

SESEC V Report

Standardization Education in China

1. Current Status of Chinese Standardization Education

Standardization Education in China is not a new topic. China opened a university named “China Metrology University” in 1985 and standardization education is one of their focus even at the very beginning of the University.

Since the *National Standardization Development Outlines* proposed to “integrate standardization into general higher education, vocational education and continuing education”, China has started to attach greater importance to standardization education. In the *Key Points of National Standardization Work 2021* (hereinafter, referred to as “Key Points”), Standardization Administration of China (SAC) lays down the requirements of “developing generic education and professional education of standardization, promoting and carrying out pilot application of vocational skill level certificate in standardization area, as well as facilitating the integration of academic certificates with relevant vocational certificates”. The requirements were repeatedly emphasized by the following 2022 and 2023’s Key Points.

Driven by these policies, China has preliminarily established a standardization education system that involves industries, academic communities, and research institutions as of this moment. Meanwhile, the approach to standardization education tends to diversify.

1.1. Standardization Education in Universities and Colleges

In 2022, the major of standardization was included in China’s undergraduate vocational education program, and standardization technologies was included into the courses for granting bachelor’s degrees in management and law. As of this moment, 14 Chinese universities and colleges have set up standardization-related majors or courses, and these majors have enrolled more than 2,000 undergraduates since 2018. The below table is a summary of these universities and colleges (incomplete statistics).

No.	College/University	School	Major	Year of founding	Education level
1	China Jiliang University (China Metrology University)	School of Standardization	Standardization engineering	2008	Bachelor’s degree
2	Tsinghua University	/	Engineering management (standardization)	2015	Master’s degree
3	Zhongnan University of Economics and Law	School of Business Administration	Standardization management	2018	Master’s degree
4	Guangdong Polytechnic College	School of Economics and Management	Standardization engineering	2015	Bachelor’s degree

5	Liaocheng University	School of Quality	Standardization engineering	2016	Bachelor's degree
6	Qingdao University	School of Quality and Standardization	Standardization engineering	2017	Bachelor's degree
			Management Science and Engineering (standardization)	2019	Master's degree
			Engineering management (Engineering standardization management)	2019	Master's degree
7	University of Jinan	School of Business	Standardization engineering	2018	Bachelor's degree
8	Nantong Institute of Technology	School of Business	Standardization engineering	2018	Bachelor's degree
9	Taiyuan University of Science and Technology	School of Economics and Management	Industrial engineering (standardization)	2019	Bachelor's degree
10	Shenzhen Technology University	School of Quality and Standards	Automation (Control system international standardization)	2019	Bachelor's degree
11	Guangdong Open University	School of Standardization	Standardization engineering	2019	Bachelor's degree
12	North University of China	School of Standardization	Industrial engineering	2020	Bachelor's degree

It is worth noting that, despite some universities and colleges do not set up a separate major for standardization, they have included standardization courses in their other relevant majors. For example, Hunan University requires its students in the majors of economics, management, etc., to take courses of standardization.

1.2. Academic Competition of Standardization

The *Key Points of National Standardization Work* highlights the necessity of strengthening the training and selection of young professionals for international standardization cooperation. As a means to achieve this goal, China has organized a large number of young students to participate in international and domestic standardization competitions. Internationally, the China Association for Standardization (CAS) has organized nationwide selection of young students to participate in International Standards Olympiad for many times. In the 17th

International Standards Olympiad, Chinese students won 4 awards including the platinum Award. Domestically, CAS holds the National College Students Standardization Olympic Competition every year since 2021 to enhance college students' innovative and practical capabilities and raise their standardization awareness. This competition is also China's largest and the most influential national standardization competition for college students by now.

1.3. Vocational Education of Standardization

In 2019, the Ministry of Education, the National Development and Reform Commission, the Ministry of Finance, and the State Administration of Market Regulation jointly issued the *Plan for the Pilot Program on Implementation of 'academic certificate + vocational skill level certificates' system in Academic Institutions* (shortly, the "1+X certificates" system). The system requires vocational schools, colleges and universities that participate in the pilot program to include vocational skill trainings into their talent cultivating programs, issuing vocational skill certificates to students who passed trainings and assessments. In 2020, the system included the vocational skill of "standards formulation and reviewing", and some assessment bodies were set up soon afterwards and have finished a series of standardization textbooks including "*Standardization Basis*", "*Standardization Methods*" and "*Standardization Practices*". These textbooks have been widely used in pilot colleges and universities. According to statistics by CNIS, as of 2022, 2461 college and university students had obtained the "1+ standards formulation and reviewing" certificates.

1.4. Continuing Education of Standardization

As standardization training has become an essential course for enterprise management and technical personnels in recent years, various forms of standardization training have been carried out across China, including, i) external standardization experts lecturing in colleges and universities' continuing education courses; ii) standardization professors from colleges and universities training in enterprises; iii) local standardization authorities/institutes organizing standardization continuing education courses for public. The contents of these standardization trainings mainly include: i) establishing the systems of technical standards, management standards and working standards for enterprises; ii) explaining standardization processes and standards' contents for all posts within these enterprises; iii) publicizing standardization knowledge for all staff through an all-round approach and from comprehensive perspectives.

International standardization is one of the hottest topics in continuing education of standardization in China. In 2022, Chinese standardization-related organizations organized 37 training sessions on this topic, where 9880 trainees received training on international standardization knowledge and skills.

As a result of above efforts, China's standardization talent group keeps expanding. By the end of 2022, there are 56,697 experts registered in and participated in the standards setting of national standardization technical committees, 15,863 of whom are from private enterprises. In 2022, China registered 1,342 new experts in ISO/IEC, with 1,077 in ISO and 265 in IEC respectively. Chinese experts have won more than 30 international standardization awards, including the IEC Edison Award, the 1906 Award, and the ISO Award for Outstanding Contribution.

2. Future development

The development of standardization education in China in recent years reflects the following trends:

- 2.1. The scale of standardized education keeps expanding. As society's standardization awareness is being increasingly enhanced, the demand for standardization talents also increases, which may prompt more colleges and universities to set up standardization majors and offer standardization courses.
- 2.2. The education system's perception of standardization will be further improved. The "academic certificate + vocational skill level certificate of standards formulation and reviewing" introduced in China's education system in 2020 will encourage students to learn standardization vocational skills outside the formal education courses, thus expanding the cognition and understanding of standardization in the education system and even the entire society.
- 2.3. Cooperation between standardization bodies and universities will become closer. Standardization organizations, especially national standardization organizations, have many excellent standardization practice cases and rich theoretical knowledge of standardization, which will help colleges and universities to develop better standardization courses and improve the quality of standardization education.
- 2.4. International standardization education cooperation will be strengthened. Both the *National Standardization Development Outlines* and its action plan clearly call for in-depth involvement in international standardization. It means that China will surely need more talents who have a good command of international standardization. International standardization education cooperation is a good means to cultivate such talents, thus it will be strengthened.

3. Summary

Chinese society's standardization awareness is rapidly increasing in recent years under the traction of policies and economic development. It brings more attention and investment to standardization education. The expansion of the standardization education will produce a larger number of professional talents to China's standardization system, helping improve the capacity of Chinese standardization community and promote the export of Chinese technical standards.

However, the cultivation of standardization talents needs to match the demands of the market, otherwise it will produce a large amount of waste of resources and hinder the healthy development of standardization cause. It remains to be seen whether the standardization talents produced by such many colleges and universities can be fully absorbed by the market and facilitate its development.