

# Analysis of Undergraduates' Compulsory Courses in China's Comprehensive Universities – A Case Study

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## Abstract

Drawing on case study evidence, this article explores the development of compulsory courses in a China's high-level comprehensive university, which has achieved good results in the procedure of Quality Assessment of Undergraduate Education (QAUE) and China Discipline Ranking (CDR) issued by Ministry of Education (MOE). The general undergraduate majors of this university are classified into 5 categories, namely, journalism and communication, economics and management, science and engineering, foreign language and literature, humanities and social science. The research scope is from grade 2007 to 2017, 2007 fall to 2018 spring semester, respectively. According to the requirements of MOE, the compulsory courses are divided into two parts: public and professional. The public part mainly refers to the courses of physical education, ideological and political and elementary computer science, while the professional part is mostly relevant to the courses associate with the major. The laws of two parts are studied by utilizing the features of course name, course ID, credits and appropriate semester. The conditions of characteristic development, the workload of teachers and students and the interdisciplinary platform, which are universal in Chinese Higher Education Institutions (HEIs), are mentioned.

**Keywords:** higher education, undergraduates, curriculum, compulsory courses, credits

## 1. Introduction

The development of Higher Education in China is accompanied by economy. In 1977, China's universities were restored in order to allow students to take in higher education, meanwhile, in 1978, the Chinese government adopted an economic policy of Reform and Opening-Up. The government took Four Modernizations, Modernization of Agriculture, Industry, National Defence, and Science and Technology, as the goal of economic policy, and higher education has become an important way to realize the goal by training advanced professionals in various areas and disciplines. From 1977 to 1985, the higher education enrolment almost tripled, 625, 319 in 1977 and 1, 703, 115 in 1985 (MOE, 1985). Between 1985 and the end of 1990s, China's Higher Education Institutions (HEIs) gained more and more autonomy which includes higher education financing, admission policies, instruction design, curriculum, and leadership assignment and promotion (Du, 1992), the government changed their centralized administration over higher education, which was in accordance with further deepen the economic policies of Reform and Opening-Up (Yin and White, 1994). In the end of 1990s, with the globalization of economy, culture and other fields, China's Higher Education embraced a large-scale expansion of enrolment, and embarked on the internationally recognized path of massification. In order to ensure the international academic competitiveness, the Chinese government has successively implemented "Project 211" and "Program 985" (Chen, 2006). As a result, many colleges and institutions were merged for the purpose of establishing research-oriented and comprehensive universities (Chen, 2002). Inevitably, there has been a decline in the quality of higher education.

In the early of 21<sup>st</sup> century, China's Ministry of Education (MOE) has taken a series of actions to ensure the quality of higher education. In 2002, the MOE launched the Project of Quality Assessment of Undergraduate Education (QAUE), and established Higher Education Evaluation Centre (HEEC) to take charge of the specific operation. The evaluation procedure mainly contained three parts: self-evaluation, site visit and follow-up reforms, and the evaluation panel was composed of academic and management experts from various universities (Hegji, 2017). Generally, quality assurance scheme, similar to QAUE, aims to gauge the undergraduate quality of HEIs in the form of student outcomes, which is also an accountability to the public (Kristoffersen, 2019). In the

same year, another action conducted by MOE was the Project of China Discipline Ranking (CDR):

*CDR evaluates the disciplines of universities and colleges in Mainland China in accordance with the Discipline Catalogue of Degree Awarding and Talent Training approved by the Chinese Ministry of Education. It is a non-profit program organized by China Academic Degrees and Graduate Development Centre (CDGDC) as an independent legal entity. [...] In evaluation, CDR mainly focuses on a university / college's teaching staff and resources, its scientific research level, its talent training quality and the reputation of its disciplines. CDR carries out its evaluation in a way which combines an objective calculation of data and peer review. (2012 CDR by CDGDC, About CDR)*

Both QAUE and CDR were designed to ensure the quality of higher education, with one focused on undergraduates and the other on disciplines and corresponding graduate students. It should be admitted that there were always disputes in the work of MOE, such as bureaucracy and homogenization of HEIs (Liu and Rosa, 2008), however, it does play a positive role in guaranteeing higher education. Furthermore, it is convenient for the government to establish administration criteria of HEIs (Liu, 2005). Obviously, common aspects should be considered among different schemes and measures, e.g. curriculum.

In the early 1950s, China reorganized its university system in an imitation of the Soviet model, since then, the academic year system has been used for nearly 30 years (Lv, 1995). Unfortunately, the Soviet model failed, the government turned to the United States, Japan and other western countries' model, and adopted the credit system in higher education (Chen, 1994). Moreover, the Central Committee of the Communist Party of China (CCCPC) promulgated document decision on the educational system reform, which clearly pointed out the implementation of the credit system (CCCPC, 1985). Traditionally, curriculum in the credit system has been divided into three categories: compulsory courses, limited elective courses and public elective courses (Wu, 1980). In addition, after 2000, general education, mainly based on the experience of the United States, quietly emerged and gradually attracted attention (Pang, 2016), and the curriculum structure correspondingly includes general education courses, professional basic courses and professional core courses. At present, the two curriculum structures coexist in China's HEIs, and there are many overlaps. China's general education is still in the stage of exploration, to a certain extent, it can be understood as an interdisciplinary platform to achieve the new goal of "Double World-Class Project"<sup>1</sup>. In a word, for a long time, even now, the former curriculum structure occupies the main position, and the courses in general education also have the attributes of compulsory and elective. Suppose the curriculum structure works as a human being, the former three categories should be treated as skeleton, flesh and blood, hair, respectively. Therefore, compulsory courses can best reflect the characteristics of disciplines and majors, and the research on the features of compulsory courses is capable of providing insights of higher education.

## 2. Case Study

### 2.1 General Situation

One of the "Project 211" universities, located in Peking, was selected as a case study. It is a comprehensive university accredited by MOE, and it contains the discipline categories of Economics Science, Law, Literature, Natural Science, Engineering, Management Science and Arts which are in accordance with Categories of Undergraduate Specialties in Regular Higher Education Institutions issued by MOE. In 2017, it passed second round QAUE audit, and its fourth circle CDR results<sup>2</sup> are shown in Table 1. Apparently, it is an upper level university, although it is not the top ones, such as Tsinghua University and Peking University. It has advantageous disciplines, and some of the disciplines are above the medium level, of course, to be admit, others are in the initial stage or improvement should be done. In short, this university is representative. Duo to the subjectivity of Arts discipline, compulsory courses of majors in other disciplines are chosen as research materials, including credits, course name, course ID, and corresponding semester, and the range  $\#$  is from grade 2007 to 2017, 2007 fall to 2018 spring semester, respectively. China's undergraduate education is usually four years, and the statistical data is collected from Office of Academic Affairs of the target university.

Table 1. Selected university fourth circle CDR results

Number	Discipline categories	First-level disciplines	Results
1	Economics Science	Unranked	None
2	Law	Unranked	None
3	Literature	Chinese language and literature	B-
		Foreign language and literature	C
		Journalism & Communication	A+
4	Natural Science	Unranked	None
5	Engineering	Electronic science and technology	C+
		Information and telecommunication engineering	B
		Computer science and technology	C+
6	Management Science	Unranked	None
7	Arts	Artistic theory	A-
		Music and dance studies	B
		Theatre film and TV studies	A+
		Fine Arts	B
		Design	B+

\* Blank items mean the same as the above

Compulsory courses are commonly divided into two parts, public compulsory courses, including physical education courses, ideological and political courses, elementary computer courses, and professional compulsory courses which means basic and core courses for all majors. It is worth noting that foreign language in the university are limited elective courses, which are classified into different levels according to the students' admission score, for all the non-foreign language majors, and compulsory courses of practice are not contained in the statistics.

The range of public compulsory courses is from freshman year to the first semester of senior year, almost all majors are the same. The situation of physical education courses is shown in Table 2, from which it can be seen that the teaching is very regular. There are four semesters from freshman year to sophomore year, and one physical education course is offered each semester. The course ID, course name, credit and corresponding semester have not been changed between grade 2007 and 2017.

Table 2. Physical education courses within the statistical interval

Number	Course ID	Course name	Credits	Semester	Grade
1	1XXX01	Physical education (1)	1	Freshman_1	2007 - 2017
2	1XXX02	Physical education (2)	1	Freshman_2	2007 - 2017
3	1XXX03	Physical education (3)	1	Sophomore_1	2007 - 2017
4	1XXX04	Physical education (4)	1	Sophomore_2	2007 - 2017

\* The middle numbers of course ID are replaced by X for confidentiality

The case of ideological and political courses is shown in Table 3. These courses are offered in all majors from grade 2007 – 2017 with slightly variation. No changes have been taken place in any aspect of Military Theory and Training, and it is always the first course for freshman. The credits added by 1 for the courses of Ideological and Moral Cultivation and Legal Basis, Basic Principle of Marxism, the Essentials of Modern Chinese History and Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics in 2013. Situation and Policy was constant from grade 2007 to 2014, the data of grade 2015 was not found, and it has been allocated to four semester from freshman year to sophomore year on average since grade 2016, the credit of each semester is 0.5 which means the total one is still 2. Besides, the course name and course ID of the remaining two guidance courses have changed. To sum up, the credits of ideological and political courses were improved in 2013, and the overall situation is relatively stable.

Table 3. Ideological and political courses within the statistical interval

Number	Course ID	Course name	Credits	Semester	Grade
1	0XXX1S	Military theory and training	3	Freshman_1	2007-2017
2	0XXX16	Ideological and moral cultivation and legal basis	3		2007, 2008
	0XXX30		2		2009-2012
	0XXX45		3		2013 - 2017
3	0XXX17	Basic principle of Marxism	3	Freshman_2	2007, 2008
	0XXX39		2		2009-2012
	0XXX46		3		2013 - 2017
4	0XXX18	The essentials of modern Chinese history	2	Sophomore_1	2007 - 2012
	0XXX47		3		2013 - 2016
5	0XXX43	Situation and policy	2	Junior_1	2007-2014
	0XXX15	Situation and policy (1)	0.5	Freshman_1	2016, 2017
	0XXX21	Situation and policy (2)		Freshman_2	
	0XXX22	Situation and policy (3)		Sophomore_1	2016
	0XXX23	Situation and policy (4)		Sophomore_2	
6	0XXX27	Mao Zedong thought and the theoretical system of socialism with Chinese characteristics (1)	3		2007
	0XXX40		2		2008-2012
	0XXX29	Mao Zedong thought and the theoretical system of socialism with Chinese characteristics (2)		Junior_1	2007 - 2012
	0XXX28	Mao Zedong thought and the theoretical system of socialism with Chinese characteristics (practice)	1	Sophomore_2	2007
	0XXX42		2		2008
	0XXX48	Mao Zedong thought and the theoretical system of socialism with Chinese characteristics	3		2012-2016
	0XXX4S	Comprehensive practice of ideological and political theory course	2		2013-2016
7	0XXX06	Contemporary world economy and politics	2	Junior year	2007-2015
8	1XXX03	Guidance to university students career design	1	Freshman_1	2008 - 2016
	0XXXXXX68	University students occupation career			2017
9	1XXX04	University students vocational guidance	2	Junior_2	2007, 2009
	1XXX05		1		2008, 2010-2014
	0XXXXXX67	Employment and entrepreneurship guidance for university students			2015

\* Blank items mean the same as the above. The middle numbers of course ID are replaced by X for confidentiality.

The condition of elementary computer courses is shown in Table 4, and it is unnecessary for school of computer to offer such courses. Elementary computer courses should be finished in freshman year, all majors in the 1<sup>st</sup> semester were offered course belongs to Number 1, and in the 2<sup>nd</sup> semester were offered one course from Number 2 to Number 7.

Table 4. Elementary computer courses within the statistical interval

Number	Course ID	Course name	Credits	Semester	Grade
1	1XXX01	Fundamentals of computer and information technology	3	Freshman_1	2007-2013
	1XXX01 (A)	Computer science (Liberal Arts)			2014-2017
	1XXX01 (B)	Computer science (Economic & Management)			
	1XXX01 (D)	Computer science (Science & Engineering)			
2	1XXX02	C language	3	Freshman_2	2007-2017
3	1XXX03	Foundation and application of multimedia technology			
4	1XXX04	Web design			
5	1XXX06	Excel application			2007-2013
6	1XXX09	Foundation of computer application	2.5		2009-2017
7	0XXX49	Access database management system	2		2007, 2008
	1XXX10	Database foundation and access application	4		2009-2017

\* Blank items mean the same as the above. The middle numbers of course ID are replaced by X for confidentiality.

Nowadays, many universities take public compulsory courses as part of general education. For all majors, the other compulsory courses except the public ones are called professional compulsory courses. From the view of university, professional compulsory courses can reflect their teaching strength, and from the perspective of students, the scores of the professional ones can represent the mastery of specialized skills. Undoubtedly, professional compulsory courses are important, however, the total features of them for different majors are too large to be detailed here, and credits are selected for analysis.

Suppose a major  $M$ , and it covers the grade  $n = 2007, \dots, 2017$ , the academic year of each grade (i.e. freshman to senior year) is  $t = 1, 2, 3, 4$ . The total credits of each grade is  $G_n$ , and the credits summation of the corresponding academic year is  $g_{(n,t)}$ , then the ratio of credits summation in the first three academic years of each grade to total credits is:

$$ratio_{n,1} = \frac{g_{(n,1)}}{G_n}, ratio_{n,2} = \frac{g_{(n,1)}+g_{(n,2)}}{G_n}, ratio_{n,3} = \frac{g_{(n,1)}+g_{(n,2)}+g_{(n,3)}}{G_n}. \tag{1}$$

As the statistical data collected ends in the 2018 spring semester, all the grades from 2007 to 2014 have graduated, and there were  $N = 8$  grades including the four-year undergraduate total credits. Therefore, the ratio of credits summation in each academic year to the total credits on average is:

$$ratio_1 = \frac{\sum_{n=2007}^{2014}(ratio_{n,1})}{N}, ratio_2 = \frac{\sum_{n=2007}^{2014}(ratio_{n,2})}{N}, ratio_3 = \frac{\sum_{n=2007}^{2014}(ratio_{n,3})}{N}. \tag{2}$$

Then, the total credits from grade 2015 to 2017 through the conversion of  $ratio_1$ ,  $ratio_2$  and  $ratio_3$  respectively are:

$$G_{2015} = \frac{g_{(2015,1)}+g_{(2015,2)}+g_{(2015,3)}}{ratio_3}, G_{2016} = \frac{g_{(2016,1)}+g_{(2016,2)}}{ratio_2}, G_{2017} = \frac{g_{(2017,1)}}{ratio_1}. \tag{3}$$

Both the compulsory courses and the professional compulsory courses for each major in grade 2015 to 2017 are converted according to the above formula, and the proportion coefficient of each academic year needs to be adjusted on the basis of actual graduation condition. In addition, the majors only have once enrolment or without graduation are ignored.

Boxplot is usually used to reflect the distribution characteristics of the original data, and it can also be used to compare the distribution characteristics of multiple groups of data. The boxplot of compulsory courses and professional compulsory courses from grade 2007 to 2017 for all majors is shown in Figure 1. It is not difficult to see that the total credits of School of International Studies are much higher than others, that is to say, their relevant teaching and learning workload are the highest. In the second place is Journalism (Data Journalism) in the School of Journalism. However, their box length is visibly longer than that of other majors, which means their curriculum changes are more obvious, and the syllabus is in a dynamic process. The School of Television and School of Culture Industries Management have the least total credits, and their box length is not long, which

indicate their syllabus is relatively static. There are many outliers in the majors of School of Economics and Management, which can be inferred that they are carrying out certain teaching reform. In connection with the fourth circle CDR results before, such resolution is not difficult to understand. The total credits of professional compulsory courses of the remaining Science and Engineering and Liberal Arts are between 80 and 100, and the former is higher. Judging by their box length, the syllabus of each major has been updated to a certain extent every academic year.

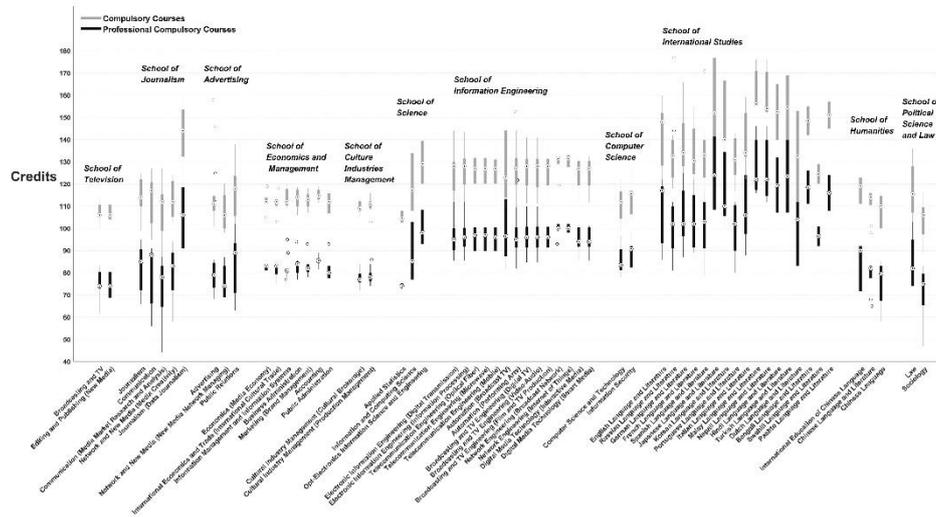


Figure 1. Total credits of compulsory courses and professional compulsory courses

According to the majors’ relevance, all schools are divided into five categories, which are Journalism and Communication (JC), including School of Television, Journalism and Advertising; Economics and Management (EM), including School of Economics and Management, Culture Industries Management; Science and Engineering (SE), including School of Science, Information Engineering, Computer Science; Foreign Language and Literature (FL), including School of International Studies; Humanities and Social Science (HS), including School of Humanities, Political Science and Law. There is a special case, that is, the major of Public Relations. It is classified in the category of Economics and Management in accordance with Categories of Undergraduate Specialties in Regular Higher Education Institutions issued by MOE, although it belongs to the School of Advertising. And then, the changes in their total credits from grade 2007 to 2017 will be analyzed below. The distribution characteristics are expressed by the percentage of public compulsory courses (mean of credits), percentage of professional compulsory courses (mean of credits) and their standard deviations.

2.2 Journalism and Communication

Majors in this category include: Broadcasting and TV, Editing and Publishing (New Media), Journalism, Communication, Communication (Media Market Research and Analysis), Network and New Media (Media Creativity), Journalism (Data Journalism), Advertising, Network and New Media (New Media Network Managing), and the annual distribution of these majors’ credits on average is shown in Figure 2. For the public parts, the standard deviation is slightly, and there was a downward trend in 2009 and an upward trend in 2013. For the professional parts, the standard deviations were much higher than the public parts, especially in the academic year 2007, 2008 and 2012. In the first two years, the main reason was the School of Television and Advertising, the professional credits in School of Television were a little bit more than 70, and however, it was around 120 in School of Advertising. After that, there was a big dive in the professional credits of the School of Advertising, and the difference between them gradually narrowed. The phenomenon in 2012 mainly occurred in the School of Journalism, because a new major, Journalism (Data Journalism), was set up. It is a typical interdisciplinary major, in addition to the traditional Journalism and Communication related courses, it also needs to learn lots of Science and Engineering contents, including statistics, natural language processing, and data visualization and so on. Its professional credits have reached 116, significantly raising the average. On the whole, the majors in the School of Journalism have been maintained at a good mean level, with small fluctuation, relatively stable teaching situation, and actively and successfully explored interdisciplinary teaching.

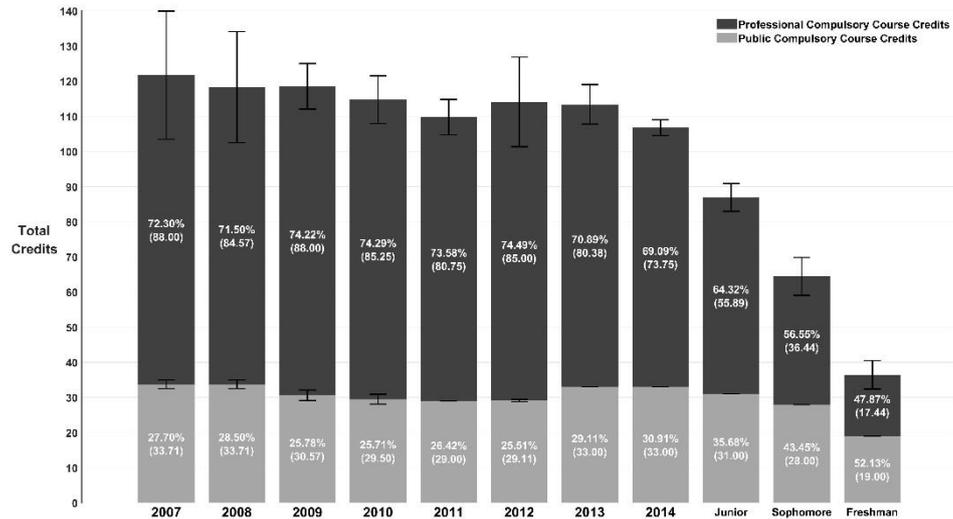


Figure 2. Annual distribution of compulsory course credits of JC

### 2.3 Economics and Management

Majors in this category include: Public Relations, Economics (Media Economy), International Economics and Trade (International Cultural Trade), Information Management and Information Systems, Business Administration, Marketing (Brand Management), Accounting, Public Administration, Cultural Industry Management (Cultural Brokerage and Production Management), and the annual distribution of these majors' credits on average is shown in Figure 3. The general trend of public compulsory courses is the same as that mentioned above, with a slightly lower credits. Particularly, between 2009 and 2013, the standard deviation was 0. Professional credits were also a little lower than the former, reaching a lowest point in 2011. Public Relations professional credits were around 100 in 2007 and 2008, which was much higher than other majors of this category, and it was the reason that these two years had a bigger standard deviation. Professional credits of majors in the School of Culture Industries Management were 75 in 2011, which pull down the overall quantity. Totally, the pattern of professional credits of Public Relations are similar to that of other majors in the School of Advertising, which was higher in 2007 and 2008, and then gradually decreased. The professional compulsory courses reserved in the School of Culture Industries Management were relatively small, and their advantages may be in research area or other aspects, but not reflected in undergraduate teaching. In order to improve the quality of teaching, or to be more realistic, for the purposes of achieving a better result in the evaluation, more works remain to be done for these majors.

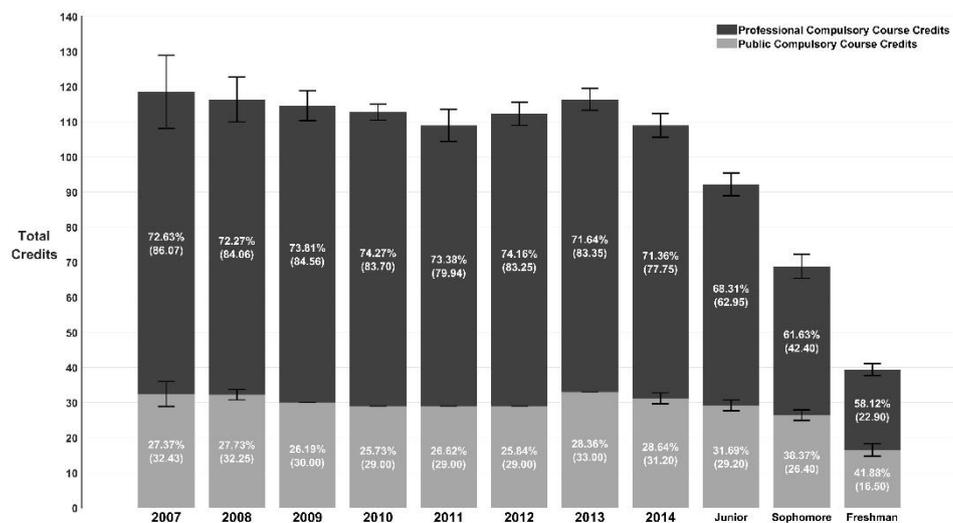


Figure 3. Annual distribution of compulsory course credits of EM

### 2.4 Science and Engineering

Majors in this category include: Applied Statistics, Information and Computing Science, Opt-Electronics Information Science and Engineering, Electronic Information Engineering (Digital Transmission, Information Processing), Telecommunication Engineering (Optical Fibre, Microwave, Mobile), Automation (Broadcast TV, Performing Arts), Broadcasting and TV Engineering (Digital TV, Video-Audio, Film and TV Production), Network Engineering (Broadcast Network, Internet of Things), Digital Media Technology (Interactive Media, Smart Media), Computer Science and Technology, Information Security, and there are also two majors Telecommunication Engineering (Wireless Multimedia Broadcasting Technology) and Software Engineering (Mobile Internet), which have not yet graduated at the time of the statistics, and the annual distribution of these majors' credits on average is shown in Figure 4. The public credits of these majors are less than those of majors in other categories, which is mainly due to the fact that elementary computer courses do not require students from the School of Computer Science. However, the public credits tendency is consistent with that of others, and their standard deviation fluctuation is almost unchanged. It can be seen from Figure 4 that the professional credits have improved a lot, which is not hard to understand that the majors of Science and Engineering are generally of high difficulty. The majors of science attributes have relatively low professional credits, and their learning contents are commonly focus on theoretical derivation. The professional credits of engineering specialty are usually high, besides theoretical knowledge, they also involve experimental verification. In 2009, the professional credits had a sharp decline, and then showed a state of increasing year by year. The fluctuation of standard deviation has been very obvious. It can be inferred that the syllabus is also in a dynamic process. These variations are related to the rapid development of information technology in recent years.

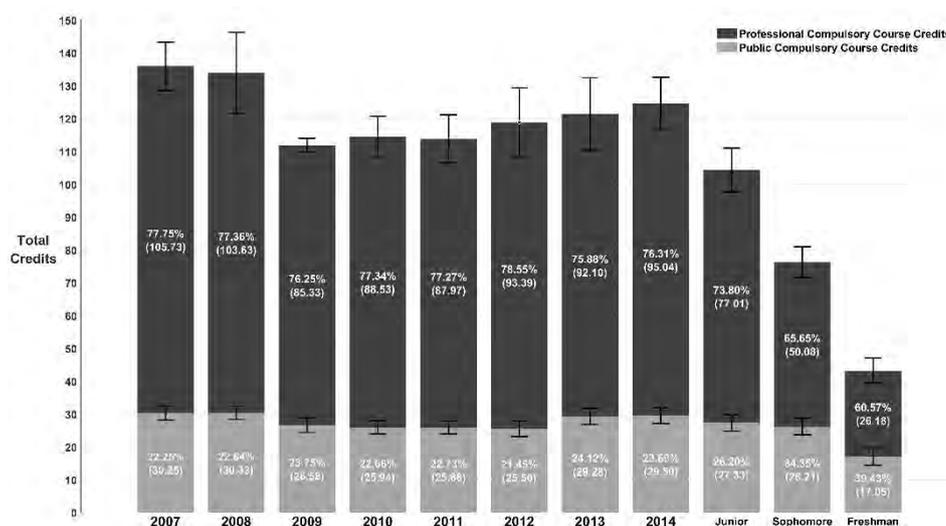


Figure 4. Annual distribution of compulsory course credits of SE

### 2.5 Foreign Language and Literature

Majors in this category include: English Language and Literature, all Non-English Languages and Literature, furthermore, Translation, which has not yet graduated at the time of the statistics, and the annual distribution of these majors' credits on average is shown in Figure 5. The pattern of variation in public credits is still similar, but the proportions have fallen dramatically. Majors of Non-English Languages and Literature commonly study for one semester or one academic year in the cooperative institutions of the corresponding language countries, and the professional credits obtained by overseas study are not included in the statistical scope. Apparently, the amount of professional credits are much larger than that in other categories. Majors of languages and literature should be learnt in an appropriate environment. Chinese is the only official language in China. Therefore, the improvements of professional credits are corresponding to the extension of learning time, and the students are constantly trained in listening, speaking, reading and writing. The standard deviation of these majors fluctuates greatly, which is related to the particularity of their educating plans. In order to match the employment requirements, some languages adopt the way of recruiting students every two or four years. For example, Korean Language and Literature is every two years, Turkish, Nepali and Malay Language and Literature are every four

years. English and Japanese Language and Literature are conducted every year, while Russian and Spanish Language and Literature only have one year without enrolment. Other majors also have interval enrolment, but the interval time is not fixed. Generally speaking, the study intensity of students in this category is the biggest, and there are signs of a gradual slowdown after 2011.

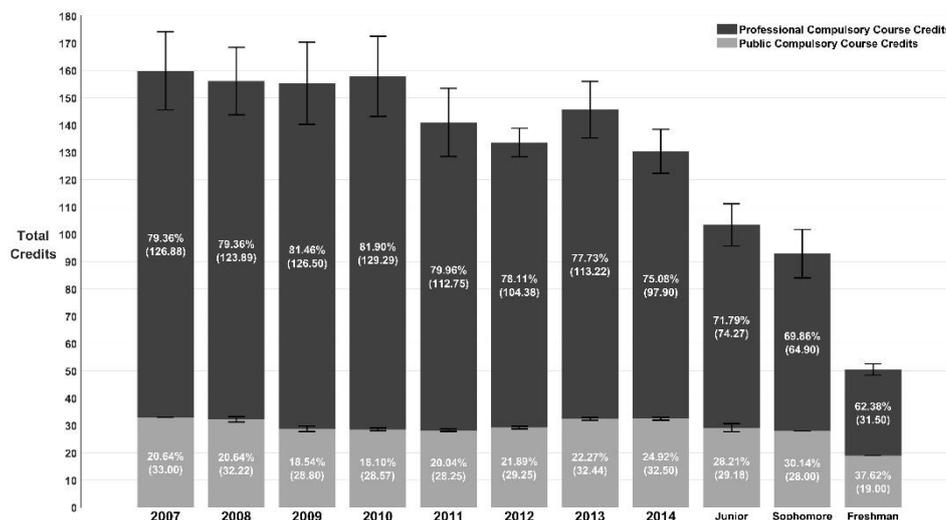


Figure 5. Annual distribution of compulsory course credits of FL

### 2.6 Humanities and Social Science

Majors in this category include: International Education of Chinese Language, Chinese Language and Literature, Chinese Language, Law, Sociology, Ideological and Political Education, which was only recruited in 2008, and the annual distribution of these majors' credits on average is shown in Figure 6. There is no fluctuation in the standard deviation of public credits, that is to say, the demands of each major are completely consistent. The professional credits of International Education of Chinese Language and Law are higher, and the requirements for admission scores are not low. However, the situation of employment is not optimistic, and the demand for such talents is not strong. Two majors should be paid more attention to, namely, Chinese Language and Sociology. In 2010, Chinese Language was re-established from School of Announcing and Anchoring to School of Humanities. Before 2017, it was named Chinese Language (Applied Linguistics). According to Categories of Undergraduate Specialties in Regular Higher Education Institutions, the School of Announcing and Anchoring belongs to the first-level discipline of Theatre Film and TV Studies, which obtained A+ in the fourth CDR evaluation, under the discipline category of Arts, which means that the aforementioned major has a strong strength. Moreover, its courses involve statistics, computer and other fields, which are more comprehensive, and the courses of Sociology are similar. China is now an aging society, and there are many sociological problems to be solved. In addition, this university is famous for its Journalism and Communication majors, which should be more closely combined with Sociology for the sake of cultivating honest and rigorous news reporting talents. The other two majors have no special concerns.

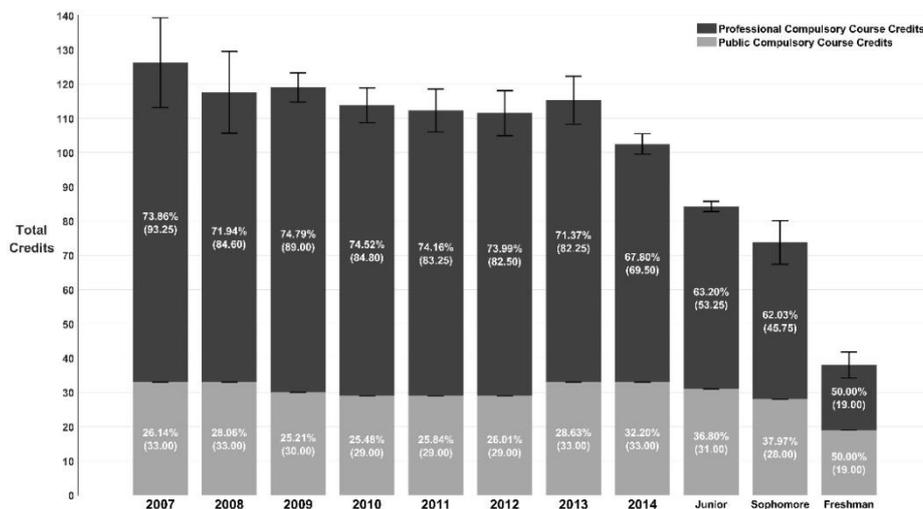


Figure 6. Annual distribution of compulsory course credits of HS

### 3. Discussion

All majors must offer public compulsory courses, which is based on the direction of MOE. Completing the physical education credits and reaching the criteria is one necessary conditions for students to graduate and obtain a degree<sup>3</sup>. The former analyses classify university students' career development and employment guidance courses<sup>4</sup> into ideological and political courses<sup>5</sup>, students must finish 9 of these courses and pass the examination to qualify for graduation. And then, two elementary computer courses are involved (UCCISC, 2016), which is obviously updated, as shown in Table 4, e.g. Excel Application was cancelled after 2013. The period from 2009 to 2012 was the valley duration of public credits. This phenomenon mainly occurred in the ideological and political courses, with a difference of about 3 to 4 credits before and after.

The professional credits ratio is generally between 70% and 80%, which is divided into two parts: basic and core. There is some repetition of professional compulsory courses in majors affiliated with the same school or related majors, and this part of repeated courses should belong to the basic ones. For any major, if a professional compulsory course has been set up in the past, it is default that the major has the teaching ability of this course, which means the corresponding course should be included in the professional database of the major. Higher education has the attribute of staying up-to-date, and a common phenomenon over the years is that some professional compulsory courses offered later to replace the previous ones. It is hard to grasp the specific content of professional teaching, so the judgement can only be made on the basis of the courses name, credits and relevant semester with strong substitutable characteristics. The repetition of the professional database within the same school is shown in Figure 7. This is the repetition of professional database, not the courses offered by different majors of the same grade, that is to say, the actual rates in each grade will be much less than the proportion shown in the figure.

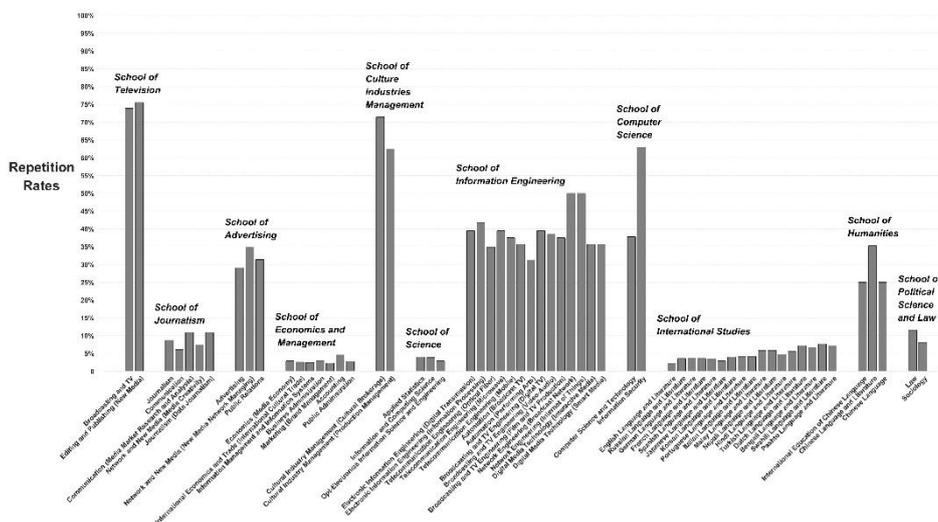


Figure 7. Professional compulsory course database repetition rates

It can be seen that there is a high ratio of repetition between two majors of School of Television and School of Culture Industries Management, so does to the Information Security in School of Computer Science, all of them are beyond 60%. There are two possible reasons for this phenomenon, on the one hand, the school has a good reputation, teaching and research results have been among the best, and the students' harvest is rich, especially has a superior employment prospect, so the teaching situation has not changed much; on the other hand, some majors have not been established for a long time, so they need to accelerate their self-development with the help of the advantageous courses of mature majors. In the actual teaching and training, when the same courses are offered for different grades or majors, the content and emphasis may be different. The current research data cannot cover the specific teaching behaviour. However, it should be recognized that the high repetition rate easily leads to the blurring of the boundaries between majors.

It is worth noting that the names of many majors are followed by directions in brackets. Since the research data is collected after the graduation of students, there are two situations. First, School of Information Engineering, students are classified into specific learning directions when they graduate, but there is no separate division in the enrolment process. Second, other majors are distinguished by directions in admission. The practice of the first case is to train talents for specific industries, and then to prepare for future study according to students' learning interest. The second case also has two reasons, for one side, universities have their own characteristics after years of development, but the setting of majors should be consistent with MOE categories, which means the personal features have to be attached to the requirements of MOE; for the other side, their own strengths are not comprehensive enough to support all the teaching tasks in the professional area.

Current research is focus on compulsory courses analysis, especially the credits, which are always accompanied by workload. Actual workload is hard to measure accurately, it is commonly consist of the timetabled class contact hours plus the time required to understand the course content and complete set assignments (Chambers, 1992). One definition is as follows: 1 class (50 minutes) per week for lectures and tutorials, 2 hours for homework, and then 1 credit can be obtained each semester (CCED, 1991). Apparently, the more courses or credits, the greater workload of students, and it is not always the better. What should be emphasized is the effect, or the real student outcomes (Kristoffersen, 2019). Take School of Television for example, although their credits are not high, the employment situation of graduates is perfect. There is a conceptual distinction between deep and surface approaches to learning (Marton, 1976), which means the difference of student-centred and teacher-centred models of learning (Martens and Prosser, 1998). Project-based education is a typically student-centred model, which enables students to participate more actively rather than passively, focusing more on the real mastery of knowledge (Tynjälä and Gijbels, 2012). One thing cannot be ignored is that teachers bear more and more pressure on assessment, in order to reach the borderline of workload, some courses will be added to students.

#### 4. Conclusion

In recent years, reforms have been accompanied in various fields of China's economic and social development, and higher education is no exception. The work of China's HEIs should be completed under the direction of MOE, they can maintain and continuously win reputation and enhance competitiveness by passing diverse assessments and achieving good results which are organized by MOE. Besides, they can obtain the policy and financial support from MOE for further development. HEIs often attach their own characteristics to the requirements of MOE, nowadays, there are more and more voice for the independent development, and MOE has made adjustments to a certain extent, such as expanding the scope of undergraduate specialties catalogue, however, it still has constraints on HEIs. These phenomena are universal.

This study chooses a comprehensive university as a case, although it is not a top one, it is still at upper position and representative. The teaching reform has a certain periodicity, according to the analysis mentioned above, in 2009, the credits of public and professional compulsory courses have fallen down, their teaching methods have changed and students' classroom workload has decreased. And then, after 2013, the two parts have been improved again. It is not difficult to imagine a new round of reform, because of big data, artificial intelligence and media convergence have gradually become the hot spots of society, and higher education will naturally make corresponding adjustments. All the work should be tested by students' outcomes, for vocational purpose, the employment situation should be assessed, and for the intention of research-oriented, the mastery of knowledge should be examined.

The development of basic disciplines and the construction of interdisciplinary platforms are crucial to the quality of higher education. For example, mathematics and computer science are the foundation of big data and artificial intelligence, rather than simple data training model; journalism and communication disciplines should better grasp the knowledge of cultural background, international relations and sociology, rather than news reporting skills. The teaching-learning method should be reasonable and, more importantly, effective. The research work on the rationality of student workload, the current situation of interdisciplinary education and undergraduate quality assurance scheme will be more detailed in the future.

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## Notes

Note 1. [http://www.gov.cn/zhengce/content/2015-11/05/content\\_10269.htm](http://www.gov.cn/zhengce/content/2015-11/05/content_10269.htm)

Note 2. <http://www.chinadegrees.cn/xwyyjsjyxx/xkpgjg/2016phden/index.shtml>

Note 3. [http://www.moe.gov.cn/s78/A17/twys\\_left/moe\\_938/moe\\_792/s3273/201001/t20100128\\_80824.html](http://www.moe.gov.cn/s78/A17/twys_left/moe_938/moe_792/s3273/201001/t20100128_80824.html)

Note 4. [http://www.moe.gov.cn/s78/A08/moe\\_745/tnull\\_11260.html](http://www.moe.gov.cn/s78/A08/moe_745/tnull_11260.html)

Note 5. [http://www.moe.gov.cn/srcsite/A13/moe\\_772/201804/t20180424\\_334099.html](http://www.moe.gov.cn/srcsite/A13/moe_772/201804/t20180424_334099.html)

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