WP1.1. Preparation for project implementation and analysis of study programs at Uzbek and EU partner universities (Jizzakh PolytechnicInstitute)

Comparative analysis of Master of Science in Engineering (MSc) in Intelligent Transport Systems study plan and subjects of various universities

The comparative analysis of the curricula and programs of the MS - Intelligent Transport Systems study plan in the EUROPE and in UZBEKISTAN. The analysis of the curricula and programs on subjects in EU testifies to a considerably flexible system of training experts and its practical purposes of increasing efficiency of the process of engineering perfection. The comparative analysis of the study programs on «Intelligent Transport Systems» in the countries reveals considerable correspondence. Meanwhile, in the EU much attention is paid to lectures and group discussion sessions. Practical studies are in the form of elective courses, facultative, independently in view of individual capacities, abilities and wishes, that is considered right by the authors.

Uzbekistan study program on «Intelligent Transport Systems» is maximized by theoretical material, does not presuppose real experimental sessions. master students come to a conclusion by theoretically by studying programs.

Green color-suitable subjects

Red color- we do not have this subjects

Modules	Czech Technical University in Prague	ECTS credits	UAS Technikum Wien	ECTS credits	Linköping University	ECTS credits	Uzbekistan	HOURS
Module 1 Transportation Systems	Analysis and Prevention of Traffic Accidents	2	Transportation Systems	3	GIS for Transportation	6	Transportation systems	120
	Energy Analysis of Land Carriage	2	Public Transport	1.5			GIS for Transportation	120
	Identification Systems	2	Technologies in Transport	1.5				
Module 2 Intelligent Transport Systems	Telematic Systems and their Design	6	ITS in Rail, Water and Airborne Transportation	4.5	Transport and Logistics Systems	6	ITS management	120
			Traffic Telematics	1.5				
Module 3 Automated Data Acquisition and Processing	Pattern Recognition	3	Sensorics	3	Traffic Demand Modelling	6	Automated Data Acquisition and Processing	60
	Data Processing	3	Algorithms and Data Structures, Soft Computing	3				
Module 4 ITS Management Skills	Economy and Management of ITS Projects	3	Management and Leadership Training	3	Project Management (takes place in the 3rd semester)	6		
	Technological Aspects of Quality	2	Law	3				

Module	Subject		Subject		Subject		Subject	
Module 5 Mathematical Tools	ITS Mathematical Tools	4	Discrete Mathematics	3	Optimization	6	Mathematical tools	80
	Theoretical Physics in Transportation	3	Operational Research	3				
Module 6 Required Elective Module	Artificial Intelligence and Expert Systems in Transport	2	Required Elective Module	6	Computer Networking	6	Required elective Module	160
	Intelligent Vehicle and Safety	2						
	Risk Analysis and Management	2						
Module 7 Traffic Modelling and Simulation	Traffic Modelling and Simulation	4	Transport Modelling and Simulation	6	Traffic Planning and Simulation	6	Traffic modeling and simulation	140
	Traffic Flow Theory	3						
Module 8 Telecommunication	Telecommunications in ITS	3	Telecommunications	3	Mobile Communication	6	Telecommunication	100
	Signals and Codes	4	Mobile Telecommunication and Network Technology	3				
Module 9 Specialization in ITS 1	Control System Theory and Reliability in Transportation	4	Embedded Control Systems	4.5	Supply Chain Logistics	6	ITS basics	94
	Information Security	2	Distributed Systems	1.5				
Module 10 Specialization in ITS 2	Master's Project 1	2	ITS Project I (Selection of the following: Autonomous Driving, Intelligent on Board Sensors for Vehicles, Traffic Data Acquisition, Cooperative Systems)	6	Logistics Resource Planning	6	Specialization in ITS I and II	180
	Master's Project 2	2						
Module 11 GIS, Positioning, Navigation	Geographical Information Localization and Navigation	6	Positioning, Navigation and Identification Systems	3	Positioning Systems	6		

Module								
and Identification Systems	Systems		GIS	3				
Module 12 Complex Systems	Systems Engineering	3	Advanced Driver Assistance Systems	1.5	Traffic Engineering and Management	6		
			Cooperative Systems	1.5				
	Applied Mathematical Modelling	4	Logistics and Fleet Management	1.5				
			ITS System Architecture	1.5				
Module 13 Human and Environmental Impacts, Safety and Sustainability	Transport and Environment	2	Safety and Sustainability	3	Traffic Safety Management	6	Traffic safety	160
	Road Safety Audit	2	Traffic Psychology and Human Machine Interface	3				
	Modelling of HMI	3						
Module 14 Specialization in ITS 3	ITS Effectiveness Assessment	2	Dependable Systems	3	Applied Optimization	6	Methods of teaching special subjects	90
	Advanced Telematic Applications / Railway Interlocking Systems /Vehicle Control Systems	2	Transport Economy	1.5				
	Safety Critical Applications in Transport/Special Materials and Technology	2	ITS Project II	1.5				
Module 15 Specialization in ITS 4	Master's Project 3	4	ITS Project III	6	Analysis of Communication and Transport Systems	6		
Module 16 Master's Thesis	Master's Project 4	8	Master's Thesis	18	Master's Thesis	30	Research work and preparation of master's thesis	1701
	Master's Thesis	22	Graduate Seminar	6				
			Supervision – Master's Thesis	6			Scientific-pedagogical	341

								work	
								Internship	389
Module 17 Other subjects								Social and economic development strategy in Uzbekistan	58
								Theory and Methodology of Science	94
								Pedagogical technologies and pedagogical skills	58
								English	147
TOTAL		**120**		**120**		**120**			**4212**

Comparative analysis of study plans based on EUROPE module-competence approach and existing model curricula and programs of the UZBEKISTAN system

Study plan based on a modular competence approach	Existing model curricula and programs of the Uzbekistan(hour) system
• Achievement by the master student of professional competencies through independent activities • Orientation to the needs for specific types of professional (labor) activity • Flexible, in the form of a horizontal or vertical set of modules based on theoretical and practical training in a specific competence • A set of theoretical and practical disciplines; focused on common approaches to the implementation of professional activities	• Knowledge transfer (informative teaching) • The main content of training is determined by the number of hours. • A set of theoretical and practical disciplines; focused on common approaches to the implementation of professional activities