

**The Undergraduate and Graduate Courses Taught in English  
and Opened to the International Visiting/Exchange Students  
at Tsinghua University  
(Spring Semester, 2020)**

*Note:*

- (1) The course information provided herein may be subject to change before course registration.*
- (2) The courses of a department/school are preferentially open to the exchange students of the department/school level.*
- (3) The rule for course registration is first come first service.*

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## **1. School of Architecture**

- (1) **【Course Title】** Introduction on Contemporary Urban Planning and Design  
当代城市规划与设计

**【Course Code】** 80000841

**【Credits】** 1

**【Credit Hours】** 16

**【Semester】** Spring

**【Capacity】** 35 Graduate Students

**【Instructor】** LIU JIAN 刘健

**【Course Description】**

An introduction to the contemporary urbanization process, the theory and practice of urban development in China and abroad. Analysis some urban and regional development planning cases, including Beijing and Shanghai metropolitan areas, Yangtze River and Purl River Delta urbanizing regions and urban agglomeration development, as well as the new town development in the Shenzhen special economic zones.

- (2) **【Course Title】** Practice and Theory in Green Building Design  
绿色建筑理论与实践

**【Course Code】** 80000861

**【Credits】** 1

**【Credit Hours】** 16

**【Semester】** Spring

**【Capacity】** 35 Graduate Students

**【Instructor】** SONG Yehao 宋晔皓

**【Course Description】**

The course lasts eight weeks and consists of eight lectures. The first three lectures will be given by Prof. Thomas Herzog, former dean of Department of Architecture in TUM. He will concentrate on the using of solar energy in architecture and urban planning. Besides, he will introduce briefly the new trends of green building design and research. The forth lecture will be given by Prof. Qin Youguo, former dean of School of Architecture, Tsinghua University, he will show the students the overall view of the development of green building design in China. The fifth one will be given by Prof. Zhu Yingxin, which is about the recognition of the built environment. The sixth one will be given by Associate Prof. Song Yehao, which concentrates on green building design for farmers in the rural area in China. The seventh one will be given by Associate Prof. Zhou Zhengnan, which concentrates on the green building design in the urban area. The last one will be given by Associate Prof. Lin Borong, which concentrates on computer simulation in green building design. There are several seminars in the course and one paper is asked to each student at the end of course.

(3) **【Course Title】** Design Studio III  
设计专题三

**【Course Code】** 80001063

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** ZHANG Yue 张悦

**【Course Description】**

The design studio will investigate the potentials of the YongDing River, Beijing's most important native waterway. We will research, map, and analyze historic, current, and future scenarios of the river in order to propose a new urban relationship between Beijing and its waters in general, and the relationship between the various neighborhoods and districts of western Beijing with the YongDing River specifically.

(4) **【Course Title】** Design Studio IV  
设计专题四

**【Course Code】** 80001073

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** LI Xiaodong 李晓东

**【Course Description】**

From 1949 to 2000, a large amount of public housing was developed in Beijing under the planned socialistic welfare housing distribution system. Those former public housing areas have started to face the challenge of deterioration in terms of ageing, lack of maintenance/management, increasing mobility of residents, etc. But those areas still keep their values to a certain extent due to their central locations, easy access, convenient public spaces/facilities, or existing conditions of mixed-use, and in the collective memory of a special historical era. Within this context, urban sustainable renewal would be a potential solution for the urban problems of the former public housing area. Therefore, we chose Block 1 of Sanlihe Neighborhood 1 in Beijing Xicheng District, which was designed and constructed in 1950s, constituting a typical representative of the former public housing areas in Beijing, as the study case.

## **2. Department of Automation**

- (1) **【Course Title】** How to Report Research Results in English and the Related Issues  
英文科技论文写作与学术报告

**【Course Code】** 60250101

**【Credits】** 1

**【Credit Hours】** 16

**【Semester】** Spring

**【Capacity】** 100 Graduate Students

**【Instructor】** GUAN Xiaohong 管晓宏

**【Course Description】**

Chinese scholars and students become more and more active in international academia and publications and professional participations have become a key measure of scholarly accomplishment. With this new trend, it becomes increasingly important that Chinese scholars and students get familiar with, and abide by the international standard when writing papers, submitting them for publication, dealing with editors, and applying for funding. This course intends to give some advice to the new scholars on the etiquette of writing a paper, proper citing of reference, and giving attribution. The "conventions and protocols" of international academia are discussed together with the cultural differences between the East and the West. The norms of serving academic communities as reviewer, associate editor and programming committee member are also introduced. The advice is given for engaging in the most important activities in academic career development such as choosing research topics and writing proposals for applying for research funding.

- (2) **【Course Title】** Enterprise and Information System Modeling and Analysis  
企业与信息系统建模分析

**【Course Code】** 40250942

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Undergraduate Students

**【Instructor】** LI Qing 李清

**【Course Description】**

Enterprise engineering and information system modeling and analysis techniques are introduced in this course. These techniques are basic methods of system design/realization, industrial engineering, management and IT consulting for graduated students from industrial engineering, management engineering, and information engineering department.

### **3. Department of Automotive Engineering**

(1) **【Course Title】** Mechatronic Systems in Automotive Engineering

汽车机电系统

**【Course Code】** 70150163

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** LI Jianqiu 李建秋

**【Course Description】**

The contents in this course includes: Chapter 1 Introduction (Development of the terminology, Demand on a Mechatronic Engineer, Education of a Mechatronics Engineer, Examples of a Mechatronic System in Vehicle Construction, Design Process of Mechatronic Systems); Chapter 2 Sensors; Chapter 3 Signal Processing; Chapter 4 Signals Output; Chapter 5 Conduction-bound Disturbance & Irradiated Disturbance; Chapter 6 Bus System; Chapter 7 Actuators and Chapter 8 Power System

(2) **【Course Title】** Automotive Engineering II

汽车工程 II

**【Course Code】** 70150333

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** ZHENG Sifa 郑四发

**【Course Description】**

The contents in Automotive Engineering II include:1) fundamentals requirements and analysis of vehicle vertical and lateral dynamics, excitation characteristic of the road, 2) structure and character of tires, components of suspension system and steering system, 3)single wheel model, single-track model , two-Track model for vertical dynamics, 4) Single Track Vehicle Model, Four-Wheel Vehicle Model for lateral dynamics, 5)the influence of the parameters of tires, suspension system and steering system to the vehicle vertical and lateral dynamics.

(3) **【Course Title】** Internal Combustion Engine II

内燃机 II

**【Course Code】** 80150183

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** WANG Zhi 王志

**【Course Description】**

This course is suitable for the postgraduate students majored in Vehicle Engineering and Power Machinery Engineering. The course mainly focuses on the working process of internal combustion engines, including gas exchange in internal combustion engine, gasoline engine and diesel engine combustion process, special combustion processes (such as HCCI, etc), supercharging for internal combustion engine, as well as the generation of pollutants formation and emission control.

**(4) 【Course Title】 Materials Selection in Mechanical Design**

机械设计中的材料选择

**【Course Code】** 80150122

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** WEI Yintao 危银涛

**【Course Description】**

The primary goal of this course will be for students to learn to identify, based on previously-defined design requirements, the basic function of an engineering object, the parameters to be optimized and the best material(s) to meet the design requirements. Students should also become aware of the breadth and range of material properties associated with different material classes, the basic processes available for processing materials and how to relate the shape of a component to its mechanical response. As the application of the materials selection theory the materials for automobile bodies will be introduced in the second part of the lectures. The practical objects includes

- Developing students' ability to select and optimize materials for a given engineering application, especially for vehicle structures, with due consideration to functional requirements, cost, availability, manufacturability, etc.
- Learn basic criteria for materials selection.
- Derive the performance indices for materials.
- Select materials with lightweight design and energy-safety.
- Select materials with good toughness and impact properties.
- Familiar with materials of automotive bodies
- After this course, the students should have
- Talent of systematic selection of materials for a variety of structural designs, especially for vehicle/component
- Capability of identifying the basic function of an engineering object, the parameters to be optimized and the best material(s) to meet the design requirements

Application of the material selection theory to the automobile bodies

**(5) 【Course Title】 Detonation in Gases**

气相爆震

**【Course Code】** 80150533  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 30 Graduate Students  
**【Instructor】** MEVEL Remy Lucien Henri  
**【Course Description】**

#### **4. Department of Chemical Engineering**

**(1) 【Course Title】 Chemical Engineering Ethics**

化学工程伦理

**【Course Code】 60340011**

**【Credits】 1**

**【Credit Hours】 16**

**【Semester】 Spring**

**【Capacity】 110 Graduate Students**

**【Instructor】 Zhao Jinsong 赵劲松**

**【Course Description】**

The safety and environmental technologies, regulations and the current status of the chemical industry are introduced in this class. The basic engineering ethics concepts are systematically discussed based on typical domestic and international chemical industry case studies. Invited presentations on practical chemical engineering ethics issues will be made by industrial and government authority experts. The students will gain thorough understanding of various ethics issues caused the development of the chemical industry as well the professional ethical codes and social responsibility. The students will also learn the methodologies for addressing chemical engineering ethics issues.

**(2) 【Course Title】 Advanced Biological Science and Engineering**

现代生命科学与生物工程进展

**【Course Code】 80340502**

**【Credits】 2**

**【Credit Hours】 32**

**【Semester】 Spring**

**【Capacity】 30 Graduate Students**

**【Instructor】 ZHANG Chong、XING Xinhui、WANG Zhao、LU ZHI 张翀、邢新会、王钊、鲁志**

**【Course Description】**

This course will introduce current development in the field of modern life science and biological engineering, which could give students advanced knowledge and thinking mode in biological science and engineering. The content includes four parts: 1, Basic knowledge: overview of modern biological science and engineering, review of classical molecular biology and basic biological engineering; 2, Current topics: bioinformatics, synthetic biology and metabolic engineering, modern biological pharmaceutical; 3, Case study: case study for previous current topics, most cutting-edge research cases from Tokyo Institute of Technology offers; 4, course summary: final reports by the students. Evaluation: homework and final report. This course will specially emphasis on case study, which could allow students to understand not only current development in the field of biological science and engineering, but also the logic behind it, and finally cultivate critical thinking in scientific research.



(3) **【Course Title】** Recent Advances in Separation Processes

分离技术最新进展

**【Course Code】** 80340512

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 20 Graduate Students

**【Instructor】** 骆广生、刘铮、陈健、王运东、王保国 LUO Guangsheng、LIU Zheng、CHEN Jian、WANG Yundong、WANG Baoguo

**【Course Description】**

The course of Recent Advances in Separation Processes will mainly introduce the development of solvent extraction, adsorption, absorption, membrane separation, bio-separation, and microscale separation.

(4) **【Course Title】** Environment Biotechnology

环境微生物技术

**【Course Code】** 80340122

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 20 Graduate Students

**【Instructor】** 邢新会 XING Xinghui

**【Course Description】**

## **5. Department of Civil Engineering**

- (1) **【Course Title】** Transportation for Tomorrow(C-Campus Course )  
未来交通(C-Campus Course )

**【Course Code】** 20030134

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 20 Undergraduate Students

**【Instructor】** Wu Jianping 吴建平

**【Course Description】**

- (2) **【Course Title】** Construction Contracts  
工程合同管理

**【Course Code】** 30030482

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 Undergraduate Students

**【Instructor】** LI AO Binchao 廖彬超

**【Course Description】**

Legal aspects of construction contracts and specifications; contract formation, interpretation, rights and duties, and changes; legal liabilities and professional ethics of architects, engineers, and contractors.

- (3) **【Course Title】** Programming Analysis of Structures  
结构矩阵分析

**【Course Code】** 40030702

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Undergraduate Students

**【Instructor】** XING Qinyan 邢沁妍

**【Course Description】**

- (4) **【Course Title】** Building Materials  
建筑材料

**【Course Code】** 40030902

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Undergraduate Students

**【Instructor】** LI Kefei 李克非

**【Course Description】**

## **6. Department of Computer Science and Technology**

**(1) 【Course Title】 Human Computer Interaction Technology**

人机交互技术

**【Course Code】 80240533**

**【Credits】 3**

**【Credit Hours】 48**

**【Semester】 Spring**

**【Capacity】 30 Graduate Students**

**【Instructor】 SHI Yuanchun 史元春**

**【Course Description】**

This course covers the basic understanding of human perception and cognition, interaction styles development, design and evaluation of GUI, and natural human computer interface technologies. Computer output mediums will include graphics, music, and 3-D sound. Input technologies are emphasized. Multimodality about visual, acoustic and touch sense channels are introduced with new input interfaces. Signal processing, feature extraction, and mapping schemes will also be covered. Measure methods are for the efficiency of interaction. Hands-on laboratories and independent projects, which can potentially continue as further researches.

**(2) 【Course Title】 Web Information Retrieval**

网络与信息检索

**【Course Code】 80240573**

**【Credits】 3**

**【Credit Hours】 48**

**【Semester】 Spring**

**【Capacity】 30 Graduate Students**

**【Instructor】 ZHANG Min 张敏**

**【Course Description】**

This course gives a survey to the new research branches, introduces the state-of-the-art technologies, and discusses on open problems and challenges on Web information retrieval (Web IR). At the same time, the course focuses on the real applications in the Internet environment, making case study and detail analysis on commercial search engines (SE). The main topics of the course includes (but not limited to): IR in Web environment, such as link analysis, anti-spam, etc; question answering; opinion / sentimental analysis; social media and IR; personalized IR and recommendation; user behavior analysis; online advertisement; mobile search; and IR and SE evaluations. The course is composed of lectures and student-conducted discussions.

**(3) 【Course Title】 Introduction to Big Data System**

大数据系统导论

**【Course Code】 80240693**

**【Credits】 3**

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** CHEN Wenguang 陈文光

**【Course Description】**

The course starts with an overview of the big data analytics, clustering and distributed programming. We will also cover methods for processing big data as well as optimization techniques. Graph processing and visualization of big data will be covered. There will be labs and projects which allow students to experiment with real data and apply the knowledge of what they learnt in class.

(4) **【Course Title】** Introduction to Distribute System

分布式系统导论

**【Course Code】** 80240613

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** CHEN Kang 陈康

**【Course Description】**

This is an introductory course on distributed systems. This course introduces the principles of distributed systems as well as some of the current influential large-scale distributed systems such as Google file system, MapReduce, Amazon Dynamo etc. To make the course more concrete, this course uses a series of labs requiring the students to build real distributed systems. This course emphasizes on the general principles of building distributed systems in addition to introducing important practical distributed systems. For example, the various kinds of distributed consistency protocols will be discussed and such principles can be adopted in many kinds of real distributed applications. The current systems used by Google, Amazon, Microsoft will be introduced.

(5) **【Course Title】** Deep Learning

深度学习

**【Course Code】** 80240743

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** HU Xiaoling 胡晓林

**【Course Description】**

(6) **【Course Title】** Natural Language Processing

**【Course Code】** 80240763

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** LIU Zhiyuan 刘知远

**【Course Description】**

## **7. School of Economics and Management**

**(1) 【Course Title】 Econometrics (1)**

计量经济学 (1)

**【Course Code】 30510973**

**【Credits】 3**

**【Credit Hours】 32**

**【Semester】 Spring**

**【Capacity】 130 Undergraduate Students**

**【Instructor】 Yuan XU**

**【Course Description】**

The purpose of this course is to help students understand how to interpret economic data. It will focus on the issues that arise in using this type of data, and the methodology for solving these problems. The focus of the course is on regression analysis. Specific topics and extensions will include multivariate regression, dummy variables, heteroskedasticity, serial correlation, and instrumental variables. Problem sets will provide practical experience in addressing some of these issues using actual economic data. Chapter 1-8 and selected material in Chapter 10-15 will be covered. In addition, basics of hypothesis testing will be covered.

**(2) 【Course Title】 Management Information Systems**

管理信息系统

**【Course Code】 30510202**

**【Credits】 2**

**【Credit Hours】 32**

**【Semester】 Spring**

**【Capacity】 60 Undergraduate Students**

**【Instructor】 WEI Qing 卫强**

**【Course Description】**

The objectives of the Management Information Systems (MIS) course are to provide the students with (1) a understanding of MIS essentials and prospects from a combined perspective of technology and management, in the context of big data; (2) a mastery of some classical MIS theories and methods; (3) a mastery of some new MIS concepts and techniques; and (4) a understanding of certain key issues of and thoughts on information technology (IT) management.

In light of rapid advances in information technology (IT) and Internet applications, the course covers a series of related materials as follows: (1) Gaining competitive advantages with IT (e.g., supply chain management and ERP, customer relationship management, business intelligence); (2) Business analytics for decision support (e.g., knowledge types, knowledge discovery techniques, associative patterns); (3) Modeling and decisions in having information systems (e.g., in-sourcing cycle, data modeling, business descriptions,

outsourcing); (5) Emerging trends (e.g., big data/cloud computing and data-centric businesses).

The content of the course also includes case discussions (e.g., Digital China, CSC and General Dynamics), lab studies (e.g., SAP ERP, Weka, Node XL) etc

(3) **【Course Title】** Intermediate Macroeconomics

中级宏观经济学

**【Course Code】** 30510763

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 261 Undergraduate Students

**【Instructor】** Tuo CHEN 陈拓

**【Course Description】**

The primary purpose of this course is to introduce students the modern approach to macroeconomics and how to apply it to analyze macroeconomic issues such as: the determination of national income and price levels in the closed and open economy, the cause of economic growth, the source of unemployment, and the origin of business cycles. A substantial amount of time will be devoted to studying the impact of fiscal and monetary policies.

We will study the economic issues within a unified framework as possible as we can. At the same time, we will also try to introduce alternative theories and models. The main purpose is to introduce the method to study macroeconomics, not the facts and the theories. We will start with the basic facts and issues in macroeconomics. Then we will introduce the modern approach to address these issues. We will study how different markets work together in general equilibrium. Markets for labor, saving and investment, and financial assets interact to determine the economy's long-run growth and its fluctuations.

(4) **【Course Title】** Marketing Management

营销管理

**【Course Code】** 30510812

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 50 Undergraduate Students

**【Instructor】** LIU Xi 刘西

**【Course Description】**

The objective of this course is to introduce students to the concepts, analyses, and activities that comprise marketing management, and to provide practice in assessing and solving marketing problems. The course is also a foundation for advanced electives in marketing as well as other business/social science disciplines. We will explore the theory and applications of marketing concepts through a mix of cases, discussions, lectures, guest speakers, individual

assignments, and group projects. We will draw materials from a variety of sources and settings including services, consumer and business-to-business products.

(5) **【Course Title】** Developmental Economics

发展经济学

**【Course Code】** 30510863

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 80 Undergraduate Students

**【Instructor】** SHI Xinzheng 施新政

**【Course Description】**

Development economics is a course involving economic problems and policies of those countries that have not yet reached the level of economic well being observed in the western world. At the completion of this course, students will be familiar with theories of development and their applications in the real world. Students will have a better understanding of a number of topics that shed light on the development process, including poverty, inequality, education, international trade, the role of the government, and population issues. Students will also be trained to conduct their own research by using theories learned in class and analyzing real world data. They will also present their research results in class, which can improve their ability of public speaking and intellectual interactions.

(6) **【Course Title】** International Economics

国际经济学

**【Course Code】** 40510763

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 80 Undergraduate Students

**【Instructor】** MA Hong 马弘

**【Course Description】**

This course aims to provide students with a survey of fundamentals in international economics, in both theory and empirics. The course consists of two parts: international trade and international finance, with an emphasis on the former. The first part includes topics on why countries trade, what they trade, the benefits and costs of trade, and the motivations for and the effects of government trade policies. The second part contains topics on how exchange rates are determined and the effects of global imbalance.

(7) **【Course Title】** Theory of Industrial Organization

产业组织理论

**【Course Code】** 40510943



**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 60 Undergraduate Students

**【Instructor】** Alexander Cowles White

**【Course Description】**

Under what circumstances should telecommunication firms be allowed to merge? When are hotel room prices "too high", such that public authorities should intervene to make them lower? Is it ok for nightclubs to charge an entry fee for men but to let women in for free? Industrial Organization Theory is a set of tools that seek to provide economic answers to these and many other questions. Ranging from one extreme of monopoly to the other of perfect competition, this course will provide an introductory exploration of the rich set of models of imperfect competition, with a focus on business strategy and policymaking applications.

Or, if you prefer, this a description of the subject from Prof. GAO Ming, who another section of this course at Tsinghua SEM: Industrial Organization (IO) is the sub-field of microeconomics that studies firm behaviour and strategy in market competition, as well as the induced industry characteristics. Not only useful for economists, the theory of IO also provides the basic theoretical framework for researchers and practitioners in many other business subjects, including corporate finance (e.g. merger and acquisition), marketing (e.g. pricing) and strategic management (e.g. competitiveness analysis).

(8) **【Course Title】** Econometrics (2)

计量经济学 (2)

**【Course Code】** 40511133

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 20 Undergraduate Students

**【Instructor】** ZHU Lin 祝林

**【Course Description】**

This course aims to equip students with modern econometric tools and modeling methods for them to set up suitable econometric models to do data analysis. Hence the approach of this course will be model-driven and data-driven, which focuses on econometric applications without pursuing technical details. This course will cover some modern topics in both macro-econometrics and micro-econometrics. For macro side, we will introduce the concept of non-stationarity and study the problem of unit-root tests and co-integration test, as well as the famous ECM model. We will also study the vector autoregression models which play an important role in macro applications. For microeconomics, we will cover several important models in application, namely, binary choice model, discrete choice model, models for count data,

sample selection model, and the panel data model. For each model introduced, we will discuss its applicability, limitation, and estimation methods together with inference tools. Since this course focuses on applied side, we will also provide training in econometrics softwares, e.g. STATA/Eviews/R.

(9) **【Course Title】** Investment

投资学

**【Course Code】** 40511423-1

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 150 Undergraduate Students

**【Instructor】** Yintian WANG

**【Course Description】**

This course will introduce and delineate basic concepts and techniques in investments by examining such topics as risk-return tradeoff, optimal portfolio construction, Capital Asset Pricing model, APT, Market efficiency, bonds and futures. On the theoretical side, this course introduces fundamental knowledge for investment strategies and portfolio management. On the practical side, this course covers recent topics that are related to the investment strategies and portfolio management. Some projects of portfolio management are specially designed to let you apply the theoretical knowledge to practice.

This course introduces the theory and practice of investment management. It provides you with fundamental knowledge of financial markets and asset pricing, and recent development of investment tools and strategies. This course is highly recommended for students who intend to pursue a finance career or further studies in derivatives, fixed income securities, or portfolio management.

By the end of the class, you will have a basic grasp of the following topics:

1. The risk-return tradeoff in financial markets; computing security risk and return and equity indices.
2. Basics of investing mechanism, including buying securities on margin, selling short securities, asset allocation strategies, and active versus passive investment management.
3. Overview of different asset classes such as equity, fixed-income securities and derivatives; introduction to the concepts of fixed-income securities and derivatives.
4. Measuring portfolio risk and return, forming optimal portfolio using mean-variance analysis, portfolio diversification, deriving efficient frontier.
5. The security market line and capital asset pricing model (CAPM)
6. Understanding the concepts of financial market efficiency and anomalies; examining evidence on profitable trading strategies in US and around the world.
7. Investigating different types of mutual funds; developing performance measures of mutual funds; using these measures to evaluate mutual fund performance in the U.S..

(10) **【Course Title】** Investment

投资学

**【Course Code】** 40511423-2

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 150 Undergraduate Students

**【Instructor】** Yintian WANG

**【Course Description】**

This course will introduce and delineate basic concepts and techniques in investments by examining such topics as risk-return tradeoff, optimal portfolio construction, Capital Asset Pricing model, APT, Market efficiency, bonds and futures. On the theoretical side, this course introduces fundamental knowledge for investment strategies and portfolio management. On the practical side, this course covers recent topics that are related to the investment strategies and portfolio management. Some projects of portfolio management are specially designed to let you apply the theoretical knowledge to practice.

This course introduces the theory and practice of investment management. It provides you with fundamental knowledge of financial markets and asset pricing, and recent development of investment tools and strategies. This course is highly recommended for students who intend to pursue a finance career or further studies in derivatives, fixed income securities, or portfolio management.

By the end of the class, you will have a basic grasp of the following topics:

1. The risk-return tradeoff in financial markets; computing security risk and return and equity indices.
2. Basics of investing mechanism, including buying securities on margin, selling short securities, asset allocation strategies, and active versus passive investment management.
3. Overview of different asset classes such as equity, fixed-income securities and derivatives; introduction to the concepts of fixed-income securities and derivatives.
4. Measuring portfolio risk and return, forming optimal portfolio using mean-variance analysis, portfolio diversification, deriving efficient frontier.
5. The security market line and capital asset pricing model (CAPM)
6. Understanding the concepts of financial market efficiency and anomalies; examining evidence on profitable trading strategies in US and around the world.
7. Investigating different types of mutual funds; developing performance measures of mutual funds; using these measures to evaluate mutual fund performance in the U.S..

(11) **【Course Title】** Management Accounting(1)

管理会计（1）

**【Course Code】** 40510343

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 80 Undergraduate Students

**【Instructor】** ZHANG Haiyan 张海燕

**【Course Description】**

This is the first course of the management accounting sequence. It introduces concepts, methods, and analytical techniques related to managerial accounting. Topics include fundamental cost concepts, Cost Volume Profit (CVP) analysis, activity-based costing (ABC), job-costing and process-costing systems, marketing and production decisions, budgets, management control system, and related decision-makings. The objective of this course is to enable you to solve real world managerial problems by applying managerial accounting concepts and techniques.

(12) **【Course Title】** Strategic Management

战略管理

**【Course Code】** 30510992

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 80 Undergraduate Students

**【Instructor】** GUO Yidi 郭依迪

**【Course Description】**

This course introduces the concepts and tools of strategy formulation. You will learn about why some firms survive and prosper while others do not, and develop critical analysis and communication skills to create and implement firm strategy. The course focuses on the analyses, organizational processes, skills and business judgment managers must use to craft strategies, position their businesses so as to maximize long-term profits upon uncertainty and competition.

Strategic Management is an integrative and interdisciplinary course, which takes a general management perspective. It views the firm as a whole, and examines how policies in each functional area (such as accounting, economics, finance, marketing, and organizational behavior) are integrated into an overall competitive strategy. It is intended that you develop a “general management point of view” in this course. This point of view is the best vantage point for making decisions that lead to sustainable business performance. The key strategic business decisions of concern involve determining organizational purpose to evolving opportunities, creating competitive advantages, choosing competitive strategies, securing and defending sustainable market positions, and allocating critical resources over long periods. Decisions such as these can only be made effectively by viewing a firm holistically, and over the long term.

This course is intended to help you develop skills for formulating strategy. The strategy formulation process demands the mastery of a body of analytical tools and the ability to take an integrative point of view.

(13) **【Course Title】** Elementary Chinese

初级汉语

**【Course Code】** 64203022

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】**

**【Instructor】** Ning GAO

**【Course Description】**

(14) **【Course Title】** Econometrics

计量经济学

**【Course Code】** 30510053

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 78 Undergraduate Students

**【Instructor】** Yuan XU

**【Course Description】**

This course is an introduction to econometrics. It introduces students to multiple regression methods for analyzing the relationship between two or more economic variables. It starts from the simple linear regression to multivariate regression, regression with discrete random variables, instrumental variables, and to regression with panel data, time series data. The objective is to help students understand, evaluate and conduct empirical studies in economics and related disciplines.

(15) **【Course Title】** Chinese Civilization

中国文明

**【Course Code】** 10510123

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 51 Undergraduate Students

**【Instructor】** Gang CHENG

**【Course Description】**

This is a course of Chinese Civilization which the basic requirements include both teaching within lesson and watching museums without lesson. In this course some dynasties or topics (Confucianism, Buddhism, Taoism and Sino-west Cultural Exchanges) are selected as the teaching subjects , and these dynasties

and topics are represents of Chinese civilization. With the help of Teaching and reading, and watching exhibits in museums, students are encouraged to get the interrelated understanding and sensitive perception of Chinese civilization. The contents of this course are as follows: (1) Zhou Dynasty; (2) Intellectual Development of Chun Qiu and Warring Periods ; (3) Qin Dynasty ; (4)Han Dynasty; (4) Tang Dynasty; (5) Lixue in Song and Ming Dynasties; (6) Buddhism; (7) Taoism; (8) Sino-western Cultural Exchanges in Ming and Qing dynasties; (9) Academic Learning in Qing Dynasty; (10) Modern Chinese Civilization.

(16) **【Course Title】** Game Theory

博弈论

**【Course Code】** 40511103

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 65 Undergraduate Students

**【Instructor】** Xiao LIU

**【Course Description】**

Game theory is the foundation of almost all modern economic theory. It is one of the most interesting courses in undergraduate economics. Emerged originally as a field of mathematics, it has been successfully applied to all fields of economics. Furthermore, game theory also plays an increasing role in other social sciences such as philosophy, law and politics, and in natural science such as evolutionary biology and computer science, etc. This course is an introduction to game theory, which puts emphasis in introducing basic game-theoretic analysis, including the conception, analytic techniques and applications for each type of games. We will discuss static games with perfect information, static games with imperfect information, and dynamic games with or without perfect information. Most class sessions will be delivered in English and will consist of both “hands-on” experiences in structured strategic situations as well as lectures about the theory underlying these situations. Student participation is strongly encouraged.

(17) **【Course Title】** Intermediate Accounting (II)

中级财务会计（2）

**【Course Code】** 40510333

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Instructor】** Kun WANG

**【Course Description】**

1. To understand the conceptual framework of accounting, the accounting principles and standards based on Generally Accepted Accounting Principles (GAAP) relating to valuation and reporting of liability and equity items.

2. To train you to apply these accounting principles and standards in data accumulation, summarization and reporting techniques.
3. To develop creative and deeper thinking and to develop the analytical skills required to use and interpret the accounting information and principles.

(18) **【Course Title】** Monetary and Banking Economics

货币银行学

**【Course Code】** 30510523

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 20 Undergraduate Students

**【Instructor】** Qing LIU and Wenlan LUO

**【Course Description】**

Why do people hold money? What determines the amount of money people hold relatively to other assets? What role do banks and other financial institutions play in the economy? Why isn't there just one world currency? How does the monetary policy work in an economy? These are the fundamental questions in monetary economics, and the purpose of the course is to provide students with the comprehensive analysis of the money markets and modern monetary policy. Throughout the course, a special emphasis will be put on using simple mathematical models to answer the questions we are interested in, rather than focusing on institutional details, which traditionally are the focus of money and banking courses. This course is designed as a survey of the basic theories in monetary economics for advanced undergraduate students. A good skill in mathematics will be helpful for the understanding of the lectures. Among the topics to be covered include: money demand and money supply, inflation and optimal quantity of money, international monetary system, Banking, monetary policy transmission mechanism, strategy of monetary policy and optimal monetary policy, time inconsistency problem in monetary policy. For each topic covered, a core body of theories, issues, and evidence will be presented and discussed.

(19) **【Course Title】** Architecture of Computer Hardware and Systems Software

计算机系统原理

**【Course Code】** 30511043

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 20 Undergraduate Students

**【Instructor】** GUO Xunhua 郭迅华

**【Course Description】**

This course provides the hardware and software technology background to enable systems development and management personnel to understand tradeoffs in

computer architecture for effective use in a business environment. A systematic view of computer systems will be utilized in examining the components, structures, and characteristics of computer hardware and software as the infrastructure of modern information technology.

(20) **【Course Title】** Management of Technological Innovation

技术管理创新

**【Course Code】** 00510232

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 70 Undergraduate Students

**【Instructor】** LI Xibao 李习保

**【Course Description】**

The aim of this course is to examine the driving forces affecting the nature and pace of technological changes and discuss managerial challenges presented by technological innovations. It is designed to provide students with a framework for analyzing industry dynamics of technological innovation, and help students understand how to formulate technological innovation strategy at firm level. Students who are interested in founding technology-based ventures, managing firms with significant technical content, or working for consulting firms / venture capitals in the future will find this course particularly useful.

The course consists of two parts. The first eight weeks will have an emphasis on analytic frameworks for managing technological innovation. Main topics to be covered in this part includes: Definition of innovation; Types and Patterns of innovation; Source of innovation; Diffusion of innovation; Standards battles and Dominant Design; Industry life cycle and timing of entry. The rest of the semester examines the strategic and managerial challenges involved in managing various aspects of the innovation process at firm level. Important topics includes: Business strategy and technology strategy; Choosing innovation project; Protecting innovation; Collaboration Strategies; Organizing for innovation; Technical Entrepreneurship. During the course, particular consideration will be given to cases, lessons and experiences that are relevant to Chinese domestic firms

(21) **【Course Title】** Business Case Analysis

商务案例分析

**【Course Code】** 40511012

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 Undergraduate Students

**【Instructor】** JIAO Jie 焦捷

**【Course Description】**

This course is designed for future managers who will face the new, globalized, and



borderless world economy. Globalization and technological advances have created exciting opportunities for managers to pursue strategies in markets around the world. These developments also present managers with enormous complexity in terms of understanding diverse economic, political and social environments, managing the organizational tension inherent in coordinating activities worldwide, fostering innovation and cross-national learning, and interacting with employees and partners from diverse cultures.

This course leverages the foundation built in other cornerstone courses to explore topics such as development of globalization, firms' foreign expansion strategies, the challenges of operating in different cultures, the difficulties of designing effective organizational structures for multinational operations, leadership in the global context, and so on.

A balanced approach is taken to this course: on one hand, this course aims to arm students with necessary knowledge and skills by covering key aspects of business case analysis and problem solving. Particularly, a global orientation is reinforced by drawing on worldwide cases or examples; On the other hand, this course will offer students the opportunities of applying the contents of this course through class discussion, case analysis, field study, and communication with diverse types of international institutions. I would strongly encourage active class participation. My experience has been that students generally tend to under- (rather than over-) estimate the worth of what they have to say. Thus, please note that probing questions are as useful a form of class participation as presentations of logical analyses.

The course should be of interest to students who expect to work in international organizations that seek to create value by having operations in or working with partners across national borders. Through the course of the semester, students will learn frameworks and approaches that will help them:

- Apply economic concepts and frameworks to the study of international management.
- Formulate strategies to create value in international markets.
- Manage the organizational tension inherent in coordinating activities worldwide.
- Manage operations across culturally diverse environments

(22) **【Course Title】** Fixed Income Securities Analysis

固定收益证券分析

**【Course Code】** 40511263

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 62 Undergraduate Students

**【Instructor】** Wang Hao

**【Course Description】**

(23) **【Course Title】** Freshman Seminar  
      新生专题讨论  
**【Course Code】** 30511021-6  
**【Credits】** 1  
**【Credit Hours】** 16  
**【Semester】** Spring  
**【Capacity】** 15 Undergraduate Students  
**【Instructor】** White Alexander Cowles  
**【Course Description】**

(24) **【Course Title】** Freshman Seminar  
      新生专题讨论  
**【Course Code】** 30511021-7  
**【Credits】** 1  
**【Credit Hours】** 16  
**【Semester】** Spring  
**【Capacity】** 15 Undergraduate Students  
**【Instructor】** White Alexander Cowles  
**【Course Description】**

(25) **【Course Title】** Freshman Seminar  
      新生专题讨论  
**【Course Code】** 30511021-8  
**【Credits】** 1  
**【Credit Hours】** 16  
**【Semester】** Spring  
**【Capacity】** 15 Undergraduate Students  
**【Instructor】** Powers Michael Roland  
**【Course Description】**

## 8. Department of Electronic Engineering

(1) **【Course Title】** Signals and Systems

信号与系统

**【Course Code】** 30230654

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 60 Undergraduate Students

**【Instructor】** SONG Jian 宋健

**【Course Description】**

This course covers the signal representation/analysis, especially how to represent the complex signals in simple format either in time or frequency domain. Based on that, it also covers how signals behave after passing through various linear, time-invariant systems. This course consists of following individual yet highly related sessions such as Introduction, time-domain analysis on the linear, time-invariant systems, signal representation in frequency domain (Fourier analysis/Fourier transform), Laplace Transform, Discrete time-domain signals, Z-Transform, Discrete/Fast Fourier transform, the state space analysis of the linear systems, and etc.

(2) **【Course Title】** Case Study on the Design of the Communication Networks

通信网络设计实例研究

**【Course Code】** 40230952

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 20 Undergraduate Students

**【Instructor】** SONG Jian 宋健

**【Course Description】**

PLC networks and PLC-specific network layers are then defined before modulation schemes and various possibilities for realization of error handling in PLC systems are discussed. The different solutions of multiple-access schemes and various MAC protocols for PLC applications are introduced together with several solutions for traffic control in PLC networks. In the end, comprehensive performance evaluation of reservation MAC protocols, suitable for broadband PLC applications are evaluated by comparing various signaling MAC protocols under different traffic and disturbance conditions. Fundamental concepts are the major focus of this course, and the students are required to do the literature investigation with a group and present their results by the end of the course.

(3) **【Course Title】** Probability Theory and Random Processes

概率论与随机过程 (1)

**【Course Code】** 330231002

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Undergraduate Students

**【Instructor】** SHEN yuan 沈渊

**【Course Description】**

This course will introduce undergraduate students to the modeling, quantification, and analysis of uncertainty. Topics covered include: formulation and solution in sample space, random variables, transform techniques, simple random processes and their probability distributions, limit theorems, and Markov chains. The tools of probability theory are the keys for being able to analyze and make sense of data. These tools underlie important advances in many fields, from the basic sciences to engineering and management. Although this is not a mathematics course, it does rely on the language and some tools from mathematics. It requires a level of comfort with mathematical reasoning, familiarity with sequences, limits, infinite series, and the chain rule, as well as the ability to work with ordinary or multiple integrals.

(4) **【Course Title】** Communication and Networks

通讯与网络

**【Course Code】** 30231034

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 60 Undergraduate Students

**【Instructor】** ZHOU Sheng 周盛

**【Course Description】**

(5) **【Course Title】** Electromagnetic Field and Wave

电磁场与波

**【Course Code】** 30231053

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 40 Undergraduate Students

**【Instructor】** MA Pin 马骋

**【Course Description】**

## **9. Department of Engineering Physics**

- (1) **【Course Title】** Introduction to High Energy Physics  
高能物理导论

**【Course Code】**

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Undergraduate Students

**【Instructor】** CHEN Shaomin 陈少敏

**【Course Description】**

This course provides an up-to-date and comprehensive introduction to modern particle physics, including all the recent developments in elementary particle physics, as well as its connections with cosmology and astrophysics. The balance between experiment and theory is emphasised. The stress is on the phenomenological approach and basic theoretical concepts rather than rigorous mathematical detail. Short descriptions are given of some of the key experiments in the field, and how they have influenced our thinking. Although most of the material is presented in the context of the Standard Model of quarks and leptons, the shortcomings of this model and new physics beyond its compass (such as supersymmetry, neutron mass and oscillations, GUTs and superstrings) are also discussed. This course is suitable for the 3rd and 4th-year undergraduate students.

## 10. School of Environment

- (1) **【Course Title】** Treatment Technologies for Safe Drinking Water  
饮用水水质安全保障工艺

**【Course Code】** 40050622

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Undergraduate Students (Junior and Senior Students Preferred)

**【Instructor】** WANG Xiaomao 王小佺

**【Course Description】**

The course is structured with a main line pertaining to drinking water qualities, and is mainly composed of the removal of individual impurities and contaminants in the conventional treatment process and the advanced treatment process, focusing on the principle and applicability of each unit operation. Case studies and invited speech by renowned professors will also be included in the course. By taking this course, students should have the “multiple barrier” concept and would be able to select appropriate treatment processes for particular cases.

- (2) **【Course Title】** Low-carbon Technology and Management  
低碳技术与管理

**【Course Code】** 40050752

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Undergraduate Students

**【Instructor】** ZHAO Ming 赵明

**【Course Description】**

The whole world is currently committed to adaptation against climate change, extreme disasters, environmental pollutions and exhausting fossil energy by means of establishment of a low-carbon society. Such transmission is certainly necessitated in China, the largest carbon emitter and 2<sup>nd</sup> biggest economy of the world. Development of low-carbon technologies and management system will be the key approach.

This course is aimed to train the undergraduate students of SOE in terms of both technological and management knowledge. It is thus a cross-disciplinary course that encourages students to learn independently and collaboratively with the purpose to address complicated issues in energy, resource, environmental, economy and policy areas under the globalization circumstance.

This course is not merely lecture and also includes quite a number of curriculum projects that require students to learn more after class and collaborate with team members. In course of the project design, students will be enhanced of abilities including but not limited to scientific writing, public speaking, literature hunting and communication skills.

This course will be delivered in pure English environment. Furthermore, the students will be fortunate to stay with world famous experts in low-carbon fields and experience the cutting-edge research. The guest professors may come from Imperial College London, Cambridge, Columbia Uni, Stanford, Ohio State, etc.

Students will also enjoy the impressive industrial field trips. They will experience how low-carbon technologies are implemented in various companies. This will be a perfect compensation to the coursework learning, providing information and ideas for the curriculum project. If lucky, students may also find exciting opportunities for internship in industries.

Low-carbon technology and management is a fast developing field with frequently updated knowledge and information. This course extremely encourages students to challenge the conventional viewpoints and existing database of knowledge. The lecturer has the responsibility to lead students to think and behave in such creative and originative ways.

(3) **【Course Title】** Environmental Genomics

环境基因组学

**【Course Code】** 30050363

**【Credits】** 3

**【Credit Hours】** 40

**【Semester】** Spring

**【Capacity】** 15 Undergraduate Students

**【Instructor】** Yang Yunfeng 杨云峰

**【Course Description】**

(4) **【Course Title】** Advanced Environmental Chemistry

高等环境化学

**【Course Code】** 70050323

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 25 Graduate Students

**【Instructor】** HUANG Jun 黄俊 YU Gang 余刚

**【Course Description】**

By learning Advanced Environmental Chemistry, the students will grasp the methodology of studying the transport, transformation and fate of pollutants using chemical principle and approaches, with the concept of multimedia in their mind. Also they will get good understandings about the environmental problems especially for those current hot issues - case studies will illustrate their chemical mechanism as well as the latest progress. The course mainly contains four parts: (1) Environmental pollution chemistry, which mainly talks about the main environmental problems and their chemical mechanism, and the transport, transformation and fate of pollutants. (2) Environmental analytical chemistry, which mainly talks about the monitoring and analysis methods for priority

pollutants with important environmental significance. (3) Environmental toxicological chemistry, which mainly talks about the dose-response relationship, kinetics, and the mechanism for teratogenesis, mutagenesis and carcinogenesis. (4) Environmental Engineering Chemistry, which mainly talks about the technical principles of chemical approaches of pollution control.

(5) **【Course Title】** Advanced Wastewater Treatment

高级废水处理工程

**【Course Code】** 80050233

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 25 Graduate Students

**【Instructor】** WEN Xianghua 文湘华

**【Course Description】**

This course provides various kinds of engineering issues related to water environment in English, which cover fundamental knowledge, the latest technologies, including wastewater reuse & disinfection, anaerobic biological treatment technologies, membrane technology, biological nutrient removal technology, and etc., and regional application examples. These lectures, will also arrange English presentations by students, and discussions to enhance English capability and internationality of students.

(6) **【Course Title】** Restoration Ecology and Applications

恢复生态学及其应用

**【Course Code】** 80050243

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 25 Graduate Students

**【Instructor】** LIU Xuehua 刘雪华

**【Course Description】**

Theoretic and practical research of restoring the degraded ecosystems is the hot topic in the modern ecological development. This course mainly contains the following contents: the degraded ecosystems under human disturbance, contents and development of restoration ecology, general introduction of global ecological restoration, restoration of degraded forest ecosystem, restoration of wetland ecosystem, restoration of grassland ecosystem, restoration of ocean and coast zone ecosystems, restoration of abandoned-land ecosystems, restoration of urban ecosystem. Restoration ecology is one of the key courses in Ecology. The students in Ecology, Ecological conservation and Environmental protection are requested to select it for credit.

(7) **【Course Title】** Global Environmental Issues



## 全球环境问题

【Course Code】 80050253

【Credits】 3

【Credit Hours】 48

【Semester】 Spring

【Capacity】 25 Graduate Students

【Instructor】 WANG Can 王灿

【Course Description】

The course will target to five important global environmental issues, including 1) global climate change, 2) Persistent Organic Pollutants, 3) curriculum-transboundary movement of hazardous waste and international chemicals management, 4) biodiversity and conservation, and 5) global and regional air pollution. On the global climate change, the following aspects will be introduced: the scientific evidence and courses of global climate change, the impacts of and adaption to climate change, the social economic impacts of mitigation, the UNFCCC and its negotiation progress, the global carbon market, the global energy issues, and so on. Several discussion topics will be identified among the aforementioned issues. Regarding the issue of Persistent Organic Pollutants (POPs), the course will firstly introduce the Origin of POPs as an environmental concern, followed by Properties and global transport of POPs, Process of developing the international treaty, Main POPs included in the Stockholm Convention, Obligations required by the Stockholm Convention, Existing barriers for developing countries to implement the Convention, Obligation of developed countries in financial and technology transfer, Trend and main problems of the Stockholm Convention. The discussion topics will focus on listing new POPs into the Stockholm Convention. The part on curriculum-transboundary movement of hazardous waste and international chemicals management will cover the following issues: International Conventions related to transboundary movement of hazardous waste and international chemicals management will be introduced and discussed in this course. Based on the introduction of hazardous waste, origin, main content and development trend of Basel Convention will be instructed, with an emphasis on hot topics.

### (8) 【Course Title】 Hazardous Waste Disposal

危险废物处置技术

【Course Code】 80050263

【Credits】 3

【Credit Hours】 48

【Semester】 Spring

【Capacity】 25 Graduate Students

【Instructor】 LI Jinhui 李金惠

【Course Description】

Solid waste pollution control and reclamation is one of the most popular topics in the field of environmental protection. Concerning solid waste, emphasis is laid on

the sound environmental management of hazardous wastes and municipal wastes. Many universities abroad have set up courses of hazardous waste management, including management policy, methodology, technology, engineering and practices. Although a different course name is used here, the overall outlook is the same, including contents as follows. 1. Introduction on hazardous waste, including the history, important incidences and future endeavors of the hazardous waste management, and the definition, typology and sources of the hazardous waste. 2. The legal framework of hazardous waste management, including Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Stockholm Convention on Persistent Organic Pollutants, introduction on laws and regulations of hazardous waste management in EU, USA and China, and cutting-edge information about hazardous waste management. 3. Hazardous waste minimization and management plan, including hazardous waste minimization, waste exchange, project planning and audits. 4. Hazardous waste treatment methods, including physical chemical processes, biological methods, stabilization and solidification. 5. Hazardous waste facility development and operation, including facility types, facility operations, needs assessment, site selection, public participation, permitting. 6. Hazardous waste thermal treatment methods, including regulations, combustion, liquid injection incinerators, solid waste incineration, storage and feed systems, air pollution control, continuous emission monitors, trial burns, mobile systems. 7. Hazardous waste land disposal methods, including landfill operations, site selection, liner and leachate collection systems, cover systems, contaminant transport through landfill barriers, landfill stability, etc.

(9) **【Course Title】** Environmental Transport Processes

环境传质学

**【Course Code】** 70050332

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 graduate Students

**【Instructor】** ZHANG Fang 张芳, Bruce E.LOGAN

**【Course Description】**

This course covers the fundamentals of mass transport of chemicals between air, water, soil, and biota. Material is divided into three subject areas: mass transfer theory, transport processes related to engineered reactors, and transport in the natural environment. The focus of the course is on chemical calculations particular to dilute systems, with emphasis on quantifying chemical transport rates and distributions in natural and engineered environments. Special topics of interest to Environmental Engineers include biofilm models, bioreactors, chemical partitioning in thin fluid films, and fate of anthropogenic chemicals from spills and discharges into the environment (rivers, lakes, and groundwater).

- (10) **【Course Title】** Human Perspectives on Environmental Issues and Solutions  
人文视野中的环境问题以及对策

**【Course Code】** 60050032  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 30 graduate Students  
**【Instructor】** LU Wenjing 陆文静  
**【Course Description】**

- (11) **【Course Title】** Environmental Risk Analysis  
环境风险分析

**【Course Code】** 700500112  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 40 graduate Students  
**【Instructor】** LI Jinhui 李金惠  
**【Course Description】**

- (12) **【Course Title】** Atmospheric Chemical Transport Model  
大气化学传输模型

**【Course Code】** 70050332  
**【Credits】** 3  
**【Credit Hours】** 48  
**【Semester】** Spring  
**【Capacity】** 30 graduate Students  
**【Instructor】** XING Jia  
**【Course Description】**

- (13) **【Course Title】** Material Flow Analysis and Its Application  
物质流分析及其应用

**【Course Code】** 70050362  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 40 graduate Students  
**【Instructor】** ZHENG Xianlai 曾现来  
**【Course Description】**

- (14) **【Course Title】** Environmental Management and Policy  
环境管理与政策

**【Course Code】** 80050213  
**【Credits】** 3

**【Credit Hours】** 48  
**【Semester】** Spring  
**【Capacity】** 30 graduate Students  
**【Instructor】** LU Xi 鲁玺  
**【Course Description】**

(15) **【Course Title】** Global Chemical Managment  
全球化学品管理

**【Course Code】** 80050263  
**【Credits】** 1  
**【Credit Hours】** 16  
**【Semester】** Spring  
**【Capacity】** 40 graduate Students  
**【Instructor】** YU Gang 余刚  
**【Course Description】**

(16) **【Course Title】** Water Resource Management  
水资源管理

**【Course Code】** 70050332  
**【Credits】** 1  
**【Credit Hours】** 16  
**【Semester】** Spring  
**【Capacity】** 40 graduate Students  
**【Instructor】** 董欣  
**【Course Description】**

## **11. Department of Hydraulic Engineering**

(1) **【Course Title】** Integrated River Management

河流综合管理

**【Course Code】** 80040103

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** WANG Zhaoyin 王兆印

**【Course Description】**

## **12. Department of Industrial Engineering**

- (1) **【Course Title】** Engineering and Technology Management  
工程与技术管理

**【Course Code】** 80160363

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 55 Graduate Students

**【Instructor】** HE Fang 何方 WANG Chen 王琛

**【Course Description】**

- Engineering and Management
- Functions of Technology Management
- Human Aspects of Organizing
- Leading Technical People
- Engineers in Marketing
- Globalization
- Engineering Economy

- (2) **【Course Title】** Logistics & Supply Chain Management  
物流与供应链管理

**【Course Code】** 80160223

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 55 Graduate Students

**【Instructor】** HUANG Simin 黄四民 ZHANG Chi 张弛

**【Course Description】**

Develop a knowledge and understanding of the issues and technologies underlying supply chain management with a focus on analysis and design skills for Logistics systems, including demand management, inventory management, logistics network design, supply chain risk, etc.

- (3) **【Course Title】** Production Management  
生产管理

**【Course Code】** 70160033-1

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 800 Graduate Students

**【Instructor】** CHEN Ye

**【Course Description】**

This graduate course leads students to investigate the organizational and technical impact between enterprise management strategies and information

system/technologies, and match up the relationship between the production problems and corresponding IT solution. The course will help students understand various management strategies in an enterprise context, including Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management and Product Lifecycle Management.

The course aims at getting students to think about the overall picture of enterprise information systems, systematically explore the fast expanding field of information systems and their applications in enterprises, and at the same time, understand the methodologies of system analysis and design for enterprise information systems. The methods of system analysis, enterprise modeling and enterprise integration will also be discussed.

(4) **【Course Title】** Production Management

生产管理

**【Course Code】** 70160033-2

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 800 Graduate Students

**【Instructor】** CHEN Ye

**【Course Description】**

This graduate course leads students to investigate the organizational and technical impact between enterprise management strategies and information system/technologies, and match up the relationship between the production problems and corresponding IT solution. The course will help students understand various management strategies in an enterprise context, including Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management and Product Lifecycle Management.

The course aims at getting students to think about the overall picture of enterprise information systems, systematically explore the fast expanding field of information systems and their applications in enterprises, and at the same time, understand the methodologies of system analysis and design for enterprise information systems. The methods of system analysis, enterprise modeling and enterprise integration will also be discussed.

(5) **【Course Title】** Chinese Industry Studies: Advanced Manufacturing and Contemporary Service.

中国产业研究：先进制造和现代服务

**【Course Code】** 80160526

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 35 Graduate Students

**【Instructor】** XIE Xiaolei

**【Course Description】**



### 13. Institute of Interdisciplinary Information Sciences

(1) **【Course Title】** General Physics (1)

普通物理 (1)

**【Course Code】** 20470024

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 60 Undergraduate Students

**【Instructor】** Xiongfeng Ma 马雄峰

**【Course Description】**

Calculus-based first physics course for physics majors and students with a serious interest in physics. Students are required to actively participate during the lectures, asking questions, and having questions asked. This class will provide you with an enhanced opportunity to acquire a good understanding of fundamental mechanics and thermodynamics and to learn how to apply this understanding to physics and beyond.

(2) **【Course Title】** Computational Biology

计算生物学

**【Course Code】** 30470093

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 40 Undergraduate Students

**【Instructor】** ZENG Jianyang 曾坚阳

**【Course Description】**

To introduce various computational problems for analyzing biological data (e.g. DNA, RNA, protein sequences, and biological networks) and the algorithms for solving these problems. Topics covered include: biological sequence analysis, gene identification, regulatory motif discovery, genome assembly, genome duplication and rearrangements, evolutionary theory, clustering algorithms, and scale-free networks.

(3) **【Course Title】** Autonomous Driving

自动驾驶

**【Course Code】** 40470262

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 Undergraduate Students

**【Instructor】** Longbo Huang, Tiancheng Lou

**【Course Description】**

This course covers the design principles and implementation essentials of the various functional modules of an autonomous driving system: 1. Overview: architecture of autonomous driving system, and overview of the autonomous driving industry; 2. Hardware: sensors (sensor fusion), computational hardware and gps ; 3. Perception: computer vision and deep learning; 4. Map: roadgraph and 3D model of the static elements of the driving environment; 5. Localization: localization based on differential GNSS systems and computer vision; 6. Planning: global route planning and local trajectory planning; 7. Control: accurately execute the planned maneuvers through feedback control mechanisms 8. System and simulation: reliable, scalable and real-time system, including testing in both physical world and simulation.

**(4) 【Course Title】 Introduction to Computer Networks**

计算机网络基础

**【Course Code】** 30470223

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 40 Undergraduate Students

**【Instructor】** HUANG Longbo 黄隆波

**【Course Description】**

This course aims at giving a comprehensive introduction to the fundamentals of computer networks and network performance analysis. The course contains two parts. The first part covers various networking topics including network principles, Ethernet, WiFi, routing, inter-networking, transport, WiMax and LTE, QoS, and physical layer knowledge. The second part presents mathematical techniques for modeling, analyzing and designing computer systems, including convex optimization, queueing theory, game theory and stochastic analysis. This course is intended for junior or senior undergraduate students in computer science or electrical engineering.

**(5) 【Course Title】 Advanced Theoretical Computer Science**

高等理论计算机科学

**【Course Code】** 80470214

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 10 Undergraduate Students, 10 Graduate Students

**【Instructor】** LI Jian 李建

**【Course Description】**

The course will cover the following topics: NP completeness, PSPACE, L Space, IP system, BPP, derandomization, PCP, classical communication complexity, circuit complexity, Decision tree complexity.

quickly recall basics about convex optimization and machine learning: linear/logistic regression, regularization, newton method, stochastic gradient descent (asynchronous, variance reduction method), generative vs discriminative, variance vs bias.

Off-the-shelf machine learning and prediction algorithms: k-nn, SVM, kernel trick, clustering, Adaboost, gradient boosting, random forest.

Online learning and sequential prediction. Multi-armed bandit, Universal portfolio, Multiplicative weighting method, online convex optimization, basic time series

linear algebra-based learning algorithms: SVD, principle component analysis (PCA), independent component analysis (ICA), Nonnegative matrix factorization (NMF), topic modeling, matrix completion, dictionary learning, tensor method, spectral clustering.

(6) **【Course Title】** Quantum Electronics and Advanced Quantum Information Theory  
量子电子学和高等量子信息学

**【Course Code】** 80470173

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 10 Undergraduate Students, 30 Graduate Students

**【Instructor】** Kihwan Kim

**【Course Description】**

This course provides an overview of the latest advancements in quantum information theory and quantum computation. Starting from the foundation of the framework of density matrices and open system dynamics, the course gradually transitions into two main chapters, the first about the quantum theory of information compression and transmission and the second on the topological models of quantum computation. The first chapter will deal with quantum entropies and quantum typicality, providing useful tools also for students interested in quantum thermodynamics. The second chapter will deal with anyons and geometric phases, showing the features of anyonic statistics can be used to perform stable and efficient quantum computations. Students who take this course will develop the mental discipline needed to identify and discuss critically these questions and will be provided with the sharpest theoretical tools to address these questions.

(7) **【Course Title】** Security Technologies in Cyberspace  
网络空间中的安全技术

**【Course Code】** 80470233

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 10 Undergraduate Students, 30 Graduate Students

**【Instructor】** Wenfei Wu 吴文斐

**【Course Description】**

Cyberspace security consists of three parts – information security, system security, and application security. Information security leverages cryptographical mechanisms to guarantee data privacy; system security leverages sandboxing, program analysis etc. to guarantee the authentication and privacy of system usage; application security leverage anomaly behavior detection to recognize malicious user and software. In this course, we would discuss typical security issues and solutions in each section, and require students to practice them in course projects. We would also research into new security issues in latest scenarios and new technologies (e.g., machine learning, trusted execution environment) that can be used to solve security problems.

(8) **【Course Title】** Selected Topics in Information Physics

信息物理学

**【Course Code】** 80470182

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** Mile Gu, WENG Wenkang 翁文康

**【Course Description】**

This course aims at introducing graduate students to the rapidly developing field of information physics. The course will highlight how the most important concepts in computation and complexity theory are physical, and how some of the most puzzling question in physics can be answered through information theory. We review classical information theory, and how to must be generalized with the discovery of quantum mechanics. The ramifications of this to information storage, energy extraction and computational complexity are discussed.

(9) **【Course Title】** Big Data Platform

大数据平台系统

**【Course Code】** 80470123

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 10 Graduate Students

**【Instructor】** GAO Yihan 高逸涵

**【Course Description】**

This course aims at introducing graduate students to the rapidly developing field of information physics. The course will highlight how the most important concepts in computation and complexity theory are physical, and how some of the most puzzling question in physics can be answered through information theory. We review classical information theory, and how to must be generalized with the

discovery of quantum mechanics. The ramifications of this to information storage, energy extraction and computational complexity are discussed.

(10) **【Course Title】** Abstract Algebra

抽象代数

**【Course Code】** 20470054

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Fall

**【Capacity】** 40 Undergraduate Students

**【Instructor】** DENG Dongling 邓东灵

**【Course Description】**

Abstract algebra studies fundamental algebraic structures of groups, rings and fields, etc. It is the foundation of modern mathematics and has broad and vital applications across different disciplines including computer science, physics, and chemistry. In this course, the students will learn the basic theory of groups, rings and fields, including subgroups, groups' actions, Sylow theorems, homomorphisms and isomorphism, the fundamental homomorphism theorem, Cauchy's theorem, the fundamental theorem of finitely generated groups, polynomial rings, quotient rings, ideals, the Chinese remainder theorem, Euclidean domains; principal ideal domains; unique factorization domains; field extension, algebraic extensions; splitting field, fundamental theorem of algebra, and Galois theory, etc. In addition, this course will also introduce the basics of lattices and Boolean algebras.

(11) **【Course Title】** Operating System

操作系统

**【Course Code】** 30470084

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 55 Undergraduate Students

**【Instructor】** XU Wei 徐葳

**【Course Description】**

In this course, student will learn the design principles of operating systems, and techniques to build a complex software systems. Topics covered in this course include operating systems structure, multi-programming (processes, inter-process communication, and synchronization), memory management (virtual memory, segmentation, and paging), scheduling, file systems, system security, basic computer networking (switching, protocols), and basic concept on database management systems (transaction). In addition to classroom instruction, the students are required to complete a substantial programming project.

(12) **【Course Title】** Theory of Computation

### 计算理论

【Course Code】 30470134

【Credits】 4

【Credit Hours】 64

【Semester】 Spring

【Capacity】 60 Undergraduate Students

【Instructor】 Ran Duan

【Course Description】

This course gives an introduction to the basics of computation theory, including: Finite Automata, Regular language, Pushdown Automata, Context-Free Grammars, Turing machine, undecidability, and computational intractable topics (NP complete, PSPACE, BPP etc).

### (13) 【Course Title】 Distributed Computing (Fundamentals and Systems)

分布式计算（基础与系统）

【Course Code】 40470034

【Credits】 4

【Credit Hours】 64

【Semester】 Spring

【Capacity】 45 Undergraduate Students

【Instructor】 CHEN Wei 陈卫

【Course Description】

Through this course, students will learn fundamental algorithms and principles in distributed computing systems, such as logical clocks, consensus problem, failure detection, Byzantine agreement, distributed locking, and gossip protocols. They will also learn how to design and analyze distributed systems using these fundamental algorithms and principles through the study of a number of advance distributed systems.

#### **14. International Chinese Language and Culture Center (LCTU)**

- (1) **【Course Title】** Elementary Chinese  
初级汉语  
**【Course Code】** 04200002-91  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】** 25 Exchange and visiting students  
**【Instructor】** Li Yuan  
**【Course Description】**
- (2) **【Course Title】** Elementary Chinese  
初级汉语  
**【Course Code】** 04200002-92  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】** 25 Exchange and visiting students  
**【Instructor】** Sun Shuzi  
**【Course Description】**
- (3) **【Course Title】** Elementary Chinese  
初级汉语  
**【Course Code】** 04200002-93  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】** 25 Exchange and visiting students  
**【Instructor】** Li Yuan Sun Shuzi  
**【Course Description】**
- (4) **【Course Title】** Quasi-intermediate Chinese  
准中级汉语  
**【Course Code】** 04200012-91  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】** 25 Exchange and visiting students  
**【Instructor】** NIE Ruili  
**【Course Description】**

- (5) **【Course Title】** Quasi-intermediate Chinese  
准中级汉语  
**【Course Code】** 04200012-92  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】** 25 Exchange and visiting students  
**【Instructor】** LU Li  
**【Course Description】**
- (6) **【Course Title】** Intermediate Chinese  
中级汉语  
**【Course Code】** 64203052-1  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】** 25 Exchange, visiting students and graduate students  
**【Instructor】** Guo Qin  
**【Course Description】**
- (7) **【Course Title】** Intermediate Chinese  
中级汉语  
**【Course Code】** 64203052-2  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】** 25 Exchange, visiting students and graduate students  
**【Instructor】** Lu Li  
**【Course Description】**
- (8) **【Course Title】** Intermediate Advanced Chinese  
中高级汉语  
**【Course Code】** 64203062-1  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】** 25 Exchange, visiting students and graduate students  
**【Instructor】** Guo Qin  
**【Course Description】**
- (9) **【Course Title】** Intermediate Advanced Chinese  
中高级汉语  
**【Course Code】** 64203062-2  
**【Credits】** 2



【Credit Hours】 32  
【Semester】 Fall  
【Capacity】 25 Exchange, visiting students and graduate students  
【Instructor】 Guo Qin  
【Course Description】

(10) 【Course Title】 Advanced Chinese

高级汉语

【Course Code】 64203072  
【Credits】 2  
【Credit Hours】 32  
【Semester】 Fall  
【Capacity】 25 Exchange and visiting students  
【Instructor】 Du Lingling  
【Course Description】

(11) 【Course Title】 Elementary Chinese Reading and Writing (2)

初级汉语阅读与写作 (2)

【Course Code】 14202012-91  
【Credits】 2  
【Credit Hours】 32  
【Semester】 Fall  
【Capacity】  
【Instructor】 Guo Qin  
【Course Description】

(12) 【Course Title】 Elementary Chinese Reading and Writing (2)

初级汉语阅读与写作 (2)

【Course Code】 14202012-92  
【Credits】 2  
【Credit Hours】 32  
【Semester】 Fall  
【Capacity】  
【Instructor】 Guo Qin  
【Course Description】

(13) 【Course Title】 Elementary Chinese Reading and Writing (2)

初级汉语阅读与写作 (2)

【Course Code】 14202012-93  
【Credits】 2  
【Credit Hours】 32  
【Semester】 Fall  
【Capacity】  
【Instructor】 Guo Qin

**【Course Description】**

- (14) **【Course Title】** Elementary Chinese Reading and Writing (2)  
初级汉语阅读与写作 (2)

**【Course Code】** 14202012-94

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Fall

**【Capacity】**

**【Instructor】** Guo Qin

**【Course Description】**

- (15) **【Course Title】** Elementary Chinese Reading and Writing (2)  
初级汉语阅读与写作 (2)

**【Course Code】** 14202012-95

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Fall

**【Capacity】**

**【Instructor】** ZHU Wentao

**【Course Description】**

- (16) **【Course Title】** Elementary Chinese Reading and Writing (2)  
初级汉语阅读与写作 (2)

**【Course Code】** 14202012-95

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Fall

**【Capacity】**

**【Instructor】** LI Jixian

**【Course Description】**

- (17) **【Course Title】** Advanced Chinese Reading and Writing (2)  
高级汉语阅读与写作 (2)

**【Course Code】** 14202032-91

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Fall

**【Capacity】**

**【Instructor】** Du Linlin

**【Course Description】**

(18) **【Course Title】** Advanced Chinese Reading and Writing (2)  
高级汉语阅读与写作 (2)

**【Course Code】** 14202032-92

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Fall

**【Capacity】**

**【Instructor】** Du Linlin

**【Course Description】**

(19) **【Course Title】** Advanced Chinese Reading and Writing (2)  
高级汉语阅读与写作 (2)

**【Course Code】** 14202032-93

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Fall

**【Capacity】**

**【Instructor】** Lu Li

**【Course Description】**

(20) **【Course Title】** Advanced Chinese Reading and Writing (2)  
高级汉语阅读与写作 (2)

**【Course Code】** 14202032-94

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Fall

**【Capacity】**

**【Instructor】** Lu Li

**【Course Description】**

(21) **【Course Title】** Advanced Chinese Reading and Writing (2)  
高级汉语阅读与写作 (2)

**【Course Code】** 14202032-95

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Fall

**【Capacity】**

**【Instructor】** Chen Weimin

**【Course Description】**

(22) **【Course Title】** Advanced Chinese Reading and Writing (2)  
高级汉语阅读与写作 (2)

**【Course Code】** 14202032-96

**【Credits】** 2

**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】**  
**【Instructor】** Chen Weimin  
**【Course Description】**

(23) **【Course Title】** Chinese Culture  
中国文化

**【Course Code】** 04202032-90  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】**  
**【Instructor】** GUO Qin  
**【Course Description】**

(24) **【Course Title】** Elements of Modern Chinese Grammar  
现代汉语语法基础

**【Course Code】** 04202082-90  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】**  
**【Instructor】** CHEN Weimin  
**【Course Description】**

(25) **【Course Title】** Advanced Trade Chinese  
高级商务汉语

**【Course Code】** 04202072-90  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Fall  
**【Capacity】**  
**【Instructor】** CHEN Weimin  
**【Course Description】**

## 15. School of Journalism and Communication

(1) **【Course Title】** Feature Writing in English

英语特稿写作

**【Course Code】** 80670612

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 Graduate Students

**【Instructor】** WANG Jiaquan 王家全

**【Course Description】**

This course aims to integrate reading and writing of feature journalism. By reading the canonic texts of feature writing from British and US newspapers and magazines, the instructor will help students know its notion, genre, and format. The students will practice the different styles of feature writing (political, economic, social and cultural) with the instructor's guidance.

(2) **【Course Title】** Intercultural Communication

跨文化传播

**【Course Code】** 80670632

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 18 Graduate Students

**【Instructor】** ZHANG Li 张莉

**【Course Description】**

\*to learn the concept and theoretical framework, paradigms and research methodology of intercultural communication at interpersonal/organizational/mass media levels; \*to acquire the "backgrounder" of the main patterns of global media/culture and basic skills in intercultural communication; \*to apply the coursework to intercultural praxis in journalism, broadcasting, advertising and public relation.

(3) **【Course Title】** Business News Data Mining and Analysis

财经新闻数据挖掘与分析

**【Course Code】** 80670833

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 45 Graduate Students

**【Instructor】** Lee J. Miller

**【Course Description】**

A key asset of the class will be students' use of the Bloomberg Professional Terminal. TSJC has more terminals of any university in the world. Students will

have the opportunity to learn data mining on the platform that is used by the world's leading business journalists, financial analysts, economists and consultants will provide a competitive advantage upon graduation and during their careers.

(4) **【Course Title】** Business News Writing and Editing

财经新闻写作与编辑

**【Course Code】** 80670803

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Fall

**【Capacity】** 40 Graduate Students

**【Instructor】** Richard Scott Dunham

**【Course Description】**

This course focuses on the business news writing and editing. The tutor will provide students basic knowledge and skills of news writing and editing. Cases will be used in this course to illustrate how business news are presented. Students will also get opportunities to listen to lectures from industrial practitioners.

(5) **【Course Title】** Media Research Methods

传播学研究方法

**【Course Code】** 70670112

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 18 Graduate Students

**【Instructor】** LU Jia 卢嘉

**【Course Description】**

The course is designed to equip the students with basic knowledge and research skills on media research. The topics covered cross the course include (but may not limited within) the nature, types and characteristics of media research, the main components of research design, various data collection approaches, data analyses, as well as the presentation and communication of research results. During the process, students are expected to be able to familiarize themselves with several popular media research methods with the primary ability of research practice.

(6) **【Course Title】** Media Management

媒介管理

**【Course Code】** 80670572

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 45 Graduate Students

**【Instructor】** Richard S. Dunham

**【Course Description】**

(7) **【Course Title】** Corporate Communication

企业传播

**【Course Code】** 80670622

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Fall

**【Capacity】** 40 Graduate Students

**【Instructor】**

**【Course Description】**

(8) **【Course Title】** Hot Topics in Global Economy

全球经济热点新闻

**【Course Code】** 80670652

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Fall

**【Capacity】** 40 Graduate Students

**【Instructor】** Richard S. Dunham

**【Course Description】**

## 16. School of Law

(1) **【Course Title】** Foreign Copyright Law

外国版权法

**【Course Code】** 80661783

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】**

**【Instructor】** Joseph P.Liu

**【Course Description】** This course is an essential course for the students majoring in international intellectual property law. This course will cover all main topics in copyright law of a specific country or region (for example, the United States or Europe), such as subject matter of copyright, originality requirement, the contents of copyright, ownership of copyright, copyright infringement, indirect infringement, remedies, etc.

(2) **【Course Title】** Intellectual Property Laws in Certain Foreign Countries

外国知识产权法专题

**【Course Code】** 80661452

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】**

**【Instructor】** Heinz Goddar

**【Course Description】** The reading materials for this course are a collection of 36 classic law review articles that apply law and economic approach to patent, copyright and trademark law issues. The titles of these articles are listed below in the outline. Students are required to finish reading 2 or 3 articles before each class meeting and participate in class discussion.

(3) **【Course Title】** Research of Case in International Arbitration

国际仲裁案例研修

**【Course Code】** 80661803

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】**

**【Instructor】** Jane Yolande Willems

**【Course Description】** This course will highlight the importance of evidence and focus on the different ways and approaches in preparing and presenting a case in international arbitrations in various jurisdictions. The module would provide students with the opportunity to prepare and learn how to present its case both in



writing and orally through mock scenarios. Documentary evidence, oral evidence of fact witnesses and expert evidence will be covered.

(4) **【Course Title】** Enforcement of Arbitral Awards

国际仲裁裁决的执行

**【Course Code】** 80661812

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】**

**【Instructor】** Albert Jan Van Den Berg

**【Course Description】**

The New York Convention is the most important treaty in the context of international commercial arbitration. The module will examine the cases on recognition and enforcement of arbitration agreements and arbitral awards under the New York Convention in various jurisdictions. The jurisprudence emanating from the court decisions on the way as to how various jurisdictions interpret this Convention will be studied and discussed.

(5) **【Course Title】** WTO Dispute Settlement Mechanism

WTO 的争端解决机制

**【Course Code】** 80661933

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】**

**【Instructor】** LU Xiaojie & ZHANG Yuejiao 吕晓杰、张月姣

**【Course Description】**

The seminar will explore these issues and some proposals for reform in the context of the structure of the World Trade Organization established by the Uruguay Round negotiations completed in 1994. There will be some emphasis on how these dispute settlement procedures interact with diplomacy and policy-making concerning international economic relations. These subjects will be explored in the context of problems of regulation of cross-border economic activity, as well as broader problems of “globalization” of economic affairs. Various constitutional problems will be discussed including questions of sovereignty, allocation of power among international and national governmental institutions, and threats to national “sovereignty.” Some specific cases will be taken up, possibly the Bananas case, the Beef Hormones case, the Shrimp–Turtle case, and recent cases such as Asbestos, Safeguards, GSP, Gambling, and others. The course provides a basic understanding in WTO law and the practice and procedures of the Appellate Body of the WTO. An overview of WTO disputes resolution procedures will also be presented.

(6) **【Course Title】** International Arbitration in Asia

亚洲国际仲裁

**【Course Code】** 80661944

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】**

**【Instructor】** Justin D Agostino

**【Course Description】**

The course will explore the current trends and issues arising from international commercial arbitration in various jurisdictions in Asia. The domestic arbitration legislations adopted in different countries of the region and the relevant cases from each jurisdiction will be covered. Lectures will be given by practitioners in international commercial arbitration in the region who will share with the students the issues arising in their field of practice. The rules of various arbitral institutions in the region will be discussed. The jurisdictions to be covered in Asia are: Mainland China, Taiwan, Hong Kong, Singapore, Korea, Australia and New Zealand.

(7) **【Course Title】** Chinese Banking Law

中国银行法

**【Course Code】** 80669022

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】**

**【Instructor】** GAO Simin

**【Course Description】**

This course focuses on laws governing banks and other financial intermediaries, reflecting the change of regulation and financial innovation. This course will mainly focus on the legal issues in China of that subject. Assessment of this course may include final essay, presentation, participation, and attendance and so on.

(8) **【Course Title】** International Intellectual Property Treaties

国际知识产权条约

**【Course Code】** 80661193

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】**

**【Instructor】** FENG Shujie

**【Course Description】**

The lectures and materials of this course are all in English. WTO intellectual property (IP) related dispute settlement cases will be used for study and discussion.

The course will be on the main IP treaties such as Paris convention for the protection of industrial property, Berne Convention for the protection of literary and artistic works, TRIPs Agreement of WTO. It will also be analysed the regional IP harmonisation such as NAFTA and EU. Invited speakers, such as lawyers, IP officers from Chinese government and Embassies in China, will share their experience.

(9) **【Course Title】** Foundations of Common Law(4)

普通法精要（4）

**【Course Code】** 40661783

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】**

**【Instructor】** William Rosoff

**【Course Description】**

This course is essentially designed for junior and senior undergraduate students, who will be introduced to the essential contents of US torts law, i.e.. the subject components of torts (intention and negligence), contributory negligence, causation, damages, to various forms of tortious offenses and the determination of damages, as well as possible defenses thereof. This course mainly consists of the following chapters: introduction, intention (mens rea), negligence, strict liability, product liability, nuisance and trespass, emotional distress, defamation, privacy, etc.

(10) **【Course Title】** International Dispute Settlement

国际争端解决

**【Course Code】** 70660622

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring& Autumn

**【Capacity】**

**【Instructor】** JIA Bingbing

**【Course Description】**

The topic of dispute settlement is a combination of doctrine and practice, which shows, by way of examining the state of research and practice, the way in which international law functions effectively. The course covers the following themes: 1) history of dispute settlement in international relations; 2) diplomatic or political methods; 3) arbitration; 4) judicial means; 5) the role of international organizations; 6) special regimes in the law of the sea, WTO.

(11) **【Course Title】** The legal system of company M&A

公司并购法律制度

**【Course Code】** 80662012

**【Credits】** 2

**【Credit Hours】** 36

**【Semester】** Spring

**【Capacity】**

**【Instructor】** Visiting Professor

**【Course Description】**

M&A is here to stay: the buying and selling of companies remains a common option for many companies. The word merger has a strictly legal meaning and has nothing to do with how the combined companies are to be operated in the future. A corporate acquisition is the process by which the stock or assets of a corporation come to be owned by a buyer. Acquisition is the generic term used to describe a transfer of ownership. Merger is a narrow, technical term for a particular legal procedure that may or may not follow an acquisition.

(12) **【Course Title】** Chinese Practice of International Law

国际法在中国的实践

**【Course Code】** 80669042

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】**

**【Instructor】** JIA Bingbing

**【Course Description】**

This is a course open to students enrolled for the Chinese Law LLM programme. It is designed to familiarise LLM students with Chinese perspective, despite differences between national approaches to international law. The course will cover the historical development of China in modern times, Chinese view of the world, and Chinese approach to international law. The course is a seminar course, and relies on extensive reading of materials and practices.

## 17. School of Life Sciences

(1) **【Course Title】** Scientific Writing

科技英语写作

**【Course Code】** 40450551

**【Credits】** 1

**【Credit Hours】** 16

**【Semester】** Spring

**【Capacity】** 15 Graduate Students

**【Instructor】** CHEN Yeguang 陈晔光

**【Course Description】**

(2) **【Course Title】** Biochemistry (1)

生物化学（1）

**【Course Code】** 30450203-1

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 185 Undergraduate Students

**【Instructor】** LIU Dong 刘栋

**【Course Description】**

The main purpose of this course is to teach the students the basic concepts in biochemistry, which includes the structures and functions of proteins, nucleic acids, carbohydrates, lipids and biomembranes. We will also put the emphasis on enzyme kinetics and molecular mechanisms of signal transduction of the cells. Besides lectures, we will also discuss the problems and answer the questions to the students through the websites or one-to-one meeting. There are will be some homework assignments to students after each lecture. We will also recommend some original research articles for students to read to further raise their interests in biochemistry.

(3) **【Course Title】** Biochemistry (1)

生物化学（1）

**【Course Code】** 30450203-2

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 185 Undergraduate Students

**【Instructor】** LIU Dong 刘栋

**【Course Description】**

The main purpose of this course is to teach the students the basic concepts in biochemistry, which includes the structures and functions of proteins, nucleic acids, carbohydrates, lipids and biomembranes. We will also put the emphasis on enzyme kinetics and molecular mechanisms of signal transduction of the

cells. Besides lectures, we will also discuss the problems and answer the questions to the students through the websites or one-to-one meeting. There will be some homework assignments to students after each lecture. We will also recommend some original research articles for students to read to further raise their interests in biochemistry.

(4) **【Course Title】** Genetics

遗传学

**【Course Code】** 30450303

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 250 Undergraduate Students

**【Instructor】** ZHOU Bing 周兵

**【Course Description】**

This course is designed to introduce genetic principles to students of biology major. It aims to cover comprehensively all fields of classical and modern genetics, but skips most topics that have been taught in biochemistry and microbiology.

(5) **【Course Title】** Molecular Biology

分子生物学

**【Course Code】** 30450453-1

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 150 Undergraduate Students

**【Instructor】** XI Qiaoran 郗乔然

**【Course Description】**

Molecular Biology is to study the activity and function of genes at molecular level. In this class, I will introduce the key points in molecular biology, focusing on the basic theories and major techniques with current development and emerging discoveries of molecular biology. The main topic in this class includes: 1) the major tools to study genes and their activities, 2) Transcription and transcriptional regulation in prokaryotes, 3) Transcription and transcriptional regulation in eukaryotes, 4) DNA and protein interaction during transcription, 5) Post-transcriptional modification of RNA, 6) DNA recombination and transposition, 7) DNA damage repair, 8) Small RNAs, 9) Omics (genomics, transcriptomics and proteomics).

(6) **【Course Title】** Molecular Biology

分子生物学

**【Course Code】** 30450453-2

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 150 Undergraduate Students

**【Instructor】** XI Qiaoran 郗乔然

**【Course Description】**

Molecular Biology is to study the activity and function of genes at molecular level. In this class, I will introduce the key points in molecular biology, focusing on the basic theories and major techniques with current development and emerging discoveries of molecular biology. The main topic in this class includes: 1) the major tools to study genes and their activities, 2) Transcription and transcriptional regulation in prokaryotes, 3) Transcription and transcriptional regulation in eukaryotes, 4) DNA and protein interaction during transcription, 5) Post-transcriptional modification of RNA, 6) DNA recombination and transposition, 7) DNA damage repair, 8) Small RNAs, 9) Omics (genomics, transcriptomics and proteomics).

## **18. School of Materials Science and Engineering**

**(1) 【Course Title】 Introduction to Metallic Functional Materials**

金属功能材料导论

**【Course Code】** 70350102

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 20 Undergraduate Students

**【Instructor】** GODFREY ANDREW WILLIAM

**【Course Description】**

This is an introductory level course aimed at giving a basic introduction to the key relationship between structure and properties in material science, and on a wider level to encourage students to think about the role of materials in modern society. The course content will focus predominantly on metallic materials, but for completeness will also cover other classes of material (including ceramics, composites and semi-conductors). The first half of the course will cover the atomic structure of materials and then review different meanings of the mechanical “strength” of a material. Following this some key functional properties will be covered, including electrical conduction, semi- and super-conduction, and magnetism. The final lecture will give students an insight into the materials science of carbon-based materials. This is a Freshman Seminar course – where all students will be expected to participate in class discussions on topics raised during the lecture periods, and where the emphasis is not on learning technical details, but on developing an awareness of key concepts. The course is open to students from all backgrounds – in the past students with study majors as diverse as economics and medicine have taken part, and actively contributed to the course. Course assessment will be based on a combination of a group presentation (groups of 3-4 students depending on class size), a final written paper (4 pages typically), and class participation. Note that the class will be conducted entirely in English, so students should be comfortable with this. The final written paper will however not be graded based on the quality of the written language (as long as the key points presented are clear). There is no textbook for the course – lecture handouts in PDF format and additional reading materials will be provided as required.

**(2) 【Course Title】 Radiation Effects in Materials**

材料辐射效应

**【Course Code】** 70350362

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 graduate Students

**【Instructor】** LI Zhengcao

**【Course Description】**



- (3) **【Course Title】** Materials Characterization  
材料表征  
**【Course Code】** 70350362  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 40 graduate Students  
**【Instructor】** Shao Yang  
**【Course Description】**
- (4) **【Course Title】** Preparation in English of Scientific Papers and Presentation of Scientific Data  
材料英文科技写作  
**【Course Code】** 80350181  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 40 graduate Students  
**【Instructor】** Godfrey William  
**【Course Description】**
- (5) **【Course Title】** Biomedical Materials  
生物医用材料  
**【Course Code】** 80350792  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 40 graduate Students  
**【Instructor】** Wang Xiumei  
**【Course Description】**
- (6) **【Course Title】** Advanced Materials Processing Technology  
先进材料加工技术  
**【Course Code】** 80350802  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 40 graduate Students  
**【Instructor】** Xu Qingyan  
**【Course Description】**

(7) **【Course Title】** Material for Sustainable Development Energy and Environment  
可持续发展的关键材料：能源与环境

**【Course Code】** 80350812

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 graduate Students

**【Instructor】** WU Hui

**【Course Description】**

(8) **【Course Title】** Multi-Scale Modeling in Materials Science  
材料科学中的多尺度计算模拟

**【Course Code】** 80350822

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 graduate Students

**【Instructor】** XU Fen

**【Course Description】**

(9) **【Course Title】** Mechanical Properties of Metallic Materials  
金属材料的力学性能

**【Course Code】** 80350832

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 graduate Students

**【Instructor】** Godfrey William

**【Course Description】**

## **19. Department of Mechanical Engineering**

**(1) 【Course Title】 Production Management**

生产管理

**【Course Code】 70160033-1**

**【Credits】 3**

**【Credit Hours】 48**

**【Semester】 Spring**

**【Capacity】 80 graduate Students**

**【Instructor】 CHEN Ye**

**【Course Description】**

**(2) 【Course Title】 Production Management**

生产管理

**【Course Code】 70160033-2**

**【Credits】 3**

**【Credit Hours】 48**

**【Semester】 Spring**

**【Capacity】 80 graduate Students**

**【Instructor】 CHEN Ye**

**【Course Description】**

**(3) 【Course Title】 Logistics and Supply Chain Management**

物流与供应链管理

**【Course Code】 80160223**

**【Credits】 3**

**【Credit Hours】 48**

**【Semester】 Spring**

**【Capacity】 55 graduate Students**

**【Instructor】 Huang Simin**

**【Course Description】**

**(4) 【Course Title】 Engineering and Technology Management**

工程与技术管理

**【Course Code】 80160363**

**【Credits】 3**

**【Credit Hours】 48**

**【Semester】 Spring**

**【Capacity】 55 graduate Students**

**【Instructor】 HE FANG**

**【Course Description】**

**(5) 【Course Title】 Chinese Industry Studies: Advanced Manufacturing and Contemporary Service**

中国产业研究：先进制造和现代服务

**【Course Code】** 80160523

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 55 graduate Students

**【Instructor】** XIE Xiaolei

**【Course Description】**

## 20. School of Medicine

(1) **【Course Title】** Management on Public Health Services

卫生事业管理

**【Course Code】** 74000283

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 10 Undergraduate Students, 50 Graduate Students

**【Instructor】** LIU Tingfang 刘庭芳

**【Course Description】**

Management on Public Health Services is a subject that explores the development rule of health service, the allocating mechanism of health resource, health policy in step with the situation of China, organization management or work method, and the experiences from other countries based on the theory, method and technology of modern management science to improve the people's health status. This course covers the framework of the health organization, health resource management, health policy analysis, health insurance system and all kinds of health affairs.

(2) **【Course Title】** Epidemiology

流行病学

**【Course Code】** 74000293

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 10 Undergraduate Students, 50 Graduate Students

**【Instructor】** ZHANG Linqi 张林琦

**【Course Description】**

Epidemiology is a population level research on diseases and health science. Course content includes general and special theory. Its general theory describes the basic concepts, basic knowledge and general theory of the Epidemiology. The special part aims to the introduction on the application of epidemiology in disease prevention and control, mainly involving large current human health hazard of infectious diseases and chronic non-infectious diseases, such as cardiovascular diseases, cancer, the respiratory system and the digestive system diseases, sexually transmitted diseases, AIDS, injuries etc.

(3) **【Course Title】** Medical Molecular Biology

医学分子生物学

**【Course Code】** 44000523

**【Credits】** 3

**【Credit Hours】** 48

**【Semester】** Spring

**【Capacity】** 35 Graduate Students

**【Instructor】** Chen Mo  
**【Course Description】**

## **21. Department of Microelectronics and Nanoelectronics**

(1) **【Course Title】** PLL Design and Clock/Frequency Generations

PLL 设计与时钟/频率产生

**【Course Code】** 80260042

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 40 Graduate Students

**【Instructor】** LI Yugen 李宇根

**【Course Description】**

This course gives insights into phase-locked clock generation as well as the ability of gaining system perspectives and circuit design aspects of phase-locked loop (PLL) for wireless and wireline communications. In the first half of the course, basic theoretical analysis of the PLL and system/circuit design considerations will be discussed. The second half of the course consists of extensive lectures covering practical design aspects in various PLL applications and more advanced topics; frequency synthesis, clock-and-data recovery, delay-locked loops, on-chip testability and compensation, coupling in SoC design, and future challenges.

## 22. Department of Physics

(1) **【Course Title】** Physics (1)

大学物理 (1)

**【Course Code】** 10430344

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 150 Undergraduate Students

**【Instructor】** Bisset Michael Andrew

**【Course Description】**

We introduce Newtonian mechanics of both mass point and rigid body. After that a basic concept of Lagrangian mechanics will be introduced. Besides those, we will introduce the physics of oscillation, fluid, and waves including travelling wave, standing wave and Doppler Effect. In the last several week, we will discuss thermodynamics.

(2) **【Course Title】** Fundamentals of Physics (2)

基础物理学(2)

**【Course Code】** 20430234

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 100 Undergraduate Students

**【Instructor】** Jiangshuo 蒋硕

**【Course Description】**

As the first fundamental course on physics for the physics major and related science or engineering major students, we shall systematically study Mechanics, Special Relativity and Wave Optics, laying a solid foundation for future study of Physics and related subjects.

(3) **【Course Title】** General Relativity

广义相对论

**【Course Code】** 30430094

**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 40 Undergraduate Students

**【Instructor】** Bisset Michael Andrew

**【Course Description】**

This course is designed to be an introduction to the theory of General Relativity (GR) as developed by Einstein and those who followed him. It is designed for advanced undergraduate students (or starting graduate students) who have already



completed some basic physics courses, including an introduction to special relativity. I will develop most or all of the additional mathematical tools required basically from scratch. This is NOT a course on current topics in GR or quantum gravity. Though I plan to touch on some aspects of current research, most of the material covered will be well-established concepts. The textbook I will mostly follow for this course is “Spacetime and Geometry: An Introduction to General Relativity” by Sean Carroll. There is an Asian edition of this book available for about 70 yuan. I will also draw some material from “A First Course in General Relativity” by Bernard F. Schutz. I will NOT always follow either book line by line. One semester is NOT long enough to cover well all topics considered standard in GR. So I will mainly discuss: review of special relativity, equivalence principle, manifolds and tensors, EM field tensor, curvature, formulation of Einstein’ s field equations, Lagrangian approach, alternative theories to GR, perfect fluids, cosmological constant, Schwarzschild metric and applications, conformal diagrams, black holes in general.

## 23. Center for Earth System Science

(1) **【Course Title】** Atmosphere–Ocean Interactions

海气相互作用

**【Course Code】** 80460072

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 30 Graduate Students

**【Instructor】** Wright Jonathon Stanley

**【Course Description】**

This course will focus on the physics and climate effects of atmosphere–ocean interactions at a variety of scales. The course will be subdivided into four parts: 1. an introduction to the atmosphere–ocean system and general circulation, including brief reviews of the relevant thermodynamics and dynamics; 2. an examination of boundary layers on both sides of the ocean surface and exchanges of heat, water, salt, and carbon across this boundary; 3. an overview of coupled atmosphere–ocean variability in the tropics and extratropics, including the El Niño–Southern Oscillation, coupled monsoon systems, the Madden–Julian Oscillation, and interannual and decadal variations in the northern Pacific and Atlantic Oceans; and 4. a discussion of the role of atmosphere–ocean interactions in climate change. Special attention will be paid to the mechanisms responsible for modes of coupled atmosphere–ocean variability, the interactions among these modes of variability, and the influences that they exert on global climate.

(2) **【Course Title】** Climate Dynamics Seminar

气候动力学研讨

**【Course Code】** 80460112

**【Credits】** 2

**【Credit Hours】** 32

**【Semester】** Spring

**【Capacity】** 24 Graduate Students

**【Instructor】** Wright Jonathon Stanley

**【Course Description】**

## 24. School of Social Humanities

- (1) **【Course Title】** Chinese Philosophy  
中国哲学  
**【Course Code】** 60610132  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 80 graduate Students  
**【Instructor】** GAO Haobo  
**【Course Description】**
- (2) **【Course Title】** Philosophy of Language  
语言哲学  
**【Course Code】** 80619023  
**【Credits】** 3  
**【Credit Hours】** 48  
**【Semester】** Spring  
**【Capacity】** 10 graduate Students 10 Undergraduate students  
**【Instructor】** Tang HAO  
**【Course Description】**
- (3) **【Course Title】** Foundations of Logic  
逻辑学基础理论  
**【Course Code】** 30690552  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 35 Undergraduate students  
**【Instructor】** Westerstahl Dag Ture Hjalmar  
**【Course Description】**
- (4) **【Course Title】** Modal Logic and its Application  
模态逻辑及应用  
**【Course Code】** 30690562  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 25 Undergraduate students  
**【Instructor】** Seligman J. Michael  
**【Course Description】**
- (5) **【Course Title】** Early Modern Western Philosophy  
早期现代西方哲学

【Course Code】 40691143  
【Credits】 3  
【Credit Hours】 48  
【Semester】 Spring  
【Capacity】 35 Undergraduate students  
【Instructor】 Tang HAO  
【Course Description】

(6) 【Course Title】 History of Analytic Philosophy  
西方分析哲学

【Course Code】 40691152  
【Credits】 2  
【Credit Hours】 32  
【Semester】 Spring  
【Capacity】 35 Undergraduate students  
【Instructor】 Tang HAO  
【Course Description】

(7) 【Course Title】 Daoist Philosophy in English Speaking World  
英语世界中的道家哲学

【Course Code】 40691163  
【Credits】 3  
【Credit Hours】 48  
【Semester】 Spring  
【Capacity】 35 Undergraduate students  
【Instructor】 YUAN Ai  
【Course Description】

## 25. Department of Mathematical Sciences

- (1) **【Course Title】** Game Theory  
博弈论  
**【Course Code】** 80619023  
**【Credits】** 3  
**【Credit Hours】** 48  
**【Semester】** Spring  
**【Capacity】** 60 graduate Students  
**【Instructor】** ZHENG Shaoyuan  
**【Course Description】**
- (2) **【Course Title】** Calculus A(2)  
微积分 A (2)  
**【Course Code】** 10421065  
**【Credits】** 5  
**【Credit Hours】** 100  
**【Semester】** Spring  
**【Capacity】** 170 undergraduate students  
**【Instructor】** Lecouturier Emmanuel Autoine  
**【Course Description】**
- (3) **【Course Title】** Calculus A(2)  
微积分 A (2)  
**【Course Code】** 10421315  
**【Credits】** 5  
**【Credit Hours】** 100  
**【Semester】** Spring  
**【Capacity】** 50 Undergraduate students  
**【Instructor】** Huang Yi  
**【Course Description】**
- (4) **【Course Title】** Advanced Topics in Linear Algebra  
高等线性代数选讲  
**【Course Code】** 10421392  
**【Credits】** 2  
**【Credit Hours】** 32  
**【Semester】** Spring  
**【Capacity】** 50 Undergraduate students  
**【Instructor】** Yang Yilong  
**【Course Description】**

- (5) **【Course Title】** Numerial Analysis  
数值分析  
**【Course Code】** 60420254  
**【Credits】** 4  
**【Credit Hours】** 64  
**【Semester】** Spring  
**【Capacity】** 40 graduate students  
**【Instructor】** Tang HAO  
**【Course Description】**
- (6) **【Course Title】** Advanced Probability  
高等概率  
**【Course Code】** 70420074  
**【Credits】** 4  
**【Credit Hours】** 64  
**【Semester】** Spring  
**【Capacity】** 10 Undergraduate students, 10 graduate students  
**【Instructor】** Tang HAO  
**【Course Description】**
- (7) **【Course Title】** Dynamical Systems  
动力系统  
**【Course Code】** 70420254  
**【Credits】** 4  
**【Credit Hours】** 64  
**【Semester】** Spring  
**【Capacity】** 10 Undergraduate students, 10 graduate students  
**【Instructor】** YUAN Ai  
**【Course Description】**
- (8) **【Course Title】** GeometryIII, Complex Geometry  
微分几何 III-复几何  
**【Course Code】** 70420534  
**【Credits】** 4  
**【Credit Hours】** 64  
**【Semester】** Spring  
**【Capacity】** 20 Undergraduate students, 20 graduate students **【Instructor】** Tang  
HAO  
**【Course Description】**
- (9) **【Course Title】** Algebraic Number Theory  
代数数论  
**【Course Code】** 80420044  
**【Credits】** 4

**【Credit Hours】** 64

**【Semester】** Spring

**【Capacity】** 20 Undergraduate students, 20 graduate students

**【Instructor】** Tang HAO

**【Course Description】**