MSc Transport, Infrastructure and Logistics

Programme Navigator AY 2024/2025

TU Delft — Delft University of Technology

Challenge the future
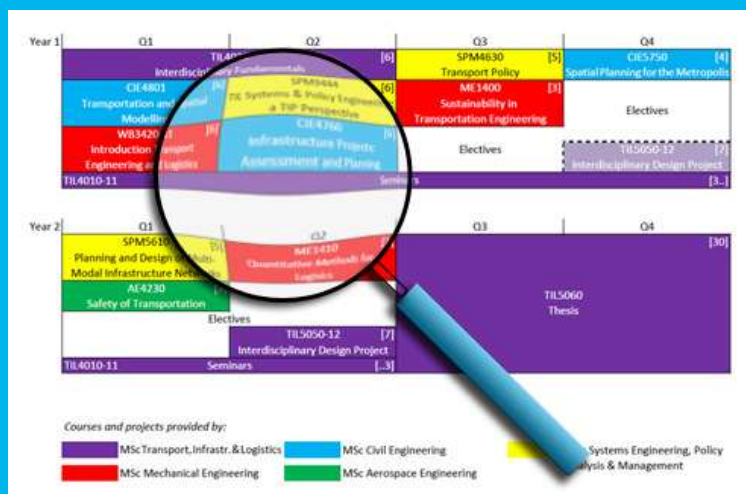
Contents

Student information

Programme	*Student Portal*	*Lecturers*
til.tudelft.nl	student.tudelft.nl	phonebook.tudelft.nl

Courses	*Digital Learning Environment*	*Schedules*
studyguide.tudelft.nl	brightspace.tudelft.nl	mytimetable.tudelft.nl

Director of Studies	*Programme Coordinator*	*Project Coordinator*
dr.ir. Arjan van Binsbergen	dr. Stefano Fazi	dr. Jaap Vleugel
Building 23: HG 4.07	Building 31: B3.200	Building 23: HG 4.18
A.J.vanBinsbergen@tudelft.nl	s.fazi@tudelft.nl	j.m.vleugel@tudelft.nl
+31 15 27 81067	+31 15 27 84354	+31 15 27 86487

Location information

Technische Universiteit Delft

Delft University of Technology

MSc Programme
Transport Infrastructure and Logistics

is an interfaculty programme of:

Faculty of Civil Engineering and Geosciences	Faculty of Technology, Policy and Management	Faculty of Mechanical, Maritime, and Materials Engineering
Building 23 Stevinweg 1 2628 CN Delft	Building 31 Jaffalaan 5 2628 BX Delft	Building 34 Mekelweg 2 2628 CD Delft
Department Transport and Planning	Department Engineering Systems and Services – Section Transport and Logistics	Department Maritime and Transport Technology – Section Transport Engineering and Logistics
Contact: Building 23: HG.411 +31 15 27 89129 d.c.dacostaricardo@tudelft.nl	Contact: Building 31: A3.100 +31 15 27 84354 c.nieuwenhuis@tudelft.nl	Contact: Building 34: B-3-250 +31 15 27 86529 p.bokop-vanderstap@tudelft.nl

Overview

MSc Transport, Infrastructure and Logistics 2024-2025 *(120 EC)*

Courses *(75 EC)*

1 Fundamentals *(28 EC)*

TIL4030-20	TIL Research and Design Methods
TIL6022	TIL programming
CIEQ6002	Transport Modelling and Analysis
SEN1221	Statistical Analysis of Choice Behaviour
ME44206	Quantitative Methods for Logistics
ME44312	Machine learning for Transport and Multi-Machine Systems

2 Specialisations

2.1 Specialisation TG - Transport Governance *(27 EC)*

CIEQ6212	Regions, Transport and Networks
WM1301T	Ethics of Transportation
SEN171a	Advanced Evaluation Methods for Transport Policy Decision-making
SEN1721	Travel behavior research
TPM032a	Multi Criteria Decision Analysis
AR0168	People, Movement and Public Space

2.2 Specialisation TN - Transport Networks *(28 EC)*

CIEQ6212	Regions, Transport and Networks
CIEM6301	Railway Traffic Management
CIEQ6232	Public Transport Demand and Network Planning and Operations
CIEQ6233	Railway Operations and Control
SEN1721	Travel Behaviour Research
AE4423-20	Airline Planning and Optimization

2.3 Specialisation TO - Traffic Operations *(27 EC)*

CIEQ6003	Traffic Modelling and Management
CIEQ6223	Intelligent Vehicles for Safe and Efficient Traffic: Design and Assessment
SEN9110	Simulation Master Class
ME44200	Operations and Maintenance
ME44305	System Analysis and Simulation
AE4423-20	Airline Planning and Optimization

2.4 Specialisation LS - Logistics Systems *(26 EC)*

CIEQ6213	Freight Transport Networks and Systems
SEN9720	Logistics and Supply Chain Innovations
TPM028b	Decision Making in Multimodal Transport Systems
ME44101	Dynamics and Interaction of Material and Equipment
ME44300	Multi-Machine Coordination for Logistics
ME44311	Advanced Operations Management

3 Free Electives

3.1 Free Electives T&P - Transport and Planning

CIEM6301	Railway Traffic Management
CIEM6303	Innovations & Transitions for Sustainable Transport
CIEM6305	Active Modes: Traffic and Transportation
CIEQ6003	Traffic Modelling and Management
CIEQ6211	Transport Modelling: Traffic Assignment
CIEQ6212	Regions, Transport and Networks
CIEQ6213	Freight Transport Networks and Systems
CIEQ6214	Resilient Transport Systems: Analysis and Interventions
CIEQ6222	Traffic Safety
CIEQ6223	Intelligent Vehicles for Safe and Efficient Traffic: Design and Assessment
CIEQ6224	Urban and Motorway Traffic Flow Modelling and Control
CIEQ6231	Public Transport System and Supply Planning and Operations
CIEQ6232	Public Transport Demand and Network Planning and Operations
CIEQ6233	Railway operations and control
CIEQ3112	Ports and Waterways 1
CIEQ3231	Ports and Waterways 2
CIEM6302	Advanced Data Science for traffic and transportation engineering

3.2 Free Electives T&L - Transport and Logistics

SEN115b	Law and Institutions
SEN171a	Advanced Evaluation Methods for Transport Policy Decision-making
SEN1721	Travel Behaviour Research
SEN1741	Innovations in Transport and Logistics
SEN9110	Simulation Master Class
SEN9720	Logistics and Supply Chain Innovations
SEN9725	Supply Chain Gaming
TPM004a	Transport Safety
TPM023c	Cost-Benefit Analysis: Theory and Application
TPM028b	Decision Making in Multimodal Transport Systems
TPM032a	Multi-criteria Decision Analysis
TPM040a	Logistics Systems Engineering

3.3 Electives MME - Multi-Machine Engineering

ME44101	Dynamics and Interaction of Material and Equipment
ME44106	Structural Design with FEM
ME44110	Integration Project Multi-Machine Systems
ME44115	Discrete Element Method (DEM) Simulation
ME44125	Reliability and Maintenance of Transport Equipment
ME44200	Operations and Maintenance
ME44210	Drive & Energy Systems
ME44300	Multi-Machine Coordination for Logistics
ME44305	System Analysis and Simulation
ME44311	Advanced Operations Management

3.4 Other Free Electives

3.4.1 Electives C&O - Control and Operations

AE4321-15	Air Traffic Management
AE4423-20	Airline Planning and Optimization
AE4446	Airport and Cargo Operations

3.4.2 Electives U - Urbanism

AR0168	People, Movement and Public Space
AR0228	Infrastructure and Environment Method Module
AR3CS021	Seminar Cross Domain City of the Future
AR8003TU	Legal and Governance

3.4.3 Electives TIL - Other TIL fields

CME2300	Financial Engineering
CIEM0120	Research Internship
TPM593A	Internship TPM
ME41106	Intelligent Vehicles 3mE
MT44070	Shipping Management
RO47016	Human Factors of Automated Driving
WI4062TU	Transport, Routing and Scheduling
WM1301TU	Ethics of Transportation (or WM1302TU)
AS3111	ATHENS programme (Advanced Technology Higher Education Network, Socrates)

3.5 TIL Free Elective

TIL6020	TIL Scientific Assignment

Projects and Thesis *(45 or 43 EC)*

4 Project *(10 EC)*

TIL5050-20	TIL Design Project

5 Thesis Research Proposal Preparation (to be defined by December 2024*) (5 or 3 EC)

TIL4020-20	TIL Research Project (5 EC)
TILxxxx-xx	TIL Research Proposal (3 EC)

6 Thesis *(30 EC)*

TIL5060	TIL Thesis

* It is expected that the TIL Research Proposal course will replace the current TIL4020-20 TIL Research Project. This will be formally defined by December 2024. This document will consider the TIL Research Proposal course as the only option for students of cohort 2024/2025.

Program

Category	EC
Courses	77
Fundamentals	28
Specialization + Electives	49
Design Project and Thesis	43
Projects	10
Thesis preparation	3
Thesis	30
Total	120

Courses	75

Fundamentals	28
TIL Research and Design Methods	7
TIL programming	3
Transport Modelling and Analysis	5
Statistical Analysis of Choice Behaviour	5
Machine Learning for Transport and Multi-machine systems	3
Quantitative Methods for Logistics	5

Specialisations

Transport Governance	27	Transport Networks	28	Traffic Operations	27	Logistics Systems	26
Regions, Transport and Networks	4	Regions, Transport and Networks	4	Traffic Modelling and Management	6	Freight Transport Networks and Systems	4
Ethics of Transportation	3	Railway Traffic Management	5	Intelligent Vehicles for Safe and Efficient Traffic	4	Logistics and Supply Chain Innovations	5
Adv. Evaluation Methods for Transp.Policy Decision making	5	Public Transport Demand and Network Planning and Operations	5	Simulation Master Class	5	Decision Making in Multi-modal Transport Systems	5
Multi criteria decision analysis	5	Railway Operations and Control	5	Operations and Maintenance	3	Dynamics and Interaction of Material and Equipment	4
Travel Behaviour Research	5	Travel Behaviour Research	5	System Analysis and Simulation	5	Multi-Machine Coordination for Logistics	3
People, Movement and Public Space	5	Airline Planning and Optimization	4	Airline Planning and Optimization	4	Advanced Operations and Production Management	5

Free Electives	Transport & Planning	Transport & Logistics	Multi-Machine Engineering
TIL electives	Control & Operations	Urbanism	Other electives

Projects and Thesis	43

Projects	10
TIL Design Project	10
Thesis Research Proposal Preparation	**3**
TIL Research Proposal	3
Thesis	**30**
TIL Thesis	30

Courses and projects provided by:

- ⬛ (blue) MSc Civil Engineering
- ⬛ (yellow) MSc CoSEM
- ⬛ (red) MSc Mechanical Engineering
- ⬛ (purple) MScTIL
- ⬛ (green) MSc Aerospace Engineering
- ⬛ (orange) MSc Architecture*
- ⬛ (grey) Interfaculty Program

*Courses offered by MSc Architecture require registration into the BIS system (https://bis.bk.tudelft.nl/student)

1. Fundamentals

	Course	EC
TIL4030-20	TIL Research and Design Methods	7
TIL4030-20 P1	*Integrated Design Exercise*	*4*
TIL4030-20 P2	*Written Exam*	*1*
TIL4030-20 P3	*Scientific Paper*	*2*
TIL6022	TIL Programming	3
CIEQ6002	Transport Modelling and Analysis	5
SEN1221	Statistical Analysis of Choice Behaviour	5
ME44312	Machine learning for Transport and Multi-Machine Systems	3
ME44206	Quantitative Methods for Logistics	5
	Total	*28*

Compulsory

Year 1	Q1	Q2	Q3	Q4

TIL4030-20 [7] TIL Research and Design Methods		**ME44312** [3] Machine learning for Transport and Multi-Machine Systems	
Integrated Design Exercise [4]	*Scientific Paper* [2]		
Written Exam [1]	**SEN1221** [5] Statistical Analysis of Choice Behaviour	Specialisations Electives	
ME44206 [5] Quantitative Methods for Logistics			
TIL6022 [3] TIL Programming	**CIEQ6002** [5] Transport Modelling and Analysis		

Year 2	Q1	Q2	Q3	Q4

Preparation [0] Definition and writing [3]	**TILxxxx-xx** [3] TIL Research Proposal*		[30]
Specialisations Electives		**TIL5060** TIL Thesis	
	TIL5050-20 [10] TIL Design Project		
Preparation [0] Vision & Scope [2]	*Analysis & Design* [8]		

Courses and projects provided by:

TIL	MSc Transport, Infrastructure & Logistics
CIE	MSc Civil Engineering
SEN	MSc Complex Systems Engineering & Management
ME	MSc Mechanical Engineering
AE	MSc Aerospace Engineering
AR	MSc Architecture, Urbanism & Building Sciences

* The TIL Research Proposal course is offered every quarter and covers two consecutive quarters. In the nominal offer, an introduction workshop is planned at the beginning of Q1. The student independently defines the research topic in the remainder of Q1. In Q2, a set of workshops is offered to guide the student towards the writing of a research proposal for the Master's thesis.

2. Specializations

Specialisation TG: Transport Governance *(27 EC)*
Specialisation TN: Transport Networks *(28 EC)*
Specialisation TO: Traffic Operations *(27 EC)*
Specialisation LS: Logistics Systems *(26 EC)*

Choose 1 Specialization

Transport Governance		*Transport Networks*		*Traffic Operations*		*Logistics Systems*	
Regions, Transport and Networks	4	Regions, Transport and Networks	4	Traffic Modelling and Management	6	Freight Transport Networks and Systems	4
Ethics of Transportation	3	Railway Traffic Management	5	Intelligent Vehicles for Safe and Efficient Traffic	4	Logistics and Supply Chain Innovations	5
Adv. Evaluation Methods for Transp. Policy Decision making	5	Public Transport Demand and Network Planning and Operations	5	Airline Planning and Optimization	4	Decision Making in Multi-modal Transport Systems	5
Travel Behaviour Research	5	Railway Operations and Control	5	Simulation Master Class	5	Dynamics and Interaction of Material and Equipment	4
Multi criteria decision analysis	5	Travel Behaviour Research	5	Operations and Maintenance	3	Multi-Machine Coordination for Logistics	3
People, Movement and Public Space	5	Airline Planning and Optimization	4	System Analysis and Simulation	5	Advanced Operations and Production Management	5

Courses provided by:

■ MSc Civil Engineering

■ MSc Complex Systems Engineering & Management

■ MSc Mechanical Engineering

■ MSc Aerospace Engineering

■ MSc Architecture, Urbanism & Building Sciences

■ Interfaculty education

2.1   Specialization TG: Transport Governance

	Course	EC
CIEQ6212	Regions, Transport and Networks	4
SEN1721	Travel Behaviour Research	5
SEN171a	Advanced Evaluation Methods for Transport Policy Decision-making	5
TPM032a	Multi Criteria Decision Analysis	5
WM1301TU	Ethics of Transportation*	3
AR0168	People, Movement and Public Space	5
	Total	**27**

In a chosen specialisation all courses are compulsory

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 [7] TIL Research and Design Methods — Integrated Design Exercise [4] Scientific Paper [2] Written Exam [1]		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6212 [4] Regions, Transport and Networks
Electives	SEN1221 [5] Statistical Analysis of Choice Behaviour	SEN1721 [5] Travel Behaviour Research	AR0168 [5] People, Movement and Public Space
		WM1301TU* [3] Ethics of Transportation	
ME44206 [5] Quantitative Methods for Logistics		Electives	
TIL6022 [3] TIL Programming	CIEQ6002 [5] Transport Modelling and Analysis		

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal	[30] TIL5060 TIL Thesis	
	Electives		
SEN171a [5] Advanced Evaluation Methods for Transport Policy Decision-making	TIL5050-20 [10] TIL Design Project		
TPM032a [5] Multi Criteria Decision Analysis			
Preparation [0] Vision & Scope [2]	Analysis & Design [8]		

Courses and projects provided by:

TIL	MSc Transport, Infrastructure & Logistics
CIE	MSc Civil Engineering
SEN	MSc Complex Systems Engineering & Management
ME	MSc Mechanical Engineering
IF	Interfaculty Education
AR	MSc Architecture, Urbanism & Building Sciences

* A 5EC version of this course can be selected (WM1302TU)

2.2   Specialization TN: Transport Networks

	Course	EC
CIEQ6212	Regions, Transport and Networks	4
CIEM6301	Railway Traffic Management	5
CIEQ6233	Railway Operations and Control	5
CIEQ6232	Public Transport Demand and Network Planning and Operations	5
SEN1721	Travel Behaviour Research	5
AE4423-20	Airline Planning and Optimization	4
	Total	*28*

In a chosen specialisation all courses are compulsory

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 [7] TIL Research and Design Methods *Integrated Design Exercise [4] Scientific Paper [2] Written Exam [1]*		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6212 [4] Regions, Transport and Networks
Electives	SEN1221 [5] Statistical Analysis of Choice Behaviour	SEN1721 [5] Travel Behaviour Research	CIEQ6233 [5] Railway Operations and Control
ME44206 [5] Quantitative Methods for Logistics		Electives	CIEQ6232 [5] Public Transport Demand and Network Planning and Operations
TIL6022 [3] TIL Programming	CIEQ6002 [5] Transport Modelling and Analysis		

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal	TIL5060 TIL Thesis [30]	
CIEM6301 [5] Railway Traffic Management	AE4423-20 [4] Airline Planning and Optimization		
Electives	TIL5050-20 [10] TIL Design Project		
Preparation [0] Vision & Scope [2]	*Analysis & Design [8]*		

Courses and projects provided by:

TIL	MSc Transport, Infrastructure & Logistics
CIE	MSc Civil Engineering
SEN	MSc Complex Systems Engineering & Management
ME	MSc Mechanical Engineering
AE	MSc Aerospace Engineering

2.3   Specialization TO: Traffic Operations

	Course	EC
CIEQ6003	Traffic Modelling and Management	6
CIEQ6223	Intelligent Vehicles for Safe and Efficient Traffic: Design and Assessment	4
SEN9110	Simulation Master Class*	5
ME44200	Operations and Maintenance	3
ME44305	System Analysis and Simulation	5
AE4423-20	Airline Planning and Optimization	4
	Total	**27**

In a chosen specialisation all courses are compulsory

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 [7] TIL Research and Design Methods		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6223 [4] Intelligent Vehicles for Safe & Efficient Traffic: Design and Assessment
Integrated Design Exercise [4] Scientific Paper [2] Written Exam [1]			
SEN9110* [5] Simulation Master Class	SEN1221 [5] Statistical Analysis of Choice Behaviour	ME44305 [5] System Analysis and Simulation	
		ME44200 [3] Operations and Maintenance	Electives
ME44206 [5] Quantitative Methods for Logistics			
TIL6022 [3] TIL Programming	CIEQ6002 [5] Transport Modelling and Analysis	CIEQ6003 [6] Traffic Modelling and Management	

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal	[30]	
	AE4423-20 [4] Airline Planning and Optimization	TIL5060 TIL Thesis	
Electives	TIL5050-20 [10] TIL Design Project		
Preparation [0] Vision & Scope [2]	Analysis & Design [8]		

Courses and projects provided by:

TIL	MSc Transport, Infrastructure & Logistics
CIE	MSc Civil Engineering
SEN	MSc Complex Systems Engineering & Management
ME	MSc Mechanical Engineering
AE	MSc Aerospace Engineering

* The course may be discontinued from the academic year 2025/2026. Students starting in September must take this course from year 1. A replacement will be offered in case of discontinuity.

2.4　　Specialization LS: Logistics Systems

	Course	EC
CIEQ6213	Freight Transport Networks and Systems	4
SEN9720	Logistics and Supply Chain Innovations	5
TPM028b	Decision Making in Multimodal Transport Systems	5
ME44101	Dynamics and Interaction of Material and Equipment	4
ME44300	Multi-Machine Coordination for Logistics	3
ME44311	Advanced Operations and Production Management	5
	Total	*26*

In a chosen specialisation all courses are compulsory

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 TIL Research and Design Methods [7]		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6213 [4] Freight Transport Networks and Systems
Integrated Design Exercise [4] Scientific Paper [2] Written Exam [1]	SEN1221 [5] Statistical Analysis of Choice Behaviour	ME44311 [5] Advanced Operations and Production Management	
Electives			ME44300 [3] Multi-Machine Coordination for Logistics
ME44206 [5] Quantitative Methods for Logistics		Electives	
TIL6022 [3] TIL Programming	CIEQ6002 [5] Transport Modelling and Analysis		

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal	[30]	
Electives	TPM028b [5] Decision Making in Multimodal Transport Systems	TIL5060 TIL Thesis	
ME44101 [4] Dynamics and Interaction of Material and Equipment	TIL5050-20 [10] TIL Design Project		
SEN9720 [5] Logistics and Supply Chain Innovations			
Preparation [0] Vision & Scope [2]	Analysis & Design [8]		

Courses and projects provided by:

TIL	MSc Transport, Infrastructure & Logistics
CIE	MSc Civil Engineering
SEN	MSc Complex Systems Engineering & Management
ME	MSc Mechanical Engineering
AE	MSc Aerospace Engineering

3. Free Electives

Free Electives T&P - Transport and Planning
Free Electives T&L - Transport and Logistics
Free Electives MME - Multi-Machine Engineering
Free External electives
       Free Electives C&O - Control and Operations
       Free Electives U – Urbanism
       Free Electives TIL - Other TIL fields

> Choose any free elective from the list. Choices outside the list are subject to the approval of the program coordinator on behalf of the Board of Examiners.

> Minimum number of credits required per specialization: TG (22EC), TN (21EC), TO (22EC), LS(23 EC)

Transport & Planning		Transport & Logistics		Multi-Machine Engineering			External			TIL electives	
Public Transp. Syst. and Supply Plan. and Op.ns	5	Law and Institutions	5	Dynamics and Interaction of Material and Equipment	4	*Control & Operations*	Airline Planning and Optimization	4		TIL Scientific Assignment	7
Traffic Modelling and Management	6	Adv. Eval. Methods for Transp. Dec.-mak.	5	Structural Design with FEM	4		Airport and Cargo Operations	4			
Urban and Motorway Traffic Flow Modelling and Control	5	Travel Behaviour Research	5	Integration Project Multi-Machine Systems	5		Air Traffic Management	4			
Transport Modelling: Traffic Assignment	3	Innovations in Transport and Logistics	5	Discrete Element Method (DEM) Simulation	4		People, Movement and Public Space	5			
Transitions, Sustainability & Innovation	5	Simulation Master Class	5	Reliability and Maintenance of Transport Equipment	3		Infrastructure & Environ-ment Method Module	5			
Railway Traffic Management	5	Logistics and Supply Chain Innovations	5	Operations and Maintenance	3	*Urbanism*	Seminar Cross Domain City of the Future	5			
Intelligent Vehicles for Safe & Efficient Traffic	4	Supply Chain Gaming	5	Drive and Energy Systems	3		Legal and Governance	5			
Traffic Safety	3	Transport Safety	4	Multi-Machine Coordination for Logistics	3		Financial Engineering	4			
Regions, Transport and Networks	4	Cost-Benefit Analysis: Theory and Application	4	System Analysis and Simulation	5		Research Internship	10			
Public Transp. Dem. and Network Plan. and Op.ns	5	Decision Making in Multi-modal Transport Systems	5	Advanced Operations and Production Management	5		Internship TPM	10			
Active modes: Traffic and Transport	3	Multi-criteria Decision Analysis	5				Intelligent Vehicles 3mE	5			
Freight Transport Networks and Systems	4	Logistics Systems Engineering	5				Automotive Human Factors	5			
Railway Operations and Control	5						Shipping Management	5			
Resilient Transport Systems: Analysis and Interventions	5					*Other TIL fields*	Transport, Routing and Scheduling	3			
Ports and Waterways 1	3						Ethics of Transportation	?			
Ports and Waterways 2	4						ATHENS programme	3			
Advanced Data Science for Traffic and Transp. Engineering	4										

Courses provided by: ■ MSc TIL   ■ MSc Civil Engineering   ■ MSc CoSEM   ■ MSc Mechanical Engineering
   ■ MSc Aerospace Engineering   ■ MSc Architecture   ■ Interfaculty Education

3.1 Electives T&P – Transport and Planning

	Course	EC
CIEQ6231	Public Transport System and Supply Planning and Operations	5
CIEQ6003	Traffic Modelling and Management	6
CIEQ6224	Urban and Motorway Traffic Flow Modelling and Control	5
CIEQ6211	Transport Modelling: Traffic Assignment	3
CIEQ6212	Regions, Transport and Networks	4
CIEQ6223	Intelligent Vehicles for Safe and Efficient Traffic: Design and Assessment	4
CIEQ6222	Traffic safety	3
CIEM6303	Transitions, Sustainability & Innovation	5
CIEQ6221	Active modes: traffic and transport	3
CIEQ6233	Railway operations and control	5
CIEQ6213	Freight Transport Networks and Systems	4
CIEQ6232	Public Transport Demand and Network Planning and Operations	5
CIEM6301	Railway traffic management	5
CIEQ6214	Resilient Transport Systems: Analysis and Interventions	5
CIEQ3112	Ports and Waterways 1	3
CIEQ3231	Ports and Waterways 2	4
CIEM6302	Advanced Data Science for traffic and transportation engineering	4

Choose only courses not already chosen as part of specialisation

Q1	Q2	Q3	Q4	
(TN) CIEM6301 [5] Railway Traffic Management		(TO) CIEQ6003 [6] Traffic Modelling and Management	CIEQ6231 [5] Public Transp. System & Supply Plann. & Op.ns	(LS) CIEQ6213 [4] Freight Transport Networks and Systems
CIEM6303 [5] Transitions, Sustainability & Innovations			(TN) CIEQ6233 [5] Railway Operations and Control	(TN) CIEQ6232 [5] Public Transp. Demand & Netw. Plann & Op.tions
CIEM6302 [5] Advanced Data Science for traffic and transportation engineering			(TO) CIEQ6223 [4] Intelligent Vehicles for Safe & Efficient Traffic	CIEQ6211 [3] Transport Modelling: Traffic Assignment
			CIEQ6221 [3] Active Modes: Traffic and Transport	(TG -TO) CIEQ6212 [4] Regions, Transport and Networks
			CIEQ3112 [3] Ports and Waterways 1	CIEQ6222 [3] Traffic Safety
				CIEQ6224 [5] Urban and Motorway Traff. Flow Mod. and Control
				CIEQ3231 [4] Ports and Waterways 2
				CIEQ6214 [4] Resilient Transport Systems Analysis and Interventions

Courses provided by:

CIE	MSc Civil Engineering Track Traffic and Transport Engineering

(TG)	Course is part of Specialisation TG - Transport Governance
(TN)	Course is part of Specialisation TN - Transport Networks
(TO)	Course is part of Specialisation TO - Traffic Operations
(LS)	Course is part of Specialisation LS - Logistics Systems

3.2   Electives T&L – Transport and Logistics

Course		EC
SEN115a	Law and Institutions	5
SEN171a	Advanced Evaluation Methods for Transport Policy Decision-making	5
SEN1721	Travel Behaviour Research	5
SEN1741	Innovations in Transport and Logistics	5
SEN9110	Simulation Master Class	5
SEN9720	Logistics and Supply Chain Innovations	5
SEN9725	Supply Chain Gaming	5
TPM004a	Transport Safety	4
TPM023b	Cost-Benefit Analysis: Theory and Application	4
TPM028b	Decision Making in Multimodal Transport Systems	5
TPM032a	Multi-criteria Decision Analysis	5
TPM040a	Logistics Systems Engineering	5

Choose only courses not already chosen as part of specialisation

Q1	Q2	Q3	Q4
(TG) SEN171a [5] Advanced Evaluation Methods for Transport Decision-making	SEN1741 [5] Innovations in Transport and Logistics	SEN115a [5] Law and Institutions	
(TO) SEN9110 [5] Simulation Master Class	SEN9725 [5] Supply Chain Gaming	(TG - TN) SEN1721 [5] Travel Behaviour Research	
(LS) SEN9720 [5] Logistics and Supply Chain Innovations	(LS) TPM028b [5] Decision Making in Multimodal Transport Systems		
(P) TPM004a [4] Transport Safety	TPM040a [5] Logistics Systems Engineering		
TPM023b [4] Cost-Benefit Analysis: Theory and Application			
(TG) TPM032a [5] Multi-criteria Decision Analysis			

Courses provided by:

SEN	MSc Systems Engineering, Policy Analysis and Management Track Transport & Logistics

(TG)	Course is part of Specialisation TG - Transport Governance
(TN)	Course is part of Specialisation TN - Transport Networks
(TO)	Course is part of Specialisation TO - Traffic Operations
(LS)	Course is part of Specialisation LS - Logistics Systems

3.3   Electives MME – Multi-Machine Engineering

Course	EC
ME44101	Dynamics and Interaction of Material and Equipment	4
ME44106	Structural Design with FEM	4
ME44110	Integration Project Multi-Machine Systems	5
ME44115	Discrete Element Method (DEM) Simulation	4
ME44125	Reliability and Maintenance of Transport Equipment	3
ME44200	Operations and Maintenance	3
ME44210	Drive & Energy Systems	3
ME44300	Multi-Machine Coordination for Logistics	3
ME44305	System Analysis and Simulation	5
ME44311	Advanced Operations and Production Management	5

Choose only courses not already chosen as part of specialisation

Q1	Q2	Q3	Q4
(LS) ME44101 [4] Dynamics and Interaction of Material and Equipment	ME44106 [4] Structural Design with FEM	ME44110 [5] Integration Project Multi-Machine Systems	
ME44210 [3] Drive & Energy Systems		ME44115 [4] Discrete Element Method (DEM) Simulation	(LS) ME44300 [3] Multi-Machine Coordination for Logistics
		ME44125 [3] Reliability and Maintenance of Transport Equipment	(TO) ME44200 [3] Operations and Maintenance
		(TO) ME44305 [5] System Analysis and Simulation	
		(LS) ME44311 [5] Advanced Operations and Production Management	

Courses provided by:

ME	MSc Mechanical Engineering
	Track Multi-Machine Engineering

(TG)	Course is part of Specialisation TG - Transport Governance
(TN)	Course is part of Specialisation TN - Transport Networks
(TO)	Course is part of Specialisation TO - Traffic Operations
(LS)	Course is part of Specialisation LS - Logistics Systems

3.4   External Free Electives

Free Electives C&O - Control and Operations
Free Electives U - Urbanism
Free Electives TIL - Other TIL fields

Choose only courses not already chosen as part of specialisation

Q1	Q2	Q3	Q4
CIEM0120** [10] Research Internship	CIEM0120 [10] Research Internship	CIEM0120 [10] Research Internship	CIEM0120 [10] Research Internship
TPM593A** [10] Internship TPM	TPM593A [10] Internship TPM	TPM593A [10] Internship TPM	TPM593A [10] Internship TPM
AS3111* [2] Athens Week	AS3111 [2] Athens Week	AS3111 [2] Athens Week	AS3111 [2] Athens Week
AR3CS021 [5] Seminar Cross Domain City of the Future		(TG) WM1301TU [3] Ethics of Transportation	(TG) AR0168 [5] People, Movement and Public Space
AR8003TU [5] Legal and Governance	AR0228 [5] Infrastructure and Environment Method Module	MT44070 [5] Shipping Management	AR0228 [5] Infrastructure and Environment Method Module
CME2300 [4] Financial Engineering	AE4321-15 [4] Air Traffic Management		RO47016 [5] Automotive Human Factors
WI4062TU [3] Transport, Routing and Scheduling	(TN - TO) AE4423-20 [4] Airline Planning and Optimisation		
	AE4446 [4] Airport and Cargo Operations		
	ME41106 [5] Intelligent Vehicles 3mE		

Courses provided by:

- 🟩 MSc Aerospace Engineering, Track Control & Operations
- 🟧 AR Electives
- 🟦 CEG Electives
- 🟥 3mE Electives
- ⬜ Interfaculty Education

(TG)   Course is part of Specialisation TG - Transport Governance
(TN)   Course is part of Specialisation TN - Transport Networks
(TO)   Course is part of Specialisation TO - Traffic Operations
(LS)   Course is part of Specialisation LS - Logistics Systems

* One week intensive courses at European universities - starting dates vary
** Starting dates and duration of internships can vary

3.5   TIL and Other Free Electives

Course   *EC*

TIL6020	TIL Scientific Assignment	7
	Free electives (Require approval)	

Technische
Universiteit ...
Delft

Q1	Q2	Q3	Q4
Free elective	Free elective	Free elective	Free elective
TIL6020 [7] TIL Scientific Assignment	TIL6020 [7] TIL Scientific Assignment	TIL6020 [7] TIL Scientific Assignment	TIL6020 [7] TIL Scientific Assignment

Courses provided by:

	MSc Transport, Infrastructure and Logistics

Universiteit
Leiden
Leiden

Erasmus
Universiteit ...
Rotterdam

Technische
Universiteit ...
Eindhoven

Universiteit
Twente
Enschede

Wageningen
University ...
Wageningen

Tilburg
University
Tilburg

Universiteit
van Amster...
Amsterdam

Vrije
Universiteit ...
Amsterdam

Universiteit
Utrecht
Utrecht

Rijksuniver...
Groningen
Groningen

Radboud
Universiteit
Nijmegen

Maastricht
University
Maastricht

4. Projects and Thesis

Project type	EC
Design Project*	10
Thesis preparation	3
Thesis**	30
Total	43

Projects provided by:

MSc Transport, Infrastructure and Logistics

*Students are allowed to continue and thus complete the TIL Design Project only once they have successfully completed courses amounting to a total of at least 50 credits on the first day of the fifth week of the educational period in which the project starts.

**The TIL Thesis can start any time during the academic year, but the student must meet some minimum requirements (see Teaching and Exam Regulations). The expected duration of the project from the kick-off is two quarters. More information here.

Extras

A   Honours Programme Master
B   Schakelprogramma HBO (Bridging Programme)
C   Convergentieprogramma WO (Convergence Programme)
     C.1   Convergence Programme: Specialisation TG – Transport Governance
     C.2   Convergence Programme: Specialisation TN – Transport Networks
     C.3   Convergence Programme: Specialisation TO – Traffic Operations
     C.4   Convergence Programme: Specialisation LS – Logistics Systems

A. Honours Programme Master

	Course or project	EC
	Interfaculty course 5 credits - Choose one course	
UD2010	Critical Reflection on Technology	5
UD2012	Business Leadership for Engineers	5
TPM019A	Leadership Skills for Engineers	5
TIL6020	TIL Scientific Assignment	7
	Thematically consistent set of Electives	8
	Total	*20*

Optional
20 EC on top of MSc programme

Q1	Q2	Q3	Q4
Electives	Electives	Electives	Electives
TIL6020 [7] TIL Scientific Assignment	TIL6020 [7] TIL Scientific Assignment	TIL6020 [7] TIL Scientific Assignment	TIL6020 [7] TIL Scientific Assignment
UD2010 [5] Critical Reflection on Technology	UD2010 [5] Critical Reflection on Technology	UD2012 [5] Business Leadership for Engineers	
TPM019a [5] Leadership Skills for Engineers			UD2010 [5] Critical Reflection on Technology

Courses provided by:

◼ MSc Transport, Infrastructure and Logistics

◼ Interfaculty Education TPM

B. Schakelprogramma HBO

	Vak	EC
IFEEMCS012100	Calculus for Engineering, deel 1	3
IFEEMCS012200	Calculus for Engineering, deel 2	3
IFEEMCS012300	Calculus for Engineering, deel 3	3
IFEEMCS010400	Lineaire Algebra	5
IFEEMCS010500*	Kansrekening en Statistiek	3
WI1909TH	Differentiaalvergelijkingen	3
CTB1420-17	Transport & Planning	5
TB111c	Probleemanalyse	5
	Totaal	*30*

Verplicht of te ronden vóór aanvang MSc-opleiding

Schakeljaar	Q1	Q2	Q3	Q4
	IFEEMCS012100 [3] Calculus for Engineering deel 1	IFEEMCS012200 [3] Calculus for Engineering deel 2	IFEEMCS012300 [3] Calculus for Engineering deel 3	IFEEMCS010500* [3] Kansrekening en Statistiek
	IFEEMCS010400 [5] Lineaire Algebra	WI1909TH [3] Differentiaal-vergelijkingen		CTB1420-17 [5] Transport & Planning
	TB111c [5] Probleem-analyse			

Vak afkomstig uit:

IFEEMCS	Interfacultair onderwijs EWI
CTB	BSc Civiele Techniek
TB	BSc Technische Bestuurskunde

* Available also in Q3. It is possible to do it also in Q2 following the course CTB2200.

C. Convergentieprogramma WO

	Vak	*Onderdeel*	*EC*
		Analyse	
IFEEMCS012100		Calculus for Engineering, deel 1	3
		ingangseis voor CIEQ6002 Transport Modelling	
		Lineaire Algebra	
WI1807TH1-21		Linear Algebra	3
		ingangseis voor CIEQ6002 Transport Modelling	
		Kansrekening en Statistiek (kies 1 vak)	
IFEEMCS010500		Kansrekening en Statistiek	3
CTB2200		Kansrekening en Statistiek	3
		ingangseis voor SEN1221 Statistical Analysis of Choice Behaviour	

Op te nemen als Free Elective in MSc-opleiding

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 [7] TIL Research and Design Methods *Integrated Design Exercise [4] Scientific Paper [2] Written Exam [1]*		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	Specialisations & Electives
ME44206 [5] Quantitative Methods for Logistics			
IFEEMCS012100 Analyse [3]	CIEQ6002 [5] Transport Modelling and Analysis		
WI1807TH1-21 Linear Algebra [3]	CTB2200 [3] Kansrekening & Statistiek	IFEEMCS010500 Kansrekening & Statistiek [3]	IFEEMCS010500 Kansrekening & Statistiek [3]
TIL6022 [3] TIL Programming			

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal	[30]	
Specializations & Electives	SEN1221 [5] Statistical Analysis of Choice Behaviour	TIL5060 TIL Thesis	
	TIL5050-20 [10] TIL Design Project		
Preparation [0] Vision & Scope [2]	*Analysis & Design [8]*		

Courses and projects provided by:

TIL	MSc Transport, Infrastructure & Logistics
CIE	MSc Civil Engineering
SEN	MSc Complex Systems Engineering & Management
ME	MSc Mechanical Engineering
	Mathematics options for Convergence Programme

C.1 Convergence Program – Specialization Transport Governance

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 [7] TIL Research and Design Methods		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6212 [4] Regions Transport and Networks
Integrated Design Exercise [4] *Scientific Paper [2]* *Written Exam [1]*		SEN1721 [5] Travel Behaviour Research	AR0168 [5] People, Movement and Public Space
ME44206 [5] Quantitative Methods for Logistics		WM1301TU [3] Ethics of Transportation	Electives
IFEEMCS012100 Analyse [3]	CIEQ6002 [5] Transport Modelling and Analysis		
WI1807TH1-21 Linear Algebra [3]	CTB2200 [3] Kansrekening & Statistiek		
TIL6022 [3] TIL Programming		Kansrek. & Statistiek [3]	IFEEMCS010500 Kansrek. & Statistiek [3]

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal	[30]	
Electives	SEN1221 [5] Statistical Analysis of Choice Behaviour	TIL5060 TIL Thesis	
SEN171a [5] Advanced Evaluation Methods for Transport Policy Decision-making			
TPM032b [5] Multi Criteria Decision Analysis	TIL5050-20 [10] TIL Design Project		
Preparation [0] Vision & Scope [2]	*Analysis & Design [8]*		

C.2 Convergence Program – Specialization Transport Networks

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 [7] TIL Research and Design Methods		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6212 [4] Regions, Transport and Networks
Integrated Design Exercise [4] *Scientific Paper [2]* *Written Exam [1]*		SEN1721 [5] Travel Behaviour Research	CIE6233 [5] Railway Operations and Control
ME44206 [5] Quantitative Methods for Logistics		Electives	CIEQ6232 [5] Public Transport Demand and Network Planning and Operations
IFEEMCS012100 Analyse [3]	CIEQ6002 [5] Transport Modelling and Analysis		
WI1807TH1-21 Linear Algebra [3]	AE4423-20 [4] Airline Planning and Optimization		
TIL6022 [3] TIL Programming		Kansrek. & Statistiek [3]	

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx * [3] TIL Research Proposal	[30]	
CIEM6301 [5] Railway Traffic Management	SEN1221 [5] Statistical Analysis of Choice Behaviour	TIL5060 TIL Thesis	
Electives	TIL5050-20 [10] TIL Design Project		
Preparation [0] Vision & Scope [2]	*Analysis & Design [8]*		

C.3a Convergence Program – Specialization Traffic Operations

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 [7] TIL Research and Design Methods — Integrated Design Exercise [4] Scientific Paper [2] Written Exam [1]		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6223 [4] Intelligent Vehicles for Safe & Efficient Traffic: Design and Assessment
	ME44206 [5] Quantitative Methods for Logistics	ME44305 [5] System Analysis and Simulation	
IFEEMCS012100 Analyse [3]	CIEQ6002 [5] Transport Modelling and Analysis	ME44200 - Operations and Maintenance [3]	Electives
WI1807TH1-21 Linear Algebra [3]		CIEQ6003 - Traffic Modelling and Management [6]	
SEN9110 [5] Simulation Master Class	AE4423-20 [4] Airline Planning and Optimization	Kansrek. & Statistiek [3]	IFEEMCS010500 Kansrek. & Statistiek [3]

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal		[30]
TIL6022 [3] TIL Programming	SEN1221 [5] Statistical Analysis of Choice Behaviour	TIL5060 TIL Thesis	
Electives	TIL5050-20 [10] TIL Design Project		
Preparation [0] Vision & Scope [2]	Analysis & Design [8]		

C.3b Convergence Program – Specialization Traffic Operations (another option)

Year 1

Q1	Q2	Q3	Q4
TIL4030-20 [7] TIL Research and Design Methods — Integrated Design Exercise [4] Scientific Paper [2] Written Exam [1]		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6223 [4] Intelligent Vehicles for Safe & Efficient Traffic: Design and Assessment
SEN9110 [5] Simulation Master Class	Electives	ME44305 [5] System Analysis and Simulation	
IFEEMCS012100 Analyse [3]	CIEQ6002 [5] Transport Modelling and Analysis	ME44200 - Operations and Maintenance [3]	Electives
WI1807TH1-21 Linear Algebra [3]		CIEQ6003 - Traffic Modelling and Management [6]	
TIL6022 [3] TIL Programming	AE4423-20 [4] Airline Planning and Optimization	Kansrek. & Statistiek [3]	IFEEMCS010500 Kansrek. & Statistiek [3]

Year 2

Q1	Q2	Q3	Q4
Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal		[30]
Electives	SEN1221 [5] Statistical Analysis of Choice Behaviour	TIL5060 TIL Thesis	
ME44206 [5] Quantitative Methods for Logistics			
Electives	TIL5050-20 [10] TIL Design Project		
Preparation [0] Vision & Scope [2]	Analysis & Design [8]		

* TIL programming is suggested in year 1 Q1 to carry out possible assignments with Python, especially for those students not familiar with programming.

C.4 Convergence Program – Specialization Logistics Systems

Year 1	Q1	Q2	Q3	Q4
	TIL4030-20 [7] TIL Research and Design Methods *Integrated Design Exercise [4]* *Scientific Paper [2]* *Written Exam [1]*		ME44312 [3] Machine learning for Transport and Multi-Machine Systems	CIEQ6213 [4] Freight Transport Networks and Systems
	ME44206 [5] Quantitative Methods for Logistics		ME44311 [5] Advanced Operations and Production Management	
	IFEEMCS012100 Analyse [3]	CIEQ6002 [5] Transport Modelling and Analysis		ME44300 [3] Multi-Machine Coordination for Logistics
	WI1807TH1-21 Linear Algebra [3]		Electives	
	TIL6022 [3] TIL Programming	TPM028b [5] Decision Making in Multimodal Transport Systems		
			Kansrek. & Statistiek [3]	Kansrek. & Statistiek [3]

Year 2	Q1	Q2	Q3	Q4
	Preparation [0] Definition and writing [3]	TILxxxx-xx [3] TIL Research Proposal	[30]	
	Electives	SEN1221 [5] Statistical Analysis of Choice Behavior	TIL5060 TIL Thesis	
	ME44101 [4] Dynamics and Interaction of Material and Equipment	TIL5050-20 [10] TIL Design Project		
	SEN9720 [5] Logistics and Supply Chain Innovations			
	Preparation [0] Vision & Scope [2]	*Analysis & Design [8]*		