The Undergraduate and Graduate Courses Taught in English and Open to the International Visiting/Exchange Students at Tsinghua University
(Fall Semester, 2015)

Note:
(1) The course information provided herein may be subject to change before course registration.
(2) The international visiting/exchange students may choose from both undergraduate and graduate courses.
(3) The courses of a department/school are preferentially open to the exchange students of the department/school.
(4) The graduate courses in the School of Economics and Management are open only to the exchange students majored in Economics.
(5) The Elementary Chinese courses in ICLCC are preferentially open to the university-level exchange students.

1. School of Aerospace

(1)【Course Title】Computational Methods for Reacting Flows
反应流计算方法
　　【Course Code】80310473
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】30 Graduate Students
　　【Instructor】REN Zhuyin　任祝寅
　　【Course Description】

This course focuses on computational methods for flows with chemical reactions. A review of governing equations and fundamental concepts of combustion and turbulent flows is first given. The characteristics of reaction source term and the integration methods for stiff ordinary differential equations (ODE's) governing chemical equations are discussed. The course is then focused on introducing the operator splitting schemes, finite volume and finite difference methods, probabilistic simulation techniques for reacting flows. Properties such as accuracy, stability and implementation will be discussed. Emphasis is made to identify key issues in the applications of the different methods in simulating practical propulsion and power generation systems.

(2)【Course Title】Engineering Mechanics
工程力学
　　【Course Code】20310504
　　【Credits】4
　　【Credit Hours】72
　　【Semester】Fall
　　【Capacity】30 Undergraduate Students
　　【Instructor】ZHENG Lili　郑丽丽
　　【Course Description】

A review of vector algebra. Concept of force. Equilibrium of particles. Moments about points and lines, couples and equivalent force systems. Equilibrium of rigid bodies. Analysis of simple structures such as trusses, frames, and beams. Centroids, centers of gravity, and moments of inertia. Dry friction with applications to wedges, screws, and belts. Method of virtual work, potential energy, and stability. Vectorial kinematics of particles in space, orthogonal coordinate systems. Relative and constrained motions of particles. Dynamics of particles and the systems of particles, equations of motion, energy and momentum methods. Collisions. Two- and three-dimensional kinematics and dynamics of rigid bodies. Moving frames and relative motion. *Free, forced, and damped vibrations of particles and rigid bodies.

2. School of Architecture

(1)【Course Title】Theory and Practice of Regional Architecture
地域建筑理论与实践
【Course Code】80000891
【Credits】1
【Credit Hours】16
【Semester】Fall
【Capacity】20 Graduate Students
【Instructor】LI Xiaodong 李晓东
【Course Description】

The course implements a strong integration between theory in international discourse, and practice in contemporary Chinese architecture. The course is organized in a weekly pattern of one lecture paired with one seminar. For each week there will be one topic. The currently proposed topics are: 1 Classical and Anti-Classical; 2 Autonomy; 3 Critical Regionalism; 4 Events and Sustainability; 5 Centralization and De-Centralization; 6 Reflective Thinking and Innovation; 7 The Representational and the Ontological; 8 The Verticality and the Horizontality.

(2)【Course Title】History of Chinese Architecture
中国建筑史
【Course Code】80000901
【Credits】1
【Credit Hours】16
【Semester】Fall
【Capacity】20 Graduate Students
【Instructor】LIU Chang 刘畅
【Course Description】

Development of Chinese Architecture; Cultural Background of Chinese Architecture; Palace; Garden; Urban and Vernacular Architecture.

(3)【Course Title】Building Energy Efficiency Diagnostics
大型商业建筑节能诊断方法
【Course Code】80000942
【Credits】2
【Credit Hours】36
【Semester】Fall
【Capacity】30 Graduate Students
【Instructor】XIA Jianjun 夏建军
【Course Description】

Building energy efficiency diagnostics will be mainly focused on the study on commercial building HVAC system and lighting system on-site energy performance investigation, diagnostics and system retrofitting methods introduction. By lecture study and field practicing in the building projects, by the end of the BEED course,

participants should be able to: 1. Understand the present building energy performance in different regions 2. Identify and discuss the key practices of building energy efficiency; 3. Analyze the costs and benefits of incorporation of building energy efficiency measures; 4. Work with architects, designers, builders, building operators, and utilities to improve a building's energy performance. The lectures will be given by the professors from Tsinghua University (70%) and University of Pennsylvania (30%).

(4)【Course Title】Design Studio I
　　　　　　　　设计专题一
【Course Code】80001043
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】15 Graduate Students
【Instructor】LI Xiaodong 李晓东
【Course Description】

Design scope of the theme is located in the southwest of the Summer Palace in the Three-hill Five-garden area in BeiJing northwest suburb, reaching BeiWuLu village in the west, the northwest fourth ring road in the south, the Long River in the east, adjacent to the Summer Palace in the north. It includes the south RuYi gate, west gate of the Summer Palace, Back Kiln of the Summer Palace, JingMi canal, the Long River, villages, the South-to-North Water Transfer Channel and proposed "TuanCheng Lake Regulation Pond", the South-to-North Water Transfer Channel garden and modern western suburb tram line etc. We will research, map, and analyze historic, current, and future scenarios of this location in order to propose a new urban relationship between Beijing and the relationship between the various neighborhoods and districts of western Beijing with the this location specifically.

(5)【Course Title】Design Studio II
　　　　　　　　设计专题二
【Course Code】80001053
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】15 Graduate Students
【Instructor】LI Xiaodong 李晓东
【Course Description】

This 8 weeks course will provide space design training based on architecture or/and urban space design, which should enable students to develop the ability both in theoretical and practical aspect, applying the skills, knowledge and techniques assimilated in the previous architecture course units in an integrated way. This Space Design Studio will consist of lecture courses, seminars, design review, as well as site survey, providing opportunities to learn from current urban development situation.

All topics or issues of the space design studio will be highly appreciated if stemming from the urban public space or architecture in relation with the rapidly urbanized China. The studio system offers a variety of approaches to the process of design, which is considered to be a positive attribute by the students, ensuring scope for debate and discussion. The final assessment is based on the submission and presentation of the space design work.

3. Department of Automation

(1)【Course Title】Network Security
    网络安全
    【Course Code】70250332
    【Credits】2
    【Credit Hours】32
    【Semester】Fall
    【Capacity】20 Graduate Students
    【Instructor】LI Jun 李军
    【Course Description】

1. IP Networking OSI Layers and Associated Security Issues: (a) L2 Review: Ethernet and VLAN. (b) L3 Review: IP, ICMP and L2 Tunneling (MPLS & BGP, IPSec, PPTP/L2TP, and PPPoE/A). (c) L4 Review: TCP/UDP. (d) L5-L7 Review: HTTP, FTP, DNS, SIP, SSL/SSH, etc. 2. Data Structure and Algorithms: (a) Packet Headers and Checksum. (b) Classification: Hash, Prefix Matching, Trie, etc. (c) Cryptograph: 3DES, AES, MD5, SHA1. 3. Authentication: (a) Privileges and Passwords. (b) RADIUS, LDAP, Windows Domain, Secure ID, SmartCard. 4. Authorization: Firewall (I): (a) L2 Packet Filtering: VLAN and MAC-IP Binding. (b) L3/4 Packet Filtering: Policy Lookup. 5. Authorization: Firewall (II): (a) L4 Stateful Inspection (Session Lookup and Fail-over). (b) L5-L7 Application Proxy. 6. Confidentiality and Integrity: VPN (I) (a) PPP and SSL based VPN, (b) PKI. 7. Confidentiality and Integrity: VPN (II) (a) IKE and IPSec, (b) IPSec VPN Topology 8. Protection and Non-repudiation: NID/PS: (a) Signature Based Solution. (b) Anomaly Analysis. 9. Engineering Issues in Network Security (I): (a) CPU, ASCI and NPU. (b) OS, HID/PS, and Secure Coding. 10. Engineering Issues in Network Security (II): (a) Performance vs. Functionality, (b) Flexibility vs. Usability, (c) Reliability, Scalability and Manageability. 11. Project Discussion. 12. Project Presentation.

(2)【Course Title】Fundamentals of Statistical Signal Processing
    统计信号处理基础
    【Course Code】70250443
    【Credits】3
    【Credit Hours】48
    【Semester】Fall
    【Capacity】25 Graduate Students
    【Instructor】GAO Feifei 高飞飞
    【Course Description】

In this course, we introduce the most comprehensive overview of both the parameter estimation and the signal detection for those involved in the design and implementation of statistical signal processing algorithms. We will (i) cover the important approaches to obtaining an optimal estimator and analyzing its performance; (ii) review the fundamental issues associated with mathematical

detection. You can find almost EVERYTHING related to estimation and detection theory from this course, e.g., Minimum Variance Unbiased Estimation; Best Linear Unbiased Estimation; Maximum Likelihood Estimation; Least Squares Estimation; Bayesian Estimation; Cramer-Rao Lower Bound; Kalman Filters; simple hypothesis testing; Neyman-Pearson Theorem; Bayes Risk; multiple hypothesis testing; composite hypothesis testing to accommodate unknown signal and noise parameters; Detection with non-Gaussian noise, etc. And we will present numerous examples as well as applications to real-world problems.

(3)【Course Title】Advanced Computing Technologies and Applications
先进计算技术与应用
【Course Code】80250792
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】15 Graduate Students
【Instructor】CAO Junwei 曹军威
【Course Description】

In 21st century, new challenges in science, research, education and engineering are becoming more and more complicated. Traditional analytical and experimental methods can no longer meet requirements of large scale science exploring and engineering problems. Computation is considered to be the third dimension of science and research and many questions are only now coming within our ability to answer because of advances in computing and related information technology. The course is focused on several typical advanced computing technologies, e.g. cluster computing, grid computing and services computing, from perspectives of theories, methods, tools and applications. The course encourages interactions, demonstration, discussion and experiments and allows a deeper understanding of theories and methods of advanced computing via hand-on experiences of corresponding software toolkits. A better understanding of features and trends of advanced computing is expected via discussion and interactions among students. The course finally aims to improve students with higher creativity, problem-solving ability and software application skills.

4. Department of Automotive Engineering

(1)【Course Title】Fundamentals of Lightweight Design

　　　　　　　　轻量化设计基础

　　【Course Code】70150133

　　【Credits】3

　　【Credit Hours】48

　　【Semester】Fall

　　【Capacity】30 Graduate Students

　　【Instructor】HOU Zhichao 侯之超

　　【Course Description】

　　1. Introduction 2. Fundamentals 3. Trusses 4. Beams 5. Torsion of Beams 6. Stiffened shear webs.

(2)【Course Title】Automotive Engineering I

　　　　　　　　汽车工程 I

　　【Course Code】70150153

　　【Credits】3

　　【Credit Hours】48

　　【Semester】Fall

　　【Capacity】30 Graduate Students

　　【Instructor】WANG Xiaofeng 王霄锋

　　【Course Description】

(3)【Course Title】Internal Combustion Engines I

　　　　　　　　内燃机 I

　　【Course Code】70150203

　　【Credits】3

　　【Credit Hours】48

　　【Semester】Fall

　　【Capacity】30 Graduate Students

　　【Instructor】MA Fanhua 马凡华

　　【Course Description】

　　1. Fuels. 2. Energy efficiency of the internal combustion engine. 3. Heat transfer in the internal combustion engine. 4. Layout of the internal combustion engine. 5. Valve train. 6. Design elements of the internal combustion engine.

(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】Fall

　　【Capacity】30 Graduate Students

【Instructor】WEI Yintao 危银涛
【Course Description】

(5)【Course Title】Alternative Vehicle Propulsion System
　　　　　　　　车辆新型驱动系统
【Course Code】80150162
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】30 Graduate Students
【Instructor】ZHANG Junzhi 张俊智
【Course Description】
The subject of this lecture series is alternative concepts for vehicle drive-trains. These lectures deal with the different alternative drive systems, such as unconventional types of combustion engines with the consideration of alternative fuels (alcohol, natural gas, and hydrogen), gas turbines, Stirling engines and fuel cells. Furthermore, these lectures discuss the different types of variable transmissions and power split drive trains. Regenerative drives e.g. electric, flywheel and hybrid drives are a main topic of these lectures. Beside the discussion of the different components (hydraulic machines, electric motors, hydraulic pressure accumulators, batteries, flywheels), possible control strategies (integrated engine-transmission management) are deducted, according to the various drive concepts.

(6)【Course Title】Vehicle NVH
　　　　　　　　汽车 NVH
【Course Code】80150173
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】30 Graduate Students
【Instructor】ZHENG Sifa 郑四发
【Course Description】
Vehicle NVH mainly concerns the fundamentals of acoustic, and principal, analysis and control method of vehicle NVH. Six parts are included in this course: 1) fundamentals of acoustics and audiology, 2) measuring equipment and signal analysis, 3) legistation, measuring regulations and limiting values, 4) drive chain and chassis NVH, 5) body NVH, 6) Psychoacoustics and sound quality.

(7)【Course Title】Fundamentals of Automotive Crash Safety
　　　　　　　　汽车碰撞安全基础
【Course Code】80150193
【Credits】3
【Credit Hours】48
【Semester】Fall

【Capacity】30 Graduate Students
【Instructor】ZHOU Qing 周青
【Course Description】

This course will systematically introduce the fundamental knowledge, current technologies and research methods in the area of vehicle crashworthiness and occupant and pedestrian protection. The main contents include safety features of automotive body structure, design and analysis of major energy absorbing components, occupant injuries in motor vehicle accidents, occupant restraint systems, pedestrian impact protection, analysis of vehicle structure failure under impact loading, vehicle safety assessment method, etc.

5. Department of Chemical Engineering

(1)【Course Title】Bioseparation Engineering
　　　　　　　生物分离工程
　　【Course Code】70340132
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】40 Graduate Students
　　【Instructor】LIU Zheng 刘铮
　　【Course Description】

(2)【Course Title】Chemical Kinetics and Reaction Mechanisms
　　　　　　　化学反应动力学及机理
　　【Course Code】80340172
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】30 Graduate Students
　　【Instructor】WANG Dezheng 王德峥
　　【Course Description】
1. Basic Concepts of Kinetics Definition of the Rate, Order and Molecularity, Elementary Reaction Rate Laws Determination of Reaction Order, Temperature Dependence of Rate Constants Stoichiometry Equations and Reaction Mechanisms Transition State Theory and Microscopic Reversibility. 2．Complex Reactions Exact Analytic Solutions for Complex Reactions Approximation Methods: The Steady-State Approximation, Rate Controlling Step, Lumping Examples: Chain Reactions and Catalyzed Reactions Determinant (Matrix) Methods Stochastic Method 3．Characterizing Reactions and Mechanisms Techniques for Kinetic Measurements. Treatment of Kinetic Measurements Identification of the Intermediate Equivalent Kinetic Expressions, Kinetically Indistinguishable Schemes Numerical Simulations. 4．Reactions in Solution General Properties of Reactions in Solutions Diffusion-Limited Rate Constants, Slow reactions Effect of Ionic Strength on Reactions between Ions Linear Free-Energy Relationships. 5．Catalysis Adsorption and Desorption Heterogeneous Catalysis and Gas-Surface Reactions Simultaneous Reaction and Diffusion Autocatalysis and Oscillating Reactions.

6. Department of Chemistry

(1)【Course Title】Chemistry for Sustainable Society
　　　　　　　可持续发展社会的化学
　　【Course Code】40440301
　　【Credits】1
　　【Credit Hours】16
　　【Semester】Fall
　　【Capacity】70 Undergraduate Students
　　【Instructor】WANG Meixiang 王梅祥
　　【Course Description】

This short course is designed specifically for the chemistry students of Tsinghua Elite Program. It is aimed to guide students to scrutinize the importance and contribution of chemistry to humankind and the development of society. It is hoped that the students, after studying the course, will strengthen their interest in chemistry, improve their innovative capacity, and choose chemistry research as their life-time career. This course will discuss a few key issues of chemistry and sustainability of the economic and social development. The topics include: what challenges we are facing in terms of sustainable development, what chemistry can deliver to ensure enough foods and guarantee food safety; chemistry is the devil causing problems of our living environment, or chemistry is the angel to protect our ecosystem and environment; where we can find enough energy to drive our planet; what are the replacement of the fossil resources for chemical industry and manufacture; what chemistry can contribute to improve the quality of life; and the philosophy and the contents of sustainable chemistry.

(2)【Course Title】Introduction to Computational Chemistry
　　　　　　　计算化学导论
　　【Course Code】40440321
　　【Credits】1
　　【Credit Hours】16
　　【Semester】Fall
　　【Capacity】70 Undergraduate Students
　　【Instructor】LI Jun 李隽
　　【Course Description】

In a time of computer revolution, chemistry has become a science with both experiment and theory due to the rapid developments of applying quantum mechanics and relativity mechanics to fundamental chemistry problems. In this course, we will introduce recent developments in theoretical and computational chemistry and the applications in experimental chemistry research.

7．Department of Civil Engineering

(1)【Course Title】Elasticity and Plasticity
　　　　　　　　弹塑性力学
　　【Course Code】70030023
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】40 Graduate Students
　　【Instructor】CHENG Xiaohui　程晓辉
　　【Course Description】

(2)【Course Title】Transportation for Tomorrow (C-Campus Course)
　　　　　　　　未来交通
　　【Course Code】20030272
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】30 Undergraduate Students
　　【Instructor】WU Jianping　吴建平
　　【Course Description】
"Transportation for Tomorrow" course included in Tsinghua-KTH course "Creative Learning" is hosted by both Tsinghua University and KTH. The course is innovative in the teaching mind and approach. Different from the conventional teaching pattern that focuses on transferring knowledge to students, the course is based on exploring and researching by interaction between teachers and students. Students would gather knowledge through discussion in class and self-learning. Teaching group consists of five teachers from Tsinghua – Jianping Wu, Qing Zhou, Runhua Guo, Li Li and Yiman Du – and six teachers from KTH - Niki Kringos, Sebastiaan Meijer, Staffan Hintze, Susanna Toller, Anders Wengelin, Mikael Nybacka. 15 students will be selected from Tsinghua University and KTH respectively. Language capability, capability of independent observation and thinking, teamwork ability constitutes the judging criterion in the selection. The course aims at training the capability of creative learning within this specific teaching environment. Likewise, the course will build a new type channel of communication between teachers and students providing chances for professors and students to communicate with each other. Teaching pattern is mainly made up by discussion. During the course, training of capability of observation, raising questions, analysis and solving question is focused on. In the course, students would be categorized into 5-6 groups. Each group has 5-6 students, including 2-3 students from KTH and 2-3 students from Tsinghua University, and they will have a topic related to future transportation. The course lasts 8 weeks. In first 2weeks, students should raise a question through observation and investigation. In weeks 3-6, the topic will be accomplished by discussion in the whole team. Finally,

in weeks 7-8, seminar and examination in class will be hosted. It's a brand new exploring course and significant in training of creative learning of students.

(3) 【Course Title】Structural Mechanics (2)

结构力学（2）

【Course Code】20030142
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】30 Undergraduate Students
【Instructor】ZHONG Hongzhi 钟宏志
【Course Description】

This course is intended to provide the student majoring in civil, architectural and other related areas skills of structural analysis at an intermediate level. It consists of three major topics: Matrix analysis of structures, Plastic limit analysis and dynamic behavior of structures. The matrix analysis part exposes the student to the elementary skills and procedures in large-scale problems that can only be dealt with using computers. The second topic covers the essential concepts in plastic design of structures. In the third topic, emphasis is placed on the dynamic response analysis of discrete parameter (lumped mass) systems. The behavior and elementary skills of dynamic analysis of discrete parameter systems are studied.

(4) 【Course Title】Building Materials

建筑材料

【Course Code】40030902
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】30 Undergraduate Students
【Instructor】WEI Ya 魏亚
【Course Description】

This course offers a broad introduction to materials used in civil engineering, including cement, concrete, steel, masonry, asphalt concrete, wood and composites. The characteristics of each type of material are discussed in terms of the following aspects: basic structure and properties of the materials, mechanistic behavior of the material and physical properties, environmental influences, engineering applications etc. Acting as a bridge linking fundamental principles to engineering practice, this course emphasizes on the engineering behaviors of these material systems. Understanding of these behaviors will be approached through detailed examination of the materials' microstructural characteristics and the associated structure performance. The students will derive benefit from this course in terms of fundamental principles, experiences, and skills.

(5) 【Course Title】Traffic Analysis and Design

交通分析与交通设计

【Course Code】40030942
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】30 Undergraduate Students
【Instructor】WU Jianping 吴建平
【Course Description】
The course systematically introduces traffic survey methods, road capacity, traffic flow theory, transport modeling, traffic assignments, traffic flow management and traffic simulation theory and technologies, and preliminary introductions of intelligent transport systems, traffic safety and sustainable development of transport. The course will be given with application examples and coursework to deepen and consolidate knowledge, and through reference reading and interactive classroom discussion to increase students' independent thinking and self-learning ability.

8. Department of Computer Science and Technology

(1)【Course Title】Combinatorics and Algorithms Design
　　　　　　　　组合数学与算法设计
　　【Course Code】70240384
　　【Credits】4
　　【Credit Hours】64
　　【Semester】Fall
　　【Capacity】35 Graduate Students
　　【Instructor】ZHAO Ying 赵颖
　　【Course Description】

This course covers topics in Combinatorics and Algorithms Design. We comprehensively discuss basic concepts, theories, methods, and instances in Combinatorics while focusing on concepts and ideas. Selected topics include: the Pigeonhole Principle, counting, combinations, Polya counting, recurrence relations and generating functions, graph, and linear programming etc. We also discuss basic mathematics concepts in algorithms design including growth of function, Big-O notations and recurrence relations etc., and basic strategies of algorithms design including search, divide and conquer, and greedy etc. Finally, we show examples of algorithms design in Combinatorics, including basic algorithms on Graph, minimum spanning tree algorithms, and algorithms for linear programming etc.

(2)【Course Title】Software Development: from Object-oriented to Service-oriented
　　　　　　　　从面向对象到面向服务的软件开发
　　【Course Code】70240393
　　【Credits】3
　　【Credit Hours】96
　　【Semester】Fall
　　【Capacity】35 Graduate Students
　　【Instructor】XU Bin 许斌
　　【Course Description】

The content of the course consists of three parts: Part 1 is the object-oriented knowledge in Java programming language, Part 2 is the design of Web application based on Java Enterprise Edition (Java EE), and Part 3 is about web service and service-oriented-architecture (SOA). The goal of the course is to let the students use Java and web service to develop web application.

(3)【Course Title】Process and Methods of Software Project Management
　　　　　　　　软件项目管理过程与方法
　　【Course Code】80240543
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】25 Graduate Students

【Instructor】ZHANG Yong 张勇
【Course Description】
At the end of the course, students should understand basic process and methods of software project management, be familiar with the project management tools. During the practice of software project management, they should be able to integrate the process of software project management and the life cycle of software development, and apply related knowledge to the project management systematically. In this way, they can undertake the software management project confidently.

(4)【Course Title】Topics in Advanced Multimedia Technologies
多媒体前沿技术
【Course Code】80240553
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】WEN Jiangtao 温江涛
【Course Description】
Entropy coding: Huffman coding, AC, entropy coding of GG sources, enumerative coding and Tunstall coding - Quantization: scalar and vector quantizations, TCQ and RD optimized quantization - Multimedia compression standards: jpeg, jpeg2000, H.26x, MPEGx - Multimedia streaming: RTP/UDP, HTTP/TCP, error resilience - DRM: crypto introduction, DRM.

(5)【Course Title】Future Internet Architecture
下一代互联网
【Course Code】80240563
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】LI Dan 李丹
【Course Description】
The development of the Internet makes more and more students get interested in related technologies. The Internet is facing regeneration, and the key technologies of new generation Internet are in dire need of spread. The course aims to enable students further understand and master the key technologies (including technical principles and specific realization) of new generation Internet after an overall understanding, and tentatively cultivate students' research ability in this field.

(6)【Course Title】Introduction to Distributed Systems
分布式系统导论
【Course Code】80240613

【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】CHEN Kang 陈康
【Course Description】

This course will introduce the principles of distributd systems as well as some of the current influential distributed systms such as Google File System, MapReduce, Bigtable, Amazon Dynamo etc. The course will emphasize on the internal structure of the corresponding systems and the general principles for designing distributed systems. Here are some of the topices that will be covered in this course: the programming model of distributed systems, distributed locking, data replications, distribted consensus and some issues related to security in real systems.

9. Center for Earth System Science

(1)【Course Title】Climate Dynamics Seminar
气候动力学研讨
　　【Course Code】80460112
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】30 Graduate Students
　　【Instructor】Wright Jonathon Stanley
　　【Course Description】

This course will include brief introductions to a wide variety of approaches and techniques in climate research, including both numerical modeling and data analysis approaches. The topics covered will include many of the key questions currently facing climate scientists, and will often deal directly with recent sources of disagreement and controversy. The course will be structured as a seminar, so that students will take turns presenting and leading a classroom discussion of topics in climate dynamics.

10. School of Economics and Management

(1)【Course Title】Theory of Investment
投资学
【Course Code】80510312
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】70 Graduate Students
【Instructor】LI Minwen 李旻文
【Course Description】

(2)【Course Title】Marketing Research
营销研究
【Course Code】80510872
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】70 Graduate Students
【Instructor】LIU Xia 刘霞
【Course Description】

(3)【Course Title】Strategic Alliance and Cooperative Strategy
战略联盟与合作战略
【Course Code】80514802
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】10 Graduate Students
【Instructor】WU Rui 吴蕊
【Course Description】
This course is targeted at graduate students in the program of Master in Management (MiM). As interfirm cooperation has become a norm rather than an exception in business practices, we design this course to prepare graduate students in the skills of utilizing management-related knowledge and of analyzing the dynamics in competitive and cooperative situations among businesses. Combining academic research and case studies, we will discuss topics about strategic alliances including the formation incentives, governance mechanisms, conflict resolutions, and cooperative dynamics under technological innovations.

(4)【Course Title】Leadership in A New Era
麦肯锡课程：全球领导力
【Course Code】80515182 (1)
【Credits】2

【Credit Hours】32
【Semester】Fall
【Capacity】200 Graduate Students
【Instructor】DUAN Zhirong 段志蓉
【Course Description】

The course is designed to convey deep insights on new trends across 10 key themes of business functions (strategy, operations, organization, corporate finance, marketing, "big data", technology, CAPEX, sustainability, macroeconomics) with a field-and-forum approach.

(5)【Course Title】Leadership in A New Era
　　　　　　　　麦肯锡课程：全球领导力
【Course Code】80515182 (2)
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】50 Graduate Students
【Instructor】DUAN Zhirong 段志蓉
【Course Description】

The course is designed to convey deep insights on new trends across 11 key themes of business functions (strategy, operations, organization, corporate finance, marketing, "big data", technology, CAPEX, sustainability, macroeconomics) with a field-and-forum approach.

(6)【Course Title】Business Performance and Sustainability
　　　　　　　　企业经营与可持续发展
【Course Code】80515382
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】60 Graduate Students
【Instructor】QIAN Xiaojun 钱小军
【Course Description】

Today, in response of the call for corporate social responsibility and sustainability by Chinese government, NGOs, public, business partners as well as, sometimes, self aspiration, more and more companies have paid greater attentions to corporate social responsibility and sustainability, which imposes both challenges and opportunities for companies. This course focuses on the topic of Business Performance and Sustainability, and, through methods of case studies, faculty lectures and corporate guest lectures, help to answer the following key questions: 1. What are the external drivers and how do their mix and relative importance change over time. 2. How are external drivers understood inside the business, and what is the internal pathway through which their importance is understood and responded to. 3. What are the business benefits of a sustainability approach and how does this relationship change

over time. 4. How do Chinese businesses compare to their international counterparts, both in their Chinese operations and in their pathway of change over time. 5. What are the engagement and communication challenges facing China-based companies evolving in their approach to sustainability and how might it be addressed. It is hoped that the course will help students to better understand the external drivers of CSR and sustainability and gain richer knowledge of the challenges and opportunities CSR and sustainability may bring so as to acquire useful lessons and experiences.

(7)【Course Title】China Roots Seminar 1 (Economy & Industry)
　　　　　　　　中国根基系列讲座 1－中国经济与产业
　　【Course Code】80515441
　　【Credits】1
　　【Credit Hours】16
　　【Semester】Fall
　　【Capacity】60 Graduate Students
　　【Instructor】LI Jinliang 郦金梁
　　【Course Description】
The course is composed of a series of seminars. Each seminar covers one topic. The topics below are samples that are likely to be covered: "The Chinese Economy: Current Status and Challenges", "Chinese Financial System: An Overview", "Venture Capital and Private Equity in China". Depending on the availability of speakers, the specific topics may vary at different semester.

(8)【Course Title】Technology Driven Business Innovation
　　　　　　　　技术驱动商业创新
　　【Course Code】80515462
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】80 Graduate Students
　　【Instructor】ZHU Yan 朱岩
　　【Course Description】
This course will introduce the importance of technology in business innovation process and BT's internal approach to research and innovation, how BT collaborates with universities, industry and start-up companies to identify and develop new services and technology innovations; Compare the innovation strategies of Chinese and International companies; Show how advanced ICT technologies continuously transform different industries like the financial service industry, the consumer packaged good industry,etc; Explain why Intellectual Property plays such an important role in today's technology world and how international MNCs maintain their technology/business leading edge by effectively generating and protecting their IPRs.

(9)【Course Title】Chinese Institution and the Innovations in Business Models

中国制度与商业模式创新
【Course Code】80516022
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】? Graduate Students
【Instructor】ZHANG Jiayin 张佳音
【Course Description】

(10)【Course Title】Technology Strategy
技术战略
【Course Code】80511412
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】? Graduate Students
【Instructor】GAO Xudong 高旭东
【Course Description】

(11)【Course Title】Computer Network
计算机网络
【Course Code】20510082
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】70 Undergraduate Students
【Instructor】GUO Xunhua 郭迅华
【Course Description】
This course provides a comprehensive introduction to the concepts and principles about data communication and computer networking, including related architectures, protocols, technologies, hardware, software, and applications. Emphasis is put upon the requirement analysis and design of networking applications in organizations, while topics such as management of communications networks, cost-benefit analysis, and evaluation of connectivity options are covered, so as to help students learn to evaluate, select, and implement different communication options within an organization.

(12)【Course Title】Econometrics
计量经济学
【Course Code】30510053
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】95 Undergraduate Students

【Instructor】XU Yuan 徐嫄

【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.

(13) 【Course Title】Auditing (1)

审计学（1）

【Course Code】30510393

【Credits】3

【Credit Hours】48

【Semester】Fall

【Capacity】80 Undergraduate Students

【Instructor】LI Dan 李丹

【Course Description】

The course is designed to provide the student with insight about auditing: what it is, why it's important, what it entails, and why users of financial statements should care about it. It is an introduction to the audit function, audit standards, objectives and procedures, ethical and legal environment, materiality and audit risk, sampling, and reporting.

(14) 【Course Title】General Management

管理学原理

【Course Code】30510732

【Credits】2

【Credit Hours】32

【Semester】Fall

【Capacity】85 Undergraduate Students

【Instructor】CHEN Xiao 陈晓, YANG Ling 杨灵

【Course Description】

Organizations are all around us in society: we study in them, work for them, rely on them for goods and services, and we are often regulated and highly influenced by them. Understanding the management of organizations, therefore, is the key to becoming more effective actors of the organizations we are or will be part of. We will cover three traditional functions of management: planning, organizing, and leading. Overall, this course offers a comprehensive perspective for those interested in management and organizations. By the end of the course, you will achieve the following: Be familiar with key principles of management and organizations，Develop analytical skills in the diagnosis of organizational & managerial (in) effectiveness，Be able to apply basic principles of management to real-world practices。

(15)【Course Title】Intermediate Microeconomics
中级微观经济学
【Course Code】30510743
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】265 Undergraduate Students
【Instructor】LI Daokui 李稻葵
【Course Description】

The course presents basic theories of microeconomics and its applications. Topics covered include consumer theory, firm theory, market supply and demand, externality and public goods, industrial organization, game theory, information economics, and general equilibrium. The economic modeling methods and analytical tools are emphasized throughout the course.

(16)【Course Title】Financial Statement Analysis
财务报表分析
【Course Code】30510893
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】130 Undergraduate Students
【Instructor】LI Dan 李丹
【Course Description】

a) Understand the construction and major elements in financial statements; b) Understand how firm performance is analyzed and valued. c) Understand the relevance of cash flow and accounting information. d) Know how to pull apart the financial statements to get the relevant information. e) Apply ratio analysis in valuation and decision-marking.The objectives of this course are to gain a more thorough understanding of financial accounting techniques and to explore the accounting theory underlying such techniques. Assets, revenue recognition, and income items, investments in other companies and stockholders' equity will be covered in this course. Class meetings involve lectures, discussions and exercises. Class attendance is required in this class.

(17)【Course Title】Financial Institution
金融机构
【Course Code】30510962
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】80 Undergraduate Students
【Instructor】PANG Jiaren 庞家任
【Course Description】

A well-functioning financial system is crucial to economic growth and development as it promotes efficient capital allocation, provides risk sharing, and reduces transaction costs. This course aims to help students understand the role of the financial system by focusing on its major components: financial markets and institutions. It will discuss the economic foundations of financial markets and management of financial institutions. It will also introduce the development of China's financial system and compare it with its U.S. counterpart.

(18)【Course Title】Statistics for Business Economics
经济统计学
【Course Code】30511003
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】105 Undergraduate Students
【Instructor】ZHAN Zhaoguo 詹兆国
【Course Description】

This is an elective course for undergraduate students wishing to learn statistics for economics and business. Three major components of this course are: probability & statistics, linear regression, time series. This elective course is closely related to two required courses offered at Tsinghua SEM: Applied Statistics in Business & Economics and Econometrics I. Compared to Applied Statistics in Business & Economics, the probability & statistics part of this course appears a little more theoretical. The linear regression part of this course is typically covered by Econometrics I, and it is also covered by this course to review the related statistical concepts. The time series part of this course is not included by the two aforementioned courses. This elective course also utilizes datasets to demonstrate how statistical methods are applied in linear regression and time series analysis. At the end of the course, students are expected to be able to use sound statistical analysis in the future empirical work. The statistical software, STATA, is used in this course to help illustrate the course material. Topics of this course include: basics of probability, basics of statistical inference, basics of asymptotics, simple linear regression, multivariate linear regression, linear regression framework, introduction to time series, autoregressive and moving average models, forecasting. This course is open to sophomores, juniors and seniors. Students who are interested in this course are strongly encouraged to consult with those who have taken this course in the past couple of years.

(19)【Course Title】Topics on International Accounting
国际会计专题
【Course Code】40510093
【Credits】3
【Credit Hours】48
【Semester】Fall

【Capacity】55 Undergraduate Students

【Instructor】HAO Zhenping 郝振平

【Course Description】

To understand the development of accounting and financial reporting models in the world, and to enable you to evaluate the reasons and evolution of international accounting harmonization and convergence;To provide you with the key technical issues in international accounting area and their impact on financial reporting, such as accounting for foreign currency transactions, translation of foreign financial statements and accounting for changing prices; andTo understand some management accounting issues in multinational operations, for instance, the establishment of management control and information system, financial risk management, international taxation，and international transfer pricing.Many of the topics in an international accounting course have a domestic counterpart. However, new factors and complications arise in the international arena. Some of these are (1) laws, practices, customs, cultures, and diversity of competitive circumstances; (2) risks associated with fluctuating exchange rates, differential rates of inflation, and unstable property rights; and (3) variations in taxes and tax rates. International accounting discusses issues from the perspective of companies that have internationalized their finance and/or operations. It also has a comparative aspect, comparing accounting across countries. It also deals with convergence of worldwide financial reporting standards. This course is designed to provide you with an understanding of the significant issues in international accounting.The teaching approach will be mainly classroom lectures with some discussions and presentations.

(20)【Course Title】Management Systems Simulation

管理系统模拟

【Course Code】40510193

【Credits】3

【Credit Hours】48

【Semester】Fall

【Capacity】50 Undergraduate Students

【Instructor】WEI Qiang 卫强

【Course Description】

Many analytical models and mathematical tools have been used in business decision to improve the operational efficiency and seize the competitive advantage. Since, however, the real world business situation and environment, regarded as a system, is very complex, which results that the traditional analytical methods and tools cannot fit properly. This course will introduce a new methodology – simulation – into the business management systems. As its name says, in complex systems, where the number of related variables is huge and they are also closely interdependent, simulation method is to mimic the real parameters in computer system, using the time-advance mechanism, to generate the evolutionary results over time. In so doing, after enough replications of simulation, statistically

confident results could be derived. Clearly, the computational load is extremely high. But, with mainstream personal computer nowadays, this process could be performed efficiently. In this course, we will cultivate the students with the abilities of modeling, simulation and analysis with computer and software. This course includes: a) Basic Concepts on Simulation Modeling; b) The Simulation Process; c) Simulation with EXCEL; d) Input Analysis using Statistics; e) Random Number and Random Variable Generation; f) Basis of simulation with ARENA; g) Advanced simulation with ARENA; h) Output Analysis; i) Lecture on system dynamics; By the end of the course, the students should: 1. Master the methodology of simulation and can modeling complex business systems; 2. Master the abilities of modeling with EXCEL and ProModel. 3. Cultivate the ability for further simulation analysis, design and implement. To accomplish this global goal, lecturing is far from enough; case programming, modeling and analysis, assignment and Q&A are also important.

(21)【Course Title】Intermediate Financial Accounting (2)
　　　　　　　　中级财务会计(2)
【Course Code】40510333
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】65 Undergraduate Students
【Instructor】WANG Kun 王琨
【Course Description】

Based on the Intermediate Accounting (1), this course covers detail problems related to liabilities, shareholders'equities, investment and revenue recognition. Meanwhile, this course introduces briefly the income tax, pension and lease problems and accounting treatments on them.

(22)【Course Title】Introduction to Electronic Business
　　　　　　　　电子商务
【Course Code】40510842
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】60 Undergraduate Students
【Instructor】LI Xixi 李希熙
【Course Description】

The central goal of this course is to develop an integrative knowledge of the digital economy. It focuses on the information superhighway as the technological enabler that has dramatically changed the way in which companies orchestrate their value creation. This course, with a strategic perspective in mind, looks into the knowledge-enabled enterprises and the influence of electronic commerce in shaping the rules of modern business environments. From a managerial point of

view, the course will delineate the skills and knowledge required in the digital world. Finally, this course also offers a technology perspective that touches upon the underlying IT mechanisms for electronic commerce.

(23)【Course Title】Labor Economics
　　　　　　　　　劳动经济学
【Course Code】40510973
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】85 Undergraduate Students
【Instructor】MENG Lingsheng 孟岭生
【Course Description】
This course studies the mechanism of labor markets. It covers the traditional topics in labor economics, which include the theories of labor demand and supply (both static and dynamic), labor market equilibrium, compensating differentials, human capital investments and returns, wage determination and structure, migration, gender and race discrimination, inequality, unionization, efficiency wages and work incentive scheme, and unemployment. It deals with the impacts of wages, prices, profits, working conditions, government policies and the like on the decision makings of firms and workers.

(24)【Course Title】Enterprise Resource Planning
　　　　　　　　　企业资源规划
【Course Code】40510992
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】70 Undergraduate Students
【Instructor】YI Cheng 易成
【Course Description】
ERP systems are enterprise-wide information systems that integrate various functional operations and streamline business processes. This course aims to introduce the concepts of ERP systems as well as the application, implementation, and management of ERP. In particular, the course will help you to obtain the knowledge of ERP at three levels. 1. At the system level. Through hands-on experience with SAP in lab sessions, you will learn SAP commands and functions. You will be able to handle basic business processes in the SAP environment. 2. At the business process level. You will learn how functional operations interact and coordinate to complete business processes and how ERP can enable and facilitate business process integration. 3. At the organizational level. You will be able to recognize and understand organizational and managerial issues associated with enterprise systems, such as planning, vendor evaluation and selection, as well as system implementation. The primary targets of this course are those who are

interested to pursue careers in ERP systems firms as managers, software analysts and developers, in ERP consulting firms as consultants, and ERP industry user firms as system engineers. As this course can enhance the understanding of management information systems, it is also suitable for those who plan to pursue various IS professional careers.

(25)【Course Title】Environmental and Resource Economics
环境与资源经济学
【Course Code】40511003
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】95 Undergraduate Students
【Instructor】CAO Jing 曹静
【Course Description】

This course is an introduction of Environmental and Natural Resource Economics. The objective of this course is for students to learn how basic economic theory can be used to understand and analyze environmental pollution and resource degradation problems. The course covers both conceptual and methodological topics and recent applications. Examples of local, regional, national and international environmental and natural resource issues are presented and discussed. The first part of this course is an introduction to the basic principles of environmental and resource economics; cost and benefit analysis. In the second part the focus is on environmental economics and policy, including economics of pollution control, valuing the environment, regional and global air pollution, water pollution and so forth. The third part is focused on natural resource economics, both renewable and non-renewable resources. The last part is on sustainable development and macroeconomic aspect of environmental policy, and Green Accounting.

(26)【Course Title】Financial Management
财务管理
【Course Code】40511093
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】90 Undergraduate Students
【Instructor】JIA Ning 贾宁
【Course Description】

Financial strategies encompass those financial decisions that affect the long-run value of the firm. The objective of this course is to build on the concepts of financial management learned in Corporate Finance (1) and other relevant courses to provide a bridge to understanding the underlying principles behind why these decisions are made and to offer explanations for observed behaviors on the part of

financial decision makers. Focus will be placed on developing a comprehensive framework of conceptual knowledge that builds on the principle of value maximization. Capital budgeting, business valuation, investment analysis, capital structure, option theory, risk management, and long-term financing are integral parts of this conceptual framework.

(27)【Course Title】Game Theory
博弈论
【Course Code】40511103
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】120 Undergraduate Students
【Instructor】MA Hong 马弘
【Course Description】

(28)【Course Title】International Business
国际商务
【Course Code】40511202
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】90 Undergraduate Students
【Instructor】XIE Zhenzhen 谢真臻
【Course Description】
International Business differs in important ways from business conducted within national borders. It poses additional challenges but also offers new opportunities. This course provides a framework for analyzing decisions made by firms in an international context. The analytical framework provides a basis for formulating strategies that will enable businesses to succeed in the international business environment. The course combines material from strategy, international finance, trade theory, trade policy, marketing, human resource management and other related areas. We emphasize the use of analytical tools and concepts but provide many real-world examples. Course projects help students develop their research and writing skills. The course is integrative by design, which leads to some overlap with material taught in other courses. The course topics follow the chapters of the textbook.

(29)【Course Title】Investment
投资学
【Course Code】40511423 (1)
【Credits】3
【Credit Hours】48
【Semester】Fall

【Capacity】100 Undergraduate Students
【Instructor】WANG Yintian 王茵田
【Course Description】

This course will introduce and delineate basic concepts and techniques in investments by examining such topics as risk-return trade off, optimal portfolio construction, Capital Asset Pricing model, APT, Market efficiency, topics related to bonds and futures. On the theoretical side, this course introduces fundamental knowledge for portfolio management and capital asset pricing. On the practical side, this course covers recent topics that are related to investment strategies and portfolio management. A project about portfolio management is specially designed to let students apply the theoretical knowledge into practice.

(30)【Course Title】Investment
　　　　　　　投资学
【Course Code】40511423 (2)
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】100 Undergraduate Students
【Instructor】LI Minwen 李旻文
【Course Description】

This course will introduce and delineate basic concepts and techniques in investments by examining such topics as risk-return trade off, optimal portfolio construction, Capital Asset Pricing model, APT, Market efficiency, topics related to bonds and futures. On the theoretical side, this course introduces fundamental knowledge for portfolio management and capital asset pricing. On the practical side, this course covers recent topics that are related to investment strategies and portfolio management. A project about portfolio management is specially designed to let students apply the theoretical knowledge into practice.

11. Department of Electrical Engineering

(1)【Course Title】Automatic Control Systems
　　　　　　　自动控制原理
　　【Course Code】30220363
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】30 Undergraduate Students
　　【Instructor】SHEN Chen 沈沉
　　【Course Description】

Upon completion students should understand the basic concepts in both classical and modern control theory: characteristics of a linear system, linearization, how to build up mathematical models for linear systems in different mathematical forms such as differential equations, transfer functions and state-space equations, be able to do system analysis (stability and performance assessment), master different tools for doing system analysis (classical time domain and frequency domain methods, state space methods), be able to do system synthesis based on different system description using appropriate tools; understand the differences between continuous and discrete-data control systems, effects of sampling rates and quantization, be able to analysis and synthesis a digital control system including stability and performance assessment using time- and frequency-domain methods, be able to design simple digital controllers either directly using discrete-date controller design methods or using continuous controller design method then converting it into a digital one.

(2)【Course Title】Design & Analysis for Electronic Machine System
　　　　　　　电子电机设计与分析
　　【Course Code】40220682
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】30 Undergraduate Students
　　【Instructor】ZHAO Zhengming 赵争鸣
　　【Course Description】

The course is about the fundamental theory and design methods of electronic machine system, which covers the definition of electronic machines, the design, performance analysis, transient analysis, and the electromagnetic field analysis of the electronic machines.

12. School of Environment

(1)【Course Title】English for Environmental Students
　　　　　　　　专业英语
　　【Course Code】30050092
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】60 Undergraduate Students
　　【Instructor】LIU Shuming 刘书明
　　【Course Description】

Professional English for Environmental Science and Engineering mainly contains two parts, namely reading part and writing part. However, listening and speaking are also the lecture contents. The teaching material is the six edition of Environmental Science－A Study of Interrelationship written by Eager Smith. The students need to complete reading the majority part of whole book. The purposes lie on making the students knowing more the environmental vocabulary and terms as well as the expressing way. The reading contents are (1) science and scientific method, (2) environmental ethics, (3) ecological principles, (4) human population issues, (5) water, air and solid pollution and management, (6) environmental regulation. The scientific writing part aims at getting students understand completely how to write scientifically, master rules of scientific writing, including (1) summary and abstract writing, (2) review writing, (3) scientific paper writing, (4) thesis writing, (5) research proposal writing, etc.. Students also get practicing on aural presentation through answering questions and presenting their written proposal.

(2)【Course Title】Environmental Soil Science
　　　　　　　　环境土壤学
　　【Course Code】30050182
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】30 Undergraduate Students
　　【Instructor】DUAN Lei 段雷
　　【Course Description】

In this course, basic characteristics of soil are learned by the students through field excursion and laboratory analysis. In addition, the principles of important soil processes, such as cation exchange, pollutant adsorption, decomposition and mineralization of soil organic matters, nitrification and denitrification, mineral weathering, C/N circulation, oxidation/reduction reactions, speciation and transportation of metals, and soil hydrology, were taught.

(3)【Course Title】Fundamentals of Environmental Biotechnology
　　　　　　　　环境生物技术原理

【Course Code】70050313
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】WANG Hui 王慧
【Course Description】

Recently, environmental biotechnology has become a very important, extremely active and exciting research field. As an important part of environmental science and engineering, environmental biotechnology has produced many important effects on it. The contents of environmental biotechnology involves the principles and applied technology of multiple disciplines, such as microbiology, molecular biology, biochemistry and molecular ecology. The goal of this course is to impart the students the basic knowledge on the important principles and advanced technology of environmental biotechnology, and to help students understand how to make use of environmental biotechnology to the practice of environmental science and engineering. The course of environmental biotechnology comprises three parts which will be carried out in different teaching models. The first part is classroom teaching, which mainly focus on introducing principles, methodology and applications of environmental biotechnology. The second part is academic presentation and discussion basing on literature reading. The third part includes two times of field visits to help students understand the contents of the course deeply. The total class hours of the course will be 48, in which the first part is 30 hours and the rest parts will be 8 hours respectively. In the first part of course three teaching units were designed. The first unit mainly focuses on introducing principles of environmental microbiology, evolutionary microbiology, microbial ecology, and other disciplines involved in environmental biotechnology. The second unit addresses methodology of environmental biotechnology, which includes stoichiometry, microbial bioenergetics, microbial kinetics and molecular microbiology techniques. The third unit provides a general introduction of some important applications and development of environmental biotechnology with emphasis of typical biological processes in wastewater treatment.

(4)【Course Title】Advanced Water Distribution System and Management
高等管网系统与管理
【Course Code】80050193
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】LIU Shuming 刘书明
【Course Description】

This course focuses on the establishment and application of water distribution network model. Its main contents covers: Introduction to Water Distribution

Modelling; Modelling Theory; Assembling a Model; Water Consumption; Data for Modelling; Introduction to EPANET; Calibration Hydraulic Network Models; Using Models for Water Distribution System Design; Water Quality in Distribution System; and Water System Security. This course emphasizes students' capacity of using water distribution models and team-working. All students should complete an assignment in this course. The assignment provides a platform to implement a all-stage model establishment and application. Techniques of data collection, digitization, model calibration and model application will be trained through this assignment. The model application lectures focuses on using a calibrated model for network design and network management.

(5)【Course Title】Advanced Water Supply Engineering
　　　　　　　　高等给水工程
【Course Code】80050203
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】LIU Wenjun 刘文君
【Course Description】

This course provides the modern theoretical knowledge, engineering application and frontier research to the graduates who have the basic knowledge of water supply engineering. The main contents consist of: physical, chemical and microbiological parameters of water quality and their implications; the principle of water quality standards and its development; reaction, mass transportation, and separation principle; adsorption model and application, the biological treatment of oligo-nutrient source water; the advanced oxidation processes and application, membrane separation; modern disinfection principle and application, the control of biological and chemical stability of water in distribution.

(6)【Course Title】Integrated Solid Waste Management
　　　　　　　　固体废物综合管理
【Course Code】80050273
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】LU Wenjing 陆文静
【Course Description】

This course puts the engineering and scientific details of solid waste management into the framework of resource management. The basic goal of the course is to provide the knowledge of solid waste management through illustrating of engineering and scientific principals, formulas, data, advanced technologies, and examples of the day-to-day issues associated with the management of municipal

solid waste. The main content covers: solid waste generation, characteristics, sorting, collection and transportation, waste recycling, aerobic treatment technology, anaerobic treatment technology, thermo treatment, landfilling, legislation and management system, advanced software execution, arising technology introduction.

(7)【Course Title】Air Pollution Control Technology
空气污染控制技术
【Course Code】80050283
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】WU Ye 吴烨
【Course Description】

This course, Air Pollution Control Technology, primarily focuses on the fundamentals of air pollution control and the typical air pollution control technologies and their engineering practice worldwide. The course is first to discuss topics that are common to all air pollutants, such as the history, characteristics and effects of air pollution, and the laws and regulations for air pollution control. Prior to targeting to the individual air pollutant, the general philosophies of air pollution control are discussed, including the fate and measurements of air pollutants, combustion fundamentals, and general logistics on designing air pollution control systems and equipment. For each of the following four typical air pollutants, particulate matter, VOCs, NOX, and SO2, each major control technology adapted for that pollutant (e.g., electrostatic precipitators for PM, adsorption for VOCs, etc.) and its engineering practice in China and other countries will be detailed discussed. Further, the course covers a typical source, motor vehicles, which play a unique role in air pollution and contribute significantly to urban air pollution problems. Specifically, the mainstream control technologies of evaporative and tailpipe emissions, and those technologies for future autos (such as alternative fuels and advanced vehicle technologies) will be presented respectively.

(8)【Course Title】Environmental Management and Policy
环境管理与政策
【Course Code】80050213
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】
【Course Description】

(9)【Course Title】Internship/Field practice
专业实践

【Course Code】80050291
【Credits】1
【Credit Hours】16
【Semester】Fall
【Capacity】25 Graduate Students
【Instructor】LI Junhua 李俊华
【Course Description】
The filed practice will provides international graduate students the opportunity to gain experience in environmental science, engineering and management field, and help the students learn how to apply theory and principles to the realities of work situations and to develop and expand professional skills. The international students will have internship in some distinguished research institutes, environmental management authorities, environmental companies, facilities including water supply, waste water treatment, air pollution control, and solid waste treatment, and circular economy park. The students will learn the practical technology and progress of environmental protection in China through the field practice. Finally, the results of field practice will be submitted in hard copy and orally presented.

13. Department of Hydraulic Engineering

(1)【Course Title】Professional English for Water and River Sciences
水利专业英语
　　【Course Code】70040291
　　【Credits】1
　　【Credit Hours】16
　　【Semester】Fall
　　【Capacity】40 Graduate Students
　　【Instructor】WANG Zhaoyin 王兆印
　　【Course Description】

(2)【Course Title】Hydraulics (2)
水利学（2）
　　【Course Code】30040393
　　【Credits】3
　　【Credit Hours】56
　　【Semester】Fall
　　【Capacity】47 Undergraduate Students
　　【Instructor】LIN Binliang 林斌良
　　【Course Description】
Open Channel Steady Flow classification, uniform flow, energy equation, specific energy, gradually varied flow, water surface profiles, backwater analysis Rapid varied flow, hydraulic jump, subcritical, critical, supercritical flow. Open Channel unsteady Flow One-dimensional continuity and momentum equations, two-dimensional continuity and momentum equations, the method of Characteristics Hydraulic Structures Weirs, orifices, sluice gates, spillways. Flow through porous media Governing equations, Darcy's law, Flow through porous media finite element method solutions.

14. Department of Industrial Engineering

(1)【Course Title】Engineering Economy
　　　　　　　　工程经济学
　　【Course Code】30160152
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】85 Undergraduate Students
　　【Instructor】ZHU Wanshan 朱万山
　　【Course Description】

(2)【Course Title】International Logistics
　　　　　　　　国际物流
　　【Course Code】40160522
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】30 Undergraduate Students
　　【Instructor】ZHAO Lei 赵磊
　　【Course Description】
Discuss and study the issues related to international logistics, understand both the commonalities and differences between international and domestic logistics, and learn to apply these concepts in real world applications.

(3)【Course Title】Quality Engineering
　　　　　　　　质量工程学
　　【Course Code】70160023
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】50 Graduate Students
　　【Instructor】WU Su 吴甦
　　【Course Description】
　1. Introduction 2. Quality Function Deployment 3. Statistical Quality Control & Acceptance Sampling 4. Design of Experiments and Taguchi Method

(4)【Course Title】Production Management
　　　　　　　　生产管理
　　【Course Code】70160033
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】50 Graduate Students

【Instructor】CHENG Ye 成晔
【Course Description】
Contents: Introduction and Production System, Product and Production Engineering, Material Management, Production Plan, Production Planning, Manufacturing and Assembly Rationization Quality, Information in Manufacturing, Production Organization, Manufacturing Cost.

(5)【Course Title】Ergonomics and Work Organization
工效学与工作组织
【Course Code】70160043
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】50 Graduate Students
【Instructor】RAO Peilun 饶培伦
【Course Description】
This lecture covers the basic theory of physiology, psychology and management. It will discuss the following topics like system analysis and optimization of the relations among human, computer and environment and so on. That is to say, the working efficiency and product competition can be improved; on the other hand, the comfortable and safety working environment can be realized.

(6)【Course Title】Introduction to Decision Making
决策方法学
【Course Code】70160513
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】50 Graduate Students
【Instructor】ZHAO Lei 赵磊
【Course Description】
Mathematic programming methods: 1. Linear Programming: a) Fundamentals and modeling, b) Simplex method, c) Duality and sensitivity analysis. 2. Transportation and assignment problems. 3. Network optimization models. 4. Dynamic programming. 5. Integer programming basics. 6. Nonlinear programming basics. Decision analysis Probability and statistics: 1. Introduction to probability theory: a) Fundamentals and concepts, b) Conditional probability. 2. Random Variables: a) Distributions, b) Expectation and variance, c) Common distributions. 3. Sampling and estimation: a) Common statistics, b) Confidence intervals, c) Hypothesis tests.

(7)【Course Title】Industrial Practice
工业工程实践
【Course Code】70160591
【Credits】1

【Credit Hours】16
【Semester】Fall
【Capacity】20 Graduate Students
【Instructor】MA Liang 马靓
【Course Description】

This course includes mainly two parts: 1. Manufacturing Industries in China and Industrial Engineering, 2. Business communication under Chinese Culture.

(8)【Course Title】Systematic Product Design and Development
　　　　　　　系统化产品设计与开发
【Course Code】80160283
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】50 Graduate Students
【Instructor】CHENG Ye 成晔
【Course Description】

The objective of this course is to develop the interdisciplinary knowledge and skills required for systematically executing a given design task and to prepare students qualified for engineering work in modern enterprises. In addition, effective communication skills and ability for synthesizing different perspectives of product design are expected to be developed. Students will be exposed to the theories, methodologies and tools assisting product planning and management, project management, cost management for product development, rationalization of design process, variant development, quality assurance for product development. New tools assisting engineering design work will be introduced. Hands-on design experience and skills will be gained and learned through problem sets. Besides regular lectures, weekly exercises, projects and in-class discussion sessions will be held. An understanding of complex design issues in real-world will be developed through a collaborative design and development project throughout the semester.

15. Institute of Interdisciplinary Information Sciences

(1)【Course Title】Advanced Computational Economics
　　　　　　　　高等计算经济学
　　【Course Code】80470063
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】10 Undergraduate Students, 20 Graduate Students
　　【Instructor】TANG Pingzhong　唐平中
　　【Course Description】

The course covers classic and state-of-the-art results on computational and game-theoretic questions related to computational economics.

(2)【Course Title】Hot Topics in Computational Biology
　　　　　　　　计算生物学热门课题
　　【Course Code】80470073
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】10 Undergraduate Students, 20 Graduate Students
　　【Instructor】ZENG Jianyang　曾坚阳
　　【Course Description】

The course covers research progress and hot topics in Computational Biology and introduces topics including basic computational theory and methods, three-dimensional structure determination and dynamic study of proteins, protein and drug molecular design, Proteomics, and Biology evolution model.

(3)【Course Title】Big Data Platform
　　　　　　　　大数据平台系统
　　【Course Code】80470123
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】20 Graduate Students
　　【Instructor】XU Wei　徐葳
　　【Course Description】

"Big data" is not only a hot topic in IT industry, but a major motivation for computer system research. In this course, we will read important papers, study critical methods and technologies, and appreciate the architecture and the design of existing deployments. Students will get a whole picture about this research area. Topics in the course include: storage systems, file systems, big data processing systems, data center networking, as well as special topics like resource scheduling, privacy, monitoring, trend in hardware technology and software engineering. The course

consists of a mix of lectures, seminar-style discussions, and student presentations. Students will be responsible for paper readings, and completing a non-trivial research project.

(4)【Course Title】Advanced Theoretical Computer Science (2)
高等理论计算机科学（下）
【Course Code】80470024
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】20 Graduate Students
【Instructor】LI Jian 李建
【Course Description】
The course will cover the following topics: classical communication complexity, circuit complexity, decision tree complexity, quantum communication complexity, quantum decision tree complexity etc.

(5)【Course Title】Quantum Electronics
量子电子学
【Course Code】80470172
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】10 Undergraduate Students, 30 Graduate Students
【Instructor】Kim Kihwan
【Course Description】
This course provides a practical knowledge of quantum electronics for graduate students who are performing atomic, molecular and optical experiments. First, we provide a fairly conventional discussion of Gaussian beams, cavities, lasers, nonlinear optics and modulation techniques. Then we seriously discuss such practical matters as the enhancement of nonlinear processes in a build-up cavity, impedance matching into a cavity, laser frequency stabilization including servomechanism theory, astigmatism in ring cavities, and atomic/molecular spectroscopic techniques for the generation of a discriminant for laser frequency locking. A number of very recent developments are discussed, such as fiber lasers and frequency metrology using femtosecond lasers.

(6)【Course Title】General Physics (2)
普通物理（2）
【Course Code】20470034
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】40 Undergraduate Students

【Instructor】SUN Luyan 孙麓岩
【Course Description】

(7)【Course Title】Introduction to Computer Science
　　　　　　　　计算机入门
【Course Code】30470013
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】50 Undergraduate Students
【Instructor】De Melo Gerard Mario Anthony
【Course Description】
Designed to appeal to a diverse audience, this course examines some of the fundamental ideas of the science of computing. Lectures and hands-on assignments cover a wide variety of topics such as hardware organization, the Internet, computer programming, limits of computing, and graphics. No prerequisite.

(8)【Course Title】Machine learning
　　　　　　　　机器学习
【Course Code】30470104
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】50 Undergraduate Students
【Instructor】WANG Liwei 王立威
【Course Description】
Machine learning studies how computers can learn from experiences. Combining ideas from theoretical computer science and statistics, researchers have developed many learning methods and their applications to computer vision, bioinformatics, natural language processing etc. are highly successful. Machine learning theory addresses the fundamental problems in learning. It studies the power and theoretical limits of learning. The aim is to provide deep understand of learning and the guidance for the development of practical algorithms.

(9)【Course Title】Algorithm Design
　　　　　　　　算法设计
【Course Code】30470124
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】45 Undergraduate Students
【Instructor】Li Jian 李建
【Course Description】

This course gives an introduction to the basics of algorithm, common algorithm design techniques, and the analysis of running time (complexity). The main contents include: tools of algorithm analysis, divide and conquer algorithms, dynamic programming, greedy algorithms etc. algorithm design techniques, and NP complete, randomized algorithms, approximation algorithms and other advanced topics.

(10)【Course Title】Modern Physics
近代物理（2）
【Course Code】30470124
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】35 Undergraduate Students, 10 Graduate Students
【Instructor】WENG Wenkang 翁文康
【Course Description】

This course provides undergraduate students with background in science and engineering the foundation to understand many key aspects of quantum and statistical physics, which are essential for learning advanced topics such as condensed-matter physics, quantum field theory, and quantum information science. Conceptual understanding of the physical ideas and detailed mathematical derivations will be equally emphasized. Active class participation of students is expected.

(11)【Course Title】Quantum Information
量子信息
【Course Code】40470094
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】40 Undergraduate Students, 5 Graduate Students
【Instructor】Chiribella Giulio
【Course Description】

Quantum Information is a course offered to upper level undergraduate students (junior or senior students in the Yao Class, physics, EE, and computer science departments) and graduate students. The course will cover many topics at the forefront of the new field of quantum information science, including, for instance, quantum entanglement theory, quantum cryptography, quantum communication theory, quantum computing models, quantum algorithms and complexity theory, quantum error correction and fault-tolerant computation, physical implementation of quantum computation, communication and networks.

(12)【Course Title】Algorithms and Models for Big Data
大数据算法与模型

【Course Code】40470184
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】40 Undergraduate Students
【Instructor】Papakonstantinou Periklis
【Course Description】
Analysis, computation, and privacy issues over environments involving a huge amount of data. Formal approaches: (i) datastream computation, (ii) property testing of large objects, (iii) big data statistics and machine learning techniques (Bootstrapping, Bagging and their variants), and if time permits (iv) introduction to differential privacy (anonymizing databases). For these settings we study models and algorithms.

16. International Chinese Language and Culture Center (ICLCC)

(1)【Course Title】Elementary Chinese
　　　　　　　　初级汉语
　　【Course Code】60610162 (3)
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】15 Undergraduate Students, 15 Graduate Students
　　【Instructor】XU Ling 徐岭
　　【Course Description】
　　For Exchange Students (Beginner).

(2)【Course Title】Elementary Chinese
　　　　　　　　初级汉语
　　【Course Code】60610162 (8)
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】15 Undergraduate Students, 15 Graduate Students
　　【Instructor】SUN Shuzi 孙书姿
　　【Course Description】
　　For Exchange Students (Beginner).

(3)【Course Title】Elementary Chinese
　　　　　　　　初级汉语
　　【Course Code】60610162 (9)
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】15 Undergraduate Students, 15 Graduate Students
　　【Instructor】SUN Shuzi 孙书姿
　　【Course Description】
　　For Exchange Students (Beginner).

17. Department of International Relations

(1)【Course Title】Ancient Chinese Thought & Modern Rising
　　　　　　　　中国古代外交思想
　　【Course Code】80615412
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】35 Graduate Students
　　【Instructor】YAN Xuetong 阎学通
　　【Course Description】

(2)【Course Title】Research Design and Writing
　　　　　　　　研究设计与编写
　　【Course Code】80700242
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】35 Graduate Students
　　【Instructor】YAN Xuetong 阎学通
　　【Course Description】

(3)【Course Title】Principles of Area Studies
　　　　　　　　地区研究
　　【Course Code】80615162
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】35 Graduate Students
　　【Instructor】CHEN Maoxiu 陈懋修
　　【Course Description】

(4)【Course Title】Contemporary Theories in International Politics
　　　　　　　　当代国际关系理论
　　【Course Code】70612872
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】35 Graduate Students
　　【Instructor】ZHANG Chuanjie 张传杰
　　【Course Description】

(5)【Course Title】Theory and Practice of Chinese Foreign Policy
　　　　　　　　中国对外政策

【Course Code】80615112
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】35 Graduate Students
【Instructor】SUN Xuefeng 孙学峰
【Course Description】

(6)【Course Title】Overview of International Energy and Environment Governance
国际能源与环境治理概论
【Course Code】80700602
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】35 Graduate Students
【Instructor】WANG Tao 王韬
【Course Description】

(7)【Course Title】China and Developing World
中国与发展中国家
【Course Code】80700212
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】35 Graduate Students
【Instructor】TANG Xiaoyang 唐晓阳
【Course Description】

(8)【Course Title】Financial Economics and Chinese Financial Markets
金融经济学与中国金融市场
【Course Code】80700612
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】35 Graduate Students
【Instructor】TANG Ke 汤珂
【Course Description】

18. School of Journalism and Communication

(1)【Course Title】Corporate Strategies: Case Studies of Chinese and Global Companies
公司策略个案报道
　　【Course Code】70670182
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】40 Graduate Students
　　【Instructor】Lee J. Miller
　　【Course Description】
The course will primarily be taught by use of case studies of important multi-national corporations. These cases will be provided to students.

(2)【Course Title】Economics and Accounting Basics for Journalists
新闻记者经济学与会计学基础
　　【Course Code】70670253
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】40 Graduate Students
　　【Instructor】HANG Min 杭敏
　　【Course Description】
This course gives an introduction to principles and basic theories of economics and accounting. It aims at providing students new perspectives and greater understandings about economics and accounting, social activities and financial news reporting. The course instructor will review the history and development of economics and accounting, introduce fundamental theories and analytical tools of macroeconomics and microeconomics. The instructor will also use cases, excerpts from newspapers, articles written by prominent economists for discussion. These methods, together with the brief introductions, will show how basic economic theories can be applied and accounting practices can be understood.

(3)【Course Title】Introduction to Mass Communications and Society in Contemporary
China 当代中国大众传媒与社会
　　【Course Code】80670513
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】30 Graduate Students
　　【Instructor】DAI Jia 戴佳
　　【Course Description】
1. Mass Communications in China: Origin, Nature and A Very Brief History. 2. Major Chinese Media Institutions. 3. International Communication Strategies of

China. 4. Propaganda, Thought Work and Psychological Operations. 5. Advertising, Public Relations for Transnational Corporations in China. 6. Practical Skills and Case Studies.

(4)【Course Title】News Writing and Multi-media Reporting
新闻写作与多媒体报道
【Course Code】80670793
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】40 Graduate Students
【Instructor】
【Course Description】
This course contains two main modules: news writing and multi-media reporting. In the news writing module, students are trained with basic knowledge of writing and reporting, with a focus on business news. In the multi-media reporting module, students are trained with basic skill of applying multi-media devices for business report.

(5)【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】
【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.

(6)【Course Title】English News Reporting and Writing
英语新闻采写
【Course Code】80670862
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】35 Graduate Students
【Instructor】SI Jiuyue 司久岳
【Course Description】
This course teaches fundamental knowledge and skills in English reporting and writing with stress on lead writing and inverted pyramid structure. It also introduces

other news styles from AP and Xinhua News Agency. This course prepares students for further development in advanced English news writing.

(7)【Course Title】China-Korea Dialogue
　　　　　　　　中韩对话
【Course Code】30670302
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】23 Undergraduate Students
【Instructor】GUO Zhenzhi 郭镇之
【Course Description】

(8)【Course Title】English News Reporting (1)
　　　　　　　　英语新闻（1）
【Course Code】30670502
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】84 Undergraduate Students
【Instructor】Lee J. Miller
【Course Description】

(9)【Course Title】Advanced English News
　　　　　　　　英语新闻（3）
【Course Code】30670552
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】84 Undergraduate Students
【Instructor】Richard S. Dunham
【Course Description】

19. School of Law

(1)【Course Title】Legal English
　　　　　　　　法律英语
　【Course Code】40660072
　【Credits】2
　【Credit Hours】32
　【Semester】Fall
　【Capacity】30 Undergraduate Students
　【Instructor】SANG Guoya 桑国亚
　【Course Description】

(2)【Course Title】Foundations of Common Law (1)
　　　　　　　　普通法精要（1）
　【Course Code】80660644
　【Credits】4
　【Credit Hours】64
　【Semester】Fall
　【Capacity】30 Undergraduate Students
　【Instructor】Guy Padula
　【Course Description】

(3)【Course Title】Basic Concepts of International Arbitration
　　　　　　　　国际商事仲裁的基本理论
　【Course Code】80661832
　【Credits】2
　【Credit Hours】32
　【Semester】Fall
　【Capacity】50 Graduate Students
　【Instructor】Gary Born
　【Course Description】
The course would provide an overview of the features of international arbitration. Basic concepts from arbitration agreement, jurisdiction of the tribunal, the arbitration process, and the award will be covered. The objective of the module is to provide the students with a comprehensive understanding of the core concepts of international commercial arbitration.

(4)【Course Title】Uncitral Model Law and Arbitration Rules
　　　　　　　　联合国国际贸易法委员会示范法与仲裁规则
　【Course Code】80661963
　【Credits】3
　【Credit Hours】48
　【Semester】Fall
　【Capacity】50 Graduate Students

【Instructor】Teresa Chang
【Course Description】
The course will discuss the most widely adopted principles and rules in international arbitration. The Model Law was firstly promulgated by UNCITRAL in 1985 and the new Arbitration Rules in 2010.

(5)【Course Title】International Arbitration in Asia
　　　　　　　　亚洲国际仲裁
【Course Code】80661944
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】50 Graduate Students
【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.

(6)【Course Title】Investment Arbitration
　　　　　　　　投资仲裁
【Course Code】80661953
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】50 Graduate Students
【Instructor】Andrea K. Bjorklund Meg Kinnear
【Course Description】
Investment arbitration conducted under the UNCITRAL rules or under the auspices of ICSID is increasingly being invoked in relation to disputes involving investor and states. This course will provide an overview of investment law, and special features in Bilateral Investment Treaty and procedures and practice of ICSID.

20. School of Life Sciences

(1)【Course Title】Introduction to Life Sciences
　　　　　　　　现代生物学导论
　　【Course Code】10450072
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】100 Undergraduate Students
　　【Instructor】YANG Yang 杨扬
　　【Course Description】

This introductory course includes the fundamental principles of biochemistry, genetics, molecular biology, and cell biology. Biological function at the molecular level is particularly emphasized and covers the structure and regulation of genes, as well as, the structure and synthesis of proteins, how these molecules are integrated into cells, and how these cells are integrated into multicellular systems and organisms. In addition, each version of the subject has its own distinctive material. All these knowledge are applied to more advanced subjects, like immunology, neurobiology, endocrinology and human behavior. This course also focuses on the exploration of current research in cell biology, immunology, neurobiology, genomics, and molecular medicine.

(2)【Course Title】Microbiology
　　　　　　　　微生物学
　　【Course Code】30450263
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】180 Undergraduate Students, 5 Graduate Students
　　【Instructor】CHEN Guoqiang 陈国强
　　【Course Description】

Microbiology is a compulsory course for students in biology department. This course covers multiple disciplines in microorganism, molecular biology, biochemistry, immunology and microbial diseases. Students taking this course will learn systematic knowledge of microorganism, as well as basic experimental skills. The most popular book Biology of Microorganisms for North American college students is used in this course. Biology of Microorganisms will be updated every two years. New knowledge and technique in microbiology will be added in each update. It is very helpful for student to improve their knowledge and scientific understanding of microbiology.

(3)【Course Title】Biochemistry (2)
　　　　　　　　生物化学（2）
　　【Course Code】30450444 (1)

【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】125 Undergraduate Students, 5 Graduate Students
【Instructor】LI Zhen 李珍
【Course Description】

Biochemistry II is divided into two parts. The first part, which include Chapter 13-23, is bioenergetics and metabolism. The second part, which include Chapter 24-27, is information pathways.

(4)【Course Title】Biochemistry (2)
　　　　　　　　生物化学（2）
【Course Code】30450444 (2)
【Credits】4
【Credit Hours】64
【Semester】Fall
【Capacity】135 Undergraduate Students
【Instructor】LI Zhen 李珍
【Course Description】

Biochemistry II is divided into two parts. The first part, which include Chapter 13-23, is bioenergetics and metabolism. The second part, which include Chapter 24-27, is information pathways.

(5)【Course Title】Molecular Basis of Human Diseases
　　　　　　　　重大疾病的分子机制
【Course Code】40450263
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】70 Undergraduate Students
【Instructor】LI Peng 李蓬
【Course Description】

This course aims to provide students with in-depth knowledge of the basic mechanisms of common human diseases such as cancer, diabetes, obesity, atherosclerosis, Alzheimer's disease etc., and to prepare them for future translational research. The course focuses on the current molecular mechanisms underlying the pathogenesis of each disease. There will be extensive discussion on results from current cutting-edge research. Prospective students should have basic knowledge of biochemistry, molecular and cell biology and immunology before registering for this course. Brief knowledge on human physiology and the pathogenesis of each disease will be introduced but students are expected to read extensive reference paper and textbook to understand the content of the lecture.

21. School of Materials Science and Engineering

(1)【Course Title】Engineering Materials
工程材料
【Course Code】20350042 (4)
【Credits】2
【Credit Hours】36
【Semester】Fall
【Capacity】30 Undergraduate Students
【Instructor】SHAO Yang 邵洋
【Course Description】

(2)【Course Title】Electron Microscopy
电子显微分析
【Course Code】40350033
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】100 Undergraduate Students
【Instructor】ZHANG Xiaozhong 章晓中
【Course Description】
The mechanical, physical and chemical properties of materials are determined by the microstructure, phase and composition of the materials. Electron microscopy is used to know the microstructure, phase and composition of the materials in a small area by use of the information generated by the interaction of electron and materials.

22. Department of Mechanical Engineering

(1)【Course Title】Manufacturing Technology I
　　　　　　　制造技术（1）
　　【Course Code】70120223
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】20 Graduate Students
　　【Instructor】RONG Yiming 融亦鸣
　　【Course Description】

The course 'Manufacturing technology' is co-lectured by Prof. Yiming Rong and Dr. Xuekun Li to the students major in mechanical engineering. This course gives the students a fundamental and in-depth understanding of the basics in manufacturing engineering and its development, including the manufacturing process planning, precision manufacturing, and non-traditional manufacturing. The lectures are given in English, and focuses on the learning through interpreting and team-working on real word projects. Therefore, the course could cultivate the students with the international vision, team-work capability, and the innovative thinking.

(2)【Course Title】Machine Design Process
　　　　　　　机械设计进程
　　【Course Code】70120233
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】35 Graduate Students
　　【Instructor】ZHAO Jingshan 赵景山
　　【Course Description】

This lecture is opened particularly for Tsinghua-Aachen Dual Master Degree Program in mechanical engineering. But it is also opened for all postgraduate students in Tsinghua University.

(3)【Course Title】Computer-Aided Tissue Engineering (CATE)
　　　　　　　计算机辅助组织工程
　　【Course Code】80120612
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】10 Undergraduate Students, 30 Graduate Students
　　【Instructor】SUN Wei 孙伟
　　【Course Description】

Introduction to Computer-Aided Tissue Engineering (CATE) is designed for graduate and senior undergraduate students in engineering and bioengineering major

who are interested in acquiring the knowledge and skill in utilizing computer-aided technologies for tissue engineering application. The course will introduce: 1) the engineering and bioengineering aspect of tissue regeneration; 2) basics of computer-aided design, computer-aided engineering, and computer-aided manufacturing (CAD/CAM/CAE); 3) knowledge on the use of integrated CAD/CAE/CAM technology in tissue engineering application; and 4) a hand-on experience on using enabling CAD, medical imaging processing and three-dimensional reconstruction software, and solid freeform fabrication system for tissue scaffold design, modeling, simulation, and freeform fabrication.

(4)【Course Title】Fundamentals of Finite Element Method for Engineers
工程有限元法基础
【Course Code】80120742
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】20 Graduate Students
【Instructor】CHANG Baohua 常保华
【Course Description】

This course covers both fundamental theories and engineering applications of finite element method (FEM). By means of lectures in class, projects on computers, and solutions to practical engineering problems, the students are enabled to learn the fundamental mathematical and mechanic theories of finite element method, and obtain the capabilities of modeling and analyzing in handling the practical engineering problems with finite element method.

23. School of Medicine

(1)【Course Title】Principles of Pharmacology
　　　　　　　　药理学原理
　　【Course Code】34000433
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】30 Undergraduate Students
　　【Instructor】XIAO Bailong 肖百龙
　　【Course Description】

(2)【Course Title】Management on Public Health Services
　　　　　　　　卫生事业管理
　　【Course Code】74000283
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】10 Undergraduate Students, 50 Graduate Students
　　【Instructor】LIU Tingfang 刘庭芳
　　【Course Description】

Management on Public Health Servicesis 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.

(3)【Course Title】Epidemiology
　　　　　　　　流行病学
　　【Course Code】74000293
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【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, and injuries etc.

(4)【Course Title】Health Communication
　　　　　　　健康传播
【Course Code】74000373
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】10 Undergraduate Students, 50 Graduate Students
【Instructor】LI Xiguang 李希光
【Course Description】

This course gives a firm foundation in planning and delivering messages and understanding health communications to create higher levels of health literacy within a society as a means to inform and influence individual, community and government decisions that enhance health.

24. Department of Microelectronics and Nanoelectronics

(1)【Course Title】Integrated Circuit Fabrication Processes
微电子工艺技术
　　【Course Code】30260112
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】40 Undergraduate Students
　　【Instructor】WU Huaqiang 吴华强
　　【Course Description】

Integration density and performance of digital and analog integrated circuits have undergone an astounding revolution in the last few decades. Although innovative circuit and system design can account for some of these performance increases, technology has been the main driving force. This course will examine the basic micro fabrication process technologies that have enabled the integrated circuit revolution and investigate newer technologies. The goal is to first impart a working knowledge of the methods and processes by which micro and nano devices are constructed, and then teach approaches for combining such methods into process sequences that yield arbitrary devices. Although the emphasis in this course is on transistor devices, many of the methods to be taught are also applicable to MEMS and other micro-devices. This course is designed for students interested in the physical bases and practical methods of silicon VLSI chip fabrication, or the impact of technology on device and circuit design.

(2)【Course Title】Digital Integrated Circuit Analysis and Design
数字集成电路分析与设计
　　【Course Code】40260173
　　【Credits】3
　　【Credit Hours】48
　　【Semester】Fall
　　【Capacity】40 Undergraduate Students
　　【Instructor】LIU Leibo 刘雷波
　　【Course Description】

Based on the knowledge of digital circuit and logic design and semiconductor devices, this course is dedicated in introducing the fundamental knowledge and technologies of the digital integrated circuit analysis and design, therefore make a good preparation for the following corresponding courses.

(3)【Course Title】Communication Systems and Circuits
通信系统与电路
　　【Course Code】40260223
　　【Credits】3
　　【Credit Hours】48

【Semester】Fall
【Capacity】40 Undergraduate Students
【Instructor】LI Yugen 李宇根
【Course Description】

This course gives insights into analog/digital communication systems with practical circuit design examples. Students are expected to learn both system and circuit design perspectives in modern communication IC design.

(4)【Course Title】Introduction to Quantum Information Science
量子信息学引论
【Course Code】40260262
【Credits】2
【Credit Hours】32
【Semester】Fall
【Capacity】35 Undergraduate Students, 5 Graduate Students
【Instructor】CHEN Wei 陈炜
【Course Description】

This course will introduce the main ideas and techniques of the field of quantum computation and quantum information. One will learn the background material in computer science, mathematics and physics necessary to understand quantum computation and information. Latest progress in quantum information process will be introduced and discussed as well.

25. Department of Physics

(1)【Course Title】Physics (2)

　　　　　　　大学物理 (2)

　　【Course Code】10430354

　　【Credits】4

　　【Credit Hours】64

　　【Semester】Fall

　　【Capacity】180 Undergraduate Students

　　【Instructor】BI Kaijie 毕楷杰

　　【Course Description】

(2)【Course Title】General Relativity

　　　　　　　广义相对论

　　【Course Code】30430094

　　【Credits】4

　　【Credit Hours】64

　　【Semester】Fall

　　【Capacity】40 Undergraduate Students

　　【Instructor】BI Kaijie 毕楷杰

　　【Course Description】

26. School of Public Policy and Management

(1)【Course Title】Strategic Management of Public Organization
公共组织战略管理
【Course Code】70590643
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】30 Graduate Students
【Instructor】CAO Feng 曹峰
【Course Description】

(2)【Course Title】Public Policy Analysis
公共政策分析
【Course Code】70590013
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】40 Graduate Students
【Instructor】DAI Yixin 戴亦欣
【Course Description】
This course of public policy analysis is specifically designed for SPPM's MID and IMPA class. It covers a series of key issues in public policy areas, with a focus on global environmental change and sustainable development. It will introduce the students to key concepts, theories and methods in policy analysis. The course provides ample opportunities for students to discuss and to interact with experts and practitioners in the field through case teaching, class discussion, and guest lectures.

(3)【Course Title】Politics and Government in China
中国政治与政府
【Course Code】80590683
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】40 Graduate Students
【Instructor】MEI Ciqi 梅赐琪
【Course Description】
This course is designed to introduce to students who have limited knowledge of China some basic aspects of political institutions and processes as well as major events in Chinese political life under the communists since 1949, focusing on the post-Mao reform period since 1978. It examines economic and political development in China--their causes, patterns, consequences, and implications--in a broader context of globalization and modernization.

(4)【Course Title】International Political Economy
国际政治经济学
【Course Code】80590203
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】40 Graduate Students
【Instructor】ZHANG Yanbing 张严冰
【Course Description】
Seminar conducted in English.

(5)【Course Title】Integrated Approaches to Sustainable Development Practice
可持续发展的综合方法
【Course Code】80590713
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】40 Graduate Students
【Instructor】YIN Chengzhi 殷成志
【Course Description】
This course provides an overview of the field of international political economy (IPE) to students who have no previous background knowledge. The main aim is to help students to understand the interaction between international political and economic systems, forces and actors, including such interaction at and between international and domestic levels. It also aims to provide an understanding of development related issues in the international political economy. By the end of the module students will be able to: (1) Demonstrate knowledge of the key features of the international political economy and different analytical frameworks used to analyze it; (2) Apply appropriate conceptual tools to explain different aspects of the international political economy; (3) Demonstrate an understanding of China's development in the recent decades within the international context; (4) Show an understanding of current global economic crisis with various theoretical perspectives.

(6)【Course Title】Governance and Development
治理与发展
【Course Code】80590623
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】40 Graduate Students
【Instructor】CUI Zhiyuan 崔之元
【Course Description】
This course introduces to the students the evolution of development thinking and experiences since the end of the Second World War. It covers the colonial

backgrounds and legacies, the development policies from 1950s to 1970s, the rise of the "Washington Consensus" in the late 1980s and the search for its alternatives from the Asian Financial Crisis in 1997 up to now. The current issues of "governance" is viewed from a historical perspective and analyzed with the aid of the latest theoretical advancement as exemplified in the World Development Report 2006 "Equity and Development".

(7)【Course Title】Frontier of Public Policy
公共政策前沿
【Course Code】90590023
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】40 Graduate Students
【Instructor】HU Angang 胡鞍钢
【Course Description】

This course is designed for MID students, and helps students understand development and related policies. This course includes three parts. The first part of the course will extensively discuss the perspectives on development, mainly focusing on Human Development and happiness. The second part will introduce economic growth and related topics, such as capital and investment, population, labor market, and economic geography. In this part, some key concepts and theory will be introduced, and the development practice in China will be presented. The third part will deal with income distribution, poverty alleviation, and sustainable development

(8)【Course Title】Economic Development: Theory and Practice
经济发展理论与实践
【Course Code】80590753
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】30 Graduate Students
【Instructor】YU Qiao 俞樵
【Course Description】

This course explores theories and issues of economic development in China, It covers seven parts. A brief introduction on the course and economic growth theory is given in part one. Then evolution of property rights and institutional change is analyzed in part two. In part three, we will turn to theories and issues of urbanization. Part four relates to the entrepreneurship. This course will also discuss financial deepening and financial reforms in part five. Part six presents the discussion on social security. In the final part, reform on the State Owned Enterprises is analyzed.

(9)【Course Title】Development: Theory and Practice

发展理论与实践

【Course Code】80590833

【Credits】3

【Credit Hours】48

【Semester】Fall

【Capacity】40 Graduate Students

【Instructor】GAO Yuning 高宇宁

【Course Description】

This course provides comprehensive framework to understand the path, experience and lessons of the development through the comparison from the early and the newly industrialized economies, middle income economies to the under developed economies.　All these de facto analysis would follow by the de jure discussion of the key factors of development, such as capital, people, technology and institution.

(10)【Course Title】Comparative Politics and Government

比较政治与政府

【Course Code】80590173

【Credits】3

【Credit Hours】48

【Semester】Fall

【Capacity】30 Graduate Students

【Instructor】WANG Qingxin 王庆新

【Course Description】

This course is a general introduction to basic concepts and issues of comparative politics. This course builds a basic foundation for students to understand and analyze politics and governments in major countries, including the United States, China and some developing countries (areas) in East Asia. The course starts with two most important political ideologies, liberalism and Marxism, and their practice in the United States and China through a close look at the political institutions in these two countries. It then examines the important experiences of economic development in developing countries by relying on the two different theoretical perspectives, dependency theory and the model of developmental state. It then moves to the important issues of political development and effects of political culture on political development.

(11)【Course Title】China Development: Field Trip Series

中国发展实践系列

【Course Code】80590913

【Credits】3

【Credit Hours】48

【Semester】Fall

【Capacity】50 Graduate Students

【Instructor】MENG Bo 孟波

【Course Description】

The course expands the understanding of development from economic approach and help the students taking the module Economic Development: Theory and Practice with more empirical evidence through different country, region or populations. The practice of China in its economic development under comparison approach would be included in each module.

(12)【Course Title】Urbanization and Social Development
城市化与社会发展
【Course Code】80590803
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】35 Graduate Students
【Instructor】YIN Chengzhi 殷成志
【Course Description】
The course "Urbanization and Social Development" is prepared for graduate students from the programs of Master in International Development (MID) as a course in areas of concentration. Based on the theory and practice of Chinese urbanization, the curriculum will be implemented by practical lessons, literature studies, comparisons, case analysis, discussion sections, and filed study, in order to deepen students' understanding of Chinese urbanization and social development issues, and enable them to define issues of management and policy under the condition of rapid urbanization in developing countries. Moreover, students will be trained to make use of effective planning means to solve these related issues.

(13)【Course Title】Sociology and Social Policy
社会学与社会政策
【Course Code】80591203
【Credits】3
【Credit Hours】48
【Semester】Fall
【Capacity】40 Graduate Students
【Instructor】WANG Ming 王名
【Course Description】
This course is designed to help graduate students of public administration obtain a clear understanding of social policies currently implemented in China. The objectives of the course include 1) an understanding of the major theoretical and practical issues about the existing social policies in China; 2) basic knowledge of the processes for policy making and historical development; 3) an overall review of social, economic, and political factors that affect the formation of China's social policies; and 4) an attempt to analyze social policies with theoretic perspectives. Through the lectures and discussions in class and readings assigned out of class, the students should get familiar with basic concepts of social policy and gain the ability to put the issues related to social policy into perspective.

27. School of Social Sciences

(1)【Course Title】The Principles of Area Studies
　　　　　　　　地区研究
　　【Course Code】30700242
　　【Credits】2
　　【Credit Hours】32
　　【Semester】Fall
　　【Capacity】30 Undergraduate Students
　　【Instructor】CHEN Maoxiu　陈懋修
　　【Course Description】

This course will focus on area studies research with a particular emphasis on Latin America. In particular it will touch on the politics, economics and social problems both in historical and contemporary Latin America. The course will also pay special attention to Latin America's relations with China and the United States.

28. Department of Thermal Engineering

(1)【Course Title】Optimization of Energy Systems

　　　　　　　　能源系统最优化方法

　　【Course Code】80140262

　　【Credits】2

　　【Credit Hours】32

　　【Semester】Fall

　　【Capacity】30 Graduate Students

　　【Instructor】LIU Pei 刘培

　　【Course Description】

Energy systems appear in every single stage of energy conversion, and their performances and efficiency decide the overall energy utilization efficiency of a society. There exist many optimization issues in planning, design, and operation of energy systems. Solving these problems would help to increase the overall energy utilization efficiency, thus reduce energy consumption, air pollution and greenhouse gas emissions. An energy system usually comprises many sub-systems or sub-processes, and optimization of energy systems is mainly about how to integrate these sub-systems or sub-processes, so that they can work together with each other with enhanced overall efficiency. These sub-systems or sub-processes are usually nonlinear and difficult to model or optimize. In this course, we will cover state-of-the-art optimization methods, and illustrate how to apply these methods in real life problems via case studies.

(2)【Course Title】Utilization Technology of Renewable Energy

　　　　　　　　太阳能及其他可再生能源利用技术

　　【Course Code】80140272

　　【Credits】2

　　【Credit Hours】32

　　【Semester】Fall

　　【Capacity】30 Graduate Students

　　【Instructor】WANG Shujuan 王淑娟

　　【Course Description】

The course mainly includes solar energy, biomass energy, and wind energy, all of which are come from the sun. The main contents involve fundamentals, main utilization principle and technology, biological and environmental impacts, and so on. For solar energy, solar collector, low temperature utilization technology, solar concentrated power system, solar PV system are the main contents. For biomass, main contents are physical conversion technology, chemical conversion technology (including combustion, gasification, pyrolysis, liquification), and biomass to biogas and ethanol. For wind energy, wind power is the main one. The course will pay more attention on the key technologies of each renewable energy, to discuss the main obstacles and the frontiers. The course will combine the lecturing and discussions.