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A comparative analysis of emergency management undergraduate programmes in China and the United States

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Undergraduate education in emergency management is crucial for shaping future professionals in the field, but virtually no published comparative studies have explored the nuances of such programmes internationally. Comparative analysis offers valuable insights into cross-national disparities, the key elements of successful educational models, and how national emergency management practices shape educational approaches. This study partially fills this gap by introducing an analytical framework that scrutinises 39 Chinese and 42 American undergraduate emergency management programmes. It focuses on general characteristics, educational objectives, curricula, and faculty composition. Results reveal notable differences. United States programmes are generally within political or public affairs departments, but programmes in China are typically housed in specialised emergency management departments. Both countries' programmes emphasise interdisciplinary training, but those in the US align closely with the Federal Emergency Management Agency's goals, thus highlighting critical thinking and communication skills. Chinese programmes, however, prioritise decision-making and command capabilities. Curriculum structures in the two countries prioritise tools and skills courses tailored to meet the specific needs of their national emergency management departments and enhance professional competencies. Faculty composition also differs: US programmes employ more adjunct faculty and faculty with public administration or emergency management backgrounds, while Chinese programmes tend to rely on faculty with engineering expertise.

Keywords: China, comparative analysis, emergency management, higher education, undergraduate programmes, United States

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1. Introduction

Emergency management higher education plays a critical role in training emergency management professionals, professionalising emergency management as a field, and establishing emergency management as a discipline; however, there is substantial variation in the development of emergency management higher education across different countries of the world. The United States has been at the forefront of initiating and developing emergency management in higher education. A significant achievement was the pioneering effort of the University of North Texas (UNT). In 1983, UNT introduced the nation's first degree programme in emergency management (Fuller, 2002). This groundbreaking initiative paved the way for further progress in emergency management education. Another notable milestone in the development of emergency management education was the creation of the Emergency Management Higher Education Program by the US Federal Emergency Management Agency (FEMA) in 1994. This served as a catalyst for the advancement of emergency management education, thereby enabling the field to grow and evolve. According to the FEMA Higher Education College List (FEMA, 2024), as of February 2024, approximately 661 emergency management degree programmes were offered at colleges and universities across the US. This extensive network of higher education institutions has created a robust and sophisticated system dedicated to the education and training of emergency management professionals.

Other countries began initiating and developing emergency management higher education later than the US, but they are steadily making progress. One important example is China, the world's largest country in the Global South. China has made significant strides in emergency management higher education since approving its first undergraduate degree programme in 2008 (Xia, 2010). In March 2020, the country's Ministry of Education (MOE) released a policy to accredit undergraduate emergency management programmes in its Intelligent Learning Workshop of Emergency and Safety Management, which led to approximately 20 schools being officially recognised as pilot emergency management schools. During the same year, when faced with the severe challenge of the COVID-19 (coronavirus disease 2019) epidemic, China's Ministry of Emergency Management (MEM) and the MOE jointly issued a document aimed at encouraging Chinese universities to leverage their respective strengths and actively explore and develop graduate degree programmes in emergency management. This initiative has provided abundant policy support for graduate education in emergency management and has yielded positive results: by 2024, 43 universities in China were offering undergraduate degree programmes in emergency management, and at least 25 institutions had established postgraduate degree programmes in emergency management. China's rapid development of emergency management in higher education showcases the nation's commitment to advancing the discipline and meeting the growing demand for skilled professionals in the field.

The emergence of emergency management programmes has garnered considerable scholarly attention (Neal, 2000; Phillips, 2005; McCreight, 2009; Zhou, Peng, and Xu, 2010; Kapucu, 2011;

Urby and McEntire, 2014; Haupt and Knox, 2018; Hu and Zhang, 2020; Sun, 2022). Many studies have investigated the challenges to and lessons learned in establishing such programmes in various countries and regions, including China, Europe, Ghana, and the US (Fuller, 2002; McEntire, 2006; Rozdilsky et al., 2011; Yakubu and Jensen, 2019; Hu and Zhang, 2020; Perpiñá-Galvañ et al., 2021). This extensive body of literature provides detailed analyses of and information on the establishment of emergency management programmes. Notwithstanding these valuable extant studies, though, a gap remains in the literature regarding comprehensive cross-national comparative perspectives. Few investigations have thoroughly examined the differences and similarities between emergency management programmes across countries. Comparison enables enhanced understanding of emergency management programmes internationally. Indeed, knowledge of disasters and emergency management activities can be advanced markedly using the comparative method (McEntire, 2007). As Scolobig and Balsiger (2024) averred, comparative research is needed to compare higher education practices in the field of disaster risk reduction to identify similarities, differences, and emerging trends. Moreover, comparative research can provide insight into the differences in emergency management institutional systems between countries and pinpoint key elements of successful emergency management higher education, as well as reveal how emergency management practices in different countries potentially shape their professional education.

This study aims to contribute to the emergency management field by focusing on the similarities and differences between emergency management undergraduate degree programmes in China and the US. Specifically, it addresses the following research questions:

1. What are the similarities and differences between emergency management programmes in China, a latecomer to the field, and the US?
2. What are the underlying reasons for these differences?
3. What lessons can be learned to build more effective emergency management degree programmes?

2. Literature review and analytical framework

2.1 Literature review

Extant literature on emergency management programmes in higher education has primarily focused on the development-related experience of building degree programmes in various countries. In the US, scholars have examined various dimensions of emergency management programmes, including educational goals, curriculum design, competency frameworks, and pedagogy (Jacoby and Associates, 1996; Alexander, 2003; McCreight, 2009; Clement, 2011; Kapucu, 2011; Waugh, Jr. and Sadiq, 2011; Kapucu and Knox, 2013; Stewart and Vocino, 2013; Feldmann-Jensen, Jensen, and Smith, 2017). Additionally, scholars have offered summaries of and reflections on the establishment of emergency management degree programmes at specific US universities (Fuller, 2002; McEntire, 2006; Rozdilsky et al., 2011).

In Europe, Perpiñá-Galvañ et al. (2021) conducted a comprehensive overview of 140 European

educational programmes in disaster management. They discovered that the quality of these programmes can be improved by adopting more practical and interactive teaching methods, by including relevant topics such as communication and intervention evaluation, and by fostering research skills through dissertation writing. In Ghana, Yakubu and Jensen (2019) found that despite the country's commitment to reducing the impacts of disasters through the provision of emergency management degree programmes, efforts over the past decade have not been particularly effective. They also identified six variables (institutional support, partnership, advocacy, funding, programme marketing, and cultural factors) that explained why Ghana had not yet established an emergency management degree programme.

Admittedly, the foregoing studies have shed light on emergency management degree programmes in various countries. Current understanding of them, though, could benefit from in-depth comparative analyses that examine cross-national similarities and differences—the *modus operandi* of our study.

As noted earlier, emergency management programmes were inaugurated in the US: its initial programme was established at UNT in 1983. In 1984, FEMA joined with the National Association of Schools of Public Affairs and Administration (now the Network of Schools of Public Policy, Affairs, and Administration) to host an inaugural workshop for disaster social science researchers, bringing together scholars from disciplines such as public policy and sociology in the emergency management arena (Waugh, Jr. and Goss, 2019). FEMA has since played a leading and sustained role in advancing emergency management in higher education in the US (Phillips, Neal, and Webb, 2016; Waugh, Jr. and Goss, 2019; Kirkpatrick and Jensen, 2021). By 1994, FEMA's Emergency Management Institute (EMI) had officially launched a Higher Education Program, collaborating with universities to develop emergency management curricula. In 1998, the agency organised its first Higher Education Conference with the objective of promoting the development of emergency management programmes across the country.

With the advent of the twenty-first century, the US has experienced a rapid expansion in emergency management education. It has been largely in response to events such as Hurricane Katrina in August 2005 and the '9/11' terrorist attacks on 11 September 2001, both of which underscored the need for more robust preparedness and response strategies. Key institutional reforms—notably, the transition from the National Response Plan to the National Response Framework—further supported this development (Rozdilsky et al., 2011). By 2023, there were 277 higher education emergency management programmes in 105 institutions (FEMA, 2024).

Emergency management education in China began much later than in the US. The response to the 2002–03 SARS (Severe Acute Respiratory Syndrome) outbreak accelerated the establishment of the country's emergency management system, and spurred the emergence and growth of emergency management education (Qian, Guo, and Yin, 2021). After China's MEM was established in 2018, the creation of emergency management disciplines and the training of specialised personnel were elevated

to a national strategic priority. In 2021, the fourteenth Five-Year Plan for the National Emergency Management System was issued, which explicitly encouraged universities to offer emergency management programmes (State Council of the People's Republic of China, 2021). As noted, by 2024, 43 universities in China had developed undergraduate programmes in emergency management, and at least 25 institutions had established postgraduate programmes in emergency management. Two main forces drove the development of emergency management education: (i) the practical need for professionalisation in the field; and (ii) national policy initiatives on emergency management (Hu and Zhang, 2020).

The comparative method enables researchers to understand better the disaster management practices of different countries. It does so by highlighting nations' commonalities and differences in emergency management, thereby enhancing understanding of emergency management institutions worldwide and fostering the development of new theories or concepts on emergency management (McEntire, 2007). However, existing comparative studies have focused on comparing emergency management higher education in China and the US using *qualitative* methods, aiming to identify the developmental needs of emergency management education in China by drawing on successful experiences in the US (Hong, 2011; Han, 2019; Hu and Zhang, 2020). While these studies have admittedly supplied background information and laid the groundwork for this line of inquiry, they are limited in that they have only examined certain aspects of a small number of programmes; therefore, they were not comprehensive and did not provide *quantitative* insights into the programmes. There is, accordingly, a need for in-depth comparative analysis of emergency management higher education in the two countries using quantitative and big data mining methods.

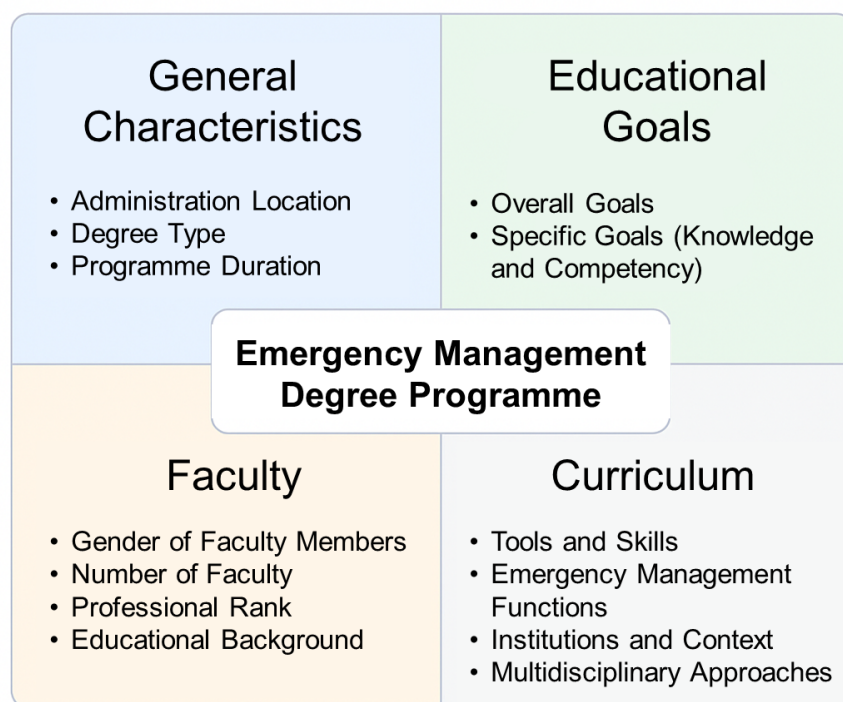
2.2 Analytical framework

To conduct a comprehensive and in-depth comparison of emergency management undergraduate programmes in China and the US, the development of a multidimensional analytical framework is required. Literature in the field of public administration education offers valuable information for this study. Clark and Pal (2011, 2014) designed a competency map for public policy and administration (PPA) programmes; it served as the foundation of our analytical framework. The competency map vertically categorises courses into domains, subjects, and themes. Horizontally, it encompasses four major areas: tools and skills; institutions and context; management functions; and public policy. Each area is further subdivided into specific themes and topics. Building on this framework, Purón Cid (2019) expanded the scope of analysis for comparative studies of PPA education programmes. Specifically, he proposed that programmes be analysed across four dimensions: general characteristics; faculty; curricula; and concepts.

Drawing on the foregoing competency map framework, we devised an analytical framework for comparing undergraduate emergency management programmes in Chinese and American colleges and universities. The framework includes general characteristics, educational goals, faculty, and curricula

as dimensions for the comparative analysis (see Figure 1). The *general characteristics* dimension encompasses basic information about degree programmes (that is, department affiliation, degree type, programme duration, and credit requirements). The *educational goals* dimension comprises the overall goals that the national government’s education department has set and the specific goals that universities established. The *faculty* dimension consists of the number of faculty members, gender distribution, professional titles, and educational backgrounds. It provides insights into the human resources allocated to the programme and the expertise available to students. The *curriculum* dimension builds on the delineation of courses by Clark and Pal (2014) and identifies three major domains: tools and skills; institutions and context; and emergency management functions. Furthermore, in consideration of the interdisciplinary nature of emergency management (Liu et al., 2025), we introduced a fourth curriculum domain: *multidisciplinary approaches*. It recognises that emergency management draws on an array of disciplines, such as geography, sociology, and public administration (Neal, 2000; Cwiak, 2011; Henkey, 2011; Urby and McEntire, 2014). Using the analytical framework, we performed a comprehensive comparison of undergraduate emergency management programmes in China and the US.

Figure 1. The analytical framework



Source: authors.

Our PPA-based framework is particularly well-suited to analysing emergency management programmes owing to the close association between emergency management and PPA. First, as

Waugh, Jr. (2015, p. 3) asserted, '[e]mergency management is the quintessential government role', thereby highlighting that emergency management is inherently a public administration function designed to help individuals, families, and communities mitigate, prepare for, respond to, and recover from hazards (McLoughlin, 1985; Petak, 1985; Comfort, Waugh, and Cigler, 2012). Second, emergency management is fundamentally a management-centred activity, embedded within the broader field of public administration. Many failures in disaster response can be traced not to technical deficits but to weaknesses in organisational coordination, planning, accountability, and leadership—core concerns that public administration addresses (Urby and McEntire, 2014). Third, our PPA framework has broad applicability and is apt for cross-national comparisons. This is because both academic research on and real-world practice in emergency management fundamentally revolve around the four dimensions of the framework (tools and skills, institutions and context, management functions, and public policy). Thus, it enables a systematic analysis of emergency management programmes by examining how each one develops students' competencies vis-à-vis the institutional environment, management functions, application of relevant tools and skills, and engagement with public policy processes.

3. Methods and data

3.1 Methods

This study utilised a comparative research method. Our comparative analysis was performed around the aforementioned four dimensions (general characteristics, faculty, educational goals, and curriculum). Regarding *general characteristics*, we analysed, as noted, data on department affiliation, degree type, programme duration, and credit requirements. Department affiliation identified the department that offered the programme (such as a Department of Political Science or a Department of Public Health). Degree type referred, for instance, to a Bachelor of Science degree or a Bachelor of Arts degree. Programme duration and credit requirements reflected the length of academic study required and the credit load needed for graduation, respectively.

In terms of *educational goals*, we assessed the overarching objectives of the emergency management programmes in both countries. By examining detailed programme descriptions and specific objectives, we were able to compare educational goals with regard to knowledge and competence, highlighting their similarities and differences.

Analysis of *faculty members* involved collecting and evaluating data on faculty members' gender, professional title, highest degree, major, and alma mater. This comparison sought to appraise the size and composition of faculty in emergency management programmes in Chinese and American institutions. Social network analysis is able to investigate social phenomena and events through the lens of networks, and it is useful for comprehending these interactions as well as the underlying structures and patterns. Consequently, we employed a social network analysis approach to map faculty hiring patterns and networks across universities.

Regarding *curriculum*, we compiled course information—types, credits, names, and descriptions—and performed a descriptive statistical analysis of courses on the curricula. We then undertook a detailed comparative analysis of the curricula in the four key domains of the framework: tools and skills; institutions and context; emergency management functions; and multidisciplinary approaches. In addition, we conducted interviews with emergency management experts to verify and interpret the findings of our study.

3.2 Data

Both China and the US have established educational programmes at the undergraduate, postgraduate, and doctoral levels in emergency management higher education. Given that undergraduate education is the foundation of higher education programmes in both countries, we focused solely on that level. Doing so led us to select samples from colleges and universities in China and the US that offer undergraduate programmes in emergency management.

In China, there are a number of emergency management-*related* majors that involve different disciplines, including engineering, management, law, and political science. Therefore, to ensure consistency in our comparative analysis, we only selected those Chinese programmes in which the title contained ‘Emergency Management’ (‘*Ying Ji Guan Li*’). According to the 2022 undergraduate major filing catalogue of higher education institutions issued by China’s MOE, there were 43 undergraduate emergency management programmes in the country. Among them, four could not be accessed through their official websites and hence were excluded. Accordingly, 39 programmes were retained (see Appendix A in the supplementary materials).¹ We then collected information regarding the introduction, curriculum, and faculty of these undergraduate programmes in emergency management.

In the US, 240 undergraduate emergency management programmes had been established as of early 2024. To obtain a comparable number of programmes, using U.S. News & World Report’s ‘Best National Universities Rankings’ in 2023, we first selected the top 30 institutions that offered undergraduate emergency management programmes. Next, we identified all undergraduate programmes that were explicitly titled ‘Emergency Management’ in the top 30 institutions. We included undergraduate programmes titled ‘Emergency Management’, thereby excluding related programmes with a different *primary* focus (such as Homeland Security and Fire Science). Programmes with very similar titles (such as ‘Emergency Services Administration’) were also included, though, provided that their curriculum demonstrated a strong emphasis on emergency management and aligned with the core competencies of emergency management. A total of 42

¹ All supplementary materials can be found online in the supporting information section at the end of the article.

undergraduate emergency management programmes were selected (see Appendix B). Note that some of the top 30 US institutions had multiple undergraduate emergency management programmes. We then collected information on them by reviewing each programme's official website.

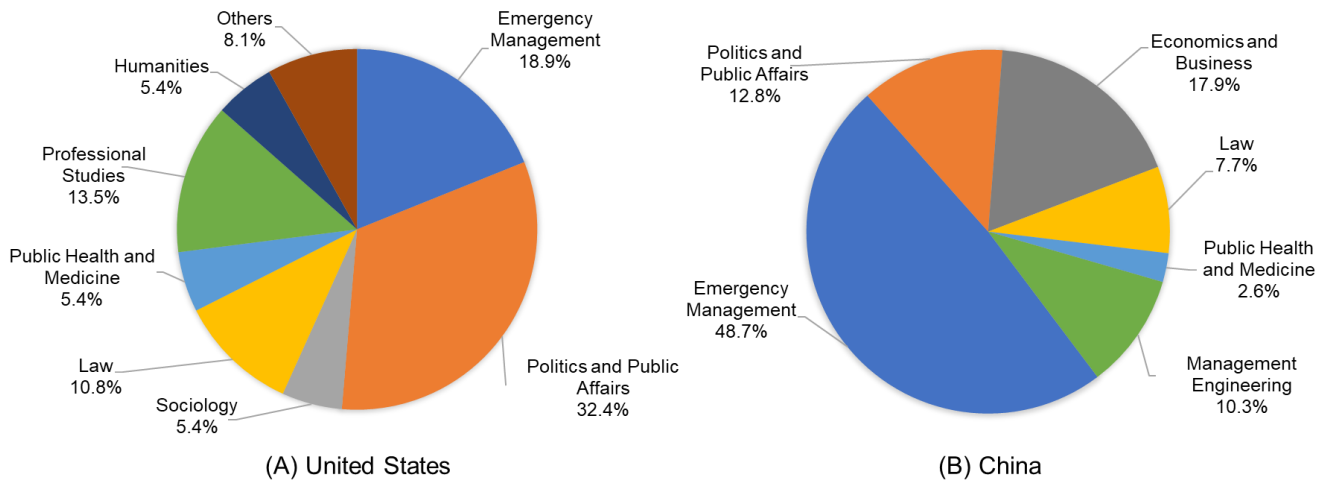
In summary, a total of 81 undergraduate emergency management programmes offered by 69 colleges and universities in China and the US were selected for comparative analysis. Faculty information was collected by searching data from various sources, such as a programme's official website and the LinkedIn professional network website. Faculty publication records were obtained by searching China Academic Journal Network Publishing Database, the Web of Science platform, and Google Scholar. After a comprehensive quality check and verification, a total of 157 faculty members of 28 US institutions were identified, with the exception of those at Bethel University in Minnesota and Colorado State University, where access to their programmes' faculty information was limited. In China, a total of 430 faculty members of 35 universities were identified. Faculty information about the undergraduate emergency management programmes at Qinghai Normal University, Guizhou University of Commerce, Wuchang University of Technology, and Southwestern University of Finance and Economics were not collected because of a lack of access to such information.

4. Results

4.1 General characteristics

As mentioned earlier, we compared the general characteristics of undergraduate emergency management programmes in terms of department affiliation, degree type, programme duration, and credit requirements. In US universities, the Department of Politics and Public Affairs (32.4 per cent), Department of Emergency Management (18.9 per cent), and Department of Professional Studies (13.5 per cent) were the top three host departments for undergraduate emergency management programmes (see Figure 2). Programmes in the Department of Professional Studies often catered to practitioners' professional development and continuing education. In Chinese universities, the top three host departments were Emergency Management (48.7 per cent), Economics and Business (17.9 per cent), and Politics and Public Affairs (12.8 per cent). We also found that none of the analysed US universities had dedicated emergency management schools/colleges that hosted the emergency management departments. In China, however, there were dedicated emergency management schools for hosting the emergency management departments, such as the School of Emergency Management at Jinan University.

Figure 2. Department affiliations of undergraduate emergency management programmes in the US (A) and China (B)



Source: authors.

In addition, universities in both China and the US offered undergraduate emergency management programmes within law departments with a focus on criminal justice. In the US, these programmes were usually found in criminal justice departments, but in China, they were offered in public security departments, emphasising social safety issues such as crime and law enforcement. Furthermore, both countries provided undergraduate programmes in emergency management, tailored to public health emergencies, through the department of public health and medicine. This specialisation demonstrated a nuanced approach to emergency management education by addressing diverse types of emergencies based on the host department. In China, some undergraduate emergency management programmes were situated within the departments of economics, management, and business, probably because China's MOE officially categorises emergency management as a subdiscipline of management. In the US, though, owing to the field's close ties to geography and sociology (Neal, 2000), some emergency management programmes were offered in these departments, a practice that is rare in China.

There is a notable difference in the *degree types* offered by undergraduate emergency management programmes in China and the US. In China, all undergraduate emergency management programmes awarded a bachelor's degree in management, whereas in the US, programmes exhibited greater diversity in the types of degree awarded. Specifically, the majority (78.6 per cent) awarded a Bachelor of Science degree. Programmes housed in sociology or law departments often conferred a Bachelor of Arts degree (10.7 per cent). A few programmes, though, issued degrees such as a Bachelor of Applied Science or a Bachelor of Multidisciplinary Studies.

Regarding *programme duration*, there were few differences between the Chinese and American programmes. In China, although some universities offered flexible study durations of three to six or four to six years to accommodate various students' needs, undergraduate emergency management

programmes typically followed a standard four-year curriculum. Similarly, in the US, most programmes had a four-year curriculum, with some opting for a flexible three to four year alternative. Longer study cycles, such as five to six years, were rare in the US. This might be because many US programmes catered to working professionals who may have been deterred by extended commitments that would impact their career advancement.

In terms of graduation *credit requirements*, Chinese undergraduate emergency management programmes typically required 140–180 total credits, with many (40.0 per cent) concentrated in the 160–170 credit range. Programmes in the US were usually offered in the format of undergraduate majors and minors. A major generally required 120–130 credits, among which almost one-half (42.5 per cent) of the programmes stipulated 120 credits. Programmes that granted an emergency management minor had lower credit requirements: usually 15–30 credits. Although Chinese programmes had a higher total credit count than American programmes, the difference was not substantial when the credits were converted into credit hours.

4.2 Educational goals

As established by FEMA, the *overarching goals* for emergency management higher education in the US were subsumed into four key categories (Blanchard, 2008):

1. fostering the advancement of the academic discipline and its theoretical framework to lay the foundation for expanding professional knowledge in emergency management;
2. enhancing students' individual knowledge and skills in emergency management;
3. improving the efficacy of emergency management practices; and
4. cultivating a culture of preparedness and prevention to bolster risk awareness and crisis response capabilities among the populace.

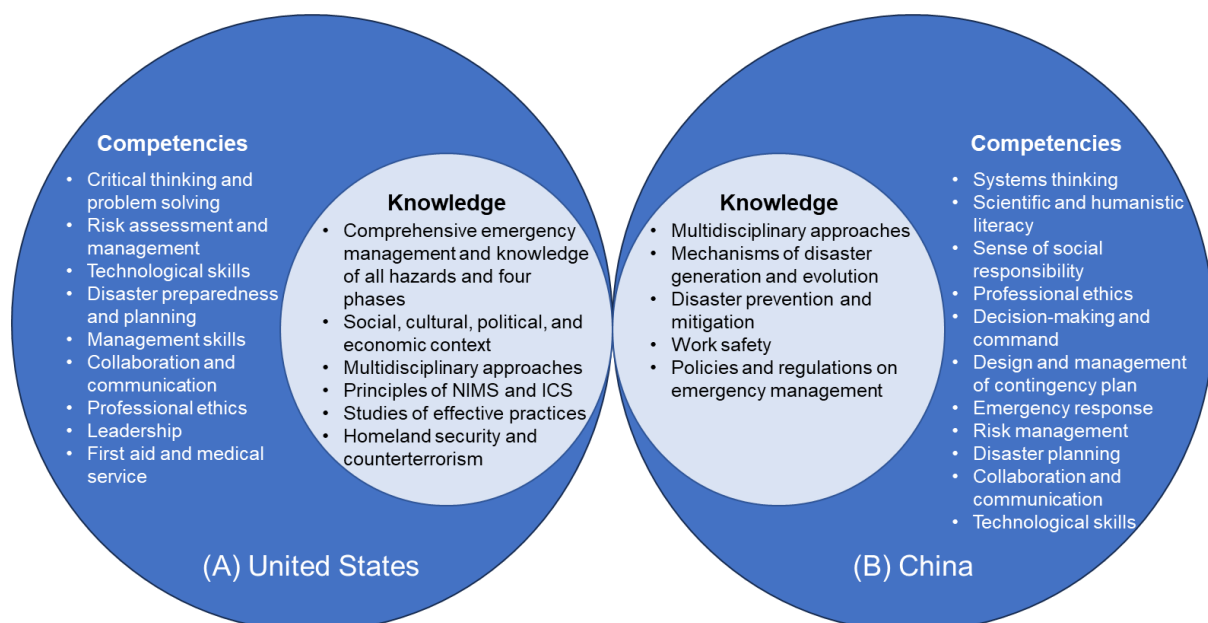
In addition, with regard to emergency management core competencies, FEMA's Higher Education Program developed the Next Generation Emergency Management Core Competencies framework, in which the competencies are organised in three interrelated, nested categories: those that build the individual; those that develop the practitioner; and those that strengthen relationships (Feldmann-Jensen, Jensen, and Smith, 2017). In contrast, China—more specifically, its MOE and MEM—did not prescribe a unified set of goals for university-level emergency management degree programmes. Consequently, Chinese universities formulated their own educational objectives based on enrolment demands, employment trends, institutional characteristics, and disciplinary strengths.

By categorising the specific requirements of emergency management undergraduate programmes in Chinese and American universities, we found distinct differences in both knowledge and competencies (see Figure 3). In terms of *knowledge*, both Chinese and American programmes underscored the interdisciplinary nature of emergency management, aiming to cultivate a robust and diversified knowledge base among students. However, significant differences existed between them: US institutions adopted a foundation in comprehensive emergency management, integrating 'all-

hazards' and 'all-phases' emergency management activities into their teaching. They focused on the core concepts of the National Incident Management System (NIMS) and the Incident Command System (ICS) while emphasising homeland security- and counterterrorism-related knowledge. Chinese programmes, meanwhile, concentrated on equipping students with a deep understanding of the mechanisms underlying the formation and evolution of emergencies and emphasised knowledge of disaster prevention, mitigation, and work safety, as well as relevant emergency management policies and regulations.

Regarding *competencies*, both Chinese and American programmes underscored core skills, such as professional ethics, risk management, and information technology proficiency. Their approaches diverged, though, in terms of competency development: US programmes prioritised enhancing critical thinking skills, encompassing strategic, adaptive, and innovative thinking and problem solving. After all, the ability to identify pertinent evidence, comprehend interconnections in complex data, and elucidate the linkages between potential causes and effects is crucial for effective decision-making, adaptive actions, and success in unpredictable situations (Feldmann-Jensen, Jensen, and Smith, 2017). Chinese programmes, in contrast, centred on cultivating well-rounded personal qualities, such as systematic thinking, social responsibility, and scientific and humanistic literacy. Whereas US programmes placed a stress on the communication and collaboration skills essential for network governance and cross-organisational disaster response, Chinese institutions put greater emphasis on command and decision-making capabilities.

Figure 3. Educational goals of undergraduate emergency management programmes in the US (A) and China (B)



Source: authors.

In addition to the goals of knowledge and competencies, professional development and career paths were integral to the educational aims of emergency management programmes in both countries. In the US, programme designs were tailored to the characteristics of the target students. For those lacking practical experience in the field, programmes sought to prepare them for diverse and extensive career opportunities in the future. For industry professionals enrolled in undergraduate programmes, they served as a means of bridging skill gaps, attaining professional certification, and expanding career horizons. In China, meanwhile, programmes prioritised alignment with the evolving demands of the emergency management sector. They offered students access to a broad spectrum of career prospects and endeavoured to enhance their competitiveness in various domains, such as government bodies and business and social organisations, as well as in higher education institutions.

4.3 Curriculum

The *curriculum* structure of US emergency management programmes was divided into three core categories: general education courses; major courses; and elective courses. General education courses encompassed a diverse array of subjects spanning languages, mathematics, humanities, arts, social sciences, and natural sciences. Depending on a programme's focus, some also offered courses in life sciences, physics and chemistry, and business. Minor degree programmes followed a more streamlined curriculum that contained courses from the major curriculum.

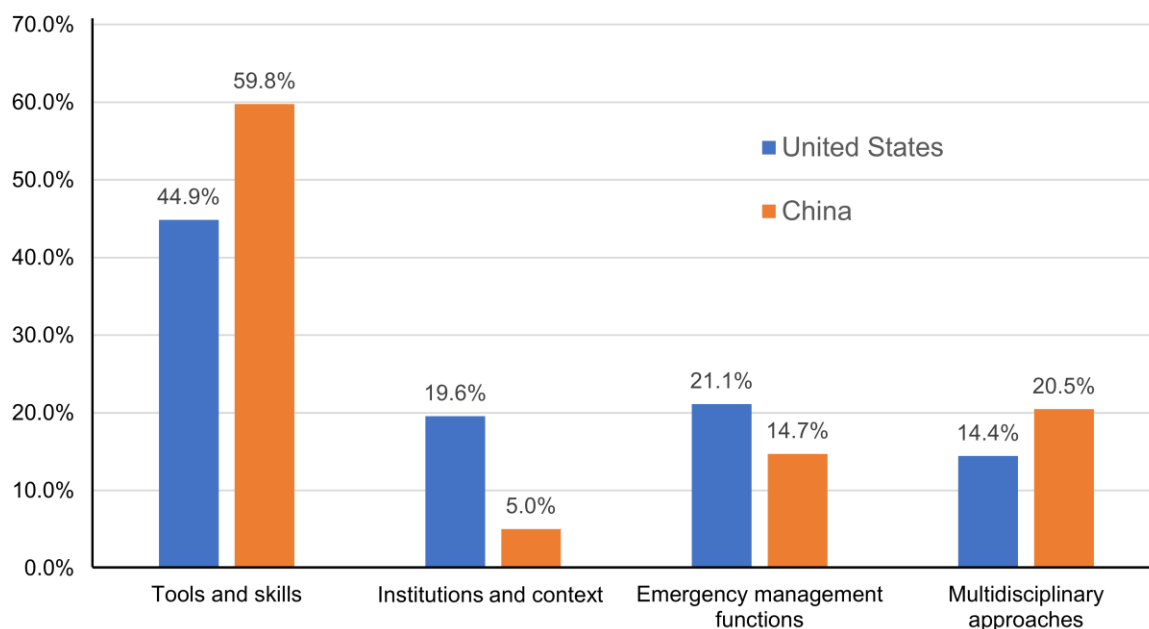
With regard to Chinese programmes, the curriculum was organised into general education courses, major courses, and internship/practice components. General education comprised compulsory and elective courses, with compulsory subjects focusing on ideological and political education, military studies, and language; electives allowed students to flexibly improve their literacy in humanities, arts, and sciences. Major courses were further categorised into major required courses and major elective courses. Internship and practice courses played a vital role in honing students' practical skills, such as labour education, social practices, and practical training.

We compiled data on 705 major courses from 42 US programmes. They had an average of 16.8 courses per programme. When categorised by degree type, US bachelor's programmes (26 in total) offered an average of 19.8 courses; however, programmes that offered a minor in emergency management (16) had an average of 11.9 courses. In China, undergraduate emergency management programmes each averaged 43.9 courses. In terms of the structure of major courses, the two countries exhibited similarities. In the US, required courses in the major constituted 56.3 per cent of the total, with major elective courses comprising 43.7 per cent, whereas in China, required courses in the major comprised 52.9 per cent of the total, with major elective courses comprising 47.1 per cent, thus reflecting a distribution pattern comparable to that in the US. In addition, there were no emergency management minor programmes in China; this situation is likely due to the relatively late start of undergraduate emergency management education. In contrast, minor programmes in emergency management were prevalent in the US, reflecting an approach that emphasised interdisciplinary

integration, flexible learning pathways, and the cultivation of broad-based public service competencies rather than exclusive professional specialisation. This finding also highlighted a structural difference between the two countries: China placed greater emphasis on full-degree major programmes, whereas minors were a distinctive feature of the US system.

We also examined the *domains* of courses in the curricula of undergraduate emergency management programmes in Chinese and American universities. We did so by categorising major courses into our framework's four domains: tools and skills; institutions and context; emergency management functions; and multidisciplinary approaches. Both countries prioritised the 'tools and skills' category, making it the focal point of their curricula (see Figure 4) and aligning with trends observed in PPA programmes (Purón Cid, 2019). In the US, 'tools and skills' courses were the most frequently offered classes in the programmes (44.9 per cent), followed by 'emergency management functions' (21.1 per cent), 'institutions and context' (19.6 per cent), and 'multidisciplinary approaches' (14.4 per cent). Compared with US programmes, Chinese programmes had a markedly higher percentage of 'tools and skills' courses (59.8 per cent), but a lower percentage of 'institutions and context' courses (5 per cent). The proportions of courses in the other two domains on Chinese programmes were as follows: 20.5 per cent for 'multidisciplinary approaches'; and 14.7 per cent for 'emergency management functions'.

Figure 4. Curriculum domains of undergraduate emergency management programmes in the US and China



Source: authors.

The comparison between the US and China revealed distinct differences in curriculum topics within each domain. Courses in 'tools and skills' primarily addressed statistics and data analysis,

leadership and communication, emergency professional skills, and research design and thesis writing. US programmes emphasised the cultivation of leadership and collaboration skills, as well as offering courses in identification and disposal of hazardous materials, Geographic Information Systems, and medical first aid, among others. Chinese programmes featured a multitude of statistics and data analysis courses in the ‘tools and skills’ domain. Those courses delved into emerging fields such as big data, machine learning, and artificial intelligence, aiming to foster students’ holistic proficiency. The objective was to enable them to utilise cutting-edge information technologies in practical emergency response scenarios.

Courses in the domain of ‘institutions and context’ addressed topics such as emergency management institutional systems, emergency laws and regulations, political systems and governments, socio-economic and cultural contexts, international contexts, and professional ethics. The comparative analysis revealed that a notable difference in the percentage of courses dedicated to ‘institutions and context’ emerged between China and the US. In particular, American programmes allocated a higher percentage (19.6 per cent) to this domain as compared to Chinese programmes (5.0 per cent). Chinese programmes predominantly focused on emergency policies and regulations, as well as political systems and governments. US programmes commonly offered specialised courses that provided detailed introductions to emergency management systems in the US, such as NIMS. This emphasis aligned with the requirements of US emergency management education, which seeks to equip students with the knowledge and skills to function effectively within the emergency management framework and to follow its guiding principles (Feldmann-Jensen, Jensen, and Smith, 2017).

Courses within the domain of ‘emergency management functions’ can be classified into two main categories: phase-based functions; and operation-oriented functions. Courses on phase-based functions concentrated on the various stages of emergency management, with US programmes typically incorporating courses centred on the stages of mitigation, preparedness, response, and recovery. Chinese programmes, however, placed greater emphasis on monitoring and early warning, as well as on rescue, but put less emphasis on prevention, preparation, and recovery, which reflected a gap between the curriculum focus and the educational goals that stressed disaster prevention and mitigation.

Regarding operation-oriented courses, US curricula encompassed topics such as financial management, operational management, resource management, and cross-organisation collaboration. Chinese programmes had courses on human resource management, logistics and supply chain management, non-profit organisations, and volunteer management. Additionally, US programmes featured many courses related to homeland security, particularly those spotlighting terrorism and counterterrorism issues. This situation probably reflected the nation’s prioritisation of these concerns in emergency management affairs. Chinese programmes, however, placed much emphasis on security

and safety issues.¹ These courses primarily centred on public safety, societal safety, and community safety, among others, all of which were different from the US's focus on national security. Because emergency planning played a pivotal role in China's 'One Plan, Three Systems' (*'Yi An San Zhi'*) for emergency management, its programmes offered extensive courses on contingency plan formulation and management. They did so to cultivate students' abilities to formulate and oversee plans and to provide robust support for formulating effective emergency response strategies.

The domain of 'multidisciplinary approaches' addressed topics such as public administration, sociology, economics, and geography. Sociology played a prominent role in American undergraduate emergency management programmes, with courses extensively covering various subtopics in depth, such as disaster sociology, environmental sociology, and the sociology of religion. Although Chinese programmes also covered sociological knowledge, greater emphasis was placed on knowledge of public administration, disaster science, economics, and safety science.

Notably, among the 42 US programmes examined, fewer than 10 per cent offered introductory courses in public administration. In contrast, a higher percentage of Chinese programmes included introductory courses in public administration and public policy (43.2 and 37.8 per cent, respectively). However, despite calls from public administration scholars to broaden the scope of emergency management education by integrating public administration knowledge into undergraduate emergency management programmes (Urby and McEntire, 2014), there remained numerous institutions in both countries that had yet to incorporate these crucial public administration courses into their curricula. The importance of public administration in the curricula of undergraduate emergency management programmes had not yet been sufficiently underlined.

Further analysis of the curriculum (see Table 1) demonstrated how American and Chinese programmes aligned with core emergency management knowledge and competencies, yet the analysis revealed critical gaps. In US programmes, 50.5 per cent of courses focused on risk assessment and management, directly addressing FEMA's emphasis on operational skills such as hazard mitigation and recovery planning; however, only 4.5 per cent of courses explicitly targeted critical thinking, a competency vital for adaptive leadership in crises (Feldmann-Jensen, Jensen, and Smith, 2017). Chinese programmes prioritised multidisciplinary approaches (20.5 per cent) and technological skills (10.7 per cent), aligning with the MOE's mandate for industry-aligned engineering expertise. Yet, collaboration and communication courses (2.6 per cent) were noticeably underrepresented in Chinese programmes, thereby likely hindering preparedness for multi-agency coordination—a key competency in China's centralised governance model. The foregoing differences reflected distinct curricular orientations between the US and China.

¹ 'Security' and 'safety', although having different meanings and used in different contexts, are two similar words with identical pronunciations when translated into the Chinese language.

Table 1. Percentage of courses corresponding to educational goals in undergraduate emergency management programmes in the US and China

US		China	
Competencies	Knowledge	Competencies	Knowledge
Critical thinking and problem solving (4.5%)	Comprehensive emergency management and knowledge of all hazards and four phases (14.5%)	Systems thinking (4.4%)	Multidisciplinary approaches (20.5%)
Risk assessment and management (50.5%)	Social, cultural, political, and economic context (22.3%)	Scientific and humanistic literacy (15.4%)	Mechanisms of disaster generation and evolution (2.6%)
Technological skills (5.8%)	Multidisciplinary approaches (14.4%)	Sense of social responsibility (1.4%)	Disaster prevention and mitigation (5.3%)
Disaster preparedness and planning (41.0%)	Principles of NIMS and ICS (14.0%)	Professional ethics (0.8%)	Work safety (2.8%)
Management skills (35.3%)	Studies of effective practices (24.7%)	Decision-making and command (3.7%)	Policies and regulations on emergency management (5.3%)
Collaboration and communication (7.2%)	Homeland security and counterterrorism (14.5%)	Design and management of contingency plan (3.4%)	
Professional ethics (4.7%)		Emergency response (8.3%)	
Leadership (2.1%)		Risk management (9.4%)	
First aid and medical service (11.8%)		Disaster planning (2.0%)	
		Collaboration and communication (2.6%)	
		Technological skills (10.7%)	

Note: the values in parentheses are the percentage of courses corresponding to the different educational goals of China and the US.

Source: authors.

4.4 Faculty

On average, the US had 5.6 faculty members per programme; however, the distribution of faculty members in US undergraduate emergency management programmes was uneven. Variations in the number of faculty members were evident, with notable differences. For example, the programme at the University of Nebraska at Omaha (UNO) had 15 faculty members, but those at Adelphi University (Adelphi) in New York and Barry University (Barry) in Florida each had only two faculty members. In contrast, China had a higher average number (12.3) of faculty members per programme. The distribution of faculty members was also uneven across Chinese universities. Specifically, approximately 45.8 per cent of the programmes in Chinese universities had fewer than 10 faculty members per programme; 34.2 per cent had 11–20 and 20 per cent had more than 20.

In addition to faculty size, the composition of the faculty highlighted similarities and differences between emergency management faculties in China and the US (see Table 2). Regarding gender distribution, both countries had more males than females. In US programmes, 61.1 per cent of the faculty were male, giving a male to female ratio of about 1.5:1. In China, 57.9 per cent were male, yielding a male to female ratio of about 1.4:1—slightly lower than in the US. Furthermore, when considering full-time versus part-time positions, the proportion of part-time faculty in US programmes was markedly higher than in China. In US programmes, more than one-third of the faculty (36.3 per cent) were part-time (see Table 2), but in China the proportion was only 6.5 per cent.

In terms of the distribution of *academic ranks*, in US programmes, assistant professors constituted the largest share (29.3 per cent), followed by professors (22.9 per cent) and associate professors (17.2 per cent). These values differed from the ‘inverted pyramid’ structure commonly observed in US public affairs schools, where the number of assistant, associate, and full professors progressively increases (Zuo, Qian, and Zhao, 2019). In Chinese programmes, associate professors comprised the highest proportion (39.5 per cent), followed by assistant professors (31.6 per cent) and full professors (28.6 per cent).

Regarding the *educational backgrounds* of faculty members in emergency management programmes, the majority in both the US and China held doctoral degrees. In US programmes, 68.2 per cent of faculty members held a doctorate, 25.5 per cent possessed a master’s degree, and 3.8 per cent had earned a bachelor’s degree, with respect to their highest level of education. In China, 77.9 per cent of faculty members had a doctorate, thus exceeding the percentage in the US. In addition, 18.1 per cent of Chinese faculty members had a master’s degree and 3.5 per cent held only a bachelor’s degree. Overall, the educational level of emergency management faculty in Chinese programmes appeared to be higher than their counterparts in the US. This difference may be attributed to the higher proportion of part-time faculty in US programmes, among whom few held doctorates. Despite the elevated educational qualifications of Chinese faculty, the percentage of members with *practical* emergency management experience was notably lower in China (2.3 per cent), a much lower

percentage than in the US (29.3 per cent).

Table 2. Characteristics of faculty members in undergraduate emergency management programmes in the US and China

Characteristic	US	China
Gender (n (%))		
Male	96 (61.1%)	249 (57.9%)
Female	61 (38.9%)	181 (42.1%)
Full-time faculty/adjunct faculty (n (%))		
Full-time	99 (63.1%)	401 (93.3%)
Adjunct	57 (36.3%)	28 (6.5%)
Missing	1 (0.6%)	1 (0.2%)
Professional title (n (%))		
Assistant professor	46 (29.3%)	136 (31.6%)
Associate professor	27 (17.2%)	170 (39.5%)
Professor	36 (22.9%)	123 (28.6%)
Other	48 (30.6%)	1 (0.2%)
Degree (n (%))		
Bachelor's	6 (3.8%)	15 (3.5%)
Master's	40 (25.5%)	78 (18.1%)
Doctorate	107 (68.2%)	335 (77.9%)
Missing	4 (2.5%)	2 (0.5%)
Have experience of emergency management (n (%))		
Yes	46 (29.3%)	10(2.3%)
No	110 (70.1%)	402 (93.5%)
Missing	1 (0.6%)	18 (4.2%)

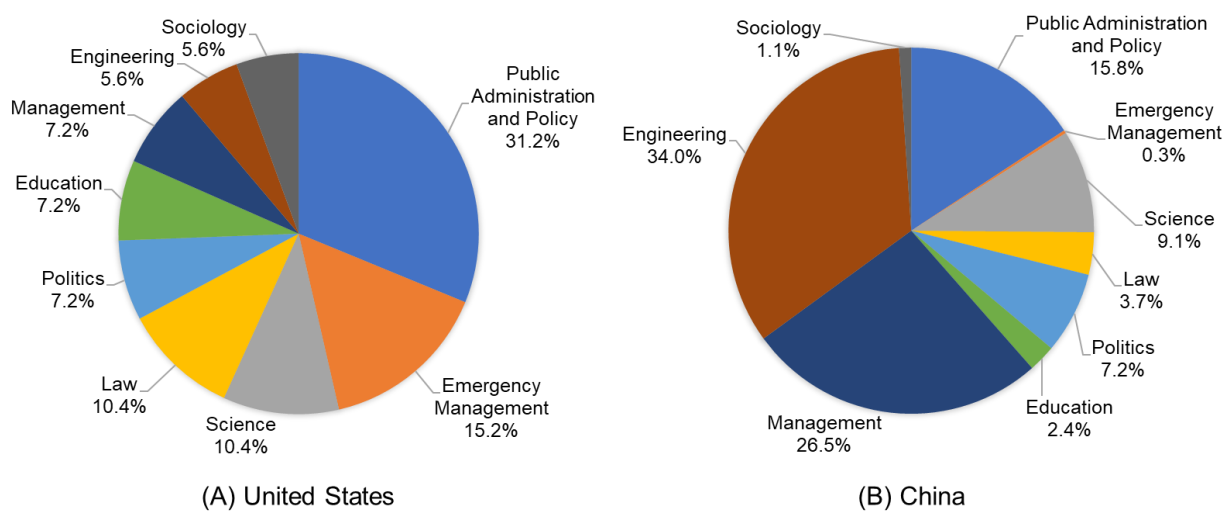
Note: 'Other' includes instructor, director, and adjunct faculty with no title indicated.

Source: authors.

Faculty members in US programmes had diverse *disciplinary backgrounds* (see Figure 5). The largest group consisted of faculty members with a background in public administration and public policy (31.2 per cent), followed by those with a background in emergency management (15.2 per cent), science (10.4 per cent), and law (10.4 per cent). The balance included engineering, political science, education, and management. In Chinese programmes, the largest group constituted faculty

members with engineering backgrounds (34.0 per cent). This metric indicated that there was a strong engineering focus in emergency management education in China. Faculty members with management backgrounds accounted for 26.5 per cent, whereas those with public administration and policy backgrounds ranked third at 15.8 per cent. The proportion of faculty with a major in emergency management was very low at only 0.3 per cent; this is likely due to the relatively recent inception of emergency management degree programmes in China.

Figure 5. Disciplinary backgrounds of faculty members in undergraduate emergency management programmes in the US (A) and China (B)



Source: authors.

Table 3 shows the percentages of practitioners and researchers for each type of institution/department in American and Chinese undergraduate emergency management programmes. In the US, many programmes featured a substantial presence of practitioners, particularly in departments focused on emergency management (39.1 per cent) and politics and public affairs (39.1 per cent). This reflected an emphasis on applied knowledge and professional experience, which aligned with FEMA’s competency-based approach that values practice-informed instruction. In contrast, Chinese programmes were predominantly researcher-driven, reflecting the MOE’s accreditation standards, which prioritise academic credentials and research output.

The foregoing differences had impacts on curriculum design, teaching quality, and practice opportunities for students, as reflected in the divergent approaches to practical teaching. Service learning, which integrates theoretical learning and real-world practice through course-related community service projects, is prevalent in US programmes (Kapucu and Knox, 2013; Brenner, Dunn, and Velotti, 2023). Implementation and promotion of such projects benefit from the high

proportion of practitioner faculty. In contrast, Chinese programmes tended to rely on other teaching approaches, such as virtual simulation-based teaching (Liu, Wu, and Li, 2023), which corresponded to the predominance of academic researchers rather than practitioners in faculty.

In addition, US programmes had greater interdisciplinary practitioner engagement, drawing instructors from public health, medicine, law, and sociology—thereby supporting a more holistic ‘all-hazards’ education model. In contrast, practitioners in Chinese programmes were primarily from emergency management, politics and public affairs, and management engineering. These patterns offer insights into differing national approaches to the professionalisation of emergency management education.

Table 3. Percentage of practitioners and researchers from each type of institution in undergraduate emergency management programmes in the United States and China

Department affiliation	US		China	
	Practitioner	Researcher	Practitioner	Researcher
Public health and medicine	2.2%	5.4%	0%	2.0%
Professional studies	2.2%	5.4%	0%	0%
Humanities	10.9%	3.6%	0%	0%
Politics and public affairs	39.1%	35.1%	27.3%	11.7%
Law	2.2%	8.1%	0%	11.0%
Emergency management	39.1%	24.3%	54.5%	57.4%
Sociology	2.2%	4.5%	0%	0%
Management engineering	0%	0%	18.2%	6.2%
Economics and business	0%	0%	0%	11.7%
Other	2.2%	13.5%	0%	0%
Total	100% (n = 46)	100% (n = 111)	100% (n = 11)	100% (n = 401)

Note: the values in parentheses are the percentage of practitioners and researchers from each type of institution in each country.

Source: authors.

To explore the patterns of *faculty mobility*, we created two hiring network diagrams depicting faculty employment across institutions in the US and China (see Figure 6). Each node in the graph represents a specific institution (see Appendix C for detailed information on the institutions and their corresponding abbreviations). The size of each node corresponds to the number of faculty members

who graduated from that institution but were employed at a different institution; the arrows indicate the direction of faculty mobility. The results (see Figure 6) revealed notable distinctions between faculty mobility patterns in the two countries. The hiring network in China exhibited a larger number of nodes and connecting links than its counterpart in the US. In the US, institutions such as the University of South Carolina (USC), Indiana University (IU), and the University of Pittsburgh (PITT) stood out for their substantial contribution in providing faculty members for emergency management to other institutions. Faculty members who had graduated from these institutions were widely dispersed across various universities. However, UNO, East Tennessee State University (ETSU), and the University of Alaska Fairbanks (UAF) demonstrated a strong tendency towards ‘self-sufficiency’, retaining many of their own graduates as faculty members.

In China, universities such as Beijing Normal University (BNU), Nanjing University (NJU), and University of Science and Technology of China (USTC) were major sources of faculty for other academic institutions, with many of their graduates assuming faculty positions in other institutions. These universities served as the emergency management talent hub in China. However, universities such as Wuhan University of Technology (WHUT), Nanjing University of Information Science and Technology (NUIST), and Northwest University (NWU) featured a tendency for retaining many of their own graduates as faculty members.

The mobility of faculty members in terms of migration between Chinese and American universities was minimal. Indeed, we only identified two cases: a faculty member from Jinan University (JNU) in China who had graduated from the Rensselaer Polytechnic Institute (RPI) in the US; and another faculty member from Jackson State University (JSU) who had graduated from Tsinghua University (THU) in China. This metric highlighted the potential for increasing collaborations and exchanges between the two countries in emergency management education.

We also examined the internal community structure of the faculty hiring network in the US and China using the Louvain algorithm (see Figure 6). We found that geographic proximity determined hiring relationships to some extent. In other words, faculty members in undergraduate emergency management programmes in both nations usually found their jobs in the same region as where they obtained their highest degree. For instance, universities located in the central part of the US—such as Texas Southern University (TSU), UNO, and UNT—had formed a subgroup in which programmes in these institutions tended to hire graduates from each other. In China, a subcluster had formed in Fujian Province and Jiangxi Province in the southeast of the country, which consisted of Xiamen University (XMU), Fujian Normal University (FJNU), Jimei University (JMU), and Huaqiao University (HQU), Nanchang University (NCU), Jiangxi Agricultural University (JXAU), and JNU.

5. Discussion

5.1 *Explanations of the comparative results*

Our comparative analyses revealed substantial differences between the undergraduate emergency management programmes in the US and China. What are the underlying reasons for them? We argue that the different leadership roles of the emergency management agencies in the two governments help to explain some of the differences.

In the US, FEMA has consistently played a leading and supporting role in advancing emergency management higher education. For example, as mentioned earlier, in 1994, the agency initiated the Higher Education Program to foster growth in college- and university-based programmes in emergency management. In 1998, it held the first Higher Education Conference, with the goal of establishing emergency management programmes in all 50 states. Over the years, FEMA's Higher Education Program has achieved remarkable results: it has facilitated the establishment of many emergency management programmes within the higher education community, with tens of thousands of students enrolling annually. Moreover, it has expanded the reach of emergency management higher education to include not only students but also practitioners and the broader professional community (Phillips, Neal, and Webb, 2016). Undoubtedly, FEMA has played a leading and sustained role in curriculum development, faculty training, student career development, and, more broadly, the emergence and professionalisation of emergency management degree programmes.

China's approach differs from that of the US. For instance, while FEMA and the EMI have provided national guidance and frameworks for university-level emergency management education programmes (Blanchard, 2008), Chinese emergency management and education authorities have yet to offer comprehensive national directives for the establishment of such programmes. Instead, they have encouraged the formation of inter-university alliances and collaborative platforms (for instance, the National Alliance of Undergraduate Emergency Management Programs, established in June 2021) as a way to explore development paths for emergency management higher education. This approach is probably because of the relative recency of the development of China's MEM, as its operational functions have yet to be confirmed and stabilised (Wu et al., 2021). Consequently, the role of the MEM in shaping higher education in China remains unclear. Studies have shown that, in the initial stages of emergency management programme development, institutional support is a crucial enabler, fostering rapid programme growth and collaborative opportunities (Yakubu and Jensen, 2019). The US model of initiating and advancing emergency management education programmes through FEMA offers valuable insights for other nations.

In addition to the different leadership roles that their respective government agencies have played, dissimilar policy and mission priority areas in emergency management between the US and China also contribute to distinctions in their undergraduate emergency management programmes. Following the terrorist attacks on 11 September 2001, homeland security became a paramount issue on the emergency management agenda of the US (Stewart and Vocino, 2013; Staupe-Delgado, Abdel-

Fattah, and Pursiainen, 2022). This phenomenon led to the creation of the Department of Homeland Security, which assumed key responsibilities in homeland security. Consequently, undergraduate emergency management programmes in the US have placed more emphasis on homeland security and integrated counterterrorism elements to prepare emergency management professionals in homeland security. In contrast, China's MEM has concentrated primarily on the management of disasters triggered by natural hazards and technological accidents. Societal security emergencies fall under the jurisdiction of the Ministry of Public Security, and public health emergencies are usually overseen by the National Health Commission. This division of responsibilities signifies a strategic trade-off that the MEM has made, placing 'all-hazards management' in the back seat to advance 'all-phase management' for disasters triggered by natural hazards and technological disasters (Tong, 2018). Therefore, the goals of undergraduate emergency management programmes in China, shaped by the MEM's institutional focus, tend to prioritise prevention and mitigation of such events.

Moreover, the US emergency management system has proactively adapted to increasingly complex and diverse disasters and emergencies in a changing environment (Kapucu, 2009). Doing so has led to elevated demand for communication and collaboration skills among emergency management professionals. Consequently, undergraduate emergency management programmes in the US strongly emphasise students' competencies in communication and collaboration to align with the collaborative demands in the emergency management institutional system. In contrast, China's emergency management institutional system revolves around the foundational tenet of unified leadership (Zhang and Tong, 2022). Within this unified and hierarchical institution (Li, Liu, and Liu, 2023), coordination mechanisms tend to be more centralised, based on a 'command and control' model (Hu et al., 2021) and a top-down power structure that plays pivotal roles in policy implementation (Hu and Zhang, 2020). In China, the abilities to direct, command, and make decisions are paramount for ensuring the effective handling of emergencies and the coordination of emergency response efforts during crises. Thus, undergraduate emergency management programmes in China place significant emphasis on cultivating students' command and decision-making capabilities.

In summary, the differences in emergency management institutional systems between the US and China have led to different requirements for students' abilities and skills. The decentralised emergency management governance in the US underscores the collaborative competencies of emergency managers (Kapucu and Garayev, 2016). However, China's centralised governance demands command and decision-making abilities in emergency managers (Comfort and Zhang, 2020).

The different foundations of emergency management as a field of study in the two nations offer an explanation for the differences in the department affiliations of undergraduate emergency management programmes in the US and China. In the US, the primary foundation disciplines of the field of emergency management are sociology, geography, public administration, and public policy (Henkey, 2011; Comfort, Waugh, and Cigler, 2012; Urby and McEntire, 2014). In contrast, in China, the emergency management discipline has evolved primarily from fields such as management science

and safety engineering (Yi et al., 2011). Consequently, many of China's undergraduate emergency management programmes are housed within management schools/departments, whereas in the US, some programmes are affiliated with sociology and geography departments.

Our comparison of faculty member characteristics reveals that undergraduate emergency management programmes in the US have a much larger proportion of adjunct professors than those in China. This finding may well be explained from two vantage points. First, the US approach is an effective way to leverage real-world expertise and bring current, practical insights into the classroom. Many adjunct professors are professionals actively working in emergency management. That experience allows them to offer students hands-on knowledge, case studies, and insights that full-time academic faculty, who may focus more on theory, might not possess. After all, in terms of its intellectual roots, emergency management emerged from a practical field. This approach helps to bridge the gap between theory and practice (Wolf-Fordham, 2020), thus providing students with the skills that they need to respond effectively to real-world situations. In the US, programme designs are tailored to a diverse student population, which includes emergency management personnel who seek to bridge skill gaps and obtain certification. This diversity in student backgrounds creates a demand for faculty with practical experience, which, in turn, contributes to the higher proportion of practitioners in US emergency management programmes. In contrast, Chinese programmes place greater emphasis on the delivery of systematic knowledge and standardised command processes, where the academically-oriented faculty are better equipped than their practitioner-oriented counterparts to deliver systematic knowledge.

Second, reliance on adjunct faculty in the US could also be viewed as being the result of universities' hesitancy to invest in full-time faculty positions for emergency management programmes. Adjuncts typically receive lower pay and fewer benefits than full-time faculty members, thereby making them an especially cost-effective option for higher education institutions. The widespread use of adjuncts may reflect, therefore, a combination of effective resource utilisation and budgetary constraints in the US higher education system. This recruitment behaviour might indicate a lack of commitment by some US universities to invest adequately in the long-term development of emergency management as an academic discipline. Although adjuncts offer valuable professional experience, a greater balance with full-time faculty could ensure more stable and sustained academic growth, research, and curriculum development in the field.

5.2 Implications

This study provides a starting point for comparative analysis of emergency management education between China and the US. Through a systematic examination of 81 undergraduate programmes across both countries using quantitative methods, our research transcends the primarily qualitative or single country-focused studies that have dominated the domain. By offering a rich and robust quantitative understanding of the similarities and differences in programme structure, curriculum

design, faculty composition, and educational objectives between emergency management programmes in China and the US, the current undertaking complements extant work and addresses a gap in the existing literature. Moreover, our efforts introduce an analytic framework that can be used to guide future studies in the field of emergency management and related disciplines.

We summarise several key lessons for optimising undergraduate emergency management programmes, which provide practical implications for their development. By drawing on these insights, nations can adapt their educational strategies to address their priorities and challenges.

Promoting interdisciplinary integration is crucial. As we found, courses in Chinese programmes focus predominantly on ‘tools and skills’ (59.8 per cent) that emphasise technical proficiencies. In contrast, courses in American programmes are more diverse, incorporating ‘institutions and context’ (19.6 per cent) and ‘emergency management functions’ (21.1 per cent). Integrating these diverse components ensures that students gain a well-rounded understanding of emergency management that spans technical skills and comprehensive knowledge of socio-political and environmental contexts.

Maintaining cohesiveness among national strategies, government policies, and programme development is essential. Doing so involves translation of national strategies into actionable government policies, as well as the subsequent transfer of those policies into concrete programme development efforts. FEMA has long played a leading role in the development of emergency management programmes in the US, enhancing the systematisation and standardisation of curricula. Under FEMA’s guidance, these programmes are aligned with national objectives and place particular stress on cultivating students’ critical thinking and communication skills. Meanwhile, Chinese programmes emphasise decision-making skills, reflecting their administrative focus. Such specificity facilitates curriculum development that spotlights the competencies that are most relevant and needed in each country’s emergency management sector. One example in China is the establishment of the National Industry–Education Collaboration Alliance in Safety and Emergency in 2019 and the launch of the Intelligent Learning Workshop of Emergency and Safety Management by the MOE in 2020, both of which have contributed to a curriculum that is increasingly oriented towards a more ‘tools and skills’ design.

Developing a full emergency management programme may be challenging for low- and middle-income countries. Consequently, such nations can start by initially developing a minor in emergency management. An effective approach may be to integrate emergency management minors into related fields such as engineering or public health. Doing so allows students from different backgrounds to gain essential emergency management skills. Such curricula prepare them to become skilled professionals who can handle risks and crises in their own spheres. This approach helps to build a workforce with interdisciplinary skills, ready to manage various emergencies effectively.

Strengthening international scholarly communication and collaboration would be helpful. Indeed, increased cooperation and exchange among faculty from different countries can significantly advance emergency management education. Our analysis of the faculty hiring network, however, indicates that

mobility between Chinese and American emergency management programmes is noticeably limited, with only two cases identified. This finding underscores a need to foster deeper academic partnerships. Such collaboration could not only support the mutual growth of emergency management programmes, but also encourage enhanced knowledge sharing across borders, thus improving the quality of teaching and research in both countries.

Lastly, enhancing faculty composition can support educational outcomes. In the US, the substantial use of adjunct faculty (36.3 per cent) with practical experience contrasts with China's preference for faculty with engineering backgrounds (34.0 per cent). A balanced faculty that combines practical experience and academic expertise can provide a richer educational experience, offering students practical insights alongside theoretical knowledge.

5.3 Limitations

This study has certain limitations that are suggestive of future research avenues. First, data constraints hindered a comprehensive analysis of student enrolment scales, structures, and employment outcomes. Consequently, understanding of the workforce alignment for emergency management personnel was limited. Additionally, this work only selected those emergency management programmes that explicitly used 'Emergency Management' in their title; therefore, some programmes that addressed other types of emergent issues, such as epidemic management, were not included. Future research could address these foregoing limitations by exploring enrolment dynamics and employment trends using more extensive data. Furthermore, employing diverse data collection methods such as field research, interviews, and surveys could provide further insights into the challenges facing undergraduate emergency management programmes and thus may offer possible coping strategies. Finally, while this study utilised the PPA framework for analysis, future research could employ alternative analytical approaches to explore further the similarities and differences between undergraduate emergency management education programmes in China and the US.

6. Conclusion

This study has presented a comprehensive comparative analysis of 81 undergraduate emergency management programmes in China and the US, focusing on four key dimensions: general characteristics; educational objectives; faculty; and curricula. It found that in the US, emergency management programmes were predominantly affiliated with political and public affairs departments and awarded Bachelor of Science or Bachelor of Arts degrees. Conversely, Chinese programmes were primarily housed within emergency management departments and conferred bachelor's degrees in management. Regarding educational goals, both countries emphasised interdisciplinary integration, yet US programmes aligned with the overarching objectives set by FEMA, emphasising critical thinking, communication, and collaboration skills. In contrast, Chinese programmes placed greater stress on decision-making and command abilities than critical thinking. In terms of faculty

composition, Chinese programmes had a larger number of faculty with engineering backgrounds, but US programmes featured more faculty with backgrounds in public administration and policy, and a significant proportion of adjunct faculty with professional experience. We also found that faculty hiring relationships were determined by geographic proximity to some extent in both countries. In addition, we discovered a hiring pattern of disciplinary similarity in China. This finding means that programmes with a dominant discipline tend to hire faculty members from similar disciplines. Our comparative analysis of curriculum revealed that both Chinese and American programmes had a marked proportion of tools and skills courses. However, US programmes designed their curriculum around the four phases of emergency management, with an emphasis on homeland security topics such as counterterrorism. Chinese programmes, though, placed a greater focus on disaster monitoring, early warning, and effective response. These differences highlighted the differing institutions involved in, the priorities of, and the approaches to emergency management in the two countries.

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Conflict of interest statement

The authors declare that they have no conflicts of interest related to this manuscript.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Appendix A. Directory of Chinese universities with undergraduate emergency management programs included in this study

University	Affiliated schools/departments	Program
Wuhan University of Technology	School of Safety Science and Emergency Management	Emergency Management Program
Hohai University	School of Public Administration	Emergency Management Program
China University of Geosciences	School of Public Administration	Emergency Management Program
Jinan University	School of Public Administration and Emergency Management	Emergency Management Program
North China Institute of Science & Technology	School of Emergency Technology and Management	Emergency Management Program
Institute of Disaster Prevention	School of Emergency Management	Emergency Management Program
Hebei University of Science and Technology	School of Economics and Management	Emergency Management Program
Shanxi University of Finance and Economics	School of Management Science & Engineering	Emergency Management Program
Shenyang University of Chemical Technology	School of Economics and Management	Emergency Management Program
Shenyang Jianzhu University	School of Management	Emergency Management Program
Yancheng Institute of Technology	School of Economics and Management	Emergency Management Program
Nanjing Normal University	School of Public Administration	Emergency Management Program
Jiangxi University of Science and Technology	School of Emergency Management and Safety Engineering	Emergency Management Program
University of Jinan	School of Management Science & Engineering	Emergency Management Program
Shandong Second Medical University	School of Management	Emergency Management Program
Qilu Normal University	School of Economics and Management	Emergency Management Program
Guangxi Police College	School of Public Administration	Emergency Management Program
Northwest University	School of Public Administration (School of Emergency Management)	Emergency Management Program
Qinghai Normal	School of Emergency and	Emergency Management Program

University	Disaster Reduction	
Shihezi University	School of Law	Emergency Management Program
China University of Mining and Technology	School of Public Policy and Management	Emergency Management Program
Shanxi Normal University	School of Economics and Management	Emergency Management Program
Shanxi Police College	Department of Public Security	Emergency Management Program
Inner Mongolia University of Science and Technology	School of Economics and Management	Emergency Management Program
Nanjing Tech University	College of Emergency Management	Emergency Management Program
Nanjing University of Information Science and Technology	School of Emergency Management	Emergency Management Program
Jimei University	School of Business Administration	Emergency Management Program
Wuchang University of Technology	School of Business	Emergency Management Program
Xiangtan University	School of Public Administration	Emergency Management Program
Hunan University of Technology and Business	School of Public Administration and Human Geography	Emergency Management Program
Xihua University	School of Emergency Management	Emergency Management Program
Tianfu College of SWUFE	Modern Service Management School	Emergency Management Program
Civil Aviation Flight University of China	College of Economics and Management	Emergency Management Program
Changchun Institute of Technology	College of Jilin Emergency Management	Emergency Management Program
Xuzhou University of Technology	School of Management and Engineering	Emergency Management Program
Wuxi University	School of Digital Economics and Management	Emergency Management Program
Suqian University	School of Economics and Management	Emergency Management Program
Nanchang Institute of Technology	School of Business Administration	Emergency Management Program
Guizhou University of Commerce	School of Business Administration	Emergency Management Program

Appendix B. Directory of American universities with undergraduate emergency management programs included in this study

University	Affiliated schools/departments	Program
Adelphi University	College of Professional and Continuing Studies College of Nursing and Health Professions	Bachelor of Science in Emergency Services Administration (Online) Bachelor of Science in Disaster Preparedness and Emergency Management (Online)
Arkansas State University	College of Humanities and Social Sciences Department of Environment, Geology, and Natural Resources, College of Sciences and Humanities	Multidisciplinary Minor in Homeland Security and Emergency Management Minor in Emergency Management and Homeland Security
Ball State University		Bachelor of Science in Emergency Management (Traditional and Online) Minor in Emergency Management
Barry University	School of Business and Public Administration	
Bethel University	College of Professional Studies Homeland Security Department, College of Arts & Sciences	Bachelor of Science in Emergency Services Management Minor in Emergency Management
Campbell University		Bachelor's with an Emergency Management Specialization
Colorado State University	Department of Community and Behavioral Health, College of Graduate and Continuing Studies	Minor in Emergency and Disaster Response Management
East Tennessee State University	Emergency Services Department, College of Health	Bachelor of Science in Homeland Security and Emergency Management
Idaho State University	Civic Engagement Department	Bachelor of Science in Emergency Planning and Management Emergency Management Minor
Immaculata University		
Jackson State University	College of Science,	Bachelor of Science with a

	Engineering & Technology	Concentration in Emergency Management Technology (Traditional and Online)
Mercer University	Department of Leadership Studies, College of Professional Advancement	Bachelor of Science in Homeland Security and Emergency Management (Online)
North Dakota State University	Department of Emergency Management and Disaster Science, College of Arts and Sciences	Bachelor of Science in Emergency Management Minor in Emergency Management
Northern Arizona University		Bachelor of Applied Science or Interdisciplinary Studies in Emergency Management (Online) Minor in Emergency Management (Online)
Prairie View A&M University	College of Juvenile Justice	Minor in Emergency Management and Crisis Informatics
Purdue University	College of Social and Behavioral Sciences	Bachelor of Science in Fire and Emergency Management (Online) Bachelor of Science in Emergency Management
Rowan University	Department of Sociology and Anthropology, College of Humanities & Social Sciences	Bachelor of Arts in Disaster Preparedness and Emergency Management
Saint Leo University	College of Education & Social Services	Bachelor of Arts in Emergency Management (Online)
Saint Louis University	School of Professional Studies	Bachelor of Science in Emergency Management Minor in Emergency Management
Texas A&M University		Bachelor of Emergency Response and Risk Management
Texas Southern University	Department of Political Science, Barbara Jordan-Mickey Leland School of Public Affairs	Bachelor of Science in Emergency Management and Homeland Security
University of Alaska, Fairbanks	College of Business and Security Management	Bachelor of Security and Emergency Management
University of Central Florida	School of Public Administration	Bachelor of Arts/Bachelor of Science in Emergency Management

University of Delaware	Department of Sociology	Minor in Emergency Management and Homeland Security Bachelor of Arts in Sociology with a Concentration in Emergency and Environmental Management Bachelor of Multidisciplinary Studies with a Concentration in Emergency Management
University of Nebraska at Omaha	College of Public Affairs and Community Service	Bachelor of Science in Emergency Management and Disaster Science Minor in Emergency Management and Disaster Science Minor in Tribal Management and Emergency Services
University of New Hampshire	Department of Business and Public Affairs	Minor in Emergency Management
University of North Texas	College of Health and Public Service	Bachelor of Science in Emergency Administration and Planning
University of South Florida	College of Public Health	Undergraduate Minor in Community-Engaged Homeland Security and Emergency Management
University of Wisconsin, Oshkosh		Bachelor of Applied Studies in Fire and Emergency Response Management (Online)
Western Carolina University	Criminology and Criminal Justice Department, College of Arts and Sciences	Bachelor of Science in Emergency and Disaster Management (Online or Residential) Minor in Emergency and Disaster Management

Appendix C. Names of universities and their corresponding abbreviations

(1) Colleges and Universities in the United States Faculty Hiring Network and their Corresponding Abbreviation

Full Name	Abbreviation	Full Name	Abbreviation
Adelphi University	Adelphi	Saint Leo University	St. Leo
American Military University	AMU	Saint Louis University	SLU
Arkansas State University	ASU	Smith College	Smith
Ball State University	BSU	St. John's University	STJ
Barry University	Barry	Swinburne University of Technology	SUT
Boston College	BC	Syracuse University	SU
Boston University	BU	Texas A&M University	TAMU
Brigham Young University	BYU	Texas Southern University	TSU
Campbell University	Campbell	Texas State University	TXST
Capella University	Capella	Touro University	Touro
CETYS University	CETYS	Tsinghua University	THU
City University of New York	CUNY	University of Alaska	UA
East Carolina University	ECU	University of Alaska Fairbanks	UAF
East Tennessee State University	ETSU	University of Applied Research & Development	UARD
Florida Atlantic University	FAU	University of Arizona	Arizona
Florida International University	FIU	University of Baltimore	UB
Florida State University	FSU	University of Bath	Bath
Fordham University	Fordham	University of Central Florida	UCF
George Mason University	GMU	University of Colorado Denver	CUD
George Washington University	GWU	University of Delaware	UD
Georgia Southern University	GS	University of Florida	UF
Georgia State University	GSU	University of Houston	UH
Grand Canyon University	GCU	University of Maryland, College Park	UMCP
Granite State College	Granite	University of Memphis	UofM
Harvard University	Harvard	University of Nebraska at Omaha	UNO

Idaho State University	ISU	University of New Hampshire	UNH
Immaculata University	Immaculata	University of North Carolina at Pembroke	UNCP
Indiana University	IU	University of North Texas	UNT
Jackson State University	JSU	University of Oklahoma	OU
Liberty University	LU	University of Pennsylvania	Penn
Long Island University	LIU	University of Phoenix	UPX
Louisiana State University	LSU	University of Pittsburgh	PITT
Marian University	Marian	University of South Carolina	USC
Mercer University	Mercer	University of South Florida	USF
Montclair State University	MSU	University of Southern California	SC
Naval Postgraduate School	NPS	University of St. Andrews	St And
North Carolina State University	NCSU	University of Tennessee	UT
North Dakota State University	NDSU	University of Texas at Arlington	UTA
Northcentral University	NCU	University of Texas at Dallas	UTD
Northeastern University	NEU	University of Texas at San Antonio	UTSA
Northern Arizona University	NAU	University of Utah	UU
Northwestern University	NU	University of Wisconsin, Oshkosh	UWO
Ohio State University	OSU	University of Wisconsin-Madison	UWM
Oklahoma City University	OCU	Walden University	Walden
Oklahoma State University	OKU	Washington State University	WSU
Pardee RAND Graduate School	RAND	West Chester University	WCUPA
Prairie View A&M University	PV	Western Carolina University	WCU
Purdue University	Purdue	Western Michigan University	WMU
Rowan University	Rowan	Wilmington University	WilmU
Rutgers University	RU	Wroclaw University of Science and Technology	WUST
Saint Joseph's University	SJU	Yale University	Yale
York University	YU		

(2) Colleges and Universities in the Chinese Faculty Hiring Network and their Corresponding Abbreviation

Full Name	Abbreviation	Full Name	Abbreviation
Air Force Medical University	AFMU	Nanjing Tech University	NJTU
Anhui University of Science and Technology	AUST	Nanjing University	NJU
Beihang University	BUAA	Nanjing University of Aeronautics and Astronautics	NUAA
Beijing Institute of Technology	BIT	Nanjing University of Information Science and Technology	NUIST
Beijing Jiaotong University	BJTU	Nanjing University of Posts and Telecommunications	NJUPT
Beijing Normal University	BNU	Nanjing University of Science and Technology	NJUST
Beijing University of Chemical Technology	BUCT	Nankai University	NKU
Beijing University of Technology	BJUT	Naval Command College	NCC
Belarusian State University	BSU	North China Institute of Science and Technology	NCIST
Central China Normal University	CCNU	North University of China	NUC
Central Party School of the Chinese Communist Party	CCPS	Northeast Forestry University	NEFU
Central South University	CSU	Northeastern University	NEU
Changchun Institute of Technology	CCIT	Northwest A&F University	NWAFU
Changzhou University	CCZU	Northwest Normal University	NWNU
Chengdu University of Technology	CDUT	Northwest University	NWU
China Agricultural University	CAU	Ocean University of China	OUC
China University of Geosciences, Beijing	CUGB	Our Lady of Fatima University	OLFU
China University of Geosciences, Wuhan	CUG	Peking University	PKU
China University of Mining & Technology, Beijing	CUMTB	People's Public Security University of China	PPSUC

China University of Mining and Technology	CUMT	Purdue University	Purdue
China University of Petroleum (East China)	UPC	Qilu Normal University	QLNU
China University of Political Science and Law	CUPL	Renmin University of China	RUC
Chinese Academy of Meteorological Sciences	CAMS	Rensselaer Polytechnic Institute	RPI
Chinese Academy of Sciences	CAS	Shandong Second Medical University	WFMC
Chinese Academy of Social Sciences	CASS	Shandong University	SDU
Chinese University of Hong Kong	CUHK	Shandong University of Finance and Economics	SDUFE
Chongqing University	CQU	Shandong University of Science and Technology	SDUST
Chung Yuan Christian University	CYCU	Shanghai Academy of Social Sciences	SASS
City University of Hong Kong	CityUHK	Shanghai Jiao Tong University	SJTU
City University of Macau	CityUM	Shanghai Normal University	SHNU
Civil Aviation Flight University of China	CAFUC	Shanxi Normal University	SXNU
Civil Aviation University of China	CAUC	Shanxi Police College	SXPC
College of Disaster Prevention Science and Technology	CIDP	Shanxi University	SXU
Communication University of China	CUC	Shanxi University of Finance and Economics	SXUFE
Dongbei University Of Finance And Economics	DUFE	Shenyang Agricultural University	SYAU
Donghua University	DHU	Shenyang Jianzhu University	SJZU
East China Normal University	ECNU	Shenyang University of Chemical Technology	SYUCT
Erasmus University Rotterdam	EUR	Shenyang University of Technology	SUT
Fudan University	FDU	Shihezi University	SHZU
Fujian Agriculture and Forestry	FAFU	Sichuan Agricultural	SICAU

University		University	
Fujian Normal University	FJNU	Sichuan University	SCU
Fujian Police College	FJPSC	South China Agricultural	SCAU
		Universit	
Fuzhou University	FZU	South China University of	SCUT
		Technology	
Guangxi Minzu University	GXMZU	Southeast University	SEU
Guangxi Normal University	GXNU	Southwest Jiaotong	SWJTU
		University	
Guangxi Police College,	GXPC	Southwest University of	SWUPL
		Political Science and Law	
Guangxi University	GXU	Southwestern University of	SWUFE
		Finance and Economics	
Harbin Engineering University	HEU	Sun Yat-sen University	SYSU
Harbin Institute of Technology	HIT	Suzhou University	SZU
Hebei Normal University	HEBTU	Taiyuan University of	TYUT
		Technology	
Hebei University of Science	HEBUST	Tianjin Medical University	TMU
and Technology			
Hohai University	HHU	Tianjin Normal University	TJNU
Huaqiao University	HQU	Tianjin University	TJU
Huazhong Agricultural	HZAU	Tianjin University of	TJUF
University		Finance and Economics	
Huazhong University of	HUST	Tohoku University	Tohoku
Science and Technology			
Hunan Normal University	HNNU	Tottori University	Tottori
Hunan University of	HUTB	Tsinghua University	THU
Technology and Business			
Inner Mongolia University	IMU	University of California,	UCLA
		Los Angeles	
Inner Mongolia University of	IMUST	University of Dundee	UoD
Science and Technology			
Institute of Engineering	IEM	University of Jinan	UJN
Mechanics			
Jiangnan University	Jiangnan	University of Science and	USTB
		Technology Beijing	
Jiangxi Agricultural University	JXAU	University of Science and	USTC
		Technology of China	
Jiangxi Normal University	JXNU	University of Shanghai for	USST
		Science and Technology	

Jiangxi University of Finance and Economics	JXUFE	University of Sydney	USYD
Jiangxi University of Science and Technology	JXUST	University of Chinese Academy of Sciences	UCAS
Jilin University	JLU	Wuhan University	WHU
Jimei University	JMU	Wuhan University of Technology	WHUT
Jinan University	JNU	Wuxi University	CWXU
Kobe University	Kobe	Xiamen University	XMU
Lanzhou University	LZU	Xi'an Jiaotong University	XJTU
Liaoning Technical University	LNTU	Xi'an Polytechnic University	XPU
Liaoning University	LNU	Xi'an University of Architecture and Technology	XAUAT
Lomonosov Moscow State University	MRY	Xi'an University of Science and Technology	XUST
Macau University of Science and Technology	MUST	Xi'an University of Technology	XAUT
Minzu University of China	MUC	Xiangtan University	XTU
Monash University	Monash	Xihua University	XHU
Nanchang Institute of Technology	NIT	Xuzhou University of Technology	XZIT
Nanchang University	NCU	Yancheng Institute of Technology	YCIT
Nanjing Agricultural University	NAU	Zhejiang Gongshang University	ZJGSU
Nanjing Normal University	NNU	Zhejiang University	ZJU
Zhongnan University of Economics and Law	ZUEL		