Discipline code: 0823

Ⅰ.General introducation of the discipline and the research fields

Ph.D. degree program in Traffic and Transportation Engineering is based on the basic theory and key technology of Traffic and Transportation Engineering, taking road vehicle as the main body, regarding traffic safety, energy conservation, environmental protection, new energy, operation qualities control as the main direction, characterized by harmonious development of vehicle, traffic and social. The first level discipline of Traffic and Transportation Engineering in our university develops based on the preponderant subjects of automotive engineering, power machinery and engineering, machine design and automation speciality. The subject of vehicle operation engineering obtained the Ph.D. Degree awarded qualification in 2003,then it was selected to be the fostering and construction place of the national key disciplines of Jiangsu Province.It was approved to build the new technology application key laboratory in road carrying tool of Jiangsu Province. It was also authorized to set up a post-doctoral research station in traffic and transportation engineering disciplines in 2009. It was approved by the Academic Degrees Committee of the State Council to obtained the Ph.D. Degree awarded qualification of a first level discipline in March 2010, then, it was selected to be the provincial level key disciplines in the twelfth five-year plan by the Education Department of Jiangsu Province in October 2011. Road carrying tool is the major carrier of the discipline and the focal points of scientific research of this discipline are operation security of vehicles, energy conservation, environmental protection, the intelligentialize and informatization of the traffic and transportation system. The discipline's main subject is the harmonious development among "vehicle ,traffic and society" ,what's more, the discipline has the vivid feature and superiority in dynamic performance simulation on road carrying tool, road traffic safety technology and transportation planning, the synthesis energy saving technology of the traffic and transportation system and the environmental protection.

The Ph.D. Degree Program in Management focuses on:

1. Simulation and control of road vehicle dynamic performance
2. Synthesis energy saving and environment protection of traffic conveyance
3. Research of traffic information and safety
4. Road vehicle operation and control
5. Intelligent transportation systems

And so on

Ⅱ. Goal and objectives

The faculties of the school are : Cultivating students on the sciences sprite of rigorous academic discipline realistic, innovations. Owning the magnificent foundation on theory and deep, system professional knowledge in the filed of Traffic and Transportation Engineering. Realizing the current situation, the development trends and the international academic front-line of this discipline sufficiently. Having the qualification for scientific research and technology problem-solving independently. Getting prepare for creative achievements in scientific research and professional technology. Possessing quality of academic leader and the teaching and research ability in college or research institution, or being engaged in technical management in traffic and transportation department.

In order to achieve the goal of this major, following objectives are to be accomplished by the time the candidate completes the 3-5 years courses.

Ⅲ. Study duration and the way to cultivate

The graduate students for management science and engineering major should finish the required course credits that must be at least a total of 12 credits, and the credits for degree courses should be more than 10. The completion of these courses is usually within 1 to 2 years, while the additional 2 to 3 years is used to complete the dissertation research and thesis oral defense. Moreover, every student is also required to commit several presentations/lectures that are closely relevant to his/her research project, attend academic conferences/workshops for at least 15 times, which will be counted for 3 credits of this seminar course. In addition, the required course credits can be added beyond the total

required course credits if that is necessary in terms of your knowledge background and the research project in which you will involve.

Ⅵ. Requirement for the course credits

Course Category		Course name	Credits	Term	School by which Courses opened	Type of the Courses	Remark
Degree Courses	Public Degree Courses	Overview of China	2	1	Overseas Education College		Compulsory
		Chinese	3	1	Language & Culture Center		
	Fundamental &Theoretical Courses	Mathematical models and application	2	1	college of science		At least two credits
		Theory and application of functional analysis	2	1	college of science		
		Theory and application of chaotic dynamics	2	1	college of science		
	Core Specialized Degree Courses	Advanced traffic and transport system engineering	3	1	School of Automotive and Traffic Engineering		At least one course
Non-degree courses	Special Elective Courses	Traffic information control and theory	2	2	School of Automotive and Traffic Engineering		Selective

		Modelling theory and method of traffic and transport system	2	2	School of Automotive and Traffic Engineering		
		Vehicle structure dynamic design method and application	2	2	School of Automotive and Traffic Engineering		
		Modern traffic safety and control	2	2	School of Automotive and Traffic Engineering		
		Comprehensive energy saving and environmental protection technology of road vehicle	2	2	School of Automotive and Traffic Engineering		
		Automobile tire technology	2	2	School of Automotive and Traffic Engineering		
		Road Vehicle Control Theory and Method	2	2	School of Automotive and Traffic Engineering		

		Intelligent Transportation System	2	2	School of Automotive and Traffic Engineering		
	Public Elective Courses	All courses in all discipline					Selective

Type of the courses: English-taught course or experimental platform courses

Ⅴ.Credits requirement for the practice

The credit system is applied to assess the Ph.D students' behaviour in academic activities and compulsory parts they must participate during the school study period ,it is generally called practical credits. The course credits and the practical credits can not be substituted by one another. The doctoral students can not enter the defense part until their course credits and the practical credits both meet the requirement.

1. Academic activities(2 credits),the doctoral students need to attend academic report activities at least 5 times,the tutor or the department is responsible to check the academic report activities attendance. The student need to write a final report around 500 words during every attendance,the time ,date ,place,reporter ,theme should be included in the report and one should also write down his academic view and attitude and the main content of the report . The student also need to report his academic dissertation on international conference or national high level academic conference.

2. Foreign literature reading(2 credits),the doctoral students need to read a quantity of foreign literature ,to understand and to get familiar with the ways how paper are written in foreign language and the ways to offer a paper or report on internal meetings. The tutor is responsible for the students' work of foreign literature reading and translation ,it should also be checked by the professional team and the student will be given a mark and he would not be allowed to enter the dissertation defence part if his grade hadn't meet the qualification.

3. Workshop(1 credit at a time),the doctoral students need to report their literature reading experience ,the progress of the academical research and the symposium in public

during the term ,and the doctoral students should report at least 2 times,it is advocated for the doctoral students to report in interdisciplinary seminar.

4. Practice,the doctoral students have to finish teaching practice at least 30 periods,the teaching practice includes teaching,answering questions and instructing students to finish their experiments,where the teaching practice is not less than 4 periods.

5. Comprehensive assessment (2 credits),the comprehensive assessment of the doctoral students is a comprehensive assessment for them before they attend the dissertation part,it is often to assess the academic morality, knowledge of fundamental theory and ability in scientific research, etc.

Comprehensive assessment should be accomplished before the end of the second semester of doctoral study,each Ph.D. student must attend on time,it is half a year that is allowed for the assessment to be postponed if there is a inevitable accident appearing.The comprehensive assessment should be organized by each discipline(college),and the assessment includes examination of comprehensive ability of each discipline and expert interviews. A comprehensive interview assessment group should be established by each discipline ,the team consists of 5 experts from the relevant discipline ,including the leading official,who organizes the assessment. The results of the assessment are “excellent”, “qualified”and “postponed”. There are two chances for the doctoral students to attend the assessment ,if the result is “postponed”,the student is allowed to attend another assessment(the interval between two assessments is at least 6months),if both are not pass,the student would drop out.

Ⅵ. Advisory committee and supervisory

The Ph.D. students should be directed by a qualified major supervisor (Ph.D. graduate faculty), as well as a committee panel containing several qualified co-advisors/committee members. The Advisory Committee initially consists of at least 4 members of the Graduate Faculty, including the Major Advisor, who acts as the chair. The committee should be established by the end of the second semester of the student’s graduate career. The supervisor is not only responsible for the formulation of the Ph.D. Degree program ,the guidance of students’ scientific research, professional practice and academic dissertation and but is also responsible for guidance,demonstration and supervision of the students’

ideology morality and academic morality. The course study and scientific research can be carried out at the same time.

Ⅶ. Dissertation

The level of the quality of doctoral thesis is a comprehensive measure of doctoral training quality and academic standards as an important symbol. Dissertation can be basic research, applied basic research, and Engineering application research, particularly to strengthen the study of the frontier disciplines and the field of cross interdisciplinary penetration, participate in a major issue to solve the forefront of high-tech development, put forward a new concept, new theories, new methods, new technologies； Participate in solving the major theoretical and engineering problems of national economic construction, and, as far as possible, participate in an important national research project which is undertaken by the supervisor or School of Management. The thesis should reflect that the author has grasped solid and wide basic theory as well as systemic expertise in this discipline. The dissertation should normally include two aspects of theoretical analysis and experimental research. It also should focus on the depth and breadth of content, highlighting the innovative and original insights or open up new areas. Dissertation should be, under the guidance of an instructor, completed by the doctoral students himself or herself to indicate that the author has the ability to undertake independent scientific research or to be independently responsible for the specialized technical work.

including：

（1）Topics of the report

After enrollment, the Ph.D. student should know his research direction clearly, under the guidance of the instructor, and participate in scientific research.Usually after passing the qualification exam within the second school year, through the collection and read literature, the Ph.D. student should carry out research and experimental work, complete the report about topics of dissertation, and employ experts of the relevant disciplines and evaluate the report of the topics. After the passage of the deliberations of the topics of the report, the Ph.D. student prepares the implementation plan of thesis under the guidance of the instructor. Topics of reports and papers on the work plan are triplicate. One is saved by the supervisor, another by the student, and the third by College within 2 weeks after the passing. In the process of dissertation work, allowing for partial adjustment of the work plan, however, in principle, the titles are not allowed to change. If there are special reasons that support to change the title, candidate for Ph.D. degree should write an application

himself or herself, and signing an opinion on the application by your major supervisor, recorded by the College Graduate Office, and timely redo report about topics of dissertation.

（2）Novelty

In order to improve the quality of the doctoral students in our school, ensure the innovation of doctoral thesis further strengthen the management of the Ph.D. degree theses, topics of Doctoral Dissertation implement check of Novelty. Under the guidance of the major supervisor, the doctoral candidate should check the Novelty on the topics in School science and technology project consulting department or the new center of other outcomes, retrieve topics of the research dynamics, horizontal, and research methods at home and abroad, and fill out and submit the novelty report.

（3）Thesis stage research report

The major supervisor of doctorial student should carry out regular checks on the Ph.D. dissertation work. In the medium-term of doctoral thesis work, Ph.D. student should stage research report. Assessment team (including the supervisor) are organized by more than five associate professors of the colleges or experts of equivalent professional and technical positions, specify the person in charge, and hold Public report meetings. Through the full description of the work of stage thesis by doctorial students, members of the assessment team question, and point out the problems and suggest improvements. The report meetings are needed to make a detailed record, and when the report meetings end, appraisal forms for postgraduate research work will be filled out, based on reviews and results given by the assessment team after discussion. Then the doctorial student hands it over to assessment team for signature. Test results are served as one of the reference materials for degree-granting.

（4）Workshop

Seminar would be held for doctoral students l ~ 2 times per semester, the total number should be at least six times; Symposiums are participated in by the supervisor, the member of the Advisory Committee (or some teacher and graduate students of related discipline) and the candidate; Symposiums are held in public, the candidate reviews literatures in his research field or report on his thesis in progress, and other members question and give guidance; After the symposium, doctoral student fills in the seminars profile table, together with the report of symposium, hands it over for auditing.

（5）Papers pre-defense

To improve the quality of the level of doctoral thesis, Ph.D. dissertation of the discipline

should implement the pre-defense system. Doctoral dissertation pre-defense is an important part of effectively checking the doctoral thesis work, ensuring the quality of doctoral thesis.

（6）Paper Reviewers and respondents

Work of Application for the respondent of the doctoral thesis, reviewing and defense should be strictly in accordance with the requirements of the "Interim Implementation Measures of the Regulations Concerning Academic Degrees of the People's Republic of China", as well as adopted by the Academic Degrees Committee of the degree-granting work rules and other related documents and regulations.

VIII. Other Issues and requirements

1. Mid-term examination

Each college in charge of its mid-term examination, to examine doctoral coursework, literature review, opening report and research progress of dissertations, the exam of master as starting point's doctoral students should be accomplished at fifth semester.

2. The report of literature review (1 credit)

The reading of Ph.D. students in this discipline should be combined with the research direction and the specific research fields, including no less than 50 references. Literature review report should reflect the international and domestic history, status and trends in the field of research, and not less than 5000 words.

Ⅸ. Financial assistance

Applicants from a foreign country can apply a variety of Chinese government scholarship that may fully or partially support your degree study at JU. For further information regarding these scholarships provided by Chinese government, you can surf on the website of Overseas Education College (OEC), JU, at http://oec.ujs.edu.cn/pub/eng/Scholarship/GS/. In addition to apply these funding supports, School of the Management in JU also provides a financial assistance for each enrolled graduate student at least 3000 Yuan a year for PhD graduate students, with which the total amount of the funding assistance may be possibly updated, depending on the funding availability from a professor's grants, as well as your performance in academic research.

Attachments：

（Ⅰ）. Guide for thesis and dissertation research proposal and plan of study

School of Management, Jiangsu University

Zhenjiang, Jiangsu Province

(Date)

TITLE: A brief, clear, specific designation of the subject of the research. The title, used by itself, should give a good indication of the project.

OBJECTIVES: A clear, complete, and logically arranged statement of specific objectives of the project. If several objectives are proposed, they must be closely related. List them as 1, 2, 3, etc.

JUSTIFICATION: Should present the motivation and importance of the research.

PREVIOUS WORK AND PRESENT OUTLOOK: A brief summary covering pertinent previous research on the problem, citing important and recent publications, the status of current research, and additional information needed, to which the project is expected to contribute. This review will help to determine work already accomplished.

PROCEDURE: A statement of essential work plans and methods to be used to attain each of the stated objectives. The procedure should correspond with objectives, and follow the same order. Phases of the work to be undertaken should be designated.

RESEACH METHOD: should specify the research method of the project, if the theoretical analysis is conducted, the basic model description should be given, if the empirical study is conducted, the possible source of data should be indicated.

PROBABLE DURATION: An estimate of the maximum time likely to be required to complete research and publish results.

LITERATURE CITED: List important and recent publications involving this field of work.

（Ⅱ）.The directory of mainly classic books needed to be read.

1. L.A.N.Gent， J.D. Walter， K. S.Monclal. The Pneumatic Tire[M]. Washington D C：U.S.Department of transportation，National Highway Traffic Safety Administration，DOT HS 810 561，2006.

2. U. Sandberg, J. A. Ejsmount. Tyre/Road Noise Reference Book[M]. Informex, Kisa, Sweden, 2002

3. Theory and Method of Traffic Demand Management.Yan kefei. Tongji University Press, first edition,2012.06

4. The non-equilibrium Operation Characteristics of Urban Road Traffic Flow and the Method of Cooperative Control of Space and Time Resources.Chen jun.China Communications Press,first edition,2014.09

5. Theory and Method of Traffic Congestion Situation Monitoring of Urban Road Network.Hu qizhou,Ye mao,Deng wei.Science Press,2013.10

6. Traffic Dynamic Data Acquisition and Analysis Applied New Technology.Liu hao,Zhang ke,Wang xiaojing. The People's Communication Publishing Company,2012.09

7. The Sustainable Development Traffic(the Implementation Strategy of Green Travel).Rodney Tolley.Translated by Zhang shiwu.2013.05

8. Theory and Method of Traffic Information Intelligent Prediction.Xu lunhui,Fu hu.Science Press.2009.01

9. Automotive System Dynamics and Integration Control.Chen wuwei.Science Press.2014.06

（Ⅲ）. The directory of mainly professional academic journals needed to be read.

Sequence Number	Name of the journal	Publications Organizers	ISSN	Included Situation
1	Control and Decision	Northeastern University	1001-0920	EI
2	China Business and Market	Beijing Wuzi University	1007-8266	EI
3	China Railway Since	China Academy Of Railway Since	1001-4632	EI
4	Computer Integrated Manufacturing Systems	China North Industries Group Corporation 210 Institute	l006-5911	EI
5	Journal of Southeast University (English Edition)	Southeast University	1001-0505	EI
6	Journal of Tsinghai University(Science and Technology)	Tsinghai University	1000-0054	EI
7	Journal of Southwest Jiaotong University(Science and Technology)	Southwest Jiaotong University	0258-2724	EI
8	Journal of Tongji	Tongji University	0253-374X	EI

	University(Science and Technology)			
9	Journal of Beijing Jiaotong University	Beijing Jiaotong University	1673-0291	EI
10	Journal Of Jilin University Engineering and Technology Edition	Jilin University	1671-5497	EI
11	Chang'an University(Natural Science Edition)	Chang'an University	1671-8879	EI
12	Transactions of the Chinese Society for Agricultural Machinery	Chinese Society for Agricultural Machinery	1000-1298	EI/CSCD
13	Acta Aerodynamica Sinica	China Aerodynamics Society	0258-1825	EI/CSCD
14	Journal of The China Railway Society	China Railway Society	1001-8360	EI/SCD
15	Vibration test and diagnosis	Nanjing University of Aeronautics and Astronautics / National Institute of Mechanical Engineering Testing Technology Research Association	1004-6801	EI/SCD
16	Journal of Vibration and Shock	China Vibration Engineering Society	1000-3835	EI/SCD
17	Journal of Systems Engineering and Electrons	China Aerospace Science and Industry Defense Technology Research Institute / China Aerospace Society and so on	1001-506X	EI/SCD
18	Journal of Railway Science and Engineering	China Railway Society /Central South University	1672-7029	EI/SCD
19	Chinese Society for Electrical Engineering	China Institute of Electrical Engineering	0258-8013	EI/SCD
20	Journal of Civil Engineering	China Civil Engineering Society	1000-131X	EI/SCD
21	Automotive Engineering	China Automotive Engineering Society	1674-6546	EI/SCD/CSCD
22	Journal of Transportation Engineering	Chang'an University	1671-1637	EI/SCD/CSCD
23	Journal of Mechanical Engineering (Chinese, English)	China Mechanical Engineering Society	0577-6686	EI/SCD/CSCD
24	Journal of China Highway	China Highway Society	1001-7372	EI/SCD/CSC

	Journal			D
25	Journal of Combustion Engines	China Internal Combustion Engine Society	1000-0909	EI/SCD/CSCD
26	Journal of Mechanics	Chinese Society of Mechanics	0459-1879	EI/SCD/CSCD
27	Journal of Vibration Engineering	China Vibration Engineering Society	1004-4523	EI/SCD/CSCD
28	Engineering Mechanics	Chinese Society of Mechanics	1000-4750	EI/SCD/CSCD
29	Geotechnical Engineering	China Water Conservancy Society / China Civil Engineering Society	1000-4548	EI/SCD/CSCD
30	Transactions of China Electrotechnical Society	China Electrotechnical Society	1000-6753	EI/SCD/CSCD
31	Journal of Electronics	Chinese Institute of Electronics	0372-2112	EI/SCD/CSCD
32	Acoustics	Acoustics Institute of Chinese Academy of Sciences / Chinese Acoustics Society	0371-0025	EI/SCD/CSCD
33	Ordnance Science and Technology	Chinese Institute of Ordnance	1000-1093	EI/SCD/CSCD
34	Automotive Technology	China Automotive Engineering Society	1000-3703	SCD
35	Road Traffic Technology	Ministry of Communications Highway Science Institute	1002-0268	SCD
36	City traffic	Ministry of Construction Urban Traffic Engineering Center	1672-5328	SCD
37	Journal of System Simulation	China System Simulation Society	1004-731X	SCD
38	Journal of Jiangsu University (Nature Edition)	Jiangsu University	1671-6604	SCD
39	Information and control	Chinese Association of Automation	1002-0411	SCD
40	Information Technology	Heilongjiang Institute of Information Technology	1009-2552	SCD
41	Transportation System Engineering and Information	China System Engineering Association	1009-6744	SCD，EI（English version）

42	Journal of Agricultural Engineering	Chinese Society of Agricultural Engineering	1002-6819	SCD/CSCD
43	China Mechanical Engineering	China Mechanical Engineering Society	1004-132X	SCD/CSCD
44	Journal of Operations Research	China Operations Research Association	1007-6093	SCD/CSCD
45	Journal of Management Science	National Natural Science Foundation of China Management Science	1007-9807	SCD/CSCD
46	Journal of Computer - Aided Design and Graphics	China Computer Society	1003-9775	SCD/CSCD
47	Chinese Science Foundation	National Natural Science Foundation of China	1000-8217	SCD/CSCD
48	Chinese Engineering Science	Chinese Academy of Engineering / Higher Education Press	1009-1742	SCD/CSCD
49	Journal of Systems Engineering	Chinese Society of Systems Engineering	1000-5781	SCD/CSCD
50	Chinese Journal of Safety Science	China Occupational Safety and Health Association	1003-3033	CSCD
51	Chinese Journal of Management	Zhejiang University	1004-6062	CSSCI
52	Environmental Science	Institute of Ecology and Environment, Chinese Academy of Sciences	0250-3301	SCIE/SCD/ CSCD

Sequence Number	**Name of the journal**	**the sponsoring organization of the publication**	**ISSN**	**SCI EI ISTP**
1	Vehicle System Dynamics	Swets Publishing Service	0042-3114	SCI
2	IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS		1524-9050	SCI
3	JOURNAL OF INTELLIGENT TRANSPORTATION SYSTEMS		1547-2450	SCI
4	JOURNAL OF ADVANCED TRANSPORTATION		0197-6729	SCI

5	TRANSPORTATION PLANNING AND TECHNOLOGY		0308-1060	SCI
6	INTERNATIONAL JOURNAL OF AUTOMOTIVE TECHNOLOGY		1229-9138	SCI
7	JOURNAL OF TRANSPORTATION ENGINEERING-ASCE		0733-947X	SCI
8	INTERNATIONAL JOURNAL OF VEHICLE DESIGN			
9	INTERNATIONAL JOURNAL OF MECHANICAL SCIENCES			
10	INTERNATIONAL JOURNAL OF HEAVY VEHICLE SYSTEMS			SCI
11	INTERNATIONAL JOURNAL OF FATIGUE			SCI
12	ENGINEERING APPLICATIONS OF COMPUTATIONAL FLUID MECHANICS			SCI
13	Tribology International			
14	Journal of the Transportation Research Board			
15	Journal of Sound and Vibration			SCI
16	Applied Acoustics			
17	Journal of Engineering Tribology			
18	Tire science and technology	The tire society	0090-8657	EI

(Ⅳ).Course content

1.Advanced traffic and transport system engineering

Essential Objectives

Through the study of this course, familiar with and master the basic features of road traffic system, function principle, key problems and the related theory and research methods, to lay the foundation for the study of the theoretical and key technologies of the transportation system.

Content Coverage

Chapter 1 Introduction (**2 credits hours)**

1.1. Overview of transportation system and industrial development

1.2. Development Trend and Key Problems of Transportation System

Chapter 2 Conveyance and characteristics (**4 credits hours)**

2.1. Overview of conveyance

2.2. Rail conveyance and characteristics analysis

2.3. Road conveyance and characteristics analysis

2.4. Other conveyance and characteristics analysis

Chapter 3 Traffic flow characteristics (**4 credits hours**)

3.1. Traffic flow parameters

3.2. Capacity analysis

3.3. Queuing and delay analysis

3.4. Level of service analysis

Chapter 4 Road traffic management and control (**6 credits hours**)

4.1. Main Objectives and Influencing Factors of Road Traffic Management

4.2. Basic characteristics of urban road traffic control system

4.3. Basic characteristics of highway traffic control

4.4. Principle and method of traffic signal coordination control in trunk road

4.5. Regional traffic signal control model and system design

Chapter 5 Planning and design theory of transportation system (**8 credits hours**)

5.1. Process of transportation system planning

5.2. Main principles and elements of design of transportation system

5.3. Basic characteristics of comprehensive transportation system

5.4. The theory and method of demand forecasting for comprehensive transportation

5.5. Regional comprehensive transport network design theory and method

5.6. Design theory and method of logistics system planning

Chapter 6 Urban transport system characteristics and analysis methods (**6 credits hours**)

6.1. Basic characteristics of urban transportation system

6.2. Design and modeling method of urban transportation system

6.3. Key issues and research methods of urban transportation system

Chapter 7 Principles and research methods of ITS (**6 credits hours**)

7.1. The principle of ITS

7.2. Development status and main functions of ITS

7.3. Key issues of ITS

7.4. Analysis and research methods of ITS

Evaluation

- Homework report + Open Exam

2. Comprehensive energy save theory and techniques of road vehicle

Essential Objectives

This course introduces that world energy utilization status and energy-saving technology development, basic principle, Practical energy saving and purifying technology for Vehicle energy saving and environment protection; introduces that Vehicle Power train control and Optimal matching method, new energy and alternative fuel vehicle in abroad; introduces that key Technology of electric/ fuel cell/hybrid electric vehicle, widens visual field of doctor on Vehicle operation engineering.

Content Coverage

Chapter 1 Introduction （2 credits）

1. Vehicle energy saving and environment protection
2. Based ways of Vehicle energy saving
3. Effects evaluation of vehicle energy saving products

Chapter 2 Theory of Vehicle energy saving （4 credits）

1. Energy conversion and balance for vehicle operation process
2. Combustion process and improvement for engine
3. Technical way and potential of Vehicle energy saving

Chapter 3 Energy saving and purifying technology for engine （4 credits）

1. Technical approaches to energy conservation of engines
2. Electric control technology of engine

3. Practical technology of engine energy saving

Chapter 4 Energy-saving technology of vehicle （4 credits）

1. Technology ways of vehicle energy-saving
2. Optimization design method of Vehicle Power train Parameters
3. Optimal matching method of Vehicle Power train
4. light weight of car body

Chapter 5 Alternative fuel for car （4 credits）

1. LPG and dual-fuel automobile
2. Natural gas and dual-fuel automobile
3. Alcohol fuel automobile

Chapter 6 Technology of electric/ fuel cell/hybrid electric vehicle （4 credits）

1. Developmental and key technology of electric vehicle
2. Developmental and key technology of hybrid electric vehicle
3. Developmental and key technology of fuel cell vehicle
4. Developmental and key technology of solar cell vehicle
5. Developmental and key technology of air powered vehicle

Evaluation

- Essay report

3. Automobile tire technology

Essential Objectives

Through this course, making students understanding the relationship between tire and vehicle performance, the contradictory relation among tire capabilities,mastering the theory and method of modern design of tire and the method of performance analysis.

Content Coverage

Chapter 1 Introduction （2 credits）

1. Tire performance and labeling rule
2. Tire structure design method

Chapter2 the Relationship between Tire and Vehicle Performance （2 credits）

1. The typical mechanical model of tire
2. Method of parameter acquisition of tire mechanics model
3. Car's requirement for tire performance

Chapter3 Tire performance analysis method （8 credits）

1. Tire CAE technical software
2. Analysis of lateral deviation of tire
3. Analysis of tire water skiing
4. Analysis of tire control methods
5. Analysis of tire noise

Chapter4 The design theory of modern automobile tire （6 credits）

1. The design theory of non-natural balance profile design
2. The contradictory relation among tire capabilities and influence factor

Chapter5 Bionics in tire design （6 credits）

1. Bionics Principles
2. Bionic tire design

Evaluation

- Essay report

4. Intelligent Transportation Systems

Essential Objectives

This course provides an overview of intelligent transportation systems (ITS) design and analysis, which include a wide range of information technology applications to surface transportation. The different components of ITS to be covered include traffic management systems, traveler information systems, commercial vehicle operations, public transportation systems, emergency response management, automated traffic enforcement, GIS and GPS implementations in transportation systems.

Content Coverage

1. Introduction to ITS and its history
2. Advanced traffic management system (ATMS)
3. Advanced traveler information systems (ATIS)
4. Commercial vehicle operations (CVO)
5. Advanced public transportation systems (APTS)
6. Advanced rural transportation systems (ARTS)
7. GIS and GPS implementations
8. ITS for emergency management
9. ITS for automated enforcement
10. ITS development process
11. ITS Technologies and Future of ITS

Evaluation

- Essay report

5. Vehicle structure dynamic design method and application

Essential Objectives

Through this course, understanding about significance of vehicle structure dynamic design, main content and key technology, and development at home and abroad. Master description model of vehicle vibration system and identification method of Modal parameter, direct dynamic design principle and method based on structure experimental modal analysis. Using dynamic design method Solves vehicle structure design problem, using advanced dynamic design replace static design, meet the needs of future society development.

Content Coverage

Chapter 1 Introduction (2 credits)

1. Significance of vehicle structure dynamic design
2. Basic concept of dynamic design
3. Main content and usual methods of dynamic design
4. Development of dynamic design at home and abroad

Chapter 2 Vehicle system and model (4 credits)

1. Mathematical model

2. Theoretical modeling and experimental modeling

3. Discrete system and modeling

4. Vehicle structure vibration system modeling

Chapter 3 Dynamic substructure method of structural modeling and analysis

(4 credits)

1. Introduction

2. Fixed interface mode synthesis method

3. Free interface mode synthesis method

4. Complex mode synthesis method

5. Composite structure system analysis method

Chapter 4 Parametric design FE model updating and structure dynamic design

(4 credits)

1. Introduction

2. Principle of FEM model local modification

3. FEM model modification of Complex mode

4. Parametric design FE model updating and structure dynamic design

Chapter 5 Structure dynamic design based on structure modification and modification reanalysis

(6 credits)

1. Structure dynamic sensitivity analysis

2. Structural modification reanalysis

3. Dynamic design method based on structure modification and modification reanalysis

Chapter 6 Structure dynamic design based on artificial neural network (4 credits)

1. Introduction

2. Principle of structure vibration system model based on artificial neural network

3. Method of structure vibration system reanalysis based on artificial neural network

4. Dynamic optimization method of vehicle component based on artificial neural network

Chapter 7 Application of vehicle dynamic design technique (6 credits)

1. Experimental modal analysis

2. Finite element analysis

3. Comparison of experimental modal and finite element analysis

4. Force analysis

Evaluation

- Essay report

6. Traffic information control and theory

Essential Objectives

Through this course, graduate students should:

(1) understand the basic theory of traffic information control, basic technology deeply, and understand the development trend of traffic information control, traffic information control technology, and the latest progress and innovative results and make an evaluation.

(2) master1-2 hot spots of the theory and technology; understand the characteristics of the mainstream traffic information control system, as well as the typical application system control method design.

(3) Traffic information engineering and control direction of the doctor can select one of the direction of the doctoral thesis, make a doctoral thesis of the opening report, through the course of study, write a paper.

Content Coverage

Chapter 1 The latest TRB, TR, ITS, WCTRs, TITS and other international database conference proceedings anthology. Choose a few of these new directions and topics, such as traffic network collaborative control technology, active traffic control technology and so on. （8 credits hours）

Chapter 2 Traffic Information Collection and Processing Technology（4 credits hours）

Chapter 3 Traffic signal control and communication technology （4 credits hours）

Chapter 4 Traffic information management platform design （4 credits hours）

Chapter 5 Experiment: Traffic information control simulation technology （4 credits hours）

Evaluation

- Essay report

7. Modelling theory and method of traffic and transport system

Essential Objectives

Through this course, understanding the basic characteristics of traffic and transportation system and the basic requirements of functional design, grasping the theory and main methods of complex system modeling, and applying it to typical transportation and transportation systems.The theories and methods of typical transportation system modeling such as road traffic system, urban integrated passenger transport hub and logistics center are introduced, and relevant modeling and simulation software are applied to design and analyze typical cases.

Content Coverage

Chapter 1 Introduction(2 class hours)

1.1 Macroscopic characteristics and model of pedestrian flow

1.2 Modeling method of complex system and related computer technology

1.3 Pedestrian flow simulation software

1.4 Simulation system

Chapter 2 Theory and method of simulation modeling for complex adaptive system(2 class hours)

2.1 System modeling method and simulation strategy

2.2 Complex adaptive system theory

2.3 Application method of complex adaptive system in traffic field

Chapter 3 Road traffic model and simulation(4 class hours)

3.1 Road traffic characteristic model

3.2 Vehicle running speed and accident prediction

3.3 Driving analogous system

3.4 Road traffic system simulation

Chapter 4 Functional decomposition and modeling of spatial structure of integrated transportation hub(4 class hours)

4.1 Function and structure analysis of integrated transportation hub

4.2 Pedestrian facilities and vehicle equipment model for passenger transport hub

4.3 The topology network of the integrated transport hub

Chapter 5 Pedestrian traffic characteristics analysis and behavior modeling(4 class hours)

5.1Experimental investigation on the pedestrian flow in comprehensive transport hubs

5.2 Psychological and behavioral characteristics of pedestrians

5.3 Analysis of macroscopic characteristics of pedestrian flow

5.4 Analysis of chaotic characteristics of pedestrian traffic flow in short time

5.5 The establishment of pedestrian traffic behavior model

Chapter 6 Design of comprehensive transportation hub function and structure evaluation system(2 class hours)

6.1 Design thought of comprehensive transportation hub function and structure evaluation system

6.2 Function and structure evaluation index of integrated transportation hub

6.3 Evaluation criteria for the function and structure of integrated passenger transport hub

6.4 The evaluation method of the function and structure of the comprehensive passenger transport hub

Chapter 7 Brief introduction and case analysis of PSSITH system(2 class hours)

7.1 System overview

7.2 Pedestrian agent model and key algorithm

7.3 Characteristic parameter statistics of simulated row of human flow

7.4 Dynamic display of density distribution

7.5 Case analysis

Chapter 8 Logistics system, model and simulation(2 class hours)

8.1 Overview of logistics system

8.2 Logistics system model and modeling steps

8.3 Simulation software and application of logistics system

Chapter 9 Logistics system prediction, node location and decision evaluation(2 class hours)

9.1 Forecasting model and Simulation of logistics system

9.2 Node location model and Simulation of logistics system

9.3 Performance evaluation model and decision method of logistics system

Evaluation

- Essay report

8. Modern traffic safety control

Essential Objectives

Through learning this course students can grasp the basic concepts and basic theories of traffic safety control, apply the analysis and evaluation methods of transportation system safety, and use modern control theories and methods to solve practical problems,have the basic ability of comprehensive traffic safety analysis and management control.

Content Coverage

Chapter 1 Prolegomenon **（2 credits hours）**

1．Overview of traffic safety engineering

(1) Formation and development of safety engineering discipline

(2) Research contents and objects of safety engineering discipline

2．Concepts related to safety systems engineering

(1)System

(2) System engineering

(3) System engineering and system interface of man-machine-environment

(4) Safety guarantee system

3．Connotation and characteristics of safety

(1) Basic concepts and relationships of safety science

(2) Basic features of safety problems

Chapter 2 Basic Theory of Traffic Safety **（2 credits hours）**

1．Theory of reliability

(1) Basic terms

(2) Reliable function and failure rate

(3) Reliability of system

(4) Reliability of human

2．Accident causes theory

(1) Accident proneness theory

(2) Accident causation sequence theory

(3) Unexpected release of energy theory

(4) Psychological motivation theory

(5) Theory of system

3．Accident prevention theory

(1) Objectives and principles of accident prevention

(2) 3E criterion of accident prevention and accident rules

(3) Heinrich industrial safety axiom

(4) Five - stage model of accident prevention

Chapter 3 Road Safety Control **（4 credits hours）**

1．Road safety

2．Traffic accidents and road factors

(1) The influence of road guardrail and road Barrier on traffic Safety

(2) The influence of road lighting and greening on traffic safety

(3) Code for safety setting of pedestrian crossing

3．The safety of the road intersection

(1) Advantages and disadvantages of plane intersection, roundabout intersection and stereo intersection

(2) The form and nature of conflict at the intersection

4．Road alignment and traffic safety

(1) The relationship between road plane line and traffic safety;

(2) The relationship between road vertical alignment and traffic safety;

(3) The relationship between road cross sectional alignment and traffic safety

Chapter 4 Vehicle And Driver Safety Control **（4 credits hours）**

1．Vehicle driving and traffic safety

(1) The process of pedestrians suffer impact by vehicles

(2) General vehicle structure for pedestrian impact mitigation

(3) General vehicle structure for passenger impact mitigation

2．Vehicle safety performance guarantee

(1) Vehicle accident prevention

(2) Safety structure for reducing accident damage

(3) The process of occupant damage to passenger and pedestrian

3．Advanced safety vehicle

4．Improve vehicle damage factors

5．Traffic safety psychology

(1) Personality traits of drivers

(2) Driving information processing features

(3) Driving suitability characteristics

(4) Driving fatigue mechanism and evaluation characteristics

Chapter 5 Traffic safety control management **（4 credits hours）**

1．Traffic safety overview

(1) Concept of safety control

(2) Main contents of safety control

(3) Safe production policy

2．Traffic safety regulations management

(1) General Administration of safety regulations

(2) Main contents of safety regulations

(3) Major traffic safety regulations

3．Personnel safety management

(1) Psychological and physiological management of personnel

(2) Teamwork

(3) Safety education and training

4．Road traffic speed management

(1) Speed characteristic

(2) Speed factors in traffic accidents

(3) Speed audit

(4) Traffic engineering countermeasures based on speed

5．Traffic incident detection technology

(1) Traffic incident detection system

(2) Event detection

(3) Traffic information collection technology

(4) Event algorithm

Cases study **（8 credits hours）**

Evaluation

- Essay report +Open discussion

(Ⅴ). Information of Professors

1.CHEN Long .Ph.D

Education Background

1982: B.S degree from Jiangsu Institute of Technology

2006: Ph.D degree from Jiangsu University

Working Experience

He is the vice president of Jiangsu University, party committee. Also, he is the director of State and Local Joint Engineering Center of hybrid vehicle technology. Meanwhile, he is in charge of the key laboratory of advanced vehicle technology of Jiangsu Province and automotive engineering research institute of Jiangsu University. He is also the academic leader of vehicle engineering and transportation engineering of Jiangsu University, carrier engineering doctoral and the first team of top-notch talent and technological innovation. He is the vice president of Society of Automotive Engineers of Jiangsu Province and the members of Automotive Standardization Committee electric vehicles of China. He was the editorial of the seventh and eighth Journal of Agricultural Machinery. He has been engaged in the field of vehicle engineering teaching and research work for a long time and conducted systematic and thorough innovation researches in vehicle dynamics and control, system integration and electronic control of new energy automotive. He has published papers in academic journals at home and abroad more than 120 papers, and more than 80 were included by SCI, EI. He has chaired the National Natural Science Foundation four times, National 863 Program, and more than 20 provincial and ministerial level research projects, he has won the first prize of provincial Department of Science and Technology Progress Award three times, seven times of second prize, and two times of third prize. Also, he won teaching achievement prize of Jiangsu province, more than 20 authorized patents. He has three times been commended for outstanding educators and outstanding communist education system of Jiangsu Province three times. He was granted the titles of "Excellent Youth Engaged in Mechanic Industry" , " Young Scientist of Mechanic Industry" and "Young and Middle of Outstanding Contributions of Jiangsu Province"

Research Interesting

1.Dynamic performance simulation and control for vehicle

2.Vehicle operation and transportation planning

Contacts

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2.JIANG Haobin .Ph.D

Education Background

Ph.D. (-2000.6), Automotive Engineering, Jiangsu University

M.E.(1991.9-1994.4), Automotive Engineering,

Jiangsu University

B.E.(1987.9-1991.6), Agriculture Machinery,

Nanjing Agricultural University

Study abroad experience (1995.10-1996.10),

Research on ground steering dynamics of vehicles, Mie University in Japan

Working Experience

2014.6-now, Dean of School of Automotive and Traffic Engineering, Jiangsu University

2011.5-2014.6, Executive Vice-President of Automotive Engineering Research Institute, Jiangsu University

2003.7-2011.5, Vice-President of Automotive and Traffic Engineering, Jiangsu University

2001.8-2011.5, Lecturer and associate professor of Automotive and Traffic Engineering, Jiangsu University

1994.4-2001.8, Teaching assistant and lecturer of Automotive and Traffic Engineering, Jiangsu University

Research Interesting

1.Vehicle dynamics performance analysis and electronic control technology

2.Road vehicle running safety active prevention and control technology and theory

3.Intelligent transportation technology

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3.HE Ren .Ph.D

Education Background

1983: B.S degree from Jiangsu Institute of Technology

1986:Master degree from Jilin University of Technology

1995: Ph.D degree from Jiangsu Institute of Technology

Working Experience

Director, Automobile Engineering Key Laboratory of Jiangsu Province, ,Jiangsu University,1999—present

Visiting Scholar, ZF Friedrichshafen AG,Germany,1998-1999

Professor, Doctoral tutor, School of Automotive and Traffic Engineering,Jiangsu

University, 1997-present

Associate Professor, School of Automotive and Traffic Engineering, ,Jiangsu University, 1994-1997

Research Interesting

1.Automobile comprehensive energy saving and purification technology

2.Automotive mechatronics technology

3.Automotive modern design theory and method

Contacts

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4.WANG Guolin .Ph.D

Education Background

1990/09-1994/06，Jinlin University ,
Institute of Agricultural Engineering, PH.D.

1985/09-1988/06，Jinlin University，Faculty of Science,
Master of Engineering.

1981/09-1985/06, Shenyang Jiangzhu University,
School of Mechanical Engineering, Bachelor of Engineering.

Working Experience

2012/5-Present, Jiangsu University, School of Automotive and Traffic Engineering, Professor, Tutor of doctoral degree.

2001/11-2002/05, Research institute of DaimlerChrysler in Germany, Visiting Professor.

2001/03-2001/10，Hochschule Esslingen University of Applied Sciences, Germany, Visiting Professor.

1999/08-2001/02，Jiangsu University of Technology, School of Automotive and Traffic Engineering, Professor.

1998/05-1999/07，Jilin University of Technology，College of Traffic , Associate Professor.

1995/11-1998/04，Jiangsu University of Technology，Postdoctoral research station of mechanical engineering，Postdocter, Associate Professor.

1988/06-1995/10，Jilin University of Technology, Faculty of Science, Teaching Assistant , Lecturer.

Research Interesting

1.Vehicle dynamic performance and control technology

2.Modern tire control technology

Contacts

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5.LI Zhongxing .Ph.D

Education Background

- Ph.D.,Vehicle Operation Engineering, Jiangsu University, 12/2007~9/1997.
- M.S., Vehicle Engineering, Jiangsu University (Jiangsu Institute of Technology,predecessor), 9/1987~6/1991.
- B.S., Design and Manufacture of Tractor, Jiangsu University, (Zhenjiang Institute of Agricultural Machinery,predecessor), 9/1980~6/1984.

Working Experience

Dr. Li has been engaged in teaching and researching work on vehicle engineering and transportation engineering for a long time since 1984 .He has done a lot of effective research work on dynamic simulation and control of vehicle performance, vehicle safety and intelligent transportation especially, and accumulated rich experiences in practice.He has finished 8 national and provincial research projects as the project leader or the principal person, and won the ministerial and provincial Science and Technology Progress Awards ,including First Prize 2, Second Prize 1,Third Prize 3.Dr. Li has published about 40 articles in the main journals at home and abroad,among them about 20 papers indexed by EI ,and has edited 3 works and drafted 1 industry standard.

Research Interesting

1. Simulation and control of vehicle dynamic performance
2. Simulation and control of transportation equipment operating quality
3. Intelligent traffic
4. Diagnosis and fault-tolerant control

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6.LIU Zhiqiang .Ph.D

Education Background

1981.09~1985.06，major in vehicle in the Jiangsu Institute of Technology；

1987.09~1990.06，study for master’s degree of vehicle engineering in the university of Science and Technology in Jiangsu;

1999.09~2003.06，study for doctor’s degree in the school of vehicle engineering in Jiangsu University；

Working Experience

Professor LIU now is the vice-dean of School of Automotive and Traffic Engineering of Jiangsu University. He also served as director of China traffic engineering association, standing director of Jiangsu province highway, the ministry of public security traffic management business instructor, director of the institute of Zhenjiang road, employed as

the national road traffic accident prevention expert group specialist by the state general administration of the ministry of public security and national security supervision and management

Research Interesting

Assistance driving of vehicles

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APPLICATION FORM FOR THE SCHEDULE

Comments of Discipline： Person in charge（Signature）： Date
Review opinion of college academic degree sub-committee: Person in charge （Signature）： Date