MASTER OF SCIENCE IN

Rail and Urban Transport

TUM Asia

Technische Universität München

Revolutionalising Global Transport System

The successful management of rail and urban transport in cities today requires innovative and sustainable transport strategies and solutions.

To meet the evolving demands, the Master of Science in Rail and Urban Transport seeks to deepen students' engineering skill set with multidimensional insights and know-how to design progressive solutions in managing various transport and railway systems effectively and efficiently.

Featuring two specialised tracks in Rail and Transport, the programme offers students two interrelated yet distinct personalised roadmaps that equip them with advanced engineering knowledge through the lens of multiple disciplines to address the transport needs for modern societies.

Specialisation: Rail

Designed for engineers pursuing a specialised career in rail engineering, the programme is the only postgraduate course offered in Singapore to go in depth into the engineering specifics of rail transport and planning.

Rail Track Engineering

Students will deepen their understanding of the rail track engineering required for the track design, construction, maintenance and renewal of tracks such as mass-rapid transit, light-rapid transit and high-speed rails

Integrated Multi-Modal Transport Planning

Students will develop the competencies to analyse capabilities of different transit modes and integrate them into one multi-modal public transport system.

Train Control and Operation

Students will advance their knowledge in train control and signalling, rail safety, rolling stock, and power systems engineering to develop cutting-edge train operating systems.

Specialisation: Transport

Offering an in-depth study on the planning, design and operation of modern passenger transport systems, the programme includes specialised topics such as telematics, modelling, and simulation to develop sustainable mobility solutions for urban cities.

Transport Planning

The programme deep dives into the principles of forecasting the future transport demand for all transport modes, concepts seamlessly integrated transport system, transport policies like transport demand management and car lite cites.

Transport Management

The programme combines economic theories and engineering concepts to examine operating methods and maintenance procedures of key transport infrastructure such as road infrastructure, airports and harbours.

Transport Infrastructure

The programme addresses highway and urban road design, both in pavement structure and geometric design. Students will gain deeper insights into the iterative design process of safe, highly efficient and sustainable road infrastructure.

Learning Outcomes

Develop necessary competencies to address the evolving challenges and demands in road- and rail-based passenger and freight transport for sustainable mobility

Demonstrate expert knowledge of the complex intricacies of today's transport systems, and interdependencies with the economy and city development

Establish strategic leadership competencies to assess and integrate the diverse range of systems underpinning multiple modes of transport

Demonstrate capability in integrating different analytical methodologies and risk measures into transport planning and design to develop sustainable transport systems

Develop analytical thinking and problem-solving skills to examine critically and evaluate factors influencing the sustainable development and management of transport systems and traffic

Illustrate proficiency in the sustainable planning, design and operation of transport systems, by leveraging suite of analytical principles and methodologies learnt

Develop high level of critical thinking and creative problem-solving skills capable of applying transport-related business management and evaluation methods to various transport scenarios
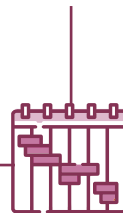
Develop profound insights of demand management, transport planning, infrastructure design, and transport management to design integrated, intermodal transport solutions

Programme Structure

Conferred by the Technical University of Munich (TUM), the Master of Science in Rail and Urban Transport offers two specialisations (Rail and Transport), both of which are designed to equip students to meet the evolving railway and transport demands for the future.

SEMESTER 1 & 2

Core Modules
- Public Transport Planning
- Transportation Modelling and Simulation Tools
- Rail Transport and Rail Planning
- Traffic Impacts, Evaluation of Transport and Logistic Processes
- Decision Support for Transport and Logistic Processes
- Statistical Methods for Transport and Logistic Processes
- Soft Skills

Non-Technical Elective Modules (Choose 1)
- Business Administration
- Innovation and Technology Management
- Project Management Principles

RAIL — CHOOSE YOUR SPECIALISATION — TRANSPORT

RAIL

Core Modules
- Rolling Stock
- Trackworks
- Train Control and Signalling Systems
- Ballastless Track Systems

Elective Modules (Choose 3)
- Rail Traffic Planning and Optimization
- Modelling of Rail Infrastructure Using CAD-FEM-MBS
- Tunnel Works and Geotechniques
- Introduction to Power Systems
- Transport and Urban Planning
- Planning of Intralogistics Systems
- Introduction to Business Logistics
- Introduction to Supply Chain Management

TRANSPORT

Core Modules
- Highway Design
- Transport and Urban Planning
- Basics of Traffic Flow and Traffic Control
- Traffic Operation and Control (ITS)

Elective Modules (Choose 3)
- Urban Road Design
- Airport and Harbour Design
- Rail Traffic Planning and Optimization
- Planning of Intralogistics Systems
- Introduction to Business Logistics
- Introduction to Supply Chain Management

SEMESTER 3 & 4

- Internship
- Master's Thesis

Programme Modules

Awarded by TUM, the MSc in Rail and Urban Transport is a two-year full-time research and application-focused programme (120 credits) comprising 15 modules delivered across four semesters.

Technical Modules

PUBLIC TRANSPORT PLANNING

This module equips students with the foundational knowledge in public transport planning and organising of public transport networks, beginning with an in-depth discussion about the advantages and disadvantages as well as the functional characteristics of transit modes and their capacity. The geometry and types of transit lines and transit networks will be closely examined during this module. In addition, students will also be acquainted with public transport schedules, learn how to plan an integrated public transport system with a seamless trip / travel experience of the passengers, how to accelerate bus operation, and improve the efficiency of the public transport operatio

TRANSPORTATION MODELLING AND SIMULATION TOOLS

This module deepens students' skills and knowledge in using macro- and micro-simulation to assess traffic engineering and transport planning measures. The theoretical background of the methods implemented in the tools will be reinforced through extensive practical exercises using state-of-the-art software, followed by systematic analysis and discussions on how real-world simulation projects are structured. Students will learn to demonstrate their capability to set up a realistic simulation by gathering real-life data within the Singapore road network.

RAIL TRANSPORT AND RAIL PLANNING

This module emphasises the foundational requirements and procedures for rail infrastructure planning on the premise of running behaviour and the performance of rail vehicles. Through discussions and in-person lessons, students will examine closer into the specific wheel-rail interface, the effective forces guiding the wheel sets (equivalent conicity), the determination and evaluation of track quality, the requirements for designing track alignment and layout, the tools to determine cant and cant deficiency, the procedures to design transition elements, the tilting train technology, the operational demands and respective track arrangements. Through this lesson, students will be able to confidently plan and design rails for passenger comfort and safety.

Image: TUM Asia

Technical Modules

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.

DECISION SUPPORT FOR TRANSPORT AND LOGISTIC PROCESSES

This module equips students with the latest mathematical modelling approaches and computer-based support solutions 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.

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 concise data by deploying the suite of analytical tools and software to identify patterns, gaps and opportunities to make scientifically founded business decisions.

Technical Modules

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 German language to provide them with an insight into German culture.

ROLLING STOCK

This module advances students' knowledge of rolling stock, focusing on the various rail concepts, such as high-speed trains and their interior designs, freight trains and freight wagons, and Mass Rapid Transit. The course pays particular attention to the wheel-rail interaction, running behaviour in curves and straight tracks, propulsion concepts, running gear and vehicle construction, body shells, bogie design, safety issues and environmental aspects such as energy efficiency and greenhouse gas emission in rail transportation. Existing and emerging applications of various engineering concepts through case studies will also be discussed in closer detail.

Image: TUM Asia

Technical Modules

TRACKWORKS

This module advances students' knowledge of trackworks, emphasising their understanding of forces acting between vehicle and track, the load distribution within the track superstructure into the substructure (Earthworks or civil structure), environmental impacts on the track performances, as well as the requirements for the design and construction of rail infrastructure. This module will pay particular attention to track design, the construction, maintenance and renewal of tracks for a variety of rail infrastructures (conventional and high-speed). In addition, students will also engage in intensive discussions on the conceptual design and structural performance of both traditional and ballastless track systems in learning about the logics and rationales behind the concepts.

TRAIN CONTROL AND SIGNALLING SYSTEMS

This module enables students to form a solid foundation in train control and signalling systems, in which the benefits and challenges of techniques used will also be closely analysed in lessons. The module will also deep dive into turnout, signals, track-based equipment, facilities, electronic interlocking and train control systems. Students will gain greater insights as the risk analysis and assessment of electronic systems and management of train schedules and transport risk are discussed in closer detail in this module.

BALLASTLESS TRACK SYSTEMS

One of the ground-breaking innovations in the railway infrastructure space, ballastless tracks are increasingly adopted globally due to their superior ride comfort, safety and low levels of care and maintenance. In this module, students learn in depth the requirements and procedures for ballastless track system design for high-speed and conventional mainline rail infrastructure. This specialised course also deep dives into the special features of Metro and light rail systems, train-track interactions, alignment and track layout for urban rail systems, the sources, propagation and effects on surrounding buildings and measures to counteract noise and vibration. Through this lesson, students will learn to design a variety of state-of-the-art tracks, such as special floating slab tracks, green tracks, tram tracks and embedded track systems, and assess their environmental impacts.

HIGHWAY DESIGN

The module covers comprehensive insight into highway planning design of safe, highly efficient and sustainable road infrastructure. It covers knowledge of road transport networks, the driver-vehicle-infrastructure interactions which served as guiding principles for road geometric design and pavement design, structural and functional performance, Nature-Based Solutions (NBS) transport infrastructure, transport infrastructure for electromobility, and Pavement Management Systems. The students will study and apply road planning strategies and tools by designing the road alignment for a new project through a case study.

Technical Modules

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 planning and design of the infrastructure and the assignment of functions in cities and conurbation, dependencies between supply and demand. Students will also learn to apply travel demand modelling using the 4-step algorithm to estimate travel demand.

BASICS OF TRAFFIC FLOW AND TRAFFIC CONTROL

This module provides students with a comprehensive insight into traffic flow, urban traffic management and signal control. Students will first be introduced to the foundations of traffic flow before diving into the numerous modelling tools, such as macroscopic and microscopic modelling of traffic flow. In addition, students will also learn how to manage and control urban traffic, evaluate the quality of traffic flow, calculate the number road lanes necessary for a specific traffic volume, design traffic signal systems, and using toll systems.

Technical Modules

TRAFFIC OPERATION AND CONTROL (ITS)

This module enhances students' understanding of the general approach to traffic control and Intelligent Transportation Systems (ITS) in the urban and motorway context. It offers a critical understanding of the principles of different systems and their technical approaches while placing emphasis on the analysis of ITS applications in urban, extra-urban and integrated systems. The module will also deep dive into the objective, measures, methods, and algorithms of implementing ITS, building on students' knowledge gained in the modules "Basics of Traffic Flow and Traffic Control and "Transportation Modelling and Simulation Tools".

RAIL TRAFFIC PLANNING AND OPTIMIZATION

In this module students learn processes and techniques in rail traffic planning and management. The module conveys modelling principles and key techniques for railway timetabling, capacity planning, delay management and rescheduling. Students will develop the problem-solving skills required to competently perform planning tasks in rail transportation.

MODELLING OF RAIL INFRASTRUCTURE USING CAD-FEM-MBS

This module introduces students to some of the most important computational tools and methods of planning infrastructure. Using Computer Aided Design (CAD) software, students will be able to apply these tools, requirements and rules set for railway planning proficiently on a student's project. Students will also learn about Finite Element Method (FEM) for the modelling and analysis of track structures, subsystems and components used for the design and evaluation of performance. Different approaches to creating Geometry models of these elements will be explored, particularly for rail/sleepers using ANSYS. Students will also learn about the basics of importing geometry files for FE analysis using ANSYS Workbench, applying simple analysis meshing methods, and understanding the compatibility of data transfer across different platforms in depth. The module will also use Multi-Body Simulation to simulate and analyse dynamic effects activated by vehicles running along tracks equipped with different track geometry and quality.

PLANNING OF INTRALOGISTICS SYSTEMS

This module provides students with a solid foundation of some of the key methods and procedures in the field of 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 gain proficiency in applying 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.

Technical Modules

TUNNEL WORKS AND GEOTECHNIQUES

In this module, students gain a comprehensive overview of tunnel works and geotechniques, covering the key aspects of the investigations conducted prior to the start of the project. Students will learn about the fundamentals of soil investigation, the basics of foundation, and earth construction in road and rail infrastructure. The course will also dive into the tunnelling methods and the techniques covering the various calculating methods and the prediction of settlements by tunnelling in loose soils.

INTRODUCTION TO POWER SYSTEMS

This module enables students to form a solid foundation in power systems, covering the key concepts and structures of power systems, such as generation, transportation and distribution, electricity consumption, and common power plant types, including new renewable technologies. Students will also enhance their understanding of the dynamics of electricity demand, especially due to new electronic services, and appreciate the new possibilities offered by smart demand technologies to make power systems more flexible by learning more about energy economy, electricity markets and smart grids.

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.

Technical Modules

INTRODUCTION TO SUPPLY CHAIN MANAGEMENT

This module provides students with an insightful overview of the fundamental concepts, theories, and applications of supply chains, 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.

URBAN ROAD DESIGN

This module provides students with foundational knowledge and analytical skills on urban road design in megacities by beginning with a detailed evaluation and discussion of the characteristics of variousmodes of transport and their advantages and disadvantages. Students will be able to appreciate the design rationale behind every single road design as they learn to analyse the challenges and needs of transport infrastructure in urban areas of big cities and agglomerations and consider correlations such as land use, capacity of passenger transport and environmental issues. Through this module, students will be able to proficiently apply the knowledge they have learned in planning, designing, andorganising urban streets as spaces for living and develop solutions to organise transport efficiently for all modes and mobility needs.

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 important components of airports, including the fundamental design concepts and operation and maintenance procedures necessary to successfully manage key infrastructures.

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 will be able to 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 foundational knowledge in 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 the critical role that finance plays in innovation to lead to job creation and economic growth.

PROJECT MANAGEMENT PRINCIPLES

This module introduces the principles of Project Management, which addresses the key aspects of the project management processes and frameworks for successful projects. The skills and understanding of principles of project management is a key for the project manager to lead, plan, and implement projects to help their organisations succeed by achieving the common objectives within 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. In this course, the student will learn how to initiate, manage, monitor, and then close the project. This module will also include a basic understanding of predictive and adaptive approaches commonly used in various projects and various 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

Graduates specialising in transport will be trained to put the stakeholders at the heart of the planning process and deploy the various analytical approaches and methodological tools to develop innovative mobility solutions for the new transport era.

Transport planning is becoming increasingly complex. With autonomous vehicles, electric vehicles, machine learning, and big data coming into the mix, the transport industry is on the cusp of a new revolution, facing an unprecedented combination of new and old technologies as new priorities emerge.

At the crossroads between traditional and modern-day vehicles, transport planners play an even more critical role in marrying the slew of divergent needs to develop a sustainable transport system.

Amid rising calls to reform the transport sector, rail transportation remains the gold standard for carbon efficiency for many emerging and burgeoning cities to avoid further traffic gridlocks and pollution.

Graduates specialising in railway will be highly needed globally for the deep level of knowledge in rail engineering to construct, design, renew and maintain a range of urban rail tracks and infrastructure. They will be able to apply analytical thinking and problem-solving skills in myriad situations in areas of planning and installation of rail infrastructure, taking environmental considerations into account to achieve safe, efficient, and sustainable transportation.

Rail Project Manager

Rail Consultant

Rail Operations

Safety and Maintenance Rail engineer

Rail Design Manager

Transportation Planner

Transportation Analyst

Researcher (Sustainable Construction Materials)

Transportation Operations Manager

Road Project Engineer/ Manager

Infrastructure Planner

Highway/ Road Engineer

Traffic Designer and Planner

Industry Outlook

for Transport

7 billion — Projected number of people - 68% - living in urban cities by 2050[1]

1.36 billion — of Urban residents lack efficient access to urban public transit[2]

25% — of total CO_2 emissions come from transport, representing about 16% of total greenhouse gas emissions[3]

6 OUT OF TOP 20 — cities worldwide with the worst traffic are in Asia[4]

1. Our World in Data
2. United Nations
3. The World Bank
4. tomtom Traffic Index

US$136.38 billion

Projected market size of road freight transport by 2028 at a compound annual growth rate of 7.1%[5]

14.5%

Expected compound annual growth rate (CAGR) of global intelligent transportation systems by 2031[6]

US$900 billion

Investments on transport infrastructure in Asia Pacific from US$557billion with an average annual growth rate of over 11% by 2025[7]

4.5 billion

Projected number of users in the public transportation market[8]

5. The Business Research Company
6. Transparency Market Research
7. PwC
8. Statista

DID YOU KNOW?

SUSTAINABLE DEVELOPMENT GOAL: SUSTAINABLE INFRASTRUCTURE

Develop quality, reliable, sustainable infrastructure, including regional and transborder infrastructure to support economic development and human well-being, with a focus on affordable and equitable access for all is one of the Sustainable Development Goals laid out by the United Nations

Industry Outlook

for Rail

US$692.2 billion

Expected market size of rail transportation by 2050[9]

200%

Percentage of growth in passenger-kilometres and tonne-kilometres by 2050 according to ITF/OECD[10]

US$1 trillion

Value of new rail projects in Asia-Pacific (excluding China), totally over 79,000 kilometres of new railway [11]

9. Moment.tech
10. Arthur D. Little
11. Dassult Systemes
12. The Straits Times
13. Reuters
14. Railway Supply Magazine

880

Projected number of new jobs in Singapore as rail network expands[12]

200,000 kilometres

Length of China's railway network to be built by 2035 according to China State Railway Group's plan[13]

USD90 billion

Capital investment in the railway sector in China which increased by 7.5% in the first 11 months of 2023[14]

DID YOU KNOW?

The rail sector is the only mode of transport that is widely electrified today.

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

	Before GST	After GST
Processing Fee[+] Per application	SGD100	SGD109
Tuition Fee[+] Rail and Urban Transport	SGD33,000	SGD35,970

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

ADMISSION CRITERIA

- Bachelor's degree in Civil/Communications/Electrical/Environmental/ Mechanical/Transportation Engineering, Geodetics, Geography, Computer Science, Economics, Mathematics, Physical Sciences, Architecture 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

www.tum-asia.edu.sg