

# **Education Plan for Academic Graduate in Traffic and Transportation Engineering**

**Discipline Code:0823,Award Master Degree of Engineering**

## **I Objectives**

To fulfill the need of social development for high-level specialized professionals in traffic and transportation engineering realm, to cultivate high-level specialized professionals who are equipped with good professionalism, strong practical, innovative and entrepreneurial proficiency, and being competent to complete technical work independently in the field of traffic and transportation engineering. The requirements are as follows:

1. 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. Inspecting and diagnosing, performance optimization and operating guarantee of mechanical system
2. Tribology system and surface engineering
3. Marine energy saving and environmental protection technology
4. System safety and environmental protection of oil-gas storage and transportation
5. Traffic information and safety
6. Traffic sensation and control
7. Traffic risk assessment and emergency decision
8. Comprehensive transportation planning and management
9. Logistics management
10. Transportation planning and management
11. Road and railway engineering
12. Traffic engineering
13. Transportation information control and equipment
14. Ship control and intelligent navigation
15. Transportation environment and security guarantee
16. Marine time Management theory and technique

## **III Educational System and Years of Study**

**Educational systems and the study period: The educational system for a full-time academic**

graduate is three years and the study period lasts generally three years, no more than five years.

**Credits:** Total credits for academic graduate are no less than 27 credits. Credits for public degree courses are no less than 11 credits; Credits for professional degree course are no less than 6 credits (professional degree course can be optionally within the primary discipline); Credits for elective course are 5 credits or more (professional foreign language as an essential elective; At least one experimental course or research methods courses as required elective courses; At least one interdisciplinary elective courses as an essential elective; optionally one to two elective course credits within the school; five credits for compulsory courses (3 credits for practice; 1 credit for academic activities; 1 credit for topics and interim assessment).

#### IV Curriculum System and Credit Requirements

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
Public Academic Degree	003281001	First Foreign Language(Chinese)	108	6	1、 2	School of Internation Education	Compulsory
	003281002	Introduction to China	54	3	1	School of Internation Education	
	01421061	Equations of Mathematical Physics	36	2	1	School of Science	Two Mathematics Curriculum As Degree Courses Are Required
	01421062	Matrix Theory	36	2	1	School of Science	
	01421063	Applied Mathematical Statistics	36	2	1	School of Science	
	01421064	Stochastic Process	36	2	2	School of Science	
	01421065	Numerical Calculations	36	2	2	School of Science	
	01421066	Mathematical Model	36	2	2	School of Science	
Professional Degree Course	00521001	Engineering Theory and Technology of Transportation Machinery	36	2	2	School of Energy and Power Engineering	School of Energy and Power Engineering/ Intelligent
	00561003		36	2	1		

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
		Tribological Principle				School of Energy and Power Engineering	Transportation System Research Center
	00561008	Safety Technology of Traffic System	36	2	1	Intelligent Transportation System Research Center	
	00561009	Key Technology of Intelligent Transportation System	36	2	1	Intelligent Transportation System Research Center	
	00521004	Transportation Engineering	36	2	1	School of Energy and Power Engineering/ Intelligent Transportation System Research Center /School of Navigation	
	00521005	Reliability Engineering	36	2	2	School of Energy And Power Engineering	
	01321005	Operations Management: Theory and Method	36	2	1	School of Logistics Engineering	School of Logistics Engineering
	01361007	Logisitics Systemanalysis and Optimization	36	2	1	School of Logistics Engineering	
	01361002	Designing and Managing The Supply Chain System	36	2	2	School of Logistics Engineering	

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
	01361008	The Technology and Application of Logistics Information System	36	2	2	School of Logistics Engineering	
	00221026	Logistics System Analysis and Planning	36	2	2	School of Transportation	School of Transportation
	00221027	Supply Chain Design and Optimization	36	2	2	School of Transportation	
	00221028	The Theory and Practice of Port Logistics	36	2	2	School of Transportation	
	00221030	Transportation Planning Principle	36	2	1	School of Transportation	
	00221031	Theory and Method of Transportation Economy	36	2	1	School of Transportation	
	00221032	Analysis and Optimization of Transportation System	36	2	2	School of Transportation	
	00221033	Transportation Management	36	2	1	School of Transportation	
	00221068	Elastic and Plastic Mechanics	54	3	1	School of Transportation	
	00221069	Finite Element Method and Program Design	54	3	1	School of Transportation	
	00221070	Advanced Soil Mechanics	36	2	1	School of Transportation	
	00221067	Theory of Higher Bridge Structure	54	3	1	School of Transportation	
	00221038	Theory and Method of Traffic And Transportation System Planning	36	2	1	School of Transportation	

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark			
	00221039	Theory and Application of Modern Road Traffic Management	36	2	1	School of Transportation				
	00221040	Principles And Methods of Road Traffic Safety	36	2	2	School of Transportation				
	00221041	Transportation Organization and Management	36	2	2	School of Transportation				
	01221001	Transportation Engineering	36	2	1	School of Navigation	School of Navigation			
	01221002	Ship Control Theory and Technology	36	2	1	School of Navigation				
	01221003	Navigation System Theory and Technology	36	2	2	School of Navigation				
	01221006	Modern Maritime Management	36	2	1	School of Navigation				
	01221007	Ship Safety and Reliability Theory	36	2	1	School of Navigation				
	01221008	Modeling and Simulation of Water Transportation System	36	2	2	School of Navigation				
	01221013	Ship Networking and Data Mining	36	2	1	School of Navigation				
Interdisciplinary elective course	02223001	Taijiquan and its	18	1	1	Department of Physical Education				
Elective Course	00522001	Professional English (Vehicle) (1)	18	1	2	School of Energy and Power Engineering			Compu ls-ory Course	School of Energy and Power Engineering
	00522003	Mechanism Fault Analysis	36	2	2	School of Energy and				

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
						Power Engineering		
	00522004	Health Maintenance And Comprehensive Assessment of Equipment	36	2	2	School of Energy and Power Engineering		
	00561010	Marine Shafting Engineering	36	2	1	School of Energy and Power Engineering		
	00522006	Equipment Diagnosis	36	2	1	School of Energy and Power Engineering		
	00561007	Green Ship Technology	36	2	1	School of Energy and Power Engineering		
	00561005	Comprehensive Experimental Training	18	1	1	School of Energy and Power Engineering	At Least One Course Should Be Chosen	
	00561001	Introduction to Scientific Research Method (Research Methodology)	18	1	1	School of Energy and Power Engineering/ Intelligent Transportation System Research Center		
	00522009	Transportation Management and Operation	36	2	2	Intelligent Transportation System Research Center		Intelligent Transportation System Research Center
	00522010	Application and Processing Technology of Transportation Information Collection (Research Methodology)	36	2	2	Intelligent Transportation System Research Center	Compulsory Course	

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
	00522011	Transportation System Modeling and Simulation	36	2	1	Intelligent Transportation System Research Center		
	00522012	Application of GIS In Transportation	36	2	1	Intelligent Transportation System Research Center		
	00562003	Submarine Robot	36	2	2	Intelligent Transportation System Research Center		
	00522014	Connected Ships	36	2	1	Intelligent Transportation System Research Center		
	00522015	Professional English(Intelligent Transportation)(1)	18	1	2	Intelligent Transportation System Research Center	Compulsory Course	School of Navigation
	01222001	Professional English (Navigation)	18	1	2	School of Navigation	Compulsory Course	
	01222002	Ship Traffic Flow Comprehensive Experiment (Experiment Course)	18	1	2	School of Navigation	At Least One Course Should Be Chosen	
	01222003	Research Methods and Academic Paper Writing	18	1	1	School of Navigation		
	01222004		36	2	1	School of Navigation		

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
		Optimization Theory and Ship Dynamic Route Optimization						
	01222005	Geographic Information System and Electronic Chart Development	36	2	2	School of Navigation		
	01222006	Data Analysis Based On MATLAB	18	1	1	School of Navigation		
	01222007	Design and Development of Embedded System	36	2	1	School of Navigation		
	01222008	Maritime Safety Convention	36	2	2	School of Navigation		
	01222009	Analysis Method of Water Traffic Accident	36	2	2	School of Navigation		
	01222010	Ship Pollution Control Technology	36	2	2	School of Navigation		
	01222011	Ship Traffic Flow Theory	36	2	1	School of Navigation		
	01222012	Traffic Asset Management	36	2	2	School of Navigation		
	01322014	Logistics Management Research Methodology	18	1	1	School of Logistics Engineering	Compulsory Course	
	01362016	Logistics Management Specialty English(Logistics	18	1	2	School of Logistics Engineering	Compulsory	



Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
		Management Required Course)					Course
	01322008	Logistics Solution Design Principle	36	2	1	School of Logistics Engineering	
	01362012	Production Quality Control	36	2	2	School of Logistics Engineering	
	01322009	Modern Port Logistics Management	36	2	2	School of Logistics Engineering	
	01322002	Advanced Project Management	36	2	1	School of Logistics Engineering	
	01322007	Academic Frontier of Logistics Management	36	2	2	School of Logistics Engineering	
	01362014	The Logistics Cost Control And Performance Management	36	2	1	School of Logistics Engineering	
	00222066	Regional Economy and Logistics	36	2	1	School of Transportation	
	00222067	Warehousing and Distribution Management Optimization	36	2	1	School of Transportation	
	00222068	Logistics Information Organization and Management	36	2	1	School of Transportation	

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
	00222071	Logistics and Electronic Commerce	36	2	2	School of Transportation		
	00222072	Professional English	18	1	2	School of Transportation	Compulsory Course	
	00222073	Traffic Safety Management Technology	36	2	1	School of Transportation		
	00222074	Traffic Information Management Technology	36	2	2	School of Transportation		
	00222075	Transportation System Analysis and Simulation	36	2	2	School of Transportation		
	00222078	Transportation Organization Optimization Method (Research Method)	18	1	2	School of Transportation	Compulsory Course	
	00222076	Transportation Investment and Financing Management	36	2	1	School of Transportation		
	00222077	Transportation Strategy Management	36	2	1	School of Transportation		
	00222079	Road and Railway Planning And Design Theory And Method	54	3	1	School of Transportation		
	00222002	Professional English	18	1	1	School of Transportation	Compulsory Course	
	00222081	Theory and Method of Pavement Design	36	2	2	School of Transportation		

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark
	00222082	Subgrade Structure and Design Theory	36	2	1	School of Transportation	
	00222083	Road Rock and Soil Engineering	54	3	1	School of Transportation	
	00222084	Road Test and Detection	36	2	2	School of Transportation	
	00222016	Bridge Structure Dynamics	54	3	1	School of Transportation	
	00241034	Higher Concrete Structure	36	2	1	School of Transportation	
	00222087	Bridge Structure Test	36	2	2	School of Transportation	
	00241032	Bridge Concept Design	36	2	1	School of Transportation	
	00222089	Technology of Large Span Bridge Construction Equipment	36	2	1	School of Transportation	
	00222090	Road and Bridge Safety Engineering	54	3	2	School of Transportation	
	00222102	Test of Asphalt Mixture (Experimental Course)	36	2	2	School of Transportation	Compu-lsory Course
	00241039	Transportation and Economy	36	2	2	School of Transportation	
	00222095	Urban Public Transport System Planning and Management	36	2	2	School of Transportation	

Course Category	Course No.	Course Name	Hour	Credit	Semester	School	Remark	
	00222097	Traffic Big Data Analysis Method (Research Methods)	18	1	1	School of Transportation	Compu lsory Course	
	00222098	Road Traffic Capacity Analysis	36	2	2	School of Transportation		
	00222100	Rail Transit Planning and Management	36	2	2	School of Transportation		
Compulsory Practice		Internship and Practical Training		3		All schools		
		Topics and Interim Assessment		1				
		Academic Activities		1				