Education Plan for Doctor in Traffic and Transportation Engineering

（Discipline Code:0823,Award Doctor Degree of Engineering）

I Objectives

The program cultivates high-level specialized professionals with full development of morality, wisdom and physique in the realms of scientific research, college teaching and engineering technology, who are equipped with creative spirit and fulfill the requirement of modern scientific development and new technology revolution. The specific requirements are as follows:

1. Grasp the theories of Marxism and establish a scientific world outlook, adhere to the basic lines of the Party, love the motherland, abide the law, form a good character, behave honestly and trustworthy, strictly and corporately, and maintain good research ethics and professionalism.

2. Master broad and solid basic theories and systematically in-depth specialized knowledge of the discipline "Traffic and Transportation Engineering", be qualified in higher levels of teaching, researching, engineering technology and technological management and can make innovative achievements in the discipline or specific technology.

3. Master a foreign language, can skillfully read professional foreign language materials and write papers.

4. Maintain a good physical and mental health quality.

II Disciplinary Research Areas

1. Condition monitoring, fault diagnosis and control of mechanical system
2. Performance optimization and simulation of marine propulsion system
3. Tribology system and surface engineering
4. Equipment engineering and resource management
5. Transportation information and safety
6. Transportation sensation and control
7. Transportation hazard assessment and emergency decision
8. Comprehensive transportation planning and management
9. Logistic management
10. Transportation planning and management
11. Road and rail engineering
12. Traffic engineering
13. Transportation environment, safety theory and technology
14. Marine control and intelligent simulation technology
15. Modern marine communication, navigation and surveillance technology
16. Marine transportation flow theory

III Educational System and Years of Study

The educational system and study period: for a Ph.D.. candidate with a master's degree is three years and the study period lasts generally three to four years, no more than five years.

Credit: Credits for Ph.D.. candidate with a master's degree should be greater than or equal to 16 credits, Credits for public degree courses are no less than 6 credits; Credits for professional degree course are no less than 4 credits (professional degree course can be optionally within the primary discipline); Credits for elective course are 2 credits or more (second foreign language as an essential elective if not be taken in master period; optionally one to two elective course credits within the school; 4 credits for compulsory courses (2 credits for practice; 1 credit for academic activities; 1 credit for topics and interim assessment).

IVCurriculum System and Credit Requirements

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
Public Course	003281001	First Foreign Language(Chinese)	108	6	12	School of Internation Education	Compulsory	
	003281002	Introduction to China	54	3	1	School of Internation Education		
Professional Degree Course	00511001	Tribology System Engineering	36	2	2	School of Energy and Power Engineering	School of Energy and Power Engineering/ Intelligent Transportation System Research Center	
	00511002	Intelligent Transportation System Theory and Method	36	2	2	Intelligent Transportation System Research Center		
	00511003	Data Fusion Theory and Method	36	2	2	/ School of Energy and Power Engineering/ Intelligent Transportation System Research Center		
	00511004	Theory and Frontiers on Marine Mechinary Operational Engineering	36	2	2	School of Energy and Power Engineering		
	00211016	Transportation System Planning Theory	54	3	1	School of Transportation	Traffic Transportation Planning and Managemen	School of Transportation
	00211017	Transport Management Theory	36	2	1	School of Transportation		
	00211019	Advanced Pavement Design Theory	54	3	1	School of Transportation	Road and Rail Engineering	
	00211008	Advanced Elastic Plastic Mechanics	54	3	1	School of Transportation		
	00211021	Traffic Network Analysis	36	2	2	School of Transportation	Transportation	

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
	00211022	Theory and Method of Traffic Flow	36	2	2	School of Transportation	Engineering	
	01311101	Supply Chain Management Methodology	36	2	2	School of Logistics Engineering	School of Logistics Engineering	
	01311102	Modeling and Simulation of Logistics System	36	2	1	School of Logistics Engineering		
	00211018	Logistics System Planning Theory	36	2	1	School of Transportation		
	01211003	Theory and Method of Ship Traffic Flow	36	2	1	School of Navigation	School of Navigation	
	01211007	Control Theory of Water Transportation	36	2	1	School of Navigation		
	01211008	Traffic Information Perception and Data Mining	36	2	1	School of Navigation		
	01111001	Modern Control Theory and Method	36	2	2	School of Automation		
	01111002	System Optimization and Intelligent Control	36	2	2	School of Automation		
Elective Course	01813001-004	The Second Foreign Language (English, German, Russian, France and Japan)	72	4	2	School of Foreign Language		
	02112101	Selected Reading In Classical Works of Marxism	18	1	1	School of Marxism		
	00512001	Optimization Technology of Shaft Engineering	36	2	2	School of Energy and Power Engineering	School of Energy and Power Engineering	

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
	00512002	Fault Diagnosis and System Control	36	2	2	School of Energy and Power Engineering		
	00512003	Equipment Reliability and Maintainability	36	2	2	School of Energy and Power Engineering		
	00512004	Theory and Method of Traffic Safety	36	2	2	Intelligent Transportation System Research Center/School of Energy and Power Engineering	Intelligent Transportation System Research Center	
	00512005	Intelligent Traffic Management and Control	36	2	2	Intelligent Transportation System Research Center		
	00512006	Theory and Method of Comprehensive Transportation Planning	36	2	2	Intelligent Transportation System Research Center		
	00512007	Theory and Method of Traffic Emergency Decision Support	36	2	2	Intelligent Transportation System Research Center		
	01312001	Logisitcs System Decision-Making and Optimization	36	2	1	School of Logistics Engineering	School of Logistics Engineering	
	01312104	Theory and Method of Port Logistics	36	2	1	School of Logistics Engineering		
	00212044	Theory and Methods of Logistics System Optimization	36	2	1	School of Transportation		School of Transportation
	00212045	Theory and Methods of Logistics operators	36	2	1	School of Transportation		
	00212046	Regional Economics and Logistics	36	2	2	School of Transportation		

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
	00212031	Simulation and Analysis of Transportation System	36	2	2	School of Transportation		
	00212032	Transportation System Optimization and Decision Theory	36	2	2	School of Transportation		
	00212033	Transport Economic Theory and Policy	36	2	2	School of Transportation		
	00212034	Traffic Safety Engineering and Management	36	2	2	School of Transportation		
	00212035	Higher Road Material Mechanics	36	2	1	School of Transportation		
	00212036	Asphalt Mixture Design	36	2	2	School of Transportation		
	00212037	Wind Resistance and Earthquake Resistance of Bridge	36	2	2	School of Transportation		
	00212005	Wind Resistance and Earthquake Resistance of Bridge	36	2	1	School of Transportation		
	00212006	Steel Bridge and Composite Structure Bridge	36	2	2	School of Transportation		
	00212040	Transportation System Operation and Management	36	2	2	School of Transportation		
	00212041	Road Traffic System Simulation and Analysis	36	2	2	School of Transportation		
	00212042	Urban Dynamic Traffic Flow Assignment	36	2	2	School of Transportation		
	00212043	Road Traffic Analysis Model	36	2	1	School of Transportation		

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
	01212009	Advanced Problem of Intelligent Transportation In Water	36	2	2	School of Navigation	School of Navigation
	01212010	Theory and Method of Maritime Emergency Decision Making	36	2	2	School of Navigation	
	01212011	Ship Intelligent Control	36	2	2	School of Navigation	
	01112001	Motion Control Technology and Its Application	36	2	2	School of Automation	
	01112002	Health Monitoring and Fault Diagnosis Technology	36	2	2	School of Automation	
	01112003	Theory and Application of Modern Navigation System	36	2	2	School of Automation	
Compulsory Practice	00514001	Practice		2		Relevant School	
	00514002	Thesis Proposal and Interim Assessment		1		Relevant School	
	00514003	Academic Practice		1		Relevant School	

V Compulsory Courses

1. Practice

Practice can be divided into two parts: professional practice and social practice. Assistant teacher and assistant researcher can be the forms of social practice. Professional practice can rely on off-campus practice basement, combine with research project of instructors and possess under the guidance of internal and external tutor. Candidates are required to stimulate a provincial (city) level and a natural (social) science fund project application and 30 minutes' presentation. After inspected and reviewed by the supervisor (Group), those who passed will get two credits.

2. Thesis Proposal And Interim Assessment.

Under the guidance of supervisors, candidates should pinpoint their research areas, look up relevant literature at home and abroad, conduct extensive investigations and make report on the selection of dissertation. After examination, the research topic will be definite. After passing thesis proposal defense, the candidate will get one credit.

Ph.D.. candidates must participate in the medium-term assessment. Specific requirements for the report on topics selection of the dissertation and interim assessment shall be carried out in

accordance with the relevant provisions in graduate students' manual.

3. Academic Activity

In order to encourage candidates to take concern and understand the state of art at home and abroad, broaden their horizons and inspire their creativity, each candidate should make public academic report at least five times, attend academic reports at least 10 times, and write 500 words or more each time after participating in academic activities. After examination by the supervisor (Group), those who complete it will get 1 credit of compulsory courses.

VI Scientific Research and Dissertation

Graduates applying for the degree must meet the relevant requirements of publication in the graduates' manual.

Degree dissertation is an integral part of graduate cultivation which can fully train graduate's ability to undertake scientific research or engage in special technical work. It is also a key link of cultivating graduates' innovation ability and comprehensively applying what they have learned in discovering, analyzing and solving problems. After selecting the topic, periodical summaries and stage work reports shall be written.

Students should actively participate research projects conducted by supervisor, topic selection of thesis should attach importance to frontier domain of communication and transportation engineering discipline or those which have significance for economic and social development.

Graduates applying for the degree must meet the relevant requirements of publication in the graduates' manual. Thesis must pass the test by TMLC2 and reach the requirements of the Academic Degree Evaluation Committee for thesis before the defense.

To examine the effects of instruction, ensure the quality, the items listed in the program must have an assessment. Assessment methods and performance assessment methods need to be clearly stated in the course syllabus.

According to the features of doctoral students, in the whole cultivation process including course learning, thesis preparation, producing and teaching practice, especially in the thesis writing, down-to-earth attitude, dependable work style, modest corporative spirit and good scientific moral spirit are imperative in cultivating process. Falsifying and fabricating data are strictly prohibited.

VII Cultivation Mode and Method

Tutor or tutor-based instruction group is the mode of cultivation, with flexible and diverse, heuristic, seminar-style teaching methods demonstrating the leading role of the supervisor.

VIII Others

1. Ph.D.. candidates who were enrolled ahead of schedule shall be trained as students starting from graduates under the program.

2. Graduates who have equivalent degree background or enroll as cross-disciplinary students, should repeat main courses for undergraduates of the discipline (the course are non-credit). Specific provisions should refer to "provisions for studying for a second time courses" in "Graduate Manual of Wuhan University of Technology".

3. Before thesis proposal, Ph.D.. candidates are required to pass all the degree courses and get the credits before thesis proposal. Students are allowed to take some of the other elective courses according to the dissertation after thesis proposal. All the courses shall be completed before the application of dissertation defense.

4. Each discipline shall make specific regulations and requirements in the amount of literature to be read for the students during the study period. Science and Engineering candidates should review more than 80 pieces of literature at home and abroad (100 for candidates of other disciplines), in which foreign literature shall be no less than one third.

5.Ph.D.. candidates shall report their own learning and research work to the supervisor at least once a month at the course learning stage, and at least twice a month during the paper sessions, which shall be institutionalized and clearly clarified in the programs.

6. This program will enact from 2016.