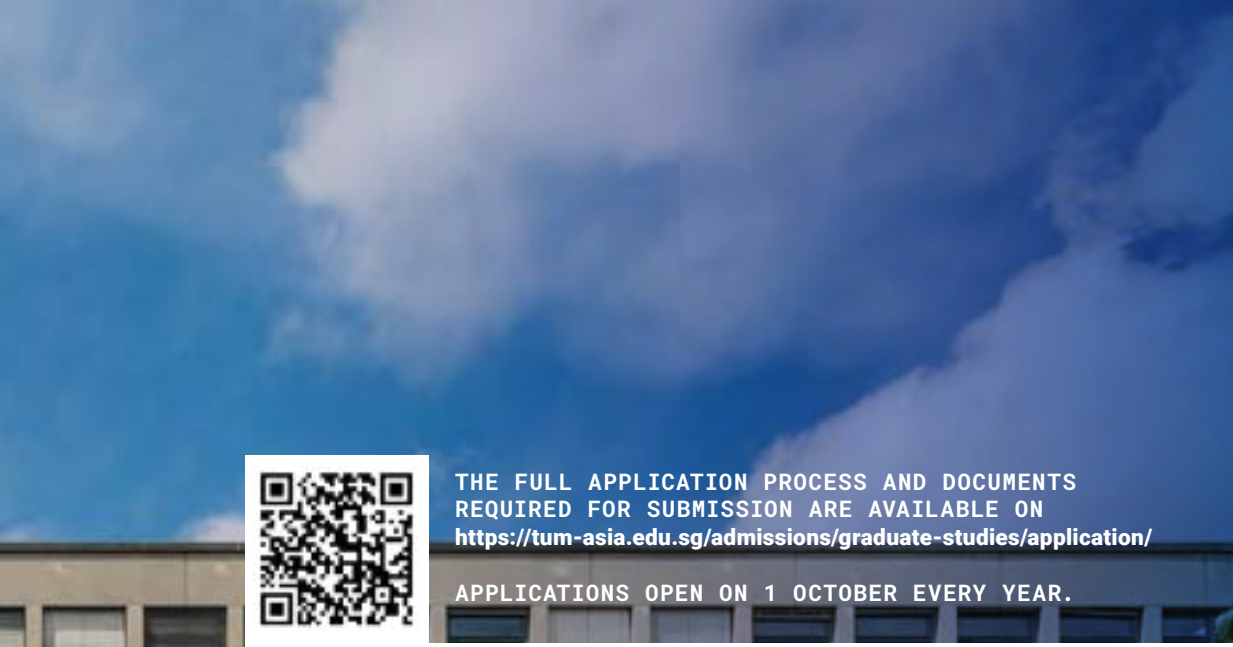
[1] QS World University Rankings 2025
[2] Academic Ranking of World Universities (ARWU) 2022
[3] Times Higher Education (THE) World University Ranking 2023
[4] The Global University Employability Ranking 2022 (Times Higher Education)

Programme Fees

PROGRAMME FEES

Processing Fee* Per application	**Before GST** SGD100	**After GST** SGD109
Tuition Fee* Logistics Engineering and Mangament	**Before GST** SGD33,000	**After GST** SGD35,970

*For more information, please visit:
https://tum-asia.edu.sg/graduate-studies/



THE FULL APPLICATION PROCESS AND DOCUMENTS REQUIRED FOR SUBMISSION ARE AVAILABLE ON **https://tum-asia.edu.sg/admissions/graduate-studies/application/**

APPLICATIONS OPEN ON 1 OCTOBER EVERY YEAR.

ADMISSION CRITERIA

- Bachelor's degree in Logistics, Supply Chain Management, Business Administration, Civil Engineering, Transportation Engineering, Electrical Engineering, Geodetics, Mechanical Engineering, Geography, Computer Science, Communications Engineering, Economics, Mathematics, Physical Sciences, Architecture, Environmental Engineering, Tourisms or a closely related discipline.
- Bachelor's degree certificate or enrolment letter* (if you have not completed your bachelor's degree)
- Academic transcripts or mark sheets, including the credits/grading system of your university
- State of purpose indicating the reason(s) you are interest in this programme
- Curriculum Vitae / Résumé
- Test of English as a Foreign Language (TOEFL) test score (≥ 88 for Internet-based test, DI Code: 7368) or
  International English Language Testing System (IELTS) test score (≥ 6.5 overall) taken no more than two years ago from date of submission
- Akademische Prüfstelle (APS) certificate for applicants who hold a degree from China, India and Vietnam

TUM Asia

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