DTU Transport

MSc Degree Program in Transport and Logistics

Study Guide

Date: 5th of August 2016

How to Read the Study Guide

This booklet is a guide to help you plan your study within the DTU MSc Program in Transport and Logistics. Furthermore it may assist you in deciding which study line to follow. Note that this guide is only a supplement to the official rules of the study that may be found at: www.sdb.dtu.dk. Moreover, you can consult the website for the program at: http://www.dtu.dk/english/Education/msc/Programmes/transport_and_logistics. - if you should have any questions please do not hesitate to contact the study leader or study line coordinators for further advice.

Structure and contents
The MSc program in Transport and Logistics follows the general rules for graduate programs at the Technical University of Denmark (DTU) – where the structure in brief can be described through the so-called *Flag Model*:

MSc program – 120 ECTS points	
General Degree Competences (min. 30 ECTS points)	Technological Specialisation (min. 30 ECTS points)
Elective Courses (max. 30 ECTS points)	Thesis (30 / 32.5 / 35 ECTS points)

The Flag Model is comprised of four boxes: General Degree Competences (GR), Technological Specialisation (TS), Elective courses (EC), and a final thesis.

General competences courses [GR] (minimum 30 ECTS points)
As an engineer, whether you work as a professional or within research and development, you need a number of general competences in order to comply with the requirements of a modern engineering job. This group of courses teaches you:

- General engineering competences - You learn how to combine technology application and development with finances, management and organisation and most important you learn how to use your qualifications and technological know-how in a professional and social context.
- Synthesis competences - You learn how to define and provide solutions to an open problem. You may be part of a cross-disciplinary team and you are trained in communication and collaboration.
- Normative competences - Here you are taught a set of essential disciplines that are common to all technical aspects of engineering within a specific field.

Please ensure that you within the 2 years of graduate studies complete GR courses equivalent to a minimum of 30 ECTS points. Note that you are allowed to obtain more than the required 30 ECTS points in the GR category.

Technological specialisation courses [TS] (minimum 30 ECTS points)
This group of courses gives you the in-depth academic and technological knowledge necessary to obtain state-of-the-art competences within a specific field of engineering. A student must follow at least 30 ECTS points, however, as for the GR you are allowed to obtain more than 30 ECTS points. In addition, this booklet details four study lines. Each study line requires specific TS courses. It is not required that you follow a specific study line. But please note that if you want to have a study line profile on your final diploma, you NEED to follow the recommended courses suggested in this the booklet for that study line.

Elective courses [E] (maximum 30 ECTS points)
An important part of the DTU MSc programs is the significant amount of elective courses. Here you can pursue your own scientific or professional interests. In principle you can choose between more than 400 different DTU courses. Please note that both General Competence and Technological specialisation courses are eligible to choose as elective courses. Please note that you can only have a maximum of 30 ECTS points within this block.

MSc thesis (minimum 30 ECTS points)
The MSc thesis marks the completion of the two-year MSc program. The research project is most often carried out at DTU and in many cases in collaboration with one of our many industrial partners. All projects include elements of fundamental research, innovation and application and the workload should be either 30, 32.5 or 35 ECTS points. Please note that you are recommended to start up both the search for a topic and supervisor minimum 6 month in advance. There will be held a mandatory luncheon on thesis topics and practicalities once every year ultimo October after the fall break.

Finally, there are four dates for a thesis start-up: for the fall semester starters it is the first working day in January OR the first Monday directly after the 3-weeks period (in January) and for the spring semester starters it is the first Monday in August OR the first Monday immediately after the 3-weeks period (in August).

Structure of the study plans
We present study plans for the four study lines:

- Transport and Business Logistics (TBL)
- Traffic Planning and Traffic Engineering (TPTE)
- Modelling of Traffic and Transport (MTT)
- Railway Technology (RT)

Each study line is described through a short introduction as concerns content and profile. Hereafter a list of all technological specialisation courses relevant for the particular study line is presented. Please note that students not seeking for a specific line of study are entitled to freely select among all technological specialisation courses provided in this booklet. Finally, an example of a schedule is provided.

For students accepted by DTU for the February 2016 intake (and onwards) the following general degree competence courses are mandatory:

42490	Technology, economics, management and organization	10	ECTS points E5+F5
42401	Introduction to Management Science	5	ECTS points E1B

For students accepted by DTU for the September 2015 intake (and earlier), the following general degree competence courses were mandatory:

13301	Transport, economics, management, planning, organization and	5	ECTS points E5A

Policy

42401	Introduction to Planning	5	ECTS points E1B

Additionally, students can choose between the following general degree competence courses (minimum 15/20 ECTS points):

42178	Introduction to Transport Models	5	ECTS points E3A
42195	Transport Economics	5	ECTS points F1A
42879	Decision Support and Risk Analysis	5	ECTS points E2B
42880	Railway Operations and Management	5	ECTS points E4A
42881	Optimisation in Public Transport	5	ECTS points F1B
42882	Simulation in Freight Transportation and Logistics	5	ECTS points F4A
42115	Network Optimization	5	ECTS points E4B

For students accepted prior to September 2015 please consult either the program coordinator or the study handbook at www.sdb.dtu.dk for further advice.

The full list of technological specialisation courses is provided below. Students within the MSc program of Transport and Logistics can freely select among all 29 courses (equivalent to 160 ECTS points). However, be advised, that if you want to finalise your study with a study line profile on your diploma you need to select at least 30 ECTS points within the specific study line:

02409	Multivariate Statistics	E1A	5 ECTS points
02424	Advanced Data Analysis and Statistical Modelling	F2A	5 ECTS points
02431	Risk Management	JAN	5 ECTS points
02443	Stochastic Simulation	JUN	5 ECTS points
42877	Railway Design and Maintenance	F5	10 ECTS points
42878	Rolling Stock acquisition and Management	JUN	5 ECTS points
42179	Advanced Transport Models	E2A	5 ECTS points
42180	Discrete Choice Models	F4B	5 ECTS points
42181	Route Choice Models	E4B	5 ECTS points
42182	Road Safety Analysis and Modelling	E1A	5 ECTS points
42883	Programming in Transport Optimization	JAN	5 ECTS points
42884	Green Transport Logistics	F5B	5 ECTS points
42885	Maritime Logistics	F4B	5 ECTS points
42886	Optimisation of operational transport systems	E5B	5 ECTS points
42887	Vehicle Routing and Distribution Planning	E1B	5 ECTS points
42183	Innovation Projects for Mobility in the Smart City	JUN	5 ECTS points
34345	Signalling systems and Technology for Railways	E3A	5 ECTS points
42114	Integer Programming	E4A	5 ECTS points
42136	Large Scale Optimization using Decomposition	F2B	5 ECTS points
42137	Optimization using Metaheuristics	F2A	5 ECTS points
42172	Risk and decision-making	JAN	5 ECTS points
42274	Sustainable Development Indicators and Sustainable Urban Development,	E2A,	5 ECTS points
42275	Sustainable Urban Development: a project oriented approach	F2A	5 ECTS points
42280	Smart, Connected and Livable Cities	E4A	5 ECTS points
42371	Design in LEAN Production and Service Systems	F1	10 ECTS points
42372	Life Cycle Assessment of Products and Systems	E1	10 ECTS points

42413	Simulation in Production and Services	JUN	5 ECTS points
42457	Supply Chain Management	E3A	5 ECTS points
42459	Planning and Scheduling in Manufacturing and Services	F3A	5 ECTS points

PLEASE NOTE! The proposed study plans presented here are based on the best-of-knowledge. The list of courses included is NOT completely exhaustive. This means that there may be courses that are relevant for the individual student which is not listed in the study plans.

Overview of GR and TS courses

The following diagrams depict the courses placed in a modular form following the DTU course modules. Please note, as courses from the departments offering courses to this program may shift time slots (modules) it is the module listed on the DTU course website that counts: www.courses.dtu.dk.

Flexible study year and study progress

It is a great pleasure to introduce the new flexible study year specifically with the introduction of two new three-week periods respectively in July and August. All departments at DTU have introduced various courses in those periods, you are therefore strongly encouraged to browse the course database to seek out interesting courses around Campus.

Further information

Questions and comments should be directed to program coordinator Associate Professor Allan Larsen (alar@dtu.dk).

Web-site

The program web-site is located at: www.transportation.dk

Study Line: Transport and Business Logistics (TBL)

Transport and Business Logistics (TBL) is aimed at optimizing transportation, flows of goods and logistics. At the end of this proposed study line the student will be able to perform amongst other:

- Planning of company distribution systems, including supply chains and flow of goods
- Planning and optimisation of public transportation systems
- Planning and optimisation of production and internal transportation in a firm
- Planning of the location of company units, i.e. service units, transport terminals and production units
- Planning of capacity needs and the use of capacity in transportation systems (e.g. planning of means of transportation for persons and freight.

The TBL study line has the following criteria.

For the TBL Study Line, it is mandatory to complete the following set of technological specialisation courses:

42885	Maritime Logistics	F4B	5 ECTS
42887	Vehicle Routing and Distribution Planning	E1B	5 ECTS
42114	Integer Programming	E4A	5 ECTS

Students can freely choose from the remaining TS points (min. 15 ECTS points) from the list below:

42883	Programming in Transport Optimization	JAN	5 ECTS
42884	Green Transport Logistics	F5B	5 ECTS
42136	Large Scale Optimization using Decomposition	F2B	5 ECTS
42137	Optimization using Metaheuristics	F2A	5 ECTS
42371	Design in LEAN Production and Service Systems	F1	10 ECTS
42413	Simulation in Production and Services	JUN	5 ECTS
42457	Supply Chain Management	E3A	5 ECTS
42459	Planning and Scheduling in Manufacturing and Services	F3A	5 ECTS
42886	Optimisation of operational transport systems	E5B	5 ECTS

Besides the TS courses appropriate for the TBL study line, students can freely choose their remaining 30 ECTS points among other DTU courses. This includes remaining GR and TS courses.

Possibly relevant elective courses are:

02409	Multivariate Statistics	E1A	5 ECTS
02417	Time Series Analysis	E4B/F2B	5 ECTS
02443	Stochastic Simulation	JUN	5 ECTS
42177	GIS and Road Traffic Planning for MSc students	E2	10 ECTS
42112	Mathematical Programming with Modelling Software	JAN	5 ECTS
42116	Implementing OR solution methods	JUN	5 ECTS
42123	Optimization in Finance	E4A	5 ECTS
42171	System safety and Reliability Engineering	E1A	5 ECTS
42376	Operations Management in Health care and service systems	E1A	5 ECTS
42435	Knowledge based Entrepreneurship	E2A/F2A	5 ECTS

The following presents an example of a study plan including GR (blue colour coding) and TS (green colour coding) courses of the TBL study line. The full list of courses is available at **www.courses.dtu.dk.**

Transport and Business Logistics: Example of Schedule

The following schedule assumes that students either fully comply with the given prerequisites for enrolment within the program or at minimum follows the conditional requirements for supplementary courses within the first semester.

Fall '15	Monday	Tuesday	Wednesday	Thursday	Friday	
	E1A	E3A	E5A	E2B	E4B	1. Semester
Morning 08-12			42490	42177	42115	
Lunch						
	E2A	E4A	E5B	E1B	E3B	
Afternoon 13-17	42177	42114	42490	42401		
3-Weeks Course January						
	42883					
Spring '16	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	
	F1A	F3A	F5A	F2B	F4B	2. Semester
Morning 08-12	42371 42195	42459		42136	42885	
Lunch						
	F2A	F4A	F5B	F1B	F3B	
Afternoon 13-17	42137	42882	42884	42371 42881		
3-Weeks Course June						
	42413					
Fall '16	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	
	E1A	E3A	E5A	E2B	E4B	3. Semester
Morning 08-12		42457 42178		42879		
Lunch						
	E2A	E4A	E5B	E1B	E3B	
Afternoon 13-17		42880	42886	42887		
3-Weeks Course January						
Master thesis subject requirement of 30 ECTS points						

Study Line: Traffic Planning and Traffic Engineering (TPTE)

Traffic planning creates the foundation for decisions about construction of new infrastructure or large-scale investments in public transportation. It also forms a basic ingredient in controlling public transportation, freight transport and the network of roads. At the end of this proposed study line the student will be able to perform amongst other:

- Valuation of the needs to base decisions within traffic politics and analyses
- Specification of models together with application and valuation of model calculations
- Analysis based on traffic engineering and capability to relate the results to model calculations
- Cost-Benefit valuation of projects together with a projection and evaluation of traffic infrastructure
- Description of the foundation for decision-making, both in a technical and communicative way

The TPTE study line has the following criteria.

For the TPTE Study Line, it is mandatory as part of the General Degree Competences to follow:

42195	Transport Economics	F1A	5 ECTS
42879	Decision Support and Risk Analysis	E2B	5 ECTS

Moreover, candidates can freely choose TS courses (min. 30 ECTS points) from the list below:

02431	Risk Management	JAN	5 ECTS
42171	Systems safety and Reliability Engineering	E1A	5 ECTS
42172	Risk and Decision-making	JAN	5 ECTS
42180	Discrete Choice Models	F4B	5 ECTS
42182	Road Safety Analysis and Modelling	E1A	5 ECTS
42183	Innovation Projects for Mobility in the Smart City	JUN	5 ECTS
42274	Sustainable Development Indicators and Sustainable Urban Development,	E2A,	5 ECTS
42275	Sustainable Urban Development: a project oriented approach	F2A	5 ECTS
42280	Smart, Connected and Livable Cities	E4A	5 ECTS
42372	Life Cycle Assessment of Products and Systems	E1	10 ECTS

Besides the TS courses appropriate for the TPTE study line, students can freely choose their remaining 30 ECTS points among other DTU courses. This includes remaining GR and TS courses.

Possibly relevant elective courses are:

02424	Advanced Data analysis and Statistical Modelling	F2A	5 ECTS
02441	Applied Statistics and Statistical Software	JAN	5 ECTS
*	Special course “Planning and modelling of public transport”	Spring 2017	5 ECTS
42873	Geometric Highway Design (BSc) (note: DK w. UK slides)	JAN	5 ECTS
42177	GIS and Road Traffic Planning for MSc Students	E2	10 ECTS
42881	Optimisation in Public Transport	F1B	5 ECTS
42884	Green Transport Logistics	F5B	5 ECTS
42112	Mathematical Programming with modelling software	JAN	5 ECTS
42349	Sustainability challenges I, Systems thinking	E4	7.5 ECTS
42350	Sustainability challenges II, Specific systems and capstone project,	E4	7.5 ECTS

The following presents an example of a study plan including GR (blue colour coding) and TS (green colour coding) courses of the TPTE study line. The full list of courses is available at **www.courses.dtu.dk.**

Traffic Planning and Traffic Engineering: Example of Schedule

The following schedule assumes that students either fully comply with the given prerequisites for enrolment within the program or at minimum follows the conditional requirements for supplementary courses within the first semester.

Fall '15	Monday	Tuesday	Wednesday	Thursday	Friday	
	E1A	E3A	E5A	E2B	E4B	1. Semester
Morning 08-12	42182	42178	42490	42177 42879		
Lunch						
	E2A	E4A	E5B	E1B	E3B	
Afternoon 13-17	42177 42274		42490	42401		
3-Weeks Course January						
	02431	42873				
Spring '16	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	
	F1A	F3A	F5A	F2B	F4B	2. Semester
Morning 08-12	42195				42180	
Lunch						
	F2A	F4A	F5B	F1B	F3B	
Afternoon 13-17	42275	42882		42881		
3-Weeks Course June						
	42183					
Fall '16	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	
	E1A	E3A	E5A	E2B	E4B	3. Semester
Morning 08-12	42171 42372			42879	42115	
Lunch						
	E2A	E4A	E5B	E1B	E3B	
Afternoon 13-17	42274	42880 42280		42372		
3-Weeks Course January						
	42172					
Master thesis subject requirement of 30 ECTS points						

Study Line: Modelling of Traffic and Transport (MTT)

Traffic and transportation models are computer based mathematical models used to determine the consequences of new infrastructure or effects of politics. At the end of this proposed study line the student will be able to perform amongst other:

- Construction of new models and maintenance of existing ones
- Demand specification for models and evaluation of the results
- Using models to plan transportation systems (public traffic, road traffic, freight traffic, etc.)
- Communication of results based on models towards customers and decision-makers
- Contribute in teams doing large-scale planning projects

The MTT study line has the following criteria.

For the MTT Study Line, it is mandatory as part of the General Degree Competences to follow:

42178	Introduction to Transport Models	E3A	5 ECTS

Moreover, it is mandatory to complete the following set of technological specialisation courses:

42179	Advanced Transport Models	E2A	5 ECTS
42180	Discrete Choice Models	F4B	5 ECTS
42181	Route Choice Models	E4B	5 ECTS

Students can freely choose the remaining TS courses (min. 15 ECTS points) from the list below:

02409	Multivariate Statistics	E1A	5 ECTS
02424	Advanced Data Analysis and Statistical Modelling	F2A	5 ECTS
02443	Stochastic Simulation	JUN	5 ECTS
42182	Road Safety Analysis and Modelling	E1A	5 ECTS
42183	Innovation Projects for Mobility in the Smart City	JUN	5 ECTS

Besides the TS courses appropriate for the MTT study line, students can freely choose their remaining 30 ECTS points among other DTU courses. This includes remaining GR and TS courses.

Possibly relevant elective courses are:

02417	Time Series Analysis	E4B/F2B	5 ECTS
02441	Applied Statistics and Statistical Software	JAN	5 ECTS
42112	Mathematical Programming with Modelling Software	JAN	5 ECTS
42114	Integer Programming	E4A	5 ECTS
42177	GIS and Road Traffic Planning for MSc Students	E2	10 ECTS
*	Special course on Planning and modelling of public transport	Spring 2017	5 ECTS
42195	Transport Economics	F1A	5 ECTS
42881	Optimisation of Public Transport	F1B	5 ECTS
42882	Simulation in Freight Transportation and Logistics	F4A	5 ECTS
42883	Programming and Transport Optimisation	JAN	5 ECTS

The following presents an example of a study plan including GR (blue colour coding) and TS (green colour coding) courses of the MTT study line. The full list of courses is available at **www.courses.dtu.dk.**

Modelling of Traffic and Transport: Example of Schedule

The following schedule assumes that students either fully comply with the given prerequisites for enrolment within the program or at minimum follows the conditional requirements for supplementary courses within the first semester.

Fall '15	Monday	Tuesday	Wednesday	Thursday	Friday	
	E1A	E3A	E5A	E2B	E4B	1. Semester
Morning 08-12		42178	42490	42177	42115	
Lunch						
	E2A	E4A	E5B	E1B	E3B	
Afternoon 13-17	42177		42490	42401		
3-Weeks Course January						
	42883	42112	02441			
Spring '16	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	
	F1A	F3A	F5A	F2B	F4B	2. Semester
Morning 08-12	42195				42180	
Lunch						
	F2A	F4A	F5B	F1B	F3B	
Afternoon 13-17	02424	42882		42881		
3-Weeks Course June						
	42183	02443				
Fall '16	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	
	E1A	E3A	E5A	E2B	E4B	3. Semester
Morning 08-12	42182 02409			42879	42181	
Lunch						
	E2A	E4A	E5B	E1B	E3B	
Afternoon 13-17	42179	42880				
3-Weeks Course January						
	42883	42112	02441			
Master thesis subject requirement of 30 ECTS points						

Study Line: Railway Technology (RT)

The railway is an important part of the infrastructure. Railways can transport many passengers and large amount of freight efficiently and sage. To operate and develop an efficient and well-functioning railway many aspects have to work together. At the end of this proposed study line the student will be able to perform amongst other:

- Plan and evaluate a real rail project
- Description of the foundation for decision-making, both in a technical and communicative way
- Design of railway infrastructure and evaluation of railway capacity
- Plan operation and maintenance of railways
- Evaluate life cycle costs for railways and safety issues on railways

The RT study line has the following criteria.

For the RT Study Line, it is mandatory as part of the General Degree Competences to follow:

42880	Railway Operations and Management	E4A	5 ECTS

Moreover, it is mandatory to complete the following set of technological specialisation courses:

42878	Rolling Stock acquisition and Management	JUN	5 ECTS
34345	Signalling Systems and Technology for Railways	E3A	5 ECTS

Students can freely choose from the remaining courses (min. 20 ECTS points) from the list below:

02431	Risk Management	JAN	5 ECTS
42372	Life Cycle Assessment of Products and Systems	E1	10 ECTS
42877	Railway Design and Maintenance	F5	10 ECTS
42886	Optimisation of operational transport systems	E5B	5 ECTS
42887	Vehicle Routing and Distribution Planning	E1B	5 ECTS

Please note that students are encouraged to enlarge the list of TS courses by considering a semester abroad! Besides the TS courses appropriate for the RT study line, students can freely choose their remaining 30 ECTS points among other DTU courses. This includes remaining GR and TS courses.

Possibly relevant elective courses are:

02443	Stochastic Simulation	JUN	5 ECTS
42873	Geometric Highway Design (BSc) (note: DK w. UK slides)	JAN	5 ECTS
42177	GIS and Road Traffic Planning for MSc Students	E2	10 ECTS
42179	Advanced Transport Models	F4B	5 ECTS
42180	Discrete Choice Models	E5B	5 ECTS
42181	Route Choice Models	E4B	5 ECTS
42183	Innovation Projects for Mobility in the Smart City	JUN	5 ECTS
42112	Mathematical Programming with Modelling Software	JAN	5 ECTS
42286	Planning and Management in Construction	JAN/JUN	5 ECTS
42543	Management of Change in Engineering Systems	F4A	5 ECTS

The following presents an example of a study plan including GR (blue colour coding) and TS (green colour coding) courses of the RT study line. The full list of courses is available at **www.courses.dtu.dk.**

Railway Technology: Example of Schedule

The following schedule assumes that students either fully comply with the given prerequisites for enrolment within the program or at minimum follows the conditional requirements for supplementary courses within the first semester.

Fall '15	Monday	Tuesday	Wednesday	Thursday	Friday	
	E1A	E3A	E5A	E2B	E4B	1. Semester
Morning 08-12		42178	42490	42177	42115	
Lunch						
	E2A	E4A	E5B	E1B	E3B	
Afternoon 13-17	42177	42880	42490	42401		
3-Weeks Course January						
	42873					
Spring '16	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	
	F1A	F3A	F5A	F2B	F4B	2. Semester
Morning 08-12	42195		42877		42180	
Lunch						
	F2A	F4A	F5B	F1B	F3B	
Afternoon 13-17		42882	42877	42881		
3-Weeks Course June						
	42878					
Fall '16	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	
	E1A	E3A	E5A	E2B	E4B	3. Semester
Morning 08-12	42372	34345		42879		
Lunch						
	E2A	E4A	E5B	E1B	E3B	
Afternoon 13-17			42886	42372 42887		
3-Weeks Course January						
	02431					
Master thesis subject requirement of 30 ECTS points						

List of MSc courses

Courses offered by DTU Management Engineering:

Courses	DTU Transport	Mod.	ECTS	Type				Remarks
				TBL	TPTE	MTT	RT	
42112	Mathematical Programming with Modeling Software	JAN	5	E	E	E	E	3-weeks course
42114	Integer Programming	E4A	5	T		E		
42115	Network Optimization	E4B	5	G	G	G	G	
42136	Large Scale Optimization using Decomposition	F2B	5	T				
42137	Optimization using Metaheuristics	F2A	5	T				
42171	System Safety and Reliability Engineering	E1A	5	E	T			
42172	Risk and Decision-Making	JAN	5		T			
42177	ArcGIS and Road Traffic Planning	E2	10	E	E	E	E	
42178	Introduction to Transport Models	E3A	5	G	G	G	G	New Schedule
42179	Advanced Transport Models	E2A	5	E	E	T	T	
42180	Discrete Choice Models	F4B	5	E	T	T	T	
*	Choice Modelling	E16	5	E	T	T	T	Only E16
42181	Route Choice Models	E4B	5	E	E	T	E	
42182	Road Safety Analysis and Modelling	E1A	5	E	T	T	E	Replacing 13160
42183	Innovation Project for Mobility in the Smart City	JUN	5	E	T	T	E	3-weeks Course
*	Planning and modelling of Public Transport	F17	5	E	E	E	E	Special course
42195	Transport Economics	F1A	5	G	G	G	G	
42273	Urban Planning and Sustainable Urban Development	F2	10		T			New Course
42280	Smart, Connected and Livable Cities	E4A	5		T			New course – replaces 42278
42286	Planning and Management in Construction	JAN	5				E	3-weeks course
42371	Design in Lean Production and Service Systems	F1	10	T				
42372	Life Cycle Assessment of Products and Systems	E1	10		T		T	
42401	Introduction to Management Science	E1B	5	G	G	G	G	Mandatory
42413	Simulation in Production and Services	JUN	5	T		E		
42457	Supply Chain Management	E3A	5	T	E	E	E	
42459	Planning and Scheduling in Manufacturing and Services	F3A	5	T				
42490	Transport, Economics, Management, Planning, Organisation and Policy (TEMO)	E5A	5	G	G	G	G	Mandatory course
42877	Railway Design and Maintenance	F5	10			E	T	
42878	Rolling Stock acquisition and management	JUN	5				T	
42879	Decision Support Simulation and Risk Analysis	E2B	5	G	G	G	G	
42880	Railway Operations and Management	E4A	5	G	G	G	G	Replaces course 13125
42881	Optimisation in Public Transport	F1B	5	G	G	G	G	Replaces course 13250

42882	Simulation in Transport and Logistics	F4A	5	G	G	G	G	
42883	Programming in Transport Optimisation	JAN	5	T		E		3-weeks Course
42884	Green Transport Logistics	F5B	5	T	E	E		New Schedule
42885	Maritime Logistics	F4B	5	T		E		
42887	Vehicle Routing and Distribution Planning	E1B	5	T			T	

Besides the set of bachelor courses:

42875	Transport logistics and optimisation	B.Sc.
42872	Basic Course in Traffic and Roads	B.Sc.
42175	ArcGIS and Road Traffic Planning	B.Sc.
42873	Geometric Highway Design	B.Sc.
42874	Road Traffic Simulation	B.Sc.
42176	Public Transport Planning	B.Sc.

Courses delivered by other Departments:

Courses	Other Departments	Mod.	ECTS	Type				Remarks
				TBL	TPTE	MTT	RT	
02409	Multivariate Statistics	E1A	5	E	E	T		
02424	Advanced Data Analysis and Statistical Modelling	F2A	5		E	T		
02431	Risk Management	JAN	5		T	E	T	3-weeks course
02443	Stochastic Simulation	JUN	5	E	T	T	E	3-weeks course
34345	Signalling Systems and Technology for Railways	E3A	5	E	E	E	T	Replaces 13123