数字电子技术基础　教学大纲

Fundamental of Digital Electronics　Subject Syllabus

一、课程信息 Subject Information

课程编号: Subject ID	3100112017	开课学期: Semester	3
课程分类: Category	专业教育 PA	所属课群: Section	专业基础 MF
课程学分: Credit Points	3	总学时/周: Total Hours/Weeks	52
理论学时: LECT. Hours	40	实验学时: EXP. Hours	12
PBL 学时: PBL Hours	0	实践学时/周: PRAC. Hours/Weeks	0
开课学院: College	东北大学 悉尼智能科技学院	适用专业: Stream	通信工程 CE
课程属性: Pattern	必修 Compulsory	课程模式: Mode	互认 EQV
中方课程协调人: NEU Coordinator	刘志刚 Zhigang Liu	成绩记载方式: Result Type	百分制 Marks
先修课程: Requisites	集成电路系统设计 Integrated Electronic System Design		
英文参考教材: EN Textbooks	Thomas L. Floyd 著,余璆、熊洁改编,Digital Fundamentals, Eleventh Edition,电子工业出版社,2017		
中文参考教材: CN Textbooks	[美]Thomas L. Floyd 著，余璆译，数字电子技术（第十一版），电子工业出版社，2017		
教学资源: Resources			
课程负责人(撰写人): Subject Director	刘志刚 Zhigang Liu	提交日期: Submitted Date	2023 年 10 月 15 日
任课教师(含负责人): Taught by	刘志刚，宋昕，李梅梅 Zhigang Liu, Xin Song, Meimei Li		
审核人: Checked by	辛凤鸣	批准人: Approved by	史闻博
		批准日期: Approved Date	2023 年 10 月 20 日

二、教学目标 Subject Learning Objectives (SLOs)

注：毕业要求及指标点可参照悉尼学院本科生培养方案，可根据实际情况增减行数

Note: GA and index can be referred from undergraduate program in SSTC website. Please add/reduce lines based on subject.

整体目标: Overall Objective	本课程是通信工程的专业基础课。其任务是通过本课程的学习，使学生了解和掌握电子技术、计算机技术及信息科学有关的基础理论知识，为进一步的研究和学习提供专业知识基础。掌握数字电路系统设计的步骤、方法，熟悉常用的数字电路系统和开发技术，培养学生分析和设计数字电路系统在解决实际问题中的能力。 This course is a basic course for electronic information majors.Its task is to make students understand and master the basic theoretical knowledge related to electronic technology, computer technology and information science through the study of this course, so as to provide professional knowledge foundation for further research and study.Master the steps and methods of digital circuit system design, be familiar with common digital circuit system and development technology, cultivate students' ability to analyze and design digital circuit system in solving practical problems.	
（1）专业目标: Professional Ability	1-1	熟悉和掌握有关基本概念、基本公式、定理和逻辑函数的化简方法。 Be familiar with and master the basic concepts, basic formulas, theorems and simplification methods of logical functions.
	1-2	了解各种典型电路的组成、工作原理、特点和应用，掌握其外特性及使用方法。 Understand the composition, working principle, characteristics and applications of various typical circuits, master their external characteristics and use methods.
	1-3	掌握组合逻辑电路和时序逻辑电路的分析方法和设计方法，具有一定的解决实际问题的能力。 Master the analysis and design methods of combinational logic circuit and sequential logic circuit, and have the ability to solve practical problems.
（2）德育目标: Essential Quality	2-1	理解数字系统对于国家战略安全与国防的重要意义。 Understand the significant meanings of the digital systems in security and national defense.
	2-2	认知当前集成电路发展前沿、关键技术及相关中国企业的核心竞争力。 Understand the technology development, key techniques and the core competitiveness of Chinese companies in the area of the integrated circuit in the world.

课程教学目标与毕业要求的对应关系 Matrix of GA & SLOs

毕业要求 GA	指标点 GA Index	教学目标 SLOs

1、工程知识：能够将数学、自然科学、工程基础和专业知识用于解决复杂工程问题。 **1. Engineering Knowledge:** Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.	指标点 1-2：掌握通信原理、信号与信息处理、电子电路技术等专业知识，具备通信系统功能模块设计开发能力和通信与信息系统设计开发与维护能力； 1-2: Mastery of the communication principles, signal and information processing, electronic circuit techniques and other professional knowledge, and capable of designing and developing communication system function modules and capable of designing, developing, and maintaining communication and information system;	1-1，1-2，1-3
2、问题分析：能够应用数学、自然科学和工程科学的基本原理、方法和手段，识别、表达、并通过文献研究分析复杂工程问题，以获得有效结论。 **2. Problem Analysis:** Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using the first principles of mathematics, natural sciences and engineering sciences.	指标点 2-1：能够应用数学、自然科学和工程科学的基本原理、方法和手段，分析、识别、表达本专业相关的复杂工程问题； 2-1: Capable of analyzing, identifying and formulating major-related complex engineering problems using the basic principle of mathematics, natural sciences and engineering sciences;	1-1，1-2，1-3，2-1，2-2
	指标点 2-2：能够应用数学、自然科学和工程科学的基本原理、方法和手段，针对实际复杂工程问题设计针对性的技术方案，并综合运用文献、科学理论和技术手段予以解决。 2-2: Capable of designing specific technical solutions for complex practical engineering problems using the basic principle of mathematics, natural sciences and engineering sciences, and solving the problem by academic literature, scientific theory and techniques.	
4、研究：能够基于科学原理并采用科学方法对复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。 **4. Investigation:** Conduct investigations of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.	指标点 4-1：能够基于科学原理并采用科学方法，在本专业相关理论指导下对复杂工程问题设计实验进行研究； 4-1: Capable of designing experiments and doing research on complex engineering problems based on scientific principles and scientific methods, under the guidance of related theories of the major;	1-2，1-3，2-1，2-2
	指标点 4-2：能够结合本专业知识对实验数据进行分析与解释，设计并优化实验方案，并通过信息综合得到合理有效的结论； 4-2: Capable of analyzing and interpreting experimental data based on professional knowledge, designing and optimizing experimental schemes, and obtaining reasonable and effective conclusions through information integration;	

三、教学内容 Content (Topics)

注：以中英文填写，各部分内容的表格可根据实际知识单元数量进行复制、扩展或缩减

Note: Filled in both CN and EN, extend or reduce based on the actual numbers of knowledge unit

(1) 理论教学 Lecture

知识单元序号: Knowledge Unit No.	1	支撑教学目标: SLOs Supported	1-1，2-1，2-2
知识单元名称 Unit Title	绪论，数字系统，运算和编码 Introductory Concepts, Number Systems, Operations and Codes		
知识点: Knowledge Delivery	数字电路及其常用芯片、对电子设计自动化技术进行简介 Digital circuits and their common chips, and introduce electronic design automation technology		
	数字电路的一般概念，包括：数字电路系统的体系结构、组成及应用 The general concept of digital circuit, including the architecture, composition and application of digital circuit system		
	几种常见的数制以及数制之间的转换，二进制算数运算的特点 Several common number systems and the conversion between them, the characteristics of binary arithmetic operations		
	二进制中原码、反码和补码的表示与运算 the representation and operation of the original code, inverse code and complement code in the binary system		
学习目标: Learning Objectives	了解: Recognize	数字量与模拟量的概念；其它常用的编码方法；二进制算数运算 The concepts of digital and analog quantities, other commonly used coding methods and binary arithmetic operations	
	理解: Understand	熟悉各种数制 Be familiar with various number systems	
	掌握: Master	数制间的相互转换方法；8421 码 The conversion methods between them; 8421 codes	
德育目标 Moral Objectives	理解数字系统对于国家战略安全与国防的重要意义。 Understand the significant meanings of the digital systems in security and national defense.		
	认知当前集成电路发展前沿、关键技术及相关中国企业的核心竞争力。 Understand the technology development, key techniques and the core competitiveness of Chinese companies in the area of the integrated circuit in the world.		
重点: Key Points	二进制、十进制、十六进制间互相转换方法 the method of conversion between binary, decimal and hexadecimal.		
难点: Focal points	十进制转换为二进制与十六进制 converting decimal to binary and hexadecimal.		

知识单元序号: Knowledge Unit No.	2	支撑教学目标: SLOs Supported	1-1
知识单元名称 Unit Title	逻辑代数基础 Foundation of logical Algebra		

知识点: Knowledge Delivery	逻辑代数中的三种基本运算 Three basic operations in logic algebra	
	逻辑代数的基本公式和常用公式 basic and common formulas of logic algebra	
	逻辑函数及其表示方法和公式化简法 logic functions and their representations and formulations	
	逻辑函数的卡诺图化简法 Karnaugh map simplification of logic functions	
	具有无关项的逻辑函数及其化简 logic functions with irrelevant terms and their simplification	
学习目标: Learning Objectives	了解: Recognize	数字电路的特点和应用 The characteristics and application of digital circuit
	理解: Understand	数字电路系统中的基本概念 The basic concepts in digital circuit system
	掌握: Master	逻辑代数中的三种基本运算，逻辑函数的表示方法，逻辑函数的公式法及卡诺图法化简 The three basic operations in logic algebra, the representation of logic function, the formula method of logic function and Karnaugh map method to simplify
德育目标 Moral Objectives	无 None	
重点: Key Points	逻辑代数中的各种概念、逻辑函数的表示方法、逻辑函数的化简 Various concepts in logic algebra, the representation of logic functions, and the simplification of logic functions	
难点: Focal points	逻辑函数的公式法及卡诺图法化简 Simplification of logical function by Formula method and Karnaugh Map method	

知识单元序号: Knowledge Unit No.	3	支撑教学目标: SLOs Supported	1-2，1-3
知识单元名称 Unit Title	组合逻辑电路 Combinational Logic Circuits		
知识点: Knowledge Delivery	组合逻辑电路的分析方法和设计方法； The analysis and design methods of combinational logic circuits;		
	若干常用的组合逻辑电路编码器、译码器、数据选择器、加法器和数值比较器 Some commonly used combinational logic encoders, decoders, data selectors, adders and numerical comparators		
	组合逻辑电路的竞争—冒险现象 The competition-adventure phenomenon of combinational logiccircuits		
学习目标: Learning Objectives	了解: Recognize	组合逻辑电路中的竞争冒险现象，以及如何消除竞争冒险 The phenomenon of competitive adventure in combinational logic circuits and how to eliminate competitive risk	

	掌握: Master	掌握组合逻辑电路的分析方法和设计方法，常用组合电路的使用 The analysis and design methods of combinational logic circuits, and the use of common combinational circuits
德育目标 Moral Objectives	无 None	
重点: Key Points	组合电路的分析方法、设计方法，常用组合电路的使用等 The analysis and design methods of combinational circuits, the use of commonly used combinational circuits, etc	
难点: Focal points	常用组合逻辑电路的使用 The use of common combinational logic circuits	

知识单元序号: Knowledge Unit No.	4	支撑教学目标: SLOs Supported	1-2，1-3
知识单元名称 Unit Title	锁存器，触发器和定时器 Latches, Flip-Flops and Timers		
知识点: Knowledge Delivery	锁存器、触发器的电路结构和动作特点 The circuit structure and action characteristics of the latches and flip-flop		
	触发器的逻辑功能及其描述方法 The logic function of the flip-flop and its description method		
	单稳态触发器、多谐振荡器的内部结构及工作原理 Internal structure and working principle of one-shots and the astable multivibrator		
学习目标: Learning Objectives	了解: Recognize	单稳态触发器、多谐振荡器的工作原理 The working principle of monostable flip-flop and multivibrator	
	掌握: Master	触发器的电路结构和动作特点，触发器的逻辑功能及其描述方法 The circuit structure and action characteristics of flip-flop, the logic function of flip-flop and its description method	
		555 定时器的工作原理及如何用 555 定时器构成单稳态触发器、多谐振荡器 Master the working principle of 555 timer and how to use 555 timer to form one-shots and the astable multivibrator	
德育目标 Moral Objectives	无 None		
重点: Key Points	触发器的电路结构和动作特点，触发器的逻辑功能及其描述方法；介绍单稳态触发器、多谐振荡触发器的概念，工作原理逻辑功能及电路的组成方法等 The circuit structure and action characteristics of the flip-flop, the logic function of the flip-flop and its description method; The concept, working principle, logic function and circuit composition of one-shots and the astable multivibrator are introduced		

难点: Focal points	触发器的电路结构和动作特点；用 555 定时器构成施密特触发器、单稳态触发器、多谐振荡器 The circuit structure and action characteristics of the flip-flop; 555 timer is used to form Schmidt flip-flop, Monostable flip-flop and multi-harmonic oscillator

知识单元序号: Knowledge Unit No.	5	支撑教学目标: SLOs Supported	1-2，1-3
知识单元名称 Unit Title	时序逻辑电路 Sequential Logic Circuits		
知识点: Knowledge Delivery	时序逻辑电路的分析方法 The analysis method of sequential logic circuit		
	若干常用的时序逻辑电路寄存器、移位寄存器、计数器 Some commonly used sequential logic circuit registers, shift registers and counters		
	时序逻辑电路的设计方法 The design method of sequential logic circuits		
学习目标: Learning Objectives	了解: Recognize	寄存器、移位寄存器和计数器的工作原理和使用方法 The working principle and usage of registers, shift registers and counters	
	掌握: Master	掌握时序逻辑电路的分析方法和设计方法，若干常用的时序逻辑电路的工作原理和使用方法 The analysis and design methods of sequential logic circuits, and the working principles and usage of some commonly used sequential logic circuits	
德育目标 Moral Objectives	无 None		
重点: Key Points	时序电路的特点、分析方法、设计方法；寄存器和计数器的工作原理和使用方法等 The characteristics, analysis methods and design methods of sequential circuits, and the working principle and use of registers and counters		
难点: Focal points	时序逻辑电路的设计，寄存器和计数器的工作原理和使用方法 The design of sequential logic circuit, the working principle and usage of registers and counters		

知识单元序号: Knowledge Unit No.	6	支撑教学目标: SLOs Supported	1-2，1-3
知识单元名称 Unit Title	数据存储 Data Storage		
知识点: Knowledge Delivery	只读存储器、随机存储器的工作原理 The working principle of read-only memory and random access memory		
	存储器容量的字扩展和位扩展 The word expansion and bit expansion of memory capacity		
	用存储器实现组合逻辑函数 Use memory to realize combinatorial logic functions		

学习目标: Learning Objectives	掌握: Master	存储器的概念 The concept of memory
		存储器容量的扩展方法 The expansion method of memory capacity
		用存储器组成的其他逻辑电路的方法 The method of other logic circuits composed of memory
德育目标 Moral Objectives	无 None	
重点: Key Points	存储器容量的扩展方法，用存储器组成的其他逻辑电路的方法 The expansion method of the memory capacity, and the method of other logic circuits composed of the memory	
难点: Focal points	存储器容量的扩展方法，用存储器构成其他逻辑电路的方法。 The expansion method of memory capacity and the method of using memory to form other logic circuits	

知识单元序号: Knowledge Unit No.	7	支撑教学目标: SLOs Supported	1-2，1-3
知识单元名称 Unit Title	信号转换与处理 Signal Conversion and Processing		
知识点: Knowledge Delivery	D/A 转换器、A/D 转换器的概念 The concept of D-A converter and A-D converter		
	基本原理和常见的典型电路 Basic principles and common typical circuits		
学习目标: Learning Objectives	了解: Recognize	A/D、D/A 转换电路的工作原理 The working principle of A/D and D/A conversion Circuits	
	理解: Understand	典型电路的组成及使用方法 The composition and usage of typical Circuits	
德育目标 Moral Objectives	无 None		
重点: Key Points	A/D、D/A 转换电路的工作原理及典型电路的组成及使用方法 The working principle of A/D 、 D/A conversion circuit and the composition and application of typical circuits		
难点: Focal points	A/D、D/A 转换电路的工作原理 The working principle of A/D and D/A conversion Circuits		

(2) 实验教学 Experiments

注：可根据实际情况增减行数。实验类型可分为验证性、设计性、综合性，实验性质可分为选做、必做。

Note: Please add/reduce lines based on subject. The Type contains Verify, Design, and Comprehensive, while the Pattern contains Required and Elective

序号 No.	实验项目名称 Experiment Topic	学时 Hours	每组人数 MPG*	实验类型 Type	实验性质 Pattern

1	门电路逻辑功能及测试 Logic function and Test of Gate Circuit	2	1	设计性 Design	必做 Elec
2	组合逻辑电路 Combinational Logic Circuit	2	1	设计性 Design	必做 Elec
3	555 定时器电路实验 555 timer Circuit experiment	4	1	综合性 Comp	必做 Elec
4	不同进制计数器的构成及译码显示实验 Composition and Decoding display experiment of different binary counters	4	1	设计性 Design	必做 Elec
	总计 Total	12			

*MPG: Members per group

实验项目序号: Experiment No.	1	支撑教学目标: SLOs Supported	1-3，1-4
每组成员: Members per Group	1	指导教师: Tutor	李梅梅 Meimei Li
实验名称: Experiment Title	门电路逻辑功能及测试 Logic function and Test of Gate Circuit		
实验内容: Content	测试与非门、异或门逻辑功能，逻辑电路的逻辑关系测试，利用与非门控制输出，设计用与非门组成其它门电路。 Test and non-gate logic function, XOR gate logic function, logic relation test of logic circuit, use and non-gate control output, design and non-gate to form other gate circuits.		
学习目标: Learning Objectives	掌握门电路的逻辑功能、主要参数的测试方法。 Master the logic function of the gate circuit, the test method of the main parameters.		
教学要求: Requirements	每个学生独立完成实验，撰写实验报告 Each student completes the experiment independently, and writes the experiment report		
实验场地: Location	综合楼 1111；comprehensive building 1111		
实验软硬件设备: Software/Hardware	MULTISIM 仿真软件 MULTISIM simulation software		

实验项目序号: Experiment No.	2	支撑教学目标: SLOs Supported	1-3，1-4
每组成员: Members per Group	1	指导教师: Tutor	李梅梅 Meimei Li

实验名称: Experiment Title	组合逻辑电路 Combinational Logic Circuit
实验内容: Content	组合逻辑电路功能测试，用异或门和与非门组成的半加器逻辑功能测试，测试用与非门组成的全加器的逻辑功能，用给定芯片设计全加器。 Combinational logic circuit function test, logic function test with XOR gates and semi-adders composed of non-gates, logic functions of full adders composed of non-gates and non-gates, a full adder is designed with a given chip.
学习目标: Learning Objectives	掌握组合逻辑电路的功能测试，验证半加器和全加器的逻辑功能，学会组合逻辑电路的设计方法。 Master the function test of combinational logic circuit, verify the logic function of semi-adder and full adder, and learn the design method of combinational logic circuit.
教学要求: Requirements	每个学生独立完成实验，撰写实验报告 Each student completes the experiment independently, and writes the experiment report
实验场地: Location	综合楼 1111；comprehensive building 1111
实验软硬件设备: Software/Hardware	MULTISIM 仿真软件 MULTISIM simulation software

实验项目序号: Experiment No.	3	支撑教学目标: SLOs Supported	1-3，1-4
每组成员: Members per Group	1	指导教师: Tutor	李梅梅 Meimei Li
实验名称: Experiment Title	555 定时器电路实验 555 Timer Circuit Experiment		
实验内容: Content	555 时基电路的功能测试，用 555 时基电路构成多谐振荡器、施密特触发器与单稳态触发器。 The function test of 555 time base circuit, using 555 time base circuit to form multi-harmonic oscillator and Monostable flip-flop.		
学习目标: Learning Objectives	掌握 555 时基电路的结构和工作原理．学会对此芯片的正确使用；学会分析和测试用 555 时基电路构成的多谐振荡器，单稳态触发器，施密特触发器等三种典型电路。 Master the structure and working principle of 555 time base circuit. Learn to use this chip correctly; learn to analyze and test three typical circuits: multiharmonic oscillator, Monostable flip-flop and Rmurs flip-flop.		
教学要求: Requirements	每个学生独立完成实验，撰写实验报告 Each student completes the experiment independently, and writes the experiment report		

实验场地: Location	综合楼 1111；comprehensive building 1111
实验软硬件设备: Software/Hardware	MULTISIM 仿真软件 MULTISIM simulation software

实验项目序号: Experiment No.	4	支撑教学目标: SLOs Supported	1-3，1-4
每组成员: Members per Group	1	指导教师: Tutor	李梅梅 Meimei Li
实验名称: Experiment Title	不同进制计数器的构成及译码显示实验 Composition and Decoding display experiment of different binary counters		
实验内容: Content	译码驱动电路芯片的功能验证，16 进制计数器的功能验证，使用 16 进制计数器实现不同进制的计数器功能，用给定芯片设计不同进制计数器。 Functional verification of decoding driver circuit chips, functional verification of hexadecimal counters, using hexadecimal counters to achieve different binary counter functions, using a given chip to design different binary counters.		
学习目标: Learning Objectives	通过实验使学生掌握基本的数字显示方法及其所用器件的基本使用方法；通过实验使学生掌握集成计数器 74LS161 的工作原理，掌握 74LS161 四位二进制计数器各控制端的作用及触发方式，进位方式，学会利用 74LS161 和门电路构成不同进制计数器的方法；能够使用任何计数器芯片实现不同进制的计数器功能。 Make the students master the basic digital display method and the basic use of the devices through the experiment; through the experiment, the students can master the working principle of the integrated counter 74LS161, master the function and trigger mode of each control terminal of the 74LS161 four-bit binary counter, carry mode, and learn to use 74LS161 and gate circuits to form different binary counters. Can use any counter chip to achieve different counter functions.		
教学要求: Requirements	每个学生独立完成实验，撰写实验报告 Each student completes the experiment independently, and writes the experiment report		
实验场地: Location	综合楼 1111；comprehensive building 1111		
实验软硬件设备: Software/Hardware	MULTISIM 仿真软件 MULTISIM simulation software		

四、教学安排 Teaching Schedule

注：可根据实际情况增减行数

Note: Please add/reduce lines based on subject.

教学内容 Teaching Content	学时(周) Hour(Week)			
	理论 LECT.	实验 EXP.	课外实践 PBL	集中实践 PRAC.
绪论，数字系统，运算和编码 Introductory Concepts, Number Systems, Operations and Codes	4			
逻辑代数基础 The Foundation of logical Algebra	6			
组合逻辑电路 Combinational Logic Circuits	10			
锁存器，触发器和定时器 Latches, Flip-Flops and Timers	8			
时序逻辑电路 Sequential Logic Circuits	8			
数据存储 Data Storage	2			
信号转换与处理 Signal Conversion and Processing	2			
门电路逻辑功能及测试 Logic function and Test of Gate Circuit		2		
组合逻辑电路 Combinational Logic Circuit		2		
555 定时器电路实验 555 Timer Circuit Experiment		4		
不同进制计数器的构成及译码显示实验 Composition and Decoding display experiment of different binary counters		4		
总计 Total	40	12		

五、教学方法 Teaching Methodology

注：可根据实际情况增减行数或修改内容

Note: Please add/reduce lines or revise content based on subject.

勾选 Check	教学方法与特色 Teaching Methodology & Characters
☑	多媒体教学：基于信息化设备的课堂教学 Multi-media-basedlecturing
☑	实践能力传授：理论与行业、实际案例相结合 Combining theory with industrial practical problems
☑	课程思政建设：知识讲授与德育相结合 Knowledgedeliverywithethiceducation

☑	PBL 教学：问题驱动的分组学习与交流 Problem-basedlearning
☐	其他:单击或点击此处输入文字。 Other:单击或点击此处输入文字。

六、成绩评定 Assessment

注：可根据实际情况增减行数或修改内容

Note: Please add/reduce lines or revise content based on subject.

考核环节: Assessment Content	平时 Behavior	环节负责人: Director	刘志刚 Zhigang Liu
给分形式: Result Type	百分制 Marks	课程总成绩比重(%): Percentage (%)	30
考核方式: Measures	满分 100 分，作业 50 分，考勤 50 分，缺勤七次及以上取消考试资格。 The full score is 100 points. The homework is 50 points and the attendance is 50 points, and the examination qualification will be cancelled for seven or more absences.		

考核环节: Assessment Content	实验 Experiment	环节负责人: Director	李梅梅 Meimei Li
给分形式: Result Type	百分制 Marks	课程总成绩比重(%): Percentage (%)	20
考核方式: Measures	满分 100 分，实验成绩不及格（低于 60 分）不得参加期末考试。 The full score is 100 points, and the experimental results failed (less than 60 points) shall not participate in the final examination.		

考核环节: Assessment Content	期末 Final	环节负责人: Director	刘志刚 Zhigang Liu
给分形式: Result Type	百分制 Marks	课程总成绩比重(%): Percentage (%)	50
考核方式: Measures	满分 100 分，通过批阅期末考试试卷给出学生成绩。 The full score is 100, and the students' scores are given by marking the final examination papers.		

七、改进机制 Improvement Mechanism

注：未尽事宜以教学团队以及学院教学指导委员会商定为准。

Note: Matters not covered in this file shall be determined by TAB of SSTC, NEU.

教学大纲改进机制 Subject Syllabus Improvement Mechanism			
考核周期(年): Check Period (YR)	4	修订周期(年): Revise Period (YR)	4
改进措施: Measures	课程负责人根据课程教学内容与人才培养目标组织课程团队讨论并修改教学大纲，报分管教学工作副院长审核后由执行院长批准。 The subject coordinator shall be responsible for the syllabus discussion and improvement, and the revised version shall be submitted to deputy dean (teaching affairs) for reviewing then to executive dean for approvement.		
成绩评定改进机制 Assessment Improvement Mechanism			
考核周期(年): Check Period (YR)	1	修订周期(年): Revise Period (YR)	1
改进措施: Measures	课程负责人根据课程教学内容、课堂教学效果以及成绩分布，对课程教学方法和成绩评定环节进行改进，并同步优化评定办法。 The subject coordinator shall revise the syllabus based on the teaching content, effect and result distribution while optimize the assessment measures.		