南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	**课程名称 Course Title**	区块链技术发展与应用 Blockchain Technology: Development and Applications
2.	**授课院系 Originating Department**	金融系 Department of Finance
3.	**课程编号 Course Code**	FETS203
4.	**课程学分 Credit Value**	1
5.	**课程类别 Course Type**	专业选修课 Major Elective Courses
6.	**授课学期 Semester**	夏季 Summer
7.	**授课语言 Teaching Language**	中英双语 English & Chinese
8.	**授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） Instructor(s), Affiliation& Contact （For team teaching, please list all instructors）**	Jerry Yang 杨旭宁 Email: yangxn@sustc.edu.cn Office: Huiyuan 3-325#
9.	**实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact**	待公布 To be announced
10.	**选课人数限额(可不填) Maximum Enrolment （Optional）**	

11.		讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other（Please specify）	总学时 Total
	授课方式 Delivery Method					
	学时数 Credit Hours	14			2（Case Study）	16

12.	**先修课程、其它学习要求 Pre-requisites or Other Academic Requirements**	FIN203 财务会计 Financial Accounting FIN201 微观经济学 Micro Economics FIN204 宏观经济学 Macro Economics FIN206 公司金融 Corporate Finance
13.	**后续课程、其它学习规划 Courses for which this course is a pre-requisite**	FIN308 金融经济学 Financial Economics FET303 金融风险管理 Financial Risk Management FIN210 货币银行学 The Economics of Money, Banking and Financial Market
14.	**其它要求修读本课程的学系 Cross-listing Dept.**	

教学大纲及教学日历 SYLLABUS

15. **教学目标 Course Objectives**

本门课程专注于区块链的理论和实际应用。课程初期将会对金融科技和区块链技术发展进行回顾。之后将着重教授如何运用区块链技术来改变传统金融机构以及设计新的金融工具和交易机制。

This course will focus on both the theorem and applications of blockchain to real-world problems. We will begin with our course a review of Fintech and blockchain technology's development. We will then focus on how to apply blockchain's technology to reform traditional financial industry and design new financial tools and trading strategy.

16. **预达学习成果 Learning Outcomes**

本门课程结束后，学生们将会知道基本的金融科技和区块链的概念。在理解了科技与运用的基础下，学生们将懂得传统金融机构如何改革才能提高效率。最后，学生能够利用各种金融科技工具来设计新的金融工具和交易机制。

After taking this course, students will be able to know fundamental Fintech and Blockchain's concepts. Based on technology and applications, students should understand how to enhance efficiency to reform traditional financial industry. Finally, students could use blockchain technology to design new financial tools and trading strategy.

17. **课程内容及教学日历 （如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）**
Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

第一讲 金融科技与区块链发展历史（2 学时）

本讲主要介绍金融科技与三次金融革命。探讨应该被称为金融科技还是科技金融，以及金融科技改变了什么。了解金融科技的主要领域：大数据、云计算、移动互联、区块链、人工智能。对比金融科技与传统金融体系的异同，从网络信用卡的弊端出发，研究如何从信用到加密货币，为什么可以凭空发行货币，如何把一切都记录在数据库账本中。

Lecture 1 The History of The Development of Financial Technology and Blockchain (2 Hours)

This lecture mainly introduces fintech and the three financial revolutions. Explore why should be called fintech not

techfin, and what fintech has changed. Understand the main areas of fintech: big data, cloud computing, mobile internet, blockchain, artificial intelligence. Comparing the similarities and differences between financial technology and traditional financial system, starting from the shortcomings of online credit cards, study how to develop into cryptocurrency, why can it be issued in a vacuum, and how to record everything in the database book.

第二讲 密码学及密码加密货币（2 学时）

本讲主要介绍加密货币的发展历程和运行机制。由于密码学中的哈希函数在加密货币的运行过程中发挥着重要的作用，课程将深入研究哈希指针与数据结构、数字签名机制等内容，并以具体加密货币为案例进行分析。

Lecture 2 Cryptography and Cryptocurrency (2 Hours)

This lecture mainly introduces the development process and operation mechanism of cryptocurrency. Since the hash function in cryptography plays an important role in the operation of cryptocurrency, the course will deeply study the hash pointer and data structure, digital signature mechanism and other content, and analyze it with specific cryptocurrency as a case.

第三讲 比特币与去中心化（2 学时）

本讲主要围绕中心化与去中心化的运行机制展开，重点研究比特币的去中心化。从比特币出发，了解分布式共识，研究其奖励机制与工作量证明机制，进而深入了解比特币的交易和区块存储机制。

Lecture 3 Bitcoin and Decentralization (2 Hours)

This lecture focuses on the operation mechanism of centralization and decentralization, focusing on the decentralization of Bitcoin. Starting from Bitcoin, learn about distributed consensus, study its reward mechanism and workload proof mechanism, and then gain an in-depth understanding of Bitcoin transactions and block storage mechanisms.

第四讲 中国区块链发展调查（2 学时）

本讲主要聚焦于中国区块链产业的发展，了解其发展特点。从区块链产业的各细分领域出发，研究区块链在金融领域的具体应用以及在实体经济领域的具体应用，判断区块链产业的未来发展趋势。

Lecture 4 Survey on The Development of China's Blockchain (2 Hours)

This lecture focuses on the development of China's blockchain industry and understands its development characteristics. Starting from the various segments of the blockchain industry, the specific application of blockchain in the financial field and the real economy field are studied to judge the future development trend of the blockchain industry.

第五讲 区块链与智能合约（2 学时）

本讲主要研究区块链中智能合约的重要意义。从智能合约的定义出发，结合智能合约三要素（包括自治、自足、去中心化），研究智能合约的应用与发展方向。

Lecture 5 Blockchain and Smart Contracts (2 Hours)

This lecture focuses on the importance of smart contracts in blockchains. Starting from the definition of smart contracts, combined with the three elements of smart contracts (including autonomy, self-sufficiency, decentralization), we will study the application and development direction of smart contracts.

第六讲 区块链监管（2 学时）

本讲主要从监管的角度看待区块链的发展。由于区块链的独特性，对其监管存在着各种新的难题，如何利用监管沙盒等新的监管方式成为重要研究课题。进一步研究监管发展趋势，国际间合作监管（以防止洗钱与地下经济）的可能性。

Lecture 6 Supervision of Blockchain (2 Hours)

This lecture mainly looks at the development of blockchain from a regulatory perspective. Due to the uniqueness of the blockchain, there are various new problems in its supervision. How to use the new regulatory methods such as the supervision sandbox has become an important research topic. We will further study the regulatory development trends and the possibility of international cooperation supervision (to prevent money laundering and the underground economy).

第七讲 区块链应用案例（2 学时）

本讲介绍四个案例，分别是电子发票、分布式智能电网、食品追溯、资产证券化，从实际案例出发研究区块链在不同行业中的实际应用，了解区块链的实际价值所在。

Lecture 7 Introduction to The Application of Blockchain (2 Hours)

This lecture introduces four cases, including electronic invoices, distributed smart grid, food traceability, and Asset-backed Securities. From the actual case, we study the practical application of blockchain in different industries and understand the actual value of blockchain.

第八讲 互联网技术与区块链发展展望（2 学时）

本讲主要根据年度全球互联网发展报告以及中国年度区块链发展白皮书，帮助同学们了解互联网和区块链的实际发展情况，整体把握区块链的未来发展方向。

Lecture 8 Prospects of Internet Technology and Blockchain Development (2 Hours)

This lecture is mainly based on the annual global Internet development report and China's annual blockchain development white paper to help students understand the actual development of the Internet and blockchain, and grasp the future development direction of the blockchain.

18. 教材及其它参考资料 Textbook and Supplementary Readings

Required:《区块链革命》，Don Tapscott. 中信出版集团

课程评估 ASSESSMENT

19.

评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance	5	10		
课堂表现 Class Performance				
小测验 Quiz				
课程项目 Projects	1	80		
平时作业				

Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam				
期末报告 Final Presentation				
其它（可根据需要改写以上评估方式） Others (The above may be modified as necessary)	1	10		微信课后讨论 WeChat Discussion

20. **记分方式 GRADING SYSTEM**

√ A. **十三级等级制 Letter Grading** ☐ B. **二级记分制（通过/不通过） Pass/Fail Grading**

课程审批 REVIEW AND APPROVAL

21. **本课程设置已经过以下责任人/委员会审议通过**
This Course has been approved by the following person or committee of authority
