

交通运输专业（卓越工程师班）2017 版本本科培养方案

Undergraduate Education Plan for Specialty in Transportation (Excellent Engineer Class) (2017)

专业名称	交通运输	主干学科	交通运输工程
Major	Materials Physics	Major Disciplines	Transportation Engineering
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineering
所属大类	交通运输大类	大类培养年限	1 年
Disciplinary	Traffic transportation	Duration	1 year

最低毕业学分规定

Graduation Credit Criteria

课程类别 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	29	61	\	35	\	170
选修课 Elective Courses	9	20	6	\	10	

一、培养目标与毕业要求

I Educational Objectives & Requirement

(一) 培养目标

总体目标：以交通运输领域的最新技术和国家经济社会发展对人才的需求为导向，以培养德才兼备且“适应性强、实干精神强、创新意识强”的高级技术及管理人才为宗旨，培养具备坚实的工程数学、计算机、外语基础知识，运筹学、交通运输组织学以及必要的土木工程、信息与控制、经济与管理等专业知识，掌握交通运输工程的基本原理以及以水路运输工程为主的专业技能和研究方法，具有社会责任感和国际交流能力，能在交通运输及物流等相关工程领域从事科学研究、项目策划与设计、生产运营与组织及经营管理等工作的高级复合型专业人才。

预期五年以上的毕业生：

- (1) 能在交通运输与物流行业、学术界、教育界成功地开展与专业职业相关的规划设计、运营组织、学术研究及创新创业等工作，适应独立和团队工作环境；
- (2) 能够在社会大背景下理解、分析和解决交通运输工程实践问题；
- (3) 以重要的法律、伦理、监管、社会、环境和经济等方面宽广的系统视角管理多学科项目；
- (4) 能与国内外同行、专业客户和公众有效沟通；
- (5) 能够通过研究生教育、继续教育或其他终身学习渠道增强知识的积累和综合能力的提升，适应职业发展，在交通运输领域具有职场竞争力。

Overall objectives: With the latest technology in the field of transportation and the development of national economy and society as the guide to the demand of talents, we should cultivate the advanced technology and management talents with good ability and political integrity and "strong adaptability, hard work spirit and strong sense of innovation", and cultivate solid engineering mathematics, computer and foreign language basic knowledge, Transport histology and the necessary professional knowledge of civil engineering, information and control, economy and management, master the Basic principles of

transportation engineering as well as the specialized skills and research methods based on waterway transportation engineering, with social responsibility and international communication ability, can be engaged in scientific research in the field of transportation and logistics and other related engineering fields. Project planning and design, production operations and organization and management of senior composite professionals.

Graduates are expected to be over five years:

1. Be able to carry out professional career-related planning and design, operational organization, academic research and innovative entrepreneurship in the transportation and logistics industry, academia, education sector to successfully, and adapt to independent and team work environment;
2. Be Able to understand, analyze and solve the problem of transportation engineering practice under the social background;
3. Be able to Management of multidisciplinary projects in a broad system of legal, ethical, regulatory, social, environmental and economic perspectives;
4. Be able to communicate effectively with domestic and foreign counterparts, professional customers and the public;
5. Be able to enhance the accumulation of knowledge and improve comprehensive ability by postgraduate education, continuing education or other channels of lifelong learning , therefore the students will have career competitiveness.in the field of transport and transportation

(二) 毕业要求

- (1) 工程知识: 具有较宽的学科背景和综合素养, 掌握以港口、航运及综合物流为主要对象的交通运输领域所需的数学、自然科学、工程基础、专业知识, 并能将其用于解决复杂工程问题。
- (2) 问题分析: 能够运用数学、自然科学和工程科学的基本原理, 识别、表达、并通过文献研究分析交通运输组织、运营与管理过程中的复杂工程问题, 以获得有效结论。
- (3) 设计/开发解决方案: 能够针对港口、航运、综合物流等方向复杂工程问题设计解决方案, 创造性地设计满足交通运输领域特定需求的系统及工艺流程设计, 并能够在设计环节中体现创新意识, 考虑社会健康、安全、法律、文化以及环境等因素。
- (4) 研究: 能够基于科学原理并采用科学方法对港口、航运及综合物流为主要对象的交通运输领域复杂工程问题进行研究, 包括设计实验、分析和解释数据, 并通过信息综合得到合理有效的结论。
- (5) 使用现代工具: 能够针对以港口、航运及综合物流为主要对象的交通运输领域复杂工程问题, 开发或选择与使用恰当的技术、资源、现代工程工具、仿真软件和信息技术工具, 包括对复杂工程问题的预测与模拟, 并能够理解其局限性。
- (6) 工程与社会: 能够基于工程相关背景知识进行合理分析, 评价交通运输领域工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响, 并理解应承担的责任。
- (7) 环境和可持续发展: 能够理解和评价针对交通运输领域复杂工程问题的工程实践对环境及社会可持续发展的影响。
- (8) 职业规范: 具有人文社会科学素养、社会责任感, 能够在工程实践中理解并遵守工程职业道德和规范, 履行责任。
- (9) 个人和团队: 具有较强的人际交往能力及团队合作精神, 能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。
- (10) 沟通: 能够就交通运输领域复杂工程问题与业界同行及社会公众进行有效沟通和交流, 包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令, 并具备一定的国际视野, 能够在跨文化背景下进行沟通和交流。
- (11) 项目管理: 理解并掌握交通运输工程管理原理与经济决策的方法, 并在多学科领域中应用,

具备一定的项目管理能力。

(12) 终身学习：具有自主学习和终身学习的意识，能够适应不断变化的人际环境和工作环境。

1. Engineering knowledge: Have wide academic background and comprehensive accomplishment, grasp mathematics, natural science, foundation of engineering and professional knowledge and can use them to solve complex engineering problems.
2. Problem analysis: Have the capability of logical thinking, systematic thinking and innovation, have the capability to discover problem, and can use the basic principles of mathematics, natural science and engineering science to identify, express and analyze complex engineering problems by literature research , in order to obtain an effective conclusion.
3. Design / develop solution: Be able to design the solution for complex engineering problems of transportation engineering, Creatively design the system, unit (component) and process flow that can meet the specific needs of transportation major, and the design can reflect the innovation consciousness in the design process, which considered with other factors, such as social health, safety, law, culture ,environment and so on.
4. Research: Be able to research the complex engineering problems of transportation major based on the scientific principle and by using scientific methods, including to design of experiments, analyze and explain the data, in addition to get the reasonable conclusion by synthesizing the information .
5. Using modern tools: Be able to develop, select and use appropriate technology, resources, modern engineering tools, simulation software and information technology tools for complex engineering problems of transportation major, including to predict and simulate the complex engineering problems, and to under the tools' limitations.
6. Engineering and society: Be able to analyze properly and evaluate the influence of the engineering practice and complex engineering problem solution in transportation major field on social, health, safety, law and culture on the basis of engineering related background knowledge ,and understand the responsibilities should be taken.
7. Environment and sustainable development: Be able to understand and evaluate the impact of the engineering practice of the complex engineering problems in transportation major field on environmental and social sustainable development.
8. Professional standards: Have the humanities and social sciences accomplishment, social responsibility, be able to understand and observe the professional ethics and norms in engineering practice, and to fulfill the responsibility.
9. Communication skills and team spirit, be able to play a role as individual, team members or director in the multi discipline background team.
10. Communication: Be able to communicate effectively with the industry peers and the public in the complex engineering problems, including writing reports and design documents, presentations, clear expression, and have a certain international perspective, can communicate under the background of cross-culture.
11. Project management: Understand and master the principles of engineering management and the methods of economic decision-making, and apply them in multi-disciplines, and be equipped with a certain project management capabilities.
12. Lifelong learning: Have the consciousness of self-learning and lifelong learning, and be adapt to the changing environment and working environment.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求 1	√	√			
毕业要求 2		√			
毕业要求 3		√			
毕业要求 4	√				√
毕业要求 5	√	√			
毕业要求 6		√	√		
毕业要求 7			√		
毕业要求 8	√			√	
毕业要求 9	√		√	√	
毕业要求 10				√	
毕业要求 11			√		
毕业要求 12					√

二、专业核心课程与专业特色课程

II Core Courses and Characteristic Courses

(一) 专业核心课程：

运筹学、交通运输经济分析、现代物流学、交通运输规划、交通运输地理数量分析、交通运输系统优化理论前沿与应用创新、运输与物流管理信息系统。

Core Courses: Operational Research、Analysis on Transport Economics、Modern Logistic、Transport Economics、Transport Planning、Transport Geography Quantitative Analysis、Theory Frontier and Application Innovation of Transportation System Optimization、Management Information System for Transportation and Logistics.

(二) 专业特色课程：

港口装卸工艺、港口生产组织与管理、港口与航道工程、船舶货运技术、船舶营运管理、国际航运业务与水运商务、公路运输组织学、国际航运经济与市场学、国际集装箱与多式联运、外贸口岸管理、物流系统规划与设计。

Characteristic Courses: Cargo Handling Technology of Ports、Port Production Organization and Management、Harbor and Waterway Engineering、Ship Stowage Techniques、Shipping Operation Management、International Shipping and Waterborne Business、Road Transport Organization、International shipping economics and market、International Container Multimodal Transport、Port Administration for Foreign Trade、Logistics System Planning and Designing.

附：毕业要求实现矩阵：

专业 核心 课程	专业 特色 课程	课程名称	交通运输专业（卓越工程师班）毕业要求											
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		军事理论									√			
		中国近现代史纲要									√			
		思想道德修养与法律基础						√		√				

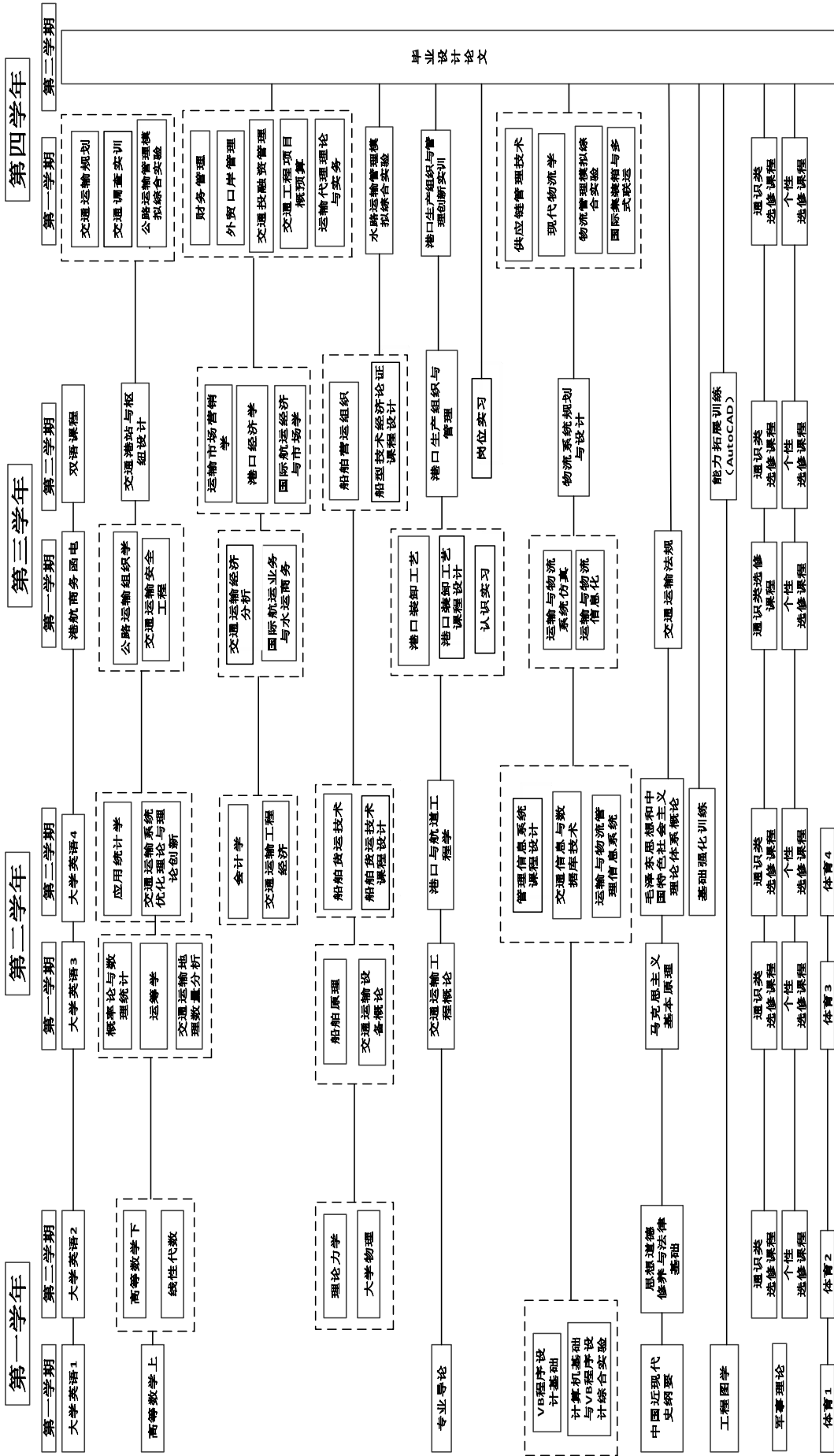
专业 核心 课程	专业 特色 课程	课程名称	交通运输专业（卓越工程师班）毕业要求											
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		马克思主义基本原理									√			
		毛泽东思想和中国特色社会 主义理论体系概论									√			
		体育										√		
		大学英语											√	
		VB 程序设计基础						√						
		计算机基础与 VB 程序设计 综合实验						√						
		创新创业类		√										
		人文社科类							√					
		经济管理类												√
		科学技术类	√											
		艺术体育类										√		
		专业导论	√											
		工程图学	√			√								
		高等数学	√											
		线性代数	√			√								
		大学物理	√											
		理论力学	√											
		概率论与数理统计	√			√								
√		运筹学	√											√
√		交通运输地理数量分析	√											
√		交通运输系统优化理论前沿 与应用创新	√			√								
√		运输与物流管理信息系统						√						
	√	港口与航道工程学	√											
	√	船舶货运技术	√					√						
	√	国际航运业务与水运商务	√											
	√	公路运输组织学		√										
	√	港口装卸工艺	√											

专业 核心 课程	专业 特色 课程	课程名称	交通运输专业（卓越工程师班）毕业要求												
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
√		交通运输经济分析								√				√	
	√	港口生产组织与管理		√								√			
		港口经济学								√					
	√	船舶营运管理										√			
√		交通运输规划	√												
√		现代物流学	√												
		船舶原理	√												
		交通运输工程概论	√												
		交通运输设备概论	√												
		会计学												√	
		交通运输工程经济								√				√	
		交通信息与数据库技术													
		应用统计学		√				√							
		交通运输安全工程							√	√					
		运输与物流信息化		√											
		运输与物流系统仿真						√							
		交通运输法规							√		√				
		港航商务函电										√	√		
		交通港站与枢纽设计	√		√										
		国际航运经济与市场学												√	
		运输市场营销学										√			
		财务管理												√	
	√	国际集装箱与多式联运			√										
		供应链管理技术												√	
		交通工程项目概预算												√	
	√	物流系统规划与设计	√					√							
		运输代理理论与实务							√						
	√	外贸口岸管理												√	

专业 核心 课程	专业 特色 课程	课程名称	交通运输专业（卓越工程师班）毕业要求											
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		交通投融资管理											√	
		军事训练									√			
		基础强化训练				√								√
		船舶货运技术课程设计			√	√								
		管理信息系统课程设计			√		√							
		认识实习		√								√		√
		港口装卸工艺课程设计			√									
		船型技术经济论证课程设计			√								√	
		能力拓展训练				√								√
		交通运输专业岗位实习								√		√		√
		交通调查实训				√	√							
		港口生产组织与管理创新实训				√	√							
		水路运输管理模拟综合实验					√							
		公路运输管理模拟综合实验					√							
		物流管理模拟综合实验				√	√							
		毕业论文		√		√					√			

三、课程教学进程图

III Teaching Process Map



四、 理论教学建议进程表

IV Theory Course Schedule

课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议 修读 学期 Suggested Term	先修课程 Prerequisite Course
			总学时 Tot hrs.	实验 Exp.	上机 Ope- ration	实践 Prac- tice	课外 Extra- cur		
(一) 通识教育必修课程									
General Education Required Courses									
1060003131	军事理论 Military Theory	1	32			16		1	
4220002111	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1	
4220001111	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		2	
4220005111	马克思主义基本原理 Marxism Philosophy	3	48			8		3	
4220003111	毛泽东思想和中国特色社会主义理论体 系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		4	
4210001171	体育 1 Physical Education I	1	26					1	
4210002171	体育 2 Physical Education II	1	34					2	
4210003171	体育 3 Physical Education III	1	34					3	
4210004171	体育 4 Physical Education IV	1	34					4	
4030002181	大学英语 1 College English 1	3	60				12	1	
4030003181	大学英语 2 College English II	2	44				12	2	大学英语 1
4030004181	大学英语 3 College English III	2	44				12	3	大学英语 2
4030004181	大学英语 4 College English IV	2	44				12	4	大学英语 3
4120345171	VB 程序设计基础 Fundamentals of Visual Basic Computer Programming Design	2	32					1	
4120346171	计算机基础与 VB 程序设计综合实验 The Comprehensive Experiments on Computer Base and Visual Basic Programming Design	1	32	32				1	
小 计 Subtotal		29	640	32	0	64	48		

课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议 修读 学期 Suggested Term	先修课程 Prerequisite Course
			总学时 Tot hrs.	实验 Exp.	上机 Ope- ration	实践 Prac- tice	课外 Extra- cur		
(二) 通识教育选修课程 General Education Elective Courses									
创新创业类 Innovation and Entrepreneurship Courses			要求至少取得 9 个学分,且必须选修艺术体育类课程中的艺术类相关课程并取得至少 2 个学分,在创新创业类课程中至少选修一门课程,在人文社科类或经济管理类课程中至少选修一门。 Students are required to obtain at least 9 credits, which must contain art courses of 2 credits from the category of Art and Physical Education Courses, at least one course from the category of Innovation and Entrepreneurship Courses, at least one course from the category of Arts and Social Science Courses or the category of Economy and Management Courses.						
人文社科类 Arts and Social Science Courses									
经济管理类 Economy and Management Courses									
科学技术类 Science and Technology Courses									
艺术体育类 Art and Physical Education Courses									
(三) 专业教育必修课程 Basic Disciplinary Required Courses									
4140343131	专业导论 Introduction to Traffic and Transportation	1	16					1	
4180269171	工程图学 B Engineering Graphics	3.5	72				16	1	
4050063111	高等数学 A 上 Advanced Mathematics I	5	80					1	
4050064111	高等数学 A 下 Advanced Mathematics II	5	80					2	高等数学上
4050229111	线性代数 Linear Algebra	2.5	40					2	高等数学上
4050463131	大学物理 B Physics	5	80					2	
4140126111	理论力学 B Theoretical Mechanics	3	48					2	
4050058111	概率论与数理统计 B Probability and Mathematical Statistics	3	48					3	高等数学上
4050254111	运筹学 A Operational Research	3	48					3	
4140639171	交通运输地理数量分析 Transport Geography Quantitative Analysis	2	32		8			3	
4140640171	交通运输系统优化理论前沿与应用创新 Theory Frontier and Application Innovation of Transportation System Optimization	2	32					4	
4140654171	运输与物流管理信息系统 Management Information System for Transportation and Logistics	2	32		8			4	

课程编号 Course Number	课 程 名 称 Course Title	学 分 Crs	学时分配 Including					建议 修读 学期 Suggested Term	先修课程 Prerequisite Course
			总学时 Tot hrs.	实验 Exp.	上机 Ope- ration	实践 Prac- tice	课外 Extra- cur		
4140485131	港口与航道工程学 B Harbor and Waterway Engineering	2	32					4	
4140411131	船舶货运技术 C Ship Stowage Techniques	2	32					4	
4140642171	国际航运业务与水运商务 A International Shipping and Waterborne Business	2.5	40					5	
4140424131	公路运输组织学 B Road Transport Organization	2	32					5	
4140465131	港口装卸工艺 D Cargo Handling Technology of Ports	2.5	40					5	
4140462131	交通运输经济分析 B Analysis on Transport Economics	2	32					5	
4140655171	港口生产组织与管理 Port Production Organization and Management	2	32					6	
4140644171	港口经济学 B Port Economics	2	32					6	
4140656171	船舶营运管理 Shipping Operation Management	2.5	40					6	
4140147111	现代物流学 A Modern Logistics	2.5	40					7	
4140646171	交通运输规划 Transportation Planning	2	32	8				7	
小 计 Subtotal		61	992	8	16	0	16		
(四) 专业教育选修课程 Specialized Elective Courses									
4140033111	船舶原理 C Ship Theory	2	32					3	
4140113111	交通运输工程概论 A The Introduction to Transportation Engineering	2	32					3	
4140117111	交通运输设备概论 A Introduction to Transportation Equipment	2	32					3	
4170065111	会计学 B Accounting	2	32					3	
4140115111	交通运输工程经济 Engineering Economics of Transportation	2	32					4	

课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议 修读 学期 Suggested Term	先修课程 Prerequisite Course
			总学时 Tot hrs.	实验 Exp.	上机 Ope- ration	实践 Prac- tice	课外 Extra- cur		
4140528151	交通信息与数据库技术 D Traffic Information and Database Technique	2	32	16				4	
4050581151	应用统计学 B Applied Statistics	2	32		8			4	
4140257111	交通运输安全工程 Traffic and Transportation Safety	2	32					5	
4140647171	运输与物流信息化 Transportation and Logistics Informatization	2	32		16			5	
4140648171	运输与物流系统仿真 Simulation of Transportation and Logistics System	2.5	40	16				5	
4140209131	交通运输法规 C Transport Laws and Regulations	2	32					5	
4140649171	港航商务函电 English for Port and Shipping Business	3	48					5	
4140296121	交通港站与枢纽设计 Traffic Hub and Terminal Design	3	48			16		6	
4140645171	国际航运经济与市场学 A International Shipping Economics and Market	2	32					6	
4140651171	物流系统规划与设计 A Logistics System Planning and Design	2	32	8				6	
4140155111	运输市场营销学 Transportation Marketing	2	32					6	
4170014111	财务管理 B Financial Management	2	32					7	
4140650171	国际集装箱与多式联运 International Container Multimodal Transport	2	32	8				7	
4140452121	供应链管理技术 Supply Chain Management Techniques	2	32					7	
4140098111	交通工程项目概预算 Budgeting of Traffic Engineering Project	2	32					7	
4140652171	运输代理理论与实务 A Theory and Practices of Transport Agency	2	32	8				7	
4140144111	外贸口岸管理 Port Administration for Foreign Trade	2	32					7	

课程编号 Course Number	课程名称 Course Title	学分 CrS	学时分配 Including					建议 修读 学期 Suggested Term	先修课程 Prerequisite Course
			总学时 Tot hrs.	实验 Exp.	上机 Ope- ration	实践 Prac- tice	课外 Extra- cur		
4140105111	交通投融资管理 Transport Investment and Financing	2	32					7	
小 计 Subtotal		48.5	776	56	24	16	0		
修读说明：要求至少选修 20 学分。 NOTE: Minimum subtotal credits:20.									
(五) 个性课程 Personalized Elective Courses									
修读说明：学生从学校发布的其它个性课程目录中选课，要求至少选修 6 学分。 NOTE: Sudents can select courses from the other personalized courses in catalog, and are required to obtain at least 6 credits.									

五、集中性实践教学环节

V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	学分 CrS	周数 Weeks	建议修读学期 Suggested Term
1060002111	军事训练 Military Training	1.5	3	1
4140208111	基础强化训练 Foundation Strengthening Training	1	1	4(暑期)
4140181111	船舶货运技术课程设计 The design of Ship Stowage Techniques	1.5	1.5	4
4140548151	管理信息系统课程设计 B The Design of Management Information System	1.5	1.5	4
4140226111	认识实习 Practice of Understanding	1	1	5
4140381131	港口装卸工艺课程设计 The design of Cargo Handling Technology of Ports	1.5	1.5	5
4140369131	船型技术经济论证课程设计 The design of The technical economy demonstration for ship type	1.5	1.5	6
4140221111	能力拓展训练 Ability development training	1	1	6(暑期)
4140657171	交通运输专业岗位实习 Internship	7	7	6
4140329121	交通调查实训 B Practice of Traffic Investigation	1.5	1.5	7
4140653171	港口生产组织与管理创新实训 Innovation Practice on Port Production Organization and Management	2	2	7

课程编号 Course Number	实践环节名称 Practice Courses Name	学分 Crs	周数 Weeks	建议修读学期 Suggested Term
4140241111	水路运输管理模拟综合实验 B Integrated Simulation Experiment on Water Transport Management	1	1	7
4140383131	公路运输管理模拟综合实验 A Integrated Simulation Experiment on road Transport Management	1	1	7
4140242111	物流管理模拟综合实验 B Integrated Simulation Experiment of Logistics Management	1	1	7
4140333121	毕业论文 Graduation Thesis	11	17	8
小 计 Subtotal		35	42.5	

六、其它要求

VI Recommendations on Course Studies

1、《形势与政策》和《心理健康教育》课程为课外必修课程，分别计 2 个和 1 个课外学分。

2、学生选修的通识选修课程和从学校发布的个性课程目录中选修的个性课程，要求与本专业培养方案内设置的课程内容不重复。

1.Situation & Policy (2 credits) and Mental Health Education (1 credit) are the required extracurricular courses.

2.The selected General Education Elective Courses and Personalized Elective Courses from the courses program by university must be different from the major undergraduate education plan in content.

学院教学责任人：王丽铮
专业培养方案责任人：董升平