“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.

year.
The topic will vary. Through the intensive study, students would get to learn the basic knowledge about the chosen topic, and be able to think from a researcher's point of view.

This course provides a brief introduction to psychology. Topics include history of psychology, research methods, biological bases of behavior, sensation and perception, consciousness, learning and memory, life-span development. Class lectures emphasize an empirical approach to a scientific understanding of human behavior across these diverse domains. In addition to learning basic knowledge about psychology, students will learn how psychologists ask questions, evaluate evidence, and communicate with each other. This course aims to inspire students to reason about current affairs and social phenomenon through the lens of a psychologist. That is, to critically evaluate evidence and to form one’s own opinion based on sound reasoning and data.

How does the mind work? This course introduces students to the field of Cognitive Science, a scientific pursuit that aims to understand the workings of the mind using an interdisciplinary approach, from psychology, linguistics, neuroscience, anthropology, philosophy, to computer science and artificial intelligence. In this course students will be exposed to the problems and questions of cognitive science—what is mind, how it works, why it works that way—and the scientific methods that are used to answer these questions. Students will learn theories and concepts from many disciplines, analyze and discuss evidence from both humans and non-human animals.

This course lead students to create a full stack modern computing system from basic logic gates, and proceeds to build Memory, CPU, Assembly to Machine Language Translator, Virtual Machine, High level Language Compiler, an Operating System, and a small application program within one semester. The goal of this exercise is to help students to build an inter-connected complex system and see how they can organize their implementation efforts using a collection of methodical engineering approaches developed by computer scientists and software engineers. This course also lead students to discover the historical development and major insights of how complex systems are being organized.
0. This course is about seeing both trees and forests with a multi-level abstraction exercise system. It comes with a tried-and-tested developmental path that lead students to see the whole stack of computing machinery.
1. Gamified Exercises: Students are required to create solutions in incremental stages. Every stage is like a game level, so that students can ben

systems (e.g., solar, wind, hydroelectric, and ocean). The course encourages trans-disciplinary thinking as a foundation to foster sustainability. Class projects will require integration of environmental, economic, engineering, and social science knowledge to measure the challenges of sustainability and build solutions.

The course is intended to apply for undergraduate general courses, to help students analyze the global nature of environmental sustainability with a connected and developing perspective, cultivate their international perspectives, enhance their sense of social responsibility, and improve their willingness to avoid adverse impacts on the environment when developing technologies. Class discussions will be included in the course to improve students' logical and critical thinking skills, and English will be used in all lectures, discussions, and assignments to enhance students' ability to communicate internationally.

This is the first course in the regular two-semester calculus sequence offered by the Department of Mathematics. Students entering the sequence usually major in the natural sciences, engineering, economics and other social sciences that require a high mathematical ability. The course undertakes a careful treatment of the mathematical theories about functions of one real variable. The course covers the following topics: (1) Preliminaries: The axioms and properties of real numbers; The limits of numerical sequences. (2) Differentiation Theories: The concept and computation of derivatives; Mean value theorems; L'Hopital's rule; Taylor's theorem; Extrema; Higher order derivatives. (3) Integration Theories: Indefinite integrals; The Fundamental Theorem of Calculus; Riemann integrals and their properties; Computations of definite and indefinite integrals; Applications in Geometry and Physics; Improper integrals. (4) Introduction to Ordinary Differential Equations (ODEs): Basic concepts; Integration method for first order equations; Higher order equations, order reductions; First order ODE systems.

This is the second course in the regular two-semester calculus sequence. It is the continuation of Calculus I (in English) and undertakes a careful treatment of more advanced topics in calculus. Those topics are: (1) Differentiation theory for Functions of Several (real) Variables: basic point-set topology on the n-Dimensional Euclidean space; Limits and Continuity of functions of several real variables; Differentiations, total derivatives, partial derivatives, directional derivatives, gradients; Vector-valued functions; Derivatives of compositions of functions; The Implicit Function Theorem; Taylor's Theorem; Extrema and Conditional Extrema; (2) Integration theory for multi-variable functions: Riemann Integral for multi-variable functions, iterated integrals, change of variables; applications in geometry and physical sciences. (3) Vectorial Calculus: Parametrization of curves and surfaces, Orientations; Line integrals and Surface integrals; Green's Theorem, Gauss' Theorem, Stokes' Theorem. (4) Series: Numerical series, convergence and divergence, Absolute convergence and conditional convergence, Convergence theorems for series with positive entries; Functional series, uniform convergence, Power series, Fourier series.

Linear algebra is a course intended primarilm ˊ m Ô MParametriz ed urfacŏ x e ce theorems thtedmss m T

linear transformations, Euclidean spaces, Gram-Schmidt orthogonalization, eigenvalues and eigenvectors, diagonalization, symmetric matrices and positive-definite matrices, and singular value decomposition.

Advanced Topics in Linear Algebra (English) is the continuation of Linear Algebra (English). The course begins with complex linear algebra, including Hermitian and unitary transformations, and also the fast Fourier transform. It proceeds to Jordan canonical form, functions of matrices, and their applications in physics, engineering, and computer science. Further topics include dual spaces, tensors and their applications. Additional topics such as projective geometry, functional analysis, numerical analysis of matrices, finite fields, and manifolds, may be included at the discretion of the instructor.

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

In the first half of the semester, we in this class focuses mainly on the theory on the electromagnetism, from Coulomb's Law to Maxwell equation. In the second half of the semester, we will introduce the basic concept of the physical optic, special relativity including Minkowski space-time diagram, and the quantum physics.

Sustainability science is science, technology, and innovation in support of sustainable development—meeting human needs, reducing hunger and poverty, while maintaining the life support systems of the planet. As such, it is an active pursuit of the scientific community and a rapidly expanding international research activity. But increasingly, it is also a focus for education as courses and degree programs in sustainability, sustainable development, and sustainability science proliferate. For these newly designed courses and programs, and for the many more scholars and scientists who want to explore the inclusion of sustainability science in their ongoing educational activities, there is need for organized teaching materials. This course explores the idea of “sustainable development” its historical context, contemporary understandings, and practical implications Finding ways to improve human well-being over the long run in the face of massive transformations of the earth’s environment has emerged as one of the grand challenges facing human beings. “sustainable development” has come to lead several parallel but
uneasy lives. It has provided a big umbrella under which important global initiatives have been nurtured, and a lot of learning has occurred. It has proven remarkably open to being adapted to meet the different and changing needs of various countries, cultures, sectors. It has been hijacked to cloak narrowly self-interested agendas in a mantel of trendy legitimacy. Some argue that “sustainable development” has become such a broad idea as to be meaningless. Others see it as a fundamentally important idea essential to society’s efforts to cope with the central challenges of our time. This course seeks to examine critically this range of viewpoints, and help you to determine what sustainable development ought to mean for how you live your life.

This course provides an introductiomMim hb rt

disorders and treatment. Class lectures emphasize an empirical approach to a scientific understanding of human behavior across these diverse domains. In addition to learning basic knowledge about psychology, students will learn how psychologists ask questions, evaluate evidence, and communicate with each other. This course aims to inspire students to reason about current affairs and social phenomenon through the lens of a psychologist. That is, to critically evaluate evidence and to form one's own opinion based on sound reasoning and data.

English is an important tool for people in industry and academia of Biomedical Engineering. This course will help the students in Department of Biomedical Engineering to enhance their ability to use English in professional writing, report, and communication. This course will based on real professional problems, emphasize the interaction among students and teacher. This course will be lectured in English.

upon the boundaries, which may be either solid surfaces or interfaces with other fluids. Both gases and liquids are

Linear algebra finds wide applications in various fields, such as computer sciences, physics, mathematics and their interdisciplinary fields. This course introduces the basic concepts and techniques of linear algebra. It includes the study of matrices and their properties, linear transformations and vector spaces. Concrete topics include systems of linear equations, row reduction and Echelon form, vector equations, solution sets of a linear equation, linear independence, linear transformation, the matrix of linear transformation, matrix algebra, characterization of invertible matrices, determinants, subspaces, null spaces, column spaces, bases and dimension, rank, eigenvalues and eigenvectors, diagonalization, inner product, etc. By introducing the concepts through concrete examples, students will learn the basic concepts and methods of linear algebra, and their capacity to think from the linear algebra perspective will be systematically trained and enhanced.

Abstract algebra studies fundamental algebraic structures of groups, rings and fields, etc. It is the foundation of modern mathematics and has broad and vital applications across different disciplines including computer science, physics, and chemistry.

In this course, the students will learn the basic theory of groups, rings and fields, including subgroups, groups' actions, Sylow theorems, homomorphisms and isomorphism, the fundamental homomorphism theorem, Cauchy's theorem, the fundamental theorem of finitely generated groups, polynomial rings, quotient rings, ideas, the Chinese remainder theorem, Euclidean domains; principal idea domains; unique factorization domains; field extension, algebraic extensions; splitting field, fundamental theorem of algebra, and Galois theory, etc. In addition, this course will also introduce the basics of lattices and Boolean algebras.

This course aims at providing freshmen students with a broad overview of the Artificial Intelligence field, including computer vision, robotics, reinforcement learning, AI systems, and AI algorithms, motivating them to study the field, and encouraging them to conduct indepth investigation on different areas of the field. It is a required course for freshmen students in the Special Artificial Intelligence Polit Class. Lectures will be given by leading experts in AI areas from both academia and industry.

and cost in computer systems.

This course provides an introduction to the field of robotics. The course covers and overview of robotic systems and the applications, basics of kinematics, inverse kinematics, dynamics, trajectory generation, and control. Besides the lectures, the course also provides labs, which aims to equip students with hand-on experiences on robotics through simulations and experiments.

This mini-course is designed to introduce practical data structures that are widely used in the real world, especially in computer systems. A key objective of this course is to give you hands-on experience in building practical data structures that are high-performance, memory-efficient, and thread-safe. Topics include B+trees, tries, hash tables, lock-based and lock-free synchronization, filters and sketches, succinct data structures, and data compression. The course consists of lectures, one exam, and a final project. You will be asked to build a concurrent data structure in the final project and compete with your classmates in performance, scalability, and memory-efficiency. Outstanding implementations may lead to publications and/or high-quality open-source tools.

This course provides a comprehensive introduction to the concepts and principles about data communication and computer networking, including architectures, protocols, hardware, software, and applications. Emphasis is put upon the requirement analysis and design of s and

buckling and configuration details; vii) typical joints in steel frame structures and their loading capacities, configurations. National standards are also incorporated in this course, including the China's one and the European and American ones.

This course, together with Soil Mechanics 1 describes the behaviour of engineering soils and simple geotechnical structures such as shallow and piled foundations, retaining wallsand slopes.
This course simply introduces students to the subject of geotechnical engineering standing one of the major disciplines in civil engineering analysis (the other being structures, hydraulics) using an up-to-date approach: a simple framework of critical state soil mechanics plus the theoretical methods for stability problem of foundations and geotechnical structures, i.e. upper bound, lower bound (LA) and limit equilibrium methods(LEM).Simple theories and idealization for soil behaviour are maintained throughout this course for the purposes of teaching fundamental principles to students.

This is a five days intensive course on analysis of international organization and environmental conventions operation mechanism, basing on the work experience of the expert and the text of Basel, Rotterdam and Stockholm Conventions. The course covers the following major themes: overview of the international conventions; negotiation of the international conventions; function of international organizations and operation mechanism. Generally, more than four and half days courses are taken mainly with lectures, which highlight the most important points that the international conventions and organizations concern, qs in civil ı eþ nt ga or andivilvt tga oÔ Mnts thaot ' jecomhte a

experiments will be organized in groups, and includes the following sessions: 1. Circuits, Electronics, and Data Acquisition with LabVIEW; 2. Basics of Optical System and Optoelectronic Devices; 3. Temperature Measurement and Control; 4. Gas Density and Concentration Measurement; 5. Remote Sensing and Ranging. Comprehensive lab project involving design of

control systems, design method for a discrete-data controller, etc.
This course is delivered in English.

Electric Machinery Fundamentals focuses on the basic electro-magnetic theory of electric machines. The course covers the fundamentals of transformers, synchronous machines, asynchronous machines and DC machines.

Beside basic principles, the course will introduce a number of examples including electrical circuits, optical and RF waveguides, antenna, and electrical measurement in biomedical applications, such that the students can implement the theory to solve real-world problems.

This course introduces key Object-Oriented Programming (OOP) features and simple design patterns based on these OOP features. Using the design patterns based on OOP, this course trains students to design good software structures, which guarantee easy code reuse and adaptability to future change, as well as maneuverable extension for new user requirements. This course covers various topics including classes, objects, inheritance, polymorphism, design patterns, template, STL, etc. Students are required to use C programming language to finish weekly assignments. C is widely used both in industry and academic research projects. It is a powerful multi-paradigm programming language, which supports procedural programming, objected-oriented programming, generic programming, etc. This course is an advanced course aiming at further improving students' capability both in programming skills and program designing skills using C . To take this course, students are required to have the basic programming skills especially in C programming language.

from worldwide, the ISSC is to foster the students to open their horizon on mechanics and related interdisciplinary fields, to develop high-level professional knowledge and skills, to explore the leading frontiers with curiosity and passion, and to prepare their future learning and research such as Open Research for Innovation Challenges (ORIC) project.

This course is designed to be a control project. In the

Biochemistry II is divided into two parts. The first part (Chapter 13-23) is bioenergetics and metabolism, which includes principles of bioenergetics (Chapter 13), catabolism of carbohydrates, lipid acids and amino acids (Chapter 14-18), oxidative phosphorylation and photophosphorylation (Chapter 19), biosynthesis of carbohydrates, lipids and amino acids (Chapter 20-22) and integration and hormonal regulation of mammalian metabolism (Chapter 23). The students are required to be familiar with the major catabolic and anabolic pathways of carbohydrates, lipids and amino acids, as well as the important enzymes and coenzymes involved in these pathways and the regulation of each pathway. The students are also required to know the interconnection and regulation between different catabolic and biosynthetic pathways. The second part (Chapter 24-27) of this course is information pathways. It includes genes and chromosomes (Chapter 24), DNA metabolism (Chapter 25), RNA metabolism (Chapter 26), and protein metabolism (Chapter 27). The students are required to know the structure of genes and chromosomes, the pathways of DNA, RNA and protein metabolism. In addition to lectures, there will be office hours every week to answer the

information.
Parcipate as an effective team member and collaborate effcetively on selected learing exercises.

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.

This course aims to introduce the fundamental mathematical techniques useful for computer science undergraduate majors, illustrated with a rich spectrum of applications. Modern computer science education requires the students to be equipped with broad knowledge in mathematics, so that they could cope with current and future technological challenges handily and innovatively. In this course, mathematical techniques from algebra, geometry, probability theory, stochastic modeling, and information theory will be covered. These techniques will be applied to algorithmic and design problems in various topics, including internet, cryptography, distributed systems, wireless sensor network, optimization, etc. Finally, this course introduces the students to deep scientific issues in the foundation of computing such as undecidability, complexity, and quantum computers.

The purpose of this course is to teach the principles and design of modern operating systems and distributed systems, as well as system programming.
Topics we will cover include concepts of operating systems, networking, database systems and systems programming, including multiple-programing systems (processes, inter-process communication, and synchronization), memory management (segmentation, paging), resource allocation and scheduling, file systems, basic networking (packet switching, file control, reliability), basic databases (transaction, SQL), basic distributed systems (consensus protocols), as well as special topics such as reliability, security, and cloud computing and block chain. Students are expected to complete set of major design and implementation projects.

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

Machine learning studies how computers learn from experiences. Combining ideas from theoretical computer science and statistics, researchers have developed many successful learning methods for computer vision, bioinformatics, natural language processing etc.
This course mainly covers the framework of machine learning, classical methods for solving various machine learning problems, and also basic machine learning theory. It includes linear methods, support vector machine, basic optimization and generalization theory, basic neural networks, popular classification/regression methods, clustering methods, nearest neighbor search, useful algebra methods, etc. This course is a basic course for machine learning, but it is challenging.

Statistical methodsoffer a powerful toolkit to extract useful information from massive and noisy observational data. This course introduces studentstomodern tatistical methods and their theoretical foundations in high-dimensional and nonparametric models. In this course, we will covermodern statistical methods developed over the past 20 years, analyzetheir asymptotic properties and probabilistic foundations, and show how these methods can be applied into real data applications. Selected topicsinclude:high-dimensional and nonparametric estimation, minimax lower bound, multiple hypothesis testing, semiparametric models.

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.

Public Finance studies the role of the public sector in the economy. In this course, we will study the economic foundations that justify the existence of the public sector, and the economic theory that describes what the role of the public sector should be. We concern when the governments should intervene the economy and how they should do so, including what options they have and what are the effects of the policies. The focus is on the government taxes and spending activities. We will also look at the governments' policies in the reality, and study how the policies affect individual and corporate decision-making and welfare.

The objectives of the Management Information Systems (MIS) course are to provide the students with (1) a understanding of MIS essentials and prospects from a combined perspective of technology and management, in the context of big data; (2) a mastery of some classical MIS theories and methods; (3) a mastery of some new MIS concepts and techniques; and (4) a understanding of certain key issues of and thoughts on information technology (IT) management.
In light of rapid advances in IT and Internet applications, the course covers a series of related materials as follows: (1) Gaining competitive advantages with IT (e.g., supply chain management (SCM) and ERP, customer relationship management (CRM), business intelligence (BI)); (2) Business analytics (BA) for decision support (e.g., knowledge discovery from data, associative/grouping patterns); (3) Modeling and decisions in having information systems (e.g., in-sourcing cycle, business modeling, outsourcing); (4) Emerging trends (e.g., big data/cloud computing and artificial intelligence (AI)).

Now we are in an Information era, which roots on a basic fact that, Information Technology (IT) has deeply and widely reshape almost every areas, e.g., production, operation, business, society and personal life. One important characteristic of information era is storing, representing and processing of large-scaled structural data. How to represent and process large-scaled data is the key factor not only for information systems construction, but also for organizations to gain competitive advantages. This course will focus on constructing effective data models using standard data structures as well as efficient processing, which will cultivate the students with the abilities of efficient data modeling and data processing.

The course contents include:

a) Introduction to Data Structures and Analysis;
b) Analysis on Computational Complexity;
c) List, Stack and Queue;
d) Binary Trees;
e) Graphs and Network;
f) Search;
g) Sorting;
h) New techs.

By the end of the course, the students should:

1. Master the major data structures and efficient processing based on C programming;
2. Master the preliminary abilities to model and analyze some real-world applications.
3. Cultivate the ability for further information analysis, design and implementation.

To accomplish this global goal, lecturing is far from enough; case programming and analysis, assignment and Q&A are also important.

This course is designed for students who plan careers in the accounting and finance functions of corporations or government entities or in the consulting/risk management/internal audit services side of public accounting and internal audit outsourcing firms. 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. Its is an introduction to the audit function, audit standards, objectives and procedures, ethical and legal environment, materiality and audit risk, sampling, and reporting.

This course presents basic concepts and theories in monetary and banking economics. Topics covered in the course include: the structure of financial system, financial market and financial institutions, definition of money and role of bank, Money supply and demand, interest rate such as the determination of short-term interest rates and the structure of interest rate, and exchange rate and determination of exchange rate including PPP, IRP, monetary approach, asset approach, and monetary policies.

Information systems (IS) have become a necessity for modern companies to improve business processes, enhance management, innovate business models and build up core competitiveness. Accounting is in general concerned with the identification, collection, processing, analysis and communication of financial information about an organization. Accounting information systems (AIS) is the core subset of IS and the infrastructure for accounting information procession. Accounting departments and accounting professionals are facing the huge opportunities and challenges of adopting and using contemporary AIS application.

This course introduces AIS from both technical and managerial perspectives. The course consists of 4 parts. Part 1 introduces AIS concepts and tools, including introduction to AIS, business processes and AIS data, documenting AIS, and identifying risks and controls in business processes. Part 2 introduces the components of AIS, including understanding and design of accounting data, queries & reports, and forms. Part 3 introduces basic business processes combined with the utilization of an AIS software, including the acquisition cycle and the revenue cycle. Part 4 covers three topics on managing information technology and IS development: IS application and evolution in enterprises,

The objective of this course is to introduce students to the concepts, analyses, and activities that comprise marketing management, and to provide practice in assessing and solving marketing problems. The course is also a foundation for advanced electives in marketing as well as other business/social science disciplines. We will explore the theory and applications of marketing concepts through a mix of cases, discussions, lectures, guest speakers, individual assignments, and group projects. We will draw materials from a variety of sources and settings including services, consumer and business-to-business products.

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

The aim of the course is to provide students with a rigorous introduction to the empirical facts and theoretical models of economic growth. A recurring theme of this course is the question: “Why are some countries so rich, while some others are so poor?” To answer this question, we will look at various aspects of economic growth, starting from some characteristics and stylized facts of different countries across the world. We will then study some of the main theories and their predictions. Through the study of the course, the students will get familiar with the available cross-country data and use different models as a basis for understanding and distinguishing the various determinants of economic growth.

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.

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 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.

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

This course introduces the concepts and tools of strategy formulation and competitive analysis. You will learn about why some firms survive and prosper while others do not, and develop critical analysis and communication skills to create and implement firm strategy. The course focuses on the analyses, organizational processes, skills and business

This course is designed for students with backgrounds and interests in philosophy, and consists of two parts. The first part of the course introduces fundamental logical notions and methods that have applications in philosophy. Things to be covered include logical systems like propositional logic, predicate logic, epistemic logic, and dynamic logic, as well as issues like inter-translation of formal and natural languages, inference pattern and calculus, epistemic activity and information flow, and the interaction between logic and games. The second part of the course introduces the students to the application of logic in the study of natural language semantics. It gives an overview of the main tools and theoretical approaches, provides concrete examples of a number of phenomena, and discusses both historical backgrounds as well as some methodological assumptions.

The course gives an overview of classical meta-logical results, in particular, Godel's completeness and incompleteness theorems, Church-Turing's proof of the undecidability of first-order logic, and Tarski's theorem on the undefinability of truth. After a recapitulation of the syntax and semantics of first-order logic, Henkin's proof of completeness, in terms of syntactic models and maximal consistent sets, is presented. Philosophical and logical consequences of the result and its proof are discussed, with some glimpses from model theory. The course then presents the notions of complete and incomplete theories, as well as decidability of theories. After an overview of the philosophical and mathematical background in the early 20th century, including Hilbert's Program, the incompleteness theorems and related results, and the ideas behind their proofs, are presented at an informal level. The remainder of the course fills in some of the details. The course presentation focuses on important concepts and ideas, philosophical as well as mathematical, but also gives pointers to the technical details.

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This course helps you to embark on a journey to explore and demystify psychology and the working of the human mind. We will examine biological, psychological, and social bases of human phenomena. You will learn about basic principles of psychology, such as in perception, learning, memory, social behavior, etc. You will also get to learn research methods and major theories of psychology.

The purpose of this course is to inform students of decision rules and their associated biases.The course has two facets. First, it gives students a broad overview of important results from various behavioral sciences (e.g., behavioral decision research, social and cognitive psychology, consumer research) that clarify how people really make decisions. Second, it investigates how these results can be leveraged to design original and more effective marketing and business strategies. Knowledge of these issues can be a significant source of competitive advantage.

The science of human physiology attempts to explain the specific characteristics and mechanisms of the human body that make it a living being. The fact that we remain alive is the result of complex control systems. Hunger makes us seek food, fear makes us seek refuge, and coldness makes us look for warmth. The fact that we are sensing, feeling, and knowledgeable beings is part of this automatic sequence of life; these special attributes allow us to exist under widely varying conditions, which otherwise would make life impossible.

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

performance; v) flexural behaviour and basic concept of steel members; vi) mechanical performance of steel members subjected to bending with tension or compression in combination, including basic concept and configuration details; vii) typical joints in steel frame structures and their configurations. National standards are also incorporated in this course, including the China's one and the European and American ones.

The common features of technical w

This undergraduate course consists of 16 seminars, including the invited research talks from world-renowned scientists and oral presentations from undergraduate students themselves. All the seminars, discussions, and written reports of this course will be in English. Focusing on several cutting-edge research frontiers in chemistry, this course

etc.
Able to implement a 3*3 convolution layer, and finish the local memory,
global memory.

This course offers a broad coverage of topics in the field of data mining. The first half of the course cover basic data mining concepts including: data preparation, knowledge presentation, classification, clustering, generalization of algorithms, evaluation of credibility, and association analysis. The second half of the course covers some of the more advanced research topics in the field of data mining. This course intends to be a first course on data mining that prepares students for further study, which introduces students to many different topics so that they can pursue their favorite ones on their own after the course.

This course introduce both of the basics and advances of computer vision. The content ranges from computer vision basics, such as image formation, image processing, to recent development of feature extraction, 3D vision, as well as recent breakthroughs such as deep learning, image recognition and object detection. We emphasize on the foundation of computer vision, but we also teach the most recent technology advancement. We hope the students can have a good understanding of the foundation of computer vision, and at the same time be enthusiastic about the cool stuff in computer vision.

Deep learning is one of the core techniques in modern AI. It is also the fundamental tool for handling massive data in the “Big Data” era. This course aims to provide a comprehensive overview of the basic ideas, methods and techniques of deep learning. Students will be also asked to use deep learning approaches to solve real-world problems in homework and final project.
The course topics include supervised learning, generative models, sequence models, unsupervised learning, meta-learning, security and explainability.

This course introduces the basic concept, principle, mechanism and algorithm of distributed systems and blockchain systems. Specifically, the course covers the clock and communication of distributed systems; distributed consensus; Bitcoin mechanism; mining pools; network communication; payment channel, etc. The course will systematically introduce the design principle of distributed systems and blockchain, and will discuss some advanced topics in practical implementations, including their background, challenges and solutions.

With the development of Internet, multimedia data have become increasingly accessible, such as images, audios, videos, texts, etc; the advances of artificial neural networks have made it easy to process these data. This course covers applications including image and video processing, audio and speech processing, natural language processing. It introduces popular signal processing and machine learning techniques in the artifitial intelligence field, such as data representation, data compression, frequency-domain transformation, convolutional neural networks, sequence models, data synthesis, multimodal fusion, etc. Through lectures and course projects, students learn about the features of different signals, and their common ground. This class can serve as the prerequisite for computer vision and natural language processing classes.

This course will explain the development of accounting and financial reporting models in the world, and 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; and To describe and analyze some management accounting issues in multinational operations, for instance, the establishment of management control and information systems, 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, and differential rates of inflation; and (3) variations in taxes and tax rates. International accounting discusses issues from the perspective of companies

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.

financial crisis, exchange-rate-based inflation stabilization, currency unions, debt default, balance-of-payment crises, and the effect of the great recession of 2008 on the world economy.

Economic interdependence between countries and across production chains continue to grow. In this context, stable rules on international trade are key. This course focuses on the rules established under the World Trade Organization (WTO) as well as selected regional trade agreements. What are the benefits and risks of trade liberalization from legal, economic and political perspectives? How can trade liberalization go hand in hand with pursuing public policy goals such as protecting the environment and human rights ("non-trade concerns") or promoting the economic development of poor countries? The course will offer an in-depth, practical knowledge of substantive WTO law

the history of the molecular biology field, I will especially stress the importance of logical thinking, and I hope to teach students not the knowledge but also the skills to acquire novel knowledge through molecular biological methodologies. The course includes the following parts: 1) Introduction of the history of Molecular biology, the nature and the function of genes, 2) Methods in Molecular biology, 3) Transcription in bacteria, 4) Transcription in eukaryotes, 5) Translation, 6) Post transcriptional events, 7) DNA replication, recombination and transposition, 8) Genomes.

This course is supported by the Rixin College and aims to train the first-year student in the college to read and write English texts in a critical way. In surrounding a thematic writing (Disease and Health), this course will equip student with capabilities of writing a critical essay of standard academic English.