



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Ingegneria
ACADEMIC YEAR	2021/2022
MASTER'S DEGREE (MSC)	CIVIL ENGINEERING
SUBJECT	THEORY OF TRANSPORT SYSTEMS
TYPE OF EDUCATIONAL ACTIVITY	B
AMBIT	50353-Ingegneria civile
CODE	15982
SCIENTIFIC SECTOR(S)	ICAR/05
HEAD PROFESSOR(S)	MIGLIORE MARCO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	9
INDIVIDUAL STUDY (Hrs)	147
COURSE ACTIVITY (Hrs)	78
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	MIGLIORE MARCO Tuesday 09:30 11:30 Stanza propria area Trasporti e Geomatica del DICAM Thursday 09:30 11:30 Stanza propria area Trasporti e Geomatica del DICAM

DOCENTE: Prof. MARCO MIGLIORE

PREREQUISITES	Mechanics of locomotion. Mathematical analysis. Elements of Statistics
LEARNING OUTCOMES	<p>Knowledge and ability to understand At the end of the course the student will have acquired knowledge and methodologies to address and to solve strategic issues in an original way. The student will be able to model the behavior of the transport system users and to plan interventions on transport system, taking into account the interaction between the supply and the demand and using different transport modes.</p> <p>Ability to apply knowledge and understanding The student will have acquired knowledge and methodologies to investigate and to solve problems of interaction between transport supply and demand. He will be able to formulate strategies, model the effect of interdependence, locate the outputs of the strategic planning and assess their consequences with regard to original and innovative contexts.</p> <p>Autonomy of judgement The student will acquire methodologies related to the demand transport modelling and the design of transport networks. He will understand complex issues concerning the design of multimodal and multiuser integrated transport networks through the methodological approach acquired during the course.</p> <p>Communicative skills The skills acquired by the student in the transport supply and demand modelling and in the development of procedures for the transport system design, make it suitable to have communication skills with public organizations and companies that have responsibility in the transport system planning.</p> <p>Learning skills The student will be able to deal with different issues related to transport planning and to use models for transport system planning.</p>
ASSESSMENT METHODS	<p>Oral examination The oral examination consists of: -a discussion pertaining to the study of planning carried out individually or in groups during the course. The discussion makes use of boards and/or reports prepared and provides for the theoretical and technical issues addressed; -an interview about other topics covered during the course. The student must pass the oral test individually even if he supported a group effort and the result is evaluated individually. The proof is in order to evaluate the availability of disciplinary skills and knowledge required by the course, and in particular they will evaluate: - the level of knowledge of the course content; - the ability to establish connections between course content; - independent judgments on the content of the course, the applications of course content, the contents of the course within a professional context; - the use of an appropriate technical language.</p> <p>EVALUATION The score, expressed in thirtieths, will be assessed on the basis of achievement relating to points previously exposed to a minimum (18/30) which implies a knowledge of the subjects and sufficient competence until the highest level (30/30 honours) of knowledge, competence, autonomy and language. In order to achieve a rating from 19/30 to 29/30 the student must demonstrate increasing levels of knowledge that exceed the sufficiency and approach the maximum score possible, demonstrating different degrees (more than enough to more than good) of knowledge, synthesis and judgment, properties of language.</p>
EDUCATIONAL OBJECTIVES	<p>The aim of this course is to study the issues related to the transport supply and the demand modelling and their mutual interaction. The calibration of the transport system models and the algorithms used for assigning the transport demand to the transport supply will be analyzed. The issues related to the design of interventions regarding the multimodal transport system will be studied.</p>
TEACHING METHODS	Lectures, exercises.
SUGGESTED BIBLIOGRAPHY	Cascetta E., Modelli per i Sistemi di Trasporto, Teoria e applicazioni. U.T.E.T., 2006. ISBN: 9788860080127 (consigliata qualsiasi edizione del testo). Dispense del Corso

SYLLABUS

Hrs	Frontal teaching
2	Urban Traffic Plans. Articulation and design content
2	Intervention on transport supply
2	Intervention on transport demand
2	Surveys for developing Urban Traffic Plans
4	Sustainable Urban Mobility Plans
4	Transport demand modelling

SYLLABUS

Hrs	Frontal teaching
4	Transport supply modelling and assignment model
4	The assignment of the transport demand to the transport supply. The fixed point problem and the solving algorithms
8	Technical characteristics and performance of public transport systems
4	Parking in urban areas
2	Performance indicators for public transport systems
2	The modelling of the parking in the transport system and the interaction between parking supply and demand.
2	The design of transport systems
Hrs	Practice
2	Quantitative analysis for developing Urban Traffic Plans
1	The hierarchical logit model
3	The calibration of demand models
3	The hyperpath for modelling the public transport services
3	The Dijkstra algorithm
6	The software for the assignment of the transport demand to the transport supply
3	Frequency, number of vehicles and operating parameters for a bus system
9	Classroom presentation and discussion of case studies related to transportation planning
6	The Urban Traffic Plan and the Sustainable Urban Mobility Plan of Palermo.