

**Erasmus+**

**Faculty of Transports – Courses in Romanian/English**

**Undergraduate courses:**

Code: UPB08 T05O343	Title: <b>Transport Systems III - project</b>	ECTS: 2	Year III Semester I (winter)
Professor: associate professor Oana Dinu oana.dinu@upb.ro	Transport, Traffic and Logistics Department	Structure: 3h project/week	
Description: The project will present the road or rail infrastructure designing (longitudinal and transversal profiles), estimation for infrastructure earth works, costs			
Examination: 70% semester evaluation and 30% final examination			
Resources and links:			

Code: UPB08 S06O357	Title: <b>Transport Economics (lecture/seminars)</b>	ECTS: 3	Year III Semester II (summer)
Professor: Senior lecturer Alina ROMAN, Ph.D./ Senior lecturer Sergiu OLTEANU, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course + 2 h applications/week	
Description: Transport demand modelling; Transport supply modelling: supply function and costs function; Transportation external costs estimation: methods and models; Transport markets specificities: monopolistic and competition mixture, public and private property mixture; transport system quality and indices of quality; quality influence on transport economics. Monetary costs estimations in passenger public transport operations; Non-monetary cost estimation of urban car traffic; car ownership prognosis; quality measurement of urban transit transport system.			
Examination: 50% semester evaluation and 50% final examination			
Resources and links:			

Code: UPB08 T07O369	Title: <b>Transport Cybernetics (lecture)</b>	ECTS: 3	Year IV Semester I (winter)
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Professor: Senior Lecturer Sergiu OLTEANU, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course/week
<b>Description:</b> Modelling methods of queuing systems in transportation; modelling traffic systems' components for computer simulation; architecture and using of the neuronal networks; neuronal networks application for traffic systems; genetic algorithms and their advantages in transport processes optimizations; using fuzzy sets in transport problems solving; expert system for transport system coordination.		
<b>Examination:</b> 50% semester evaluation and 50% final examination		
<b>Resources and links:</b>		

Code: UPB08 T07O370	Title: <b>Transport Cybernetics - project</b>	ECTS: 2	Year IV Semester I (winter)
Professor: Senior Lecturer Sergiu OLTEANU, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h project/week	
<b>Description:</b> Designing of analytical models for the travel tickets delivery in case of travel agency. Numerical simulation models (using ARENA software package) for the travel tickets delivery. Designing of the passenger facilities for tickets emission. Database designing for the tickets emission system.			
<b>Examination:</b> 70% semester evaluation and 30% final examination			
<b>Resources and links:</b>			

Code: UPB08 T06O354	Title: <b>Transport Terminals (project)</b>	ECTS: 2	Year III Semester II (summer)
Professor: Senior Lecturer Sergiu OLTEANU, Ph.D./ Senior Lecturer Alina ROMAN, Ph.D..	Transport, Traffic and Logistics Department	Structure: 2h project/week	
<b>Description:</b> Designing of the marshalling yard for freight flows, related on the pick traffic flows and rolling stock characteristics. Dimensioning of the trial device and the way-breaks.			
<b>Examination:</b> 70% semester evaluation and 30% final examination			
<b>Resources and links:</b>			

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Code: UPB08 S06O356	Title: <b>Technologies in Transport Terminals (project)</b>	ECTS: 2	Year III Semester II (summer)
Professor: Senior Lecturer Aura RUSCA, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h project/week	
Description: Interdependency among terminal technologies inside of the rail terminal, between terminal's technologies and input and output tracks' trains. Graphical simulation of the marshalling yard. Stationary time assessment for the freight wagons. The level of the equipment utilization.			
Examination: 70% semester evaluation and 30% final examination			
Resources and links:			

Code: UPB08 S08A368	Title: <b>Road Traffic I (lecture/laboratory)</b>	ECTS: 4	Year IV Semester I (winter)
Professor: Prof. Vasile DRAGU, Ph.D./ Senior Lecturer Cristina OPREA, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course + 2h laboratory/week	
Description: Foundations of Traffic Flow Theory, Basic transport parameters and their measurement; Modelling Road Traffic Flows; The concept of capacity analysis Traffic Assignment on Congested Road Networks; Theoretical foundations and application of Microscopic & Macroscopic Traffic Simulation Models; Basic techniques of mobility management.			
Examination: 50% semester evaluation and 50% final examination			
Resources and links:			

Code: UPB08 T08O376	Title: <b>Transport Logistics (lecture/seminars)</b>	ECTS: 3	Year IV Semester II (summer)
Professor: Senior Lecturer Stefan Burciu, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course + 1h aplications/week	
Description: Unitary and systemic approach of the physical flows and their transfer, using the procedures' harmonization for the interfaces between transport modes in urban area. Assessment of transfer's performance and the resources (materials, energy			

and labour) economies. Supply-chain management's solution in case of urban congested environment.  
 Operation research methods specifics to the combinatorial problems (with large number of variables).

Examination:70% semester evaluation and 30% final examination

Resources and links:

Code: UPB08 S07O365	Title: <b>Handling, Storage and Industrial Transportation (lecture/laboratory)</b>	ECTS: 5	Year IV Semester I (winter)
Professor: Senior Lecturer Stefan Burciu, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course +2h laboratory/week	
Description: Design of the storage system in case of the pallet freight handling: base-machinery choosing; dimensioning of the machinery tracks and the storage spaces; power loading of the electrical equipment. Computing of the power consumption for the specific loading. Estimation of the freight handling cost and the operation indices: necessary handling staff; occupied space surface; using surface and volume for storage; hourly productivity of the handling equipment and machines.			
Examination:50% semester evaluation and 50% final examination			
Resources and links:			

Code: UPB08 S03O329	Title: <b>GIS/GPS Systems (lecture/laboratory)</b>	ECTS: 4	Year II Semester I (winter)
Professor: Assoc. Prof. Dorinela COSTESCU, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course +2h laboratory/week	
Description: Organizing, treatment and displaying of the geographical data, their presentation on map and tables; database creation for the transport-territorial system modelling purposes. GPS based information; transport applications with GPS techniques.			
Examination:70% semester evaluation and 30% final examination			
Resources and links:			

Code: UPB08 S08A382	Title: <b>Traffic Safety and Transport Security (lecture /laboratory)</b>	ECTS: 3	Year IV Semester II (summer)
Professor: Assoc. Prof Florin RUSCA, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course +1h applications /week	

**Description:**  
 Measurements for traffic safety and transports security; specific risk assessment methods in case of transport systems. Damage survey principles, accident cost assessment. Prevention methods for passengers and freights transport. Indices of traffic safety; safety regulation in case of loading units and bracing. Special transports and their risk assessment. Assessment of the damage, compensations and insurance premium for people and goods transportation.

**Examination:**70% semester evaluation and 30% final examination

**Resources and links:**

Code: UPB.08.	Title: <b>Railway Interlocking - Project</b>	ECTS: 2	Year IV Semester II (summer)
Professor: assistant lecturer Florin Bădău florin.badau@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 1h project/week	
<b>Description:</b> The students will design the relay-based interlocking for a railway station. The design will follow national and international guidelines. Students will learn how to represent railway stations using standard symbols for switches, signals and other elements, how to build a route locking matrix and how to design the relay circuitry for the interlocking.			
<b>Examination:</b> 70% project homework and 30% final examination			
<b>Resources and links:</b> Gregor Thegg, Sergej Vlasenko, Railway Signalling & Interlocking International Compendium 2 <sup>nd</sup> Edition, Eurail press, 2018			

Code: UPB.08.	Title: <b>Transport Systems</b>	ECTS: 3	Year II Semester II (summer)
Professor: associate professor Florin Nemtanu Florin.nemtanu@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 2h course + 1 h applications/week	
<b>Description:</b> The course will present the concept and definition of transport systems and will go into details about the components of all transport modes including Pipeline transport. The course is focused also on telematics and electronics applications in transport systems (for both components: vehicles and infrastructures). Urban transport and Mobility as a Service are also important topics of this course.			
<b>Examination:</b> 40% applications test, 30% homework and 30% final examination			

Resources and links:

<https://ocw.mit.edu/courses/civil-and-environmental-engineering/1-221j-transportation-systems-fall-2004/>

Code: UPB.08.	Title: <b>Fundamentals of Electric Circuits</b>	ECTS: 3	Master Year I Semester I (winter)
Professor: associate professor Florin Nemtanu Florin.nemtanu@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 2h course + 1h laboratory + 1h applications/week	
Description: The course will present the main electric circuits and analysis of signals associated with these circuits. The circuits presented in the course are the following: amplifiers, circuits with reactions, oscillators, flip-flops, rectifiers etc. The electrical signals which are transferred through these circuits are also analysed and some aspects about the signal processing and analysis are presented as well.			
Examination: 30% laboratory test, 30% applications test and 40% final examination			
Resources and links: <a href="https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/">https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-002-circuits-and-electronics-spring-2007/</a>			

Code: UPB.08.	Title: <b>Dependability, Security and Quality in Transport</b>	ECTS: 3	Master, Year I, Semester II (summer)
Professor: lecturer Petrișor Peiu Petrisorgabriel.peiu@gmail.com	Telematics and Electronics for Transport Dept.	Structure: 2h course + 1 h applications/week	
Description: The course will present the concept of dependability and security, its attributes, threats and means also the augmented concept of quality, for both hardware and software. The course speaks about the transportation systems and their dependability and security. The course also speaks about the specific dependability and security of the traffic management systems under different views.			
Examination: 30% applications test, 30% homework and 40% final examination			
Resources and links: <a href="http://ndl.ethernet.edu.et/bitstream/123456789/46915/1/Transportation-Systems-Reliability-and-Safety.pdf">http://ndl.ethernet.edu.et/bitstream/123456789/46915/1/Transportation-Systems-Reliability-and-Safety.pdf</a> <a href="https://www.eurocontrol.int/sites/default/files/library/038_Romanian_Airspace_RA_MS_Simulation.pdf">https://www.eurocontrol.int/sites/default/files/library/038_Romanian_Airspace_RA_MS_Simulation.pdf</a>			

[https://pdfs.semanticscholar.org/090a/2e3189454ea43992792ce6f0494b659a867a.pdf?\\_ga=2.54070568.180134088.1614254861-161236201.1614254861](https://pdfs.semanticscholar.org/090a/2e3189454ea43992792ce6f0494b659a867a.pdf?_ga=2.54070568.180134088.1614254861-161236201.1614254861)  
<https://openjicareport.jica.go.jp/pdf/11689403.PDF>

Code: UPB.08.	Title: <b>Information Transmission Theory</b>	ECTS: 3	Year II Semester I (Fall)
Professor: associate professor Corneliu Sterian corneliu.sterian@upb.ro		Telematics and Electronics for Transport Dept.	Structure: 2h course + 1 h applications/week
Description: This is a first course in information theory. It starts with an introductory chapter on probability theory with accent put on random variables. Based on this, entropy and mutual information are then introduced. Source coding is exemplified with the best coding methods known to date: Huffman coding and Ziv-Lempel coding. There is a chapter on basic modulation. The most extensive part is dedicated to channel error-control coding: block codes, cyclic coding, and convolutional coding. As an advanced topic, low-density parity check coding and Polar coding as applied in 5G communications networks are introduced.			
Examination: 50% laboratory and 50% final examination			
Resources and links: Shu Lin and Daniel J. Costello, Jr: Error Control Coding, Second Edition, Pearson Prentice Hall John G. Proakis: Digital Communications, Fourth Edition, McGraw Hill			

Code: UPB.08.	Title: <b>Telecommunication Systems for Transportations</b>	ECTS: 3	Year IV Semester II (springtime)
Professor: associate professor Corneliu Sterian corneliu.sterian@upb.ro		Telematics and Electronics for Transport Dept.	Structure: 3h course + 1h laboratory and applications/week
Description: This is an introductory course in Telecommunications Systems. It starts by comparing and contrasting two fundamental industries: telecommunications and transportations. There is then a chapter on reviewing notions of signal and system as applied in the following parts. Analog amplitude modulation is treated first as it is intuitively appealing to the students. Only digital modulations are considered next. Nyquist criterium, ideal low-pass filter and raised-cosine filter are treated in depth. Partial-response systems are exemplified by order I and IV systems. There are sections on synchronization methods, OFDM systems and other.			
Examination: 50% laboratory test and 50% final examination			
Resources and links: John G. Proakis: Digital Communications, Fourth Edition, McGraw Hill			

Bernard Sklar: Digital Communications, Second Edition, Prentice Hall  
 Simon Haykin: Communication Systems, Fourth Edition, John Wiley & Sons

Code: UPB.08.T03O428	Title: <b>Electronic Devices</b>	ECTS: 6	Year II Semester I (fall)
Professor: lecturer Luigi- Gabriel OBREJA luigi.obreja@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 4h course + 3 h applications/week	
Description: Specific competences accumulated: knowledge of the operating principles of the main electronic devices; knowledge of polarization circuits of electronic devices; low signal modelling of semiconductor devices; analysis of the fundamental stages made with bipolar and unipolar transistors; study of the switching regime of semiconductor devices; noise analysis of semiconductor devices.			
Examination: 25% laboratory test, 25% seminar test, 25% weekly tests, 25% final examination			
Resources and links: <a href="https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-071j-introduction-to-electronics-signals-and-measurement-spring-2006/">https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-071j-introduction-to-electronics-signals-and-measurement-spring-2006/</a> <a href="https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-101-introductory-analog-electronics-laboratory-spring-2007/">https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-101-introductory-analog-electronics-laboratory-spring-2007/</a>			

Code: UPB.08.S06O459	Title: <b>Supervisory control systems</b>	ECTS: 3	Year III Semester II (spring)
Professor: lecturer Luigi- Gabriel OBREJA luigi.obreja@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 2h course + 2h applications/week	
Description: Specific competences accumulated : defining the concepts, principles and methods used in remote control and telecommunications systems used in transport; explain and interpret basic concepts for the implementation of remote control and telecommunications systems used in transport; application of fundamental methods to the analysis and determination of the performance of remote control and telecommunications systems; use of appropriate performance criteria to assess the quality of services provided by remote control and telecommunications systems used in transport; design of low / medium complexity remote control / telecommunications systems for transport.			
Examination: 30% laboratory test, 30% weekly tests, 40% final examination			
Resources and links: <a href="https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-422-human-supervisory-control-of-automated-systems-spring-2004/">https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-422-human-supervisory-control-of-automated-systems-spring-2004/</a> <a href="https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-06-principles-of-automatic-control-fall-2012/">https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-06-principles-of-automatic-control-fall-2012/</a>			



**Master Courses:**

Code: UPB.08. M1O0804	Title: <b>Intelligent Transport Systems Architectures</b>	ECTS: 3	Master Year I Semester I (winter)
Professor: associate professor Florin Nemtanu Florin.nemtanu@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 2h course + 2 h laboratory/week	
Description: The course will present the methodology to build an ITS (Intelligent Transport Systems) system architecture starting with user needs and creating the functional, physical, communication, organisational and security architectures of ITS. The main tools applied in this course are FRAME tools (Browsing and Selection Tools) as well as FRAME Next tool.			
Examination: 40% laboratory test, 30% homework and 30% final examination			
Resources and links: <a href="https://frame-online.eu/">https://frame-online.eu/</a> <a href="https://frame-next.eu/">https://frame-next.eu/</a>			

Code: UPB.08. M1O0805	Title: <b>Intelligent Transport Systems Architectures - project</b>	ECTS: 2	Master Year I Semester I (winter)
Professor: associate professor Florin Nemtanu Florin.nemtanu@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 1h project/week	
Description: The students will design the ITS (Intelligent Transport Systems) architecture based on the methodology presented at the course and will follow the steps: starting with user needs and creating the functional, physical, communication, organisational and security architectures of ITS. The main tools applied in this course are FRAME tools (Browsing and Selection Tools) as well as FRAME Next tool.			
Examination: 60% project homework and 40% final examination			
Resources and links: <a href="https://frame-online.eu/">https://frame-online.eu/</a> <a href="https://frame-next.eu/">https://frame-next.eu/</a>			

Code: UPB.08. M3O0821	Title: <b>Development and Management of Intelligent Transport System Projects</b>	ECTS: 2	Master Year II Semester I (winter)
Professor: associate professor Florin Nemtanu Florin.nemtanu@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 2h course/week	
Description: The course is focused on the project management applied in ITS (Intelligent Transport Systems) and the students will understand the concept of project management as well as the PMI methodology. The stages of projects are described and the cost, time, quality, acquisition, risks management aspects are presented in the framework of the project management.			
Examination: 60% project homework and 40% final examination			
Resources and links: <a href="https://pmi.ro/">https://pmi.ro/</a> <a href="https://www.pmi.org/">https://www.pmi.org/</a>			

Code: UPB.08. M3O0822	Title: <b>Development and Management of Intelligent Transport System Projects - Project</b>	ECTS: 2	Master Year II Semester I (winter)
Professor: associate professor Florin Nemtanu Florin.nemtanu@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 1h project/week	
Description: The project is focused on the project management applied in ITS (Intelligent Transport Systems) and the students will understand the concept of project management as well as the PMI methodology. The stages of projects are described and the cost, time, quality, acquisition, risks management aspects are presented in the framework of the project management. The plan of the ITS project will be developed in Microsoft Project.			
Examination: 60% project homework and 40% final examination			
Resources and links: <a href="https://pmi.ro/">https://pmi.ro/</a> <a href="https://www.pmi.org/">https://www.pmi.org/</a>			

Code: UPB.08. M1O0804	Title: <b>Mobile Communications for Transports</b>	ECTS: 3	Master Year II Semester I (Fall)
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Professor: associate professor Corneliu Sterian corneliu.sterian@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 2h course + 1 h project and 2h laboratory/week
<p>Description:</p> <p>This course presents around thirteen technologies that are actually used in modern mobile communications. Each lesson is introductory and purport to provide the students with a survey of useful wireless technologies that are liable to be applied somehow in transports.</p> <p>There is also an associated project to this discipline.</p>		
<p>Examination:</p> <p>50% laboratory test and 50% final examination</p>		
<p>Resources and links:</p> <p>The master students are encouraged to browse good international journals like IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Vehicular Technology and others.</p>		

Code: UPB.08. M1O0805	Title: <b>Advanced Technologies for Telecommunications Systems</b>	ECTS: 2	Master Year II Semester I (Fall)
Professor: associate professor Corneliu Sterian corneliu.sterian@upb.ro	Telematics and Electronics for Transport Dept.	Structure: 2h course and 2h project/week	
<p>Description:</p> <p>Around thirteen advanced technologies are carefully selected for presentation in the class. When one of them becomes obsolete, it is replaced by a new one. The level is introductive, as the purpose is to provide the master student with a large view of this industry at the time being.</p> <p>There is also an associated project to this discipline.</p>			
<p>Examination:</p> <p>50% laboratory and 50% final examination</p>			
<p>Resources and links:</p> <p>The master students are encouraged to browse good international journals like IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Vehicular Technology and others.</p>			

Code: UPB08 M1O09-12	Title: <b>Mathematical and Simulation Modelling (lecture /laboratory)</b>	ECTS: 4	Master Year II Semester I (winter)
Professor: Prof Eugen ROSCA, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course +2h applications /week	
<p>Description:</p>			

The subject deals with the problems of mathematical modelling of dynamical systems, estimation of these models and their utilization for prediction. The results are illustrated on practical transportation tasks

Examination:50% semester evaluation and 50% final examination

Resources and links:

Code: UPB08 M1O05- 12	Title: <b>Road Safety Audit (lecture /laboratory)</b>	ECTS: 4	Master Year I Semester II (summer)
Professor: Senior lecturer Cristina Oprea, Ph.D.	Transport, Traffic and Logistics Department	Structure: 2h course +2h applications /week	
Description: Schedules of applications of safety assessments during the process of preparations, and of the particular realization of the road network that should minimize traffic accident risks for all those who take part in road traffic. Road safety survey. Application of European Directive 2008/96/EC on road safety infrastructure management.			
Examination:50% semester evaluation and 50% final examination			
Resources and links:			

Code: UPB08 M1O09- 05	Title: <b>SCIENTIFIC RESEARCH I</b>	ECTS: 10	Master Year I Semester I (winter)
Professor: Assoc. Prof. Oana Dinu, Ph.D.	Transport, Traffic and Logistics Department	Structure: 12h research /week	
Description: Research topic in transportation field			
Examination:70% semester evaluation and 30% final paper			
Resources and links:			

Code: UPB08 M1O09- 10	Title: <b>SCIENTIFIC RESEARCH II</b>	ECTS: 10	Master Year I Semester II (summer)
Professor: Assoc. Prof. Oana Dinu, Ph.D.	Transport, Traffic and Logistics Department	Structure: 12h research /week	
Description: Research topic in transportation field			
Examination:70% semester evaluation and 30% final paper			

Resources and links: