Standardization Engineering

(Grade 2024)

Course code: 120702T

I. Cultivation Objectives

1. General cultivation objective

This program cultivates talents who achieve all-round development in morality, intelligence, physical fitness, aesthetics and labor skills, and who possess scientific literacy, humanistic spirit, international perspective and pioneering innovation spirit; have a solid professional foundation and a sound knowledge structure, as well as modern management and information economy concepts; master knowledge in standardization engineering, system management and other related fields, and the ability to apply standardization in specific areas. It cultivates compound, innovative and application-oriented talents who can collaborate with engineering and technical personnel of relevant majors in enterprises and institutions at all levels, government departments, mass organizations, as well as in fields such as supply chain and industrial engineering to carry out work related to the formulation and revision of standards, construction of standardization systems, design, development, organization, implementation and whole-process management of standardization projects; and who have certain capabilities in management communication, collaboration and organization & implementation, along with a rigorous scientific research attitude and strong practical application ability.

2. Objective of value guidance

Objective 1: Have a firm political orientation, love the motherland, and uphold the leadership of the Communist Party of China; master the theoretical system of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, firmly establish socialist core values and a correct worldview and outlook on life; possess good humanities and social sciences literacy, patriotism and national pride, a sense of social responsibility, and adhere to professional ethics and norms.

Objective 2: Systematically master the professional knowledge system of standardization engineering, quality management and other related fields; have a solid foundation in standardization principles and a firm grasp of standardization technologies and methods; be capable of independently undertaking various standardization work in enterprises, providing professional standardization consulting and services, participating in domestic and international standardization activities, and independently leading the development, application and research of major standardization projects in enterprises.

Objective 3: Be able to apply the latest technologies and tools in the field of standardization engineering to lead teams in establishing enterprise standardization management systems; take the lead in the overall construction, implementation, application and promotion of enterprise standardization; and use standardization concepts to improve the level and effectiveness of strategic decision-making and business management.

Objective 4: Possess good communication and expression skills, interpersonal skills and team spirit, outstanding organizational and management capabilities, certain innovation capabilities, and basic decision-making capabilities.

Objective 5: Have an international perspective, maintain physical and mental health and motivation for sustainable development; possess the ability to update knowledge in the standardization engineering field, good thinking skills and awareness of lifelong learning; in particular, have the ability to engage in in-depth research in

the industry and continuously learn in areas such as standardization technologies and methods, and standardization management.

II. Graduation requirements

Students of this major mainly study the basic theories and knowledge of the disciplines of Intelligent Manufacturing Engineering and Standardization. By learning the basic principles and fundamental knowledge of related disciplines such as economics, management, industrial engineering, systems science, and computer information systems, they receive basic training in the principles and methods of standardization engineering, systematically master the relevant theories, methods, and tools of standardization, possess strong practical capabilities in work related to the standardization field, and initially grasp the methods to solve complex problems in the professional field. Graduates shall meet the following nine aspects of capabilities:

1. Moral Cultivation

Possess humanistic heritage, scientific spirit, professional ethics, and social responsibility; understand the national conditions, social conditions, and people's conditions; and practice core socialist values.

1-1 Have a firm political orientation, be familiar with the basic line, policies, and guidelines of the Party and the country, and practice core socialist values.

1-2 Possess good humanities and social sciences literacy, understand national conditions, social conditions, and people’s aspirations, safeguard national interests, pay attention to and reflect on major hot issues concerning national economy and people's livelihood, and have a sense of responsibility to promote the progress of society and the standardization cause.

1-3 Understand laws and regulations related to standardization, establish the concept of low-carbon, energy conservation, and environmental protection, follow the standardization principles of advanced technology and reasonable economy, and abide by the professional ethics and industry norms of the standardization industry.

2. Disciplinary Knowledge

Possess solid basic theoretical knowledge and professional skills in standardization engineering, master the basic research methods in the field of standardization engineering, be familiar with the basic structure, methods, and principles of standardization engineering theories and practices, and understand the theoretical progress of standardization engineering and new developments and trends in the practice of the standardization field.

2-1 Proficiency in applied basic knowledge such as English, computers, and the Internet; possess basic computer application capabilities and the ability to search and retrieve literature and materials; and have a solid foundation in management and economics.

2-2 Be able to use basic mathematical measurement knowledge such as higher mathematics and linear algebra to solve calculation and measurement problems in standardization work; systematically master the theoretical framework and knowledge system of the standardization engineering major; and be familiar with the basic principles and methods of standardization.

2-3 Understand the current situation, development trends, and latest dynamics of standardization at home and abroad, and master the relevant legal knowledge required for engaging in standardization work.

2-4 Be able to use basic knowledge of industrial engineering to understand standardization engineering problems.

2-5 Be able to use standardization theory knowledge to analyze and solve comprehensive standardization problems.

3. Critical Thinking and Innovation Capability

Possess a critical spirit and professional sensitivity, as well as innovation awareness and practical innovation capabilities. Be able to identify, analyze, and evaluate various phenomena and problems in the standardization field; have the ability to develop new ideas, new theories, new methods, and new inventions in new environments and with new technologies to respond to the challenges posed by new environments to standardization talents.

3-1 Have the ability to apply and transform knowledge in this discipline and interdisciplinary fields.

3-2 Possess critical thinking and professional sensitivity; be able to capture, analyze, question, and evaluate phenomena and problems in the standardization field, and express personal insights.

3-3 Have the basic skills and spirit of standardization innovation and entrepreneurship; put forward innovative insights and conduct innovative practices in the face of a constantly changing social environment.

4. Application Capability

Possess the ability to apply standardization professional knowledge to solve practical problems; be able to conduct comprehensive analysis and research on complex problems in the standardization field and propose corresponding countermeasures or solutions.

4-1 Be able to carry out the construction of standardization systems for products, projects, and services.

4-2 Be able to formulate conventional standards and draft standard documents.

4-3 Possess the ability to monitor standard implementation and conduct quality management system certification.

4-4 Possess the ability to process, analyze, and evaluate quality test data.

4-5 Be able to track, analyze, and research cutting-edge and hot issues in the application of standardization.

4-6 Be able to understand and analyze complex problems in the standardization field through literature research, and understand the cutting-edge developments and trends of standardization at home and abroad.

5. Information Literacy

Reach a certain level of understanding, comprehension, application, and effectiveness of information; be able to use modern scientific and technological tools to collect, analyze, and process data and information in the standardization and related fields; be familiar with common data analysis software and their usage methods; and be able to use computer-aided systems to provide support for management decision-making and solve practical problems in standardization business.

5-1 Be able to use advanced information platform equipment to search and consult relevant standard documents; select and use appropriate information tools and technologies to record, organize, arrange, and store data in compliance with laws and regulations during the standard formulation process; and use office software and TCS series standard compilation software to create and compile standardization documents.

5-2 Possess information application awareness; be able to identify, express, and analyze problems in business practice through information; be familiar with the usage methods of common information analysis software such as SPSS and AMOS to conduct comprehensive data analysis, identify patterns, and provide a basis for standardization decision-making.

6. Communication and Expression

Be able to proficiently use verbal and non-verbal communication skills; possess written and oral expression capabilities; be able to communicate effectively on issues related to the standardization engineering field; have an international perspective; master cross-cultural communication methods and skills; and possess the ability to participate in international standardization work.

6-1 Be able to accurately express personal views on professional issues through oral presentations, manuscripts,

charts, and other methods.

6-2 Be able to communicate and interact effectively with industry peers and the public on issues in the standardization field, including writing reports and design plans, giving presentations, and clearly expressing or responding to instructions.

6-3 Possess verbal and written expression capabilities for cross-cultural communication; have the ability to participate in international standardization work; and be able to solve basic problems in transnational standardization engineering activities.

7. Teamwork

Possess a sense of teamwork; be able to effectively exert personal capabilities in various teams; be able to coordinate and cooperate with other members to achieve team cooperation goals; and possess certain leadership capabilities.

7-1 Be able to cooperate with team members in curriculum projects; get along harmoniously and work collaboratively with team members; and play an active role in team activities.

7-2 Be able to connect well with team members in relatively comprehensive projects and complete personal tasks.

7-3 Be able to cooperate with team members in practical projects; be able to create a common vision, inspire team morale, promote the achievement of team goals; lead team members to obtain growth opportunities; and develop certain team leadership skills.

8. International Perspective

Possess an international standardization perspective and the ability to understand international standards; pay attention to international standardization dynamics and global standardization issues; understand and respect the differences and diversity of different cultures in the world; and be familiar with cultural differences and communication strategies in international standardization engineering.

8-1 Be able to proficiently use at least one foreign language to complete daily tasks in listening, speaking, reading, and writing; possess the ability to search and compile foreign-language standard documents; understand the differences in standard compilation and implementation caused by different cultures; solve problems in international communication of standardization engineering; adapt to the differences of standardization activities in different cultural environments; and be able to adapt to standardization work in different cultural environments.

8-2 Possess an international perspective and international understanding ability; pay attention to international standardization dynamics and global standardization issues; be familiar with domestic and foreign standardization policies, regulations, and international trade rules; and be familiar with the current situation of international standardization and the general guidelines for international standard formulation.

9. Learning and Development

Maintain physical and mental health; possess a lifelong learning awareness and the abilities of self-management and independent learning; be able to adapt to the sustainable development of society and individuals through continuous learning; and achieve personal career development goals.

9-1 Have a positive attitude towards life; maintain physical and mental health; recognize the necessity of continuous exploration and learning; and possess the awareness of independent learning and lifelong learning.

9-2 Understand the ways to expand knowledge and capabilities; be able to adopt appropriate methods for independent learning according to the needs of personal or career development; and adapt to the development of the industry in which they are engaged.

III. Schooling System

Four years.

IV. Length of Study

Flexible study period, generally four years, the minimum length of flexibility is not less than three years, the longest not more than six years.

V. Graduation Requirements and Degree Award

Students must complete the minimum number of credits required for each category of study in accordance with the requirements of the Instructive Cultivation Plan, and complete all the content required for the Extracurricular Class, with a total of 158 credits, in order to graduate; those who meet the requirements for the award of a Bachelor's degree will be awarded a Bachelor of Management Science.

VI. Discipline

Management Science; Management Science and Engineering.

VII. Core Courses

Management Science, Fundamentals of Economics, Principles of Standardization, Standardization Technology and Methods, Standardization Systems and Certification, Operations Research, Project Characteristics and Standardized Management Methods, Applied Statistics, Error Theory and Data Processing, Systems Engineering, International Standardization.

VIII. Course Structure and Course Hours (excluding Extracurricular Class)

Category	Total Credit	%	Total Course Hours	Theory Learning	Practical Training
Public Fundamental Course	51.5	33	960	870	90
General Education	10	6	160	160	0
Professional Fundamental Course	30	19	480	424	56
Professional Course	40	26	640	476	164
Professional Practic	25.5	16	760	0	760
Total	157	100	3000	1930	1070
Theory:Practical (%)	64:36				

IX. Teaching schedule (1)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hours	Theory Learning	Practical Training	Recommended semester
Public Fundamental Course	required	School of Marxism	b1080001	Basic Principles of Marxism	test	3	48	42	6	Autumn 1
	required	School of Marxism	b1080009	Ethics and the Rule of Law	non-test	3	48	42	6	Autumn 1
	required	School of Marxism	b1080006	Outline of Modern Chinese History	non-test	3	48	42	6	Spring 1
	required	School of Marxism	b1080010	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics	test	3	48	42	6	Autumn 2
	required	School of Marxism	b1080011	Introduxtion to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	test	3	48	42	6	Spring 2
	required	School of Marxism	-----	Situation and Policy (Modules 1 to 4)	non-test	2	32	28	4	Autumn 1 to
	required	Others	b1110004	Mental Health Education for University Students	non-test	2	32	16	16	Spring 1
	required	School of Marxism	b1080008	Labour Education A	non-test	0.5	16	16		Spring 1
	required	School of Applied Arts and Design	b1020082	Advanced Mathematics B1	test	4	64	64		Autumn 1
	required	School of Applied Arts and Design	b1020083	Advanced Mathematics B2	test	2	32	32		Spring 1
	required	School of Applied Arts and Design	b1020012	Linear Algebra	test	2	32	32		Spring 1
	required	School of Applied Arts and Design	b1020013	Probability Theory and Mathematical Statistics	test	2	32	32		Autumn 2
	required	School of Applied Arts and Design	b1020065	Academic Physics B	test	2	32	32		Autumn 2
	required	School of Foreign Languages and	b1020018	Academic Chinese	non-test	2	32	32		Autumn 1
	required	College of Physical Education	-----	Physical Education I to VI	non-test	3	160	160		Autumn 1 to
	required	Others	b1110003	Military skills	non-test	0.5	2W			Autumn 1
	required	Others	b1110002	Military theory	non-test	0.5	32	32		Spring 1
	required	Engineering Training	b1090001	Basic Engineering Training	non-test	2	32		32	Autumn 1
	required	School of Computer and Information	b1012001	Applications and Practice of Artificial Intelligence	non-test	1	16	8	8	Spring 1
	required	School of Resources and	b1013002	Low-carbon and Ecological Civilization	non-test	1	16	16		Autumn 1
	★ Academic English(Select 1 Module for 10 Credits)	Module A	b1020003	General English III	test	3	48	48		Autumn 1
			b1020004	General English IV	test	3	48	48		Spring 1
			b1020005	General Academic English A	test	2	32	32		Autumn 2
			---	English Knowledge Expansion	non-test	2	32	32		Spring 2
		Module B	b1020002	General English II	test	3	48	48		Autumn 1
			b1020003	General English III	test	3	48	48		Spring 1
			b1020006	General Academic English B	test	2	32	32		Autumn 2
			---	English Knowledge Expansion	non-test	2	32	32		Spring 2
		Module C	b1020001	General English I	test	4	64	64		Autumn 1
			b1020002	General English II	test	3	48	48		Spring 1
			b1020003	General English III	test	3	48	48		Autumn 2
	★ Academic German	School of Foreign Languages and	b1020040	Academic German I	test	3	48	48		Autumn 1
		School of Foreign Languages and	b1020041	Academic German II	test	3	48	48		Spring 1
		School of Foreign Languages and	b1020042	Academic German III	test	4	64	64		Autumn 2
	★ Academic Japanese	School of Foreign Languages and	b1020077	Academic Japanese I	test	3	48	48		Autumn 1
		School of Foreign Languages and	b1020078	Academic Japanese II	test	3	48	48		Spring 1
		School of Foreign Languages and	b1020079	Academic Japanese III	test	4	64	64		Autumn 2
Subtotal (Public Fundamental Course)						**51.5**	**960**	**870**	**90**	
General	selective	Art Education Center	b0-----	Aesthetic Education	non-test	2	32	32		Autumn,

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hours	Theory Learning	Practical Training	Recommended semester
	selective	Each College	b0-----	Social Sciences and Humanistic Qualities	non-test	4	64	64		Autumn,
				Natural Sciences and Technology Innovation	non-test	4	64	64		Autumn,
Subtotal (General Education)						**10**	**160**	**160**		

(★Note: The first foreign language is 10 credits in total, including 3 languages: Academic English, Academic German and Academic Japanese, choose the appropriate language as required; when Academic English is chosen, please choose the appropriate module in Module A, B, C)

IX. Teaching schedule (2)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hours	Theory Learning	Practical Training	Recommended semester
Professional Fundamental Course	required	School of Economics and Management	b2030037	Management Science	test	3	48	48	0	Autumn 1
	required	School of Economics and Management	b2030444	Introduction to Standardization	test	1	16	12	4	Autumn 1
	required	School of Economics and Management	b2030460	Principles of Standardization	test	2	32	28	4	Spring 1
	required	School of Economics and Management	b2030461	Fundamentals of Economics	test	3	48	48	0	Spring 1
	required	School of Economics and Management	b2030462	Introduction to Industrial Engineering	test	2	32	24	8	Autumn 2
	required	School of Economics and Management	b2030463	Standardization Systems and Certification	test	2	32	24	8	Autumn 2
	required	School of Economics and Management	b2030159	Applied Statistics	test	3	48	40	8	Autumn 2
	required	School of Economics and Management	b2030464	Operations Research	test	3	48	40	8	Spring 2
	required	School of Economics and Management	b2030465	Error Theory and Data Processing	test	3	48	40	8	Spring 2
	required	School of Economics and Management	b2030466	Systems Engineering	test	3	48	48	0	Spring 2
	required	School of Economics and Management	b2030467	Project Characteristics and Standardized Management Methods	test	3	48	48	0	Autumn 3
	required	School of Economics and Management	b2030468	Standardization Technology and Methods	test	2	32	24	8	Spring 3
	Subtotal (Professional Fundamental Course)					**30**	**480**	**424**	**56**	
Professional Course	required	School of Economics and Management	b2030536	Python Programming Language Design	non-test	2	32	28	4	Spring 1
	required	School of Economics and Management	b2030035	Supply Chain Management	non-test	2	32	32	0	Autumn 2
	required	School of Economics and Management	b2030470	Digital Information Standardization	non-test	2	32	20	12	Autumn 2
	required	School of Economics and Management	b2030471	Standardization Laws and Regulations	non-test	2	32	32	0	Spring 2
	required	School of Economics and Management	b2030472	Quality Management Engineering	non-test	2	32	28	4	Spring 2
	required	School of Economics and Management	b2030473	Fundamentals of Metrology	non-test	2	32	16	16	Spring 2
	required	School of Economics and Management	b2030474	National Quality Infrastructure (NQI)	non-test	2	32	32	0	Autumn 3
	required	School of Economics and Management	b2030475	International Standardization (Bilingual)	non-test	2	32	24	8	Autumn 3
	required	School of Economics and Management	b2030476	Certification and Accreditation	non-test	2	32	20	12	Autumn 3
	required	School of Economics and Management	b2030477	Enterprise Standardization Management and Practice	non-test	2	32	20	12	Spring 3
	required	School of Economics and Management	b2030478	Comprehensive Evaluation Theory and Methods	non-test	2	32	20	12	Autumn 4
	Subtotal(Required Professional Course)					**22**	**352**	**272**	**80**	
	Select different courses in different	Module A	b2030479	Logistics Management	non-test	2	32	26	6	Spring 2
			b2030537	Operations Management	non-test	2	32	26	6	Autumn 3
			b2030481	Environmental, Social and Governance (ESG)	non-test	3	48	24	24	Autumn 3

	modules for 16 credits		b2030482	Standardization of Logistics Services and Technologies	non-test	2	32	26	6	Autumn 3
			b2030483	E-Commerce and Information Standardization	non-test	2	32	26	6	Spring 3
			b2030484	Standardization of Supply Chain Finance	non-test	3	48	24	24	Spring 3
			b2030485	Standardization of Social Management and Public Services	non-test	2	32	28	4	Spring 3
		Module B	b2030486	Lean Production	non-test	2	32	26	6	Spring 2
			b2030487	Reliability Engineering	non-test	2	32	28	4	Autumn 3
			b2030488	International Industrial Standardization	non-test	2	32	26	6	Autumn 3
			b2030489	Standardization and Intellectual Property Rights	non-test	2	32	26	6	Autumn 3
			b2030490	Standardization of Industrial Design and Testing	non-test	3	48	24	24	Spring 3
			b2030491	Standardization of Automobile Manufacturing	non-test	3	48	24	24	Spring 3
			b2030492	Standardization of New Energy Technologies	non-test	2	32	26	6	Spring 3
	Subtotal (Selective Professional Course)					**16**	**256**	**180**	**76**	
	Select for 2 credits	School of Economics and Management	b2030408	Digital Trade	non-test	2	32	24	8	Spring 2
		School of Economics and Management	b2030504	Interpretation and Analysis of Corporate Financial Statements	non-test	2	32	24	8	Spring 2
		School of Economics and Management	b2030503	Fundamentals and Frontiers of Economics and Finance	non-test	2	32	24	8	Spring 2
		School of Economics and Management	b2030516	Computational Social Science	non-test	2	32	24	8	Spring 3
		School of Economics and Management	b2030521	Management Research Design and Methods	non-test	2	32	24	8	Spring 3
		School of Economics and Management	b2030517	AI and Big Data Marketing	non-test	2	32	24	8	Spring 3
		School of Economics and Management	b2030535	Reverse Logistics Management	non-test	2	32	24	8	Autumn 2
		School of Economics and Management	b2030502	Tax Theory and Practice	non-test	2	32	24	8	Autumn 2
	Subtotal (Selective Professional Course)					**2**	**32**	**24**	**8**	
	Total (Professional Course)					**40**	**640**	**476**	**164**	

IX. Teaching schedule (3)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hours	Theory Learning	Practical Training	Recommended semester
Professional Practice	required	School of Economics and Management	b4030239	Practice of Standardization Documents	non-test	3	72		72	Summer 1
	required	School of Economics and Management	b4030240	Practice of Standardization Information Tools	non-test	2	48		48	Summer 1
	required	School of Economics and Management	b4030241	Comprehensive Practice of Standardization Projects I	non-test	3	72		72	Summer 2
	required	School of Economics and Management	b4030242	Comprehensive Practice of Standardization Projects II	non-test	3	72		72	Summer 2
	required	School of Economics and Management	b4030243	Labor Education B	non-test	2	48		48	Spring 3
	required	School of Economics and Management	b4030200	Labor Education B	non-test	0.5	16		16	Spring 3
	required	School of Economics and Management	b4030248	Graduation Internship and Graduation Design (Thesis) for Standardization Engineering	non-test	6	288		288	Spring 4

	required	Module A	b4030244	Basic Practice of Supply Chain Standardization	non-test	3	72		72	Summer 3
	required		b4030245	Comprehensive Practice of Supply Chain Standardization	non-test	3	72		72	Autumn 4
	required	Module B	b4030246	Basic Practice of Industrial Standardization	non-test	3	72		72	Summer 3
	required		b4030247	Comprehensive Practice of Industrial Standardization	non-test	3	72		72	Autumn 4
	Subtotal (Professional Practice)					**25.5**	**760**		**760**	
Extracurricular Class	required	Others	b5110001	Extracurricular Class	non-test	**1**	-	-	-	Autumn, Spring, Summer
Total						**158**	**3000**	**1930**	**1070**	

★ Description of Professional Module Course and Practical Module Course :

Professional courses are structured into modules based on different competency requirements. Students must select one module and earn the number of credits required by that module. Professional practical modules must be selected in correspondence with the respective professional course modules.

(1) Module A: Supply Chain Standardization Module

Targeting the talent demand for standardization development in supply chain-related fields, this track focuses on the standardization development of the five core characteristics of supply chains—intelligence, technology, management, organization, and green development. It cultivates application-oriented standardization engineering talents who master the basic principles of supply chain standardization development, understand relevant operations in smart supply chains, possess knowledge and comprehensive application capabilities in standardization engineering and supply chain management, and are capable of carrying out work in procurement, logistics practice, finance, and services in key supply chain fields such as logistics, e-commerce and international trade, and social management and public services.

(2) Module B: Industrial Standardization Module

Aiming at the talent demand for standardization development in industry-related fields, this track cultivates application-oriented standardization engineering talents who master the basic principles of industrial standardization development, understand relevant operations in industrial engineering, possess knowledge and comprehensive application capabilities in standardization engineering and industrial management, and are capable of conducting standardization work in industrial production, testing, design, and management in industrial engineering-related fields such as machinery industry and intelligent manufacturing.

X. Credit of Extracurricular Class

Through taking extracurricular classes, students are encouraged to take part in academic lectures, social practice activities, campus cultural and sports activities, innovative and entrepreneurial activities, voluntary activities, etc. to improve their social adaptability and enhance the competitiveness in the job market. Details are specified in Students' Manual.