

Management Information Systems curricula: a comparison between China and the USA

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Abstract

This article compares a Management Information Systems program offered at a university in the United States with a similar program offered at a university in China. The 2 universities involved in the study are Northern State University (NSU) in Aberdeen, SD, and Capital Normal University (CNU) in Beijing, China. The MIS program was chosen because of the technology component and the importance of being able to communicate globally in today's world. However, the findings offer insights into other programs, as well. For instance, there is an emphasis on general education courses, as well as a core set of courses, at both universities. At the same time, there are noticeable differences, such as the CNU requirement that students participate in military training. The CNU program also has a stronger emphasis on the major field of study than the Information Systems program offered at NSU, whereas the NSU curriculum has a stronger emphasis on general education.

Keywords: Management, Curricula, MIS, Higher education, Comparison.

Management Information Systems Curricula: A Comparison between China and the USA

Northern State University is a small, multipurpose public university of approximately 2,500 students, most of whom are undergraduate students, with approximately 200 students enrolled in the masters program (Northern State University [NSU] website, 2007). In contrast, Capital Normal University, funded by the Beijing Municipal Government, has approximately 27,500 students, of which approximately 10,000 are undergraduate students, approximately 15,000 are students of adult education, and the rest are primarily graduate students (Capital Normal University [CNU] website, 2007). As shown in Table 1, CNU has 2,465 faculty members, with 1,156 of those serving as fulltime faculty. There are 685 professors and associate professors, 256 with doctorates and 406 with master's degrees. Conversely, NSU has 93 fulltime faculty members, 76 of which have terminal degrees. Of the 93 faculty members, 21 are full professors, 25 are associate professors, 34 are assistant professors, and 13 are instructors.

Although CNU is a much larger university than NSU, several similarities exist between the two universities. As a university approved by the Ministry of Education to receive foreign students and students from Hong Kong, Macao and Taiwan, CNU is engaged in activities of international cultural exchange and has established cooperative relations with 68 overseas colleges and educational institutes. Over 300 international students are enrolled at CNU (CNU website, 2007). Similarly, NSU is home to the Center of Excellence in International Business. NSU's Center of Excellence supports the International Business Studies major and a variety of international activities. Over 100 students from other countries attended NSU in 2006-07. NSU has cooperative relationships with 19 exchange partner universities from eight different countries, with additional partnerships in the development stage (NSU website, 2007).

Capital Normal University's goal is to grow into an education-oriented and research-based first-class comprehensive normal university. Similarly, Northern State University has recently significantly increased its focus on research, supported by the South Dakota Board of Regents' efforts to increase research activities throughout the state.

CNU had 40 students majoring in Information Systems in 2006 (35 from the local area and 5 from other providences) (Capital Normal University [CNU], 2006c), likewise NSU had 39 students in 2006 (Northern State University [NSU], 2006); hence the number of majors in each program is very comparable. The biggest difference between the two universities is their size in terms of total enrollment, which is obviously quite dramatic. On the other hand, CNU serves as an important base for the development of qualified teachers in primary and secondary education in Beijing. Similarly, NSU has had a strong history of producing quality educators. In fact, at one time, NSU was referred to as "Northern Normal," indicative of its role in the development of qualified teachers for primary and secondary education throughout the state of South Dakota. As will be shown, there are a number of similarities between the Information Management and Information Systems program at CNU and the Management Information Systems program at NSU, some of which will be indicative of similarities between other programs. At the same time, several differences will be noted, as well, highlighting some of the dissimilarities, in general, between higher education in the United States and higher education in China.

Institutional Size Comparisons

It was noted earlier in this paper that there is a considerable difference in the size of the two institutions, NSU and CNU. However, when the city populations are compared, the

proportional size difference brings a new perspective to the size comparisons. Beijing has a population of 16,330,000 (China Data Online, 2007) compared to an Aberdeen population of approximately 25,000 people. The size of the student population of NSU is approximately 9.09% of the size of the student population at CNU, whereas the size of the population of Aberdeen is approximately 0.17% of the size of the population of Beijing. Similar comparisons can be made between the size of the two countries, the USA and China. In other words, it would be expected that there would be significant differences in the sizes of the institutions, because of the differences in the populations of the two cities, as well as the countries.

General Education Requirements

There is a focus on general education, or a liberal arts education, at both CNU and NSU. At CNU, the development of comprehensive quality is an integral part of the mission of the university. Apart from specialized skills, great importance has also been given to education of general knowledge. Over the years, backed up by the advantage of multi-discipline strength, 200 general elective courses of four major categories have been offered, including social science, art and sports, natural science and educational science. Meanwhile, dozens of supplemental courses are also available to the students, including music, fine art, computerized art design, sexual health education, English and computer skills, etc. (CNU, 2006a)

Similarly, NSU's programs include courses that meet requirements in several categories: system general education, institutional graduation, degree, and major. The general education component consists of courses in speech and composition, mathematics and natural sciences, arts and humanities, and social sciences. (NSU, 2006)

Degree Requirements

Both universities, NSU and CNU, offer 4-year programs. However, the requirements in China appear to be somewhat more rigorous than in the United States. As shown in Table 2, the total "credit points" required for completion of the 4-year degree at CNU is 196, compared to the typical requirement of 128 credit hours (120 at some universities in the USA) to complete a 4-year degree at NSU. At CNU, a typical 3-credit class meets for 40 minutes per day, three days per week, over an 18 week period, whereas a typical 3-credit class at NSU meets for 50 minutes per day, three days per week, over a 15 week period (plus finals week). The total contact hours for a 3-credit CNU class are 36 hours, while the total contact hours for a 3-credit NSU class are 37.5 hours. However, in order to complete the degree in four years, CNU students must average 24.5 credit points (just slightly more than eight 3-credit classes) per semester. NSU students, on the other hand, must average 16 credit hours (slightly more than five 3-credit courses) per semester. (CNU, 2006a; CNU, 2006b; NSU 2006)

Curricula

Table 2 provides comparative data between the curricula at CNU and that at NSU. The biggest difference between the curricula at CNU and at NSU appears to be in the major. CNU requires 123 credits in the core and major combined, compared to 70 credits in the core and major combined at NSU. It is even more noticeable when the credits in the major are compared. CNU requires that students complete 92 credits in Information Management / Information

Systems courses, compared to 24 credits in the Management Information Systems courses at NSU (NSU, 2006). This would seem to indicate that the CNU Information Management and Information Systems program is considerably more rigorous than the Management Information Systems program at NSU. Students who complete the degree requirements at CNU are exposed to many information systems courses that are not available at Northern, which one would assume would better prepare them for information systems positions in business, industry, and government, as well as for advanced degrees. Conversely, the general education requirements are higher at NSU, which would seem to indicate that NSU students receive a more well-rounded education, outside their major area of study.

The other notable difference between the CNU and the NSU curricula is in the area of “other requirements.” For instance, military training is required at CNU, whereas it is neither a requirement nor an option at NSU. In addition, CNU requires several internship-related courses, but many of these appear to be similar to the shadowing programs offered in many high schools in the United States. Upon completion of the “shadowing” experience, it appears that CNU students are required to complete an internship in their field. Although students in the MIS program at NSU are strongly encouraged to participate in internships, it is not a requirement. (CNU, 2006b)

CNU students are required to complete an integrated curriculum design course, which involves a comprehensive project and a final paper, somewhat like the theses that are required in most master’s programs in the United States. The course is designed to allow students to participate in comprehensive training by performing actual project work, which includes project management, programming, information systems design, project organization, team work, etc. A group of four to six students make up a team and each team is assigned to a different project. This project is started during the second semester of the junior year and completed during the first semester of the senior year. The students meet one day per week to discuss and research this project as a team. If the project is creative and can be implemented in business or commercialized, there is funding available to the students. At the end of the project, each team must write a report and defend the project. CNU students do not receive credit for the project and paper, but successful completion is a requirement for graduation. (CNU, 2006c)

Correspondingly, MIS majors at NSU are required to complete a capstone business course called Business Policy and Strategy, designed to help students “develop an understanding of strategy formulation, implementation, and evaluation. It involves integrating all functional areas of business, analyzing the environment in which the firm operates, and choosing strategies that enable the firm to meet its objectives.” (NSU, 2006). A notable difference in the two courses is that the IMIS project is more specific to the major, whereas the Business Policy and Strategy course ties the various areas of business together into a culminating experience. Additionally, NSU students receive credit for the Policy and Strategy capstone course. NSU students must also complete an exit exam, which is a requirement for graduation. However, low scores do not (at least at the present time) prevent students from graduating; rather, the exam scores are used to assess the effectiveness of the program. Also, the comprehensive course taken by the CNU students as a requirement for graduation is specific to the major, whereas both the capstone course and the exit exam taken by the NSU students as a requirement for graduation cover a broad spectrum of business subjects (applicable to the business core, not just the MIS major). (Northern State University Office of Instructional Research website, 2007)

Course Offering Comparisons

As shown in Table 3, only 12 of the courses offered as part of the Management Information Systems program at NSU are comparable to the courses offered in the Information Management and Information Systems program at CNU. Table 4 shows the courses necessary for completion of the Management Information Systems program at NSU, grouped into a sample schedule for completing the program in a four-year period (NSU, 2006); Table 5 provides a four-year schedule that indicates the range of courses from which CNU students can select each semester over the same four-year period; and Table 6 lists the entire set of course offerings for the Information Management and Information Systems program at CNU. Table 4 and Table 5 are somewhat different in that the NSU schedule (Table 4) is a sample schedule of which courses could be taken each semester in order to accumulate 128 credit hours and complete the MIS program in four years, whereas the CNU schedule (Table 5) lists *all* possible courses that are offered for IMIS majors each semester over the same four-year period (CNU, 2006b).

At NSU, MIS 205 (Advanced Information Systems) and MIS 325 (Management Information Systems) are part of the business core and as such are required of all business majors. In addition to these two courses, the other courses available in the Management Information Systems program at NSU are listed in Table 7. (NSU, 2006) A review of the Major Courses section of the CNU courses listed in Table 5 reveals that there are over 40 courses available in the area of Information Management and Information Systems at CNU (CNU, 2006b), whereas only 15 MIS-related courses are available in NSU's Management Information Systems program. However, the size of the student and faculty populations at each institution must be taken into consideration. The College of Information Technology at CNU has more than 90 staff members and over 1,000 undergraduates and post-graduates. The Information Management and Information System major is one of six majors within the College. The other majors are 1) Computer Science and Technology (education); 2) Computer Science and Technology, 3) Electronic Information Engineering, 4) Software Engineering, and 5) Information Engineering, which includes concentrations in a) intelligent information engineering and b) network and communication engineering. (CNU, 2006c)

The MIS Department is one of four departments in the School of Business at NSU, and the only department in the School that offers Information Systems / Technology courses (other than the Accounting Systems course) (Northern State University website, 2007). On the other hand, the IMIS program is one of six majors (listed above) in the College of Information Technology (CNU website, 2007), so the number of Information Systems / Technology courses available at CNU is much larger, as would be expected with an entire college providing systems / technology type courses, compared to the offerings of a small MIS Department in the School of Business at NSU.

At CNU, a large number of faculty must be employed in the program in order to accommodate classes for the large number of students taking courses in the College of Information Technology. Furthermore, because the other five majors in the College are interrelated with the Information Management and Information Systems major, it is possible to offer the same course as an elective in multiple majors. As a result, it is possible to have a large number of course offerings available for students in the Information Management and Information System program. In contrast, not only is NSU's size quite small in comparison to CNU's, but moreover the size of the MIS Department at NSU is extremely small, as mentioned above, consisting of one part-time faculty member (he is fulltime, but teaches part-time in

another area and part-time in MIS) and three fulltime faculty members. Similarly, the number of MIS majors at NSU is quite small, with 39 students majoring in MIS in 2006-07 (NSU website, 2007). The South Dakota Board of Regents requires a minimum enrollment of 10 students; course offerings with fewer than 10 students are cancelled. The typical class size in the School of Business is much larger than this, with most classes having 20 to 30 students enrolled. Thus, it would not be feasible to offer the number of courses at NSU that are available at CNU; there would not be a sufficient number of students to fill the courses, nor would there be a sufficient number of faculty to teach the courses. As it is, most MIS courses at Northern are only offered once a year and several of the electives are only offered every other year.

Student Comparisons

Before comparing the student populations at the college level, it might be helpful to note some differences at the high school level. In China, high school is mandated for all students. (Special schools are provided for those students with learning disabilities.) Conversely, in South Dakota, high school students can drop out of school at the age of 16, so not all students have a high school diploma.

Also, it should be noted that there are probably differences between the student populations at the two institutions in terms of student preparedness. CNU applicants must pass the National College Entrance Examination before they are admitted into the university. The use of the National examination to select students for higher education (and positions of leadership) has been an important part of Chinese culture (Wikipedia, 2007). The examination continues to be used as the basis for recruiting academically able students. China has a very competitive labor market, which is highly dependent on a college degree, so the competition for acceptance into universities in China is very fierce. Only a relatively small percentage of the people are allowed to go to college in China and the entrance examination serves as an effective tool in filtering out those people less likely to succeed.

Students in the United States are also required to complete a college entrance exam, typically either the SAT (Scholastic Aptitude Test) or the ACT (American College Testing). However, unlike the universities in China, students who have a low ACT score are typically conditionally accepted at NSU and are required to complete a series of remedial courses to help prepare them for college courses. In other words, in effect, NSU has what might be considered an open-enrollment policy, as opposed to the very selective and competitive process utilized in China.

Conclusions and Implications

From our comparisons of the curriculum of the two schools, we found several similarities between the two Information Systems programs. For example, both universities offer general education courses, core course, and courses in the major. On the other hand, we also found several differences between the two universities in terms of the Information Systems major. One explanation for the differences might be due to the dissimilarities in the sizes of each institution, as well as the sizes of each department. Another explanation might be the cultural differences of the regions and the different environments in which the students live.

For example, it was noted in the curriculum section, above, that the CNU IMIS program appears to be much more rigorous than the MIS program at NSU. CNU students must earn a total

of 192 credits in order to graduate, compared to 128 credits at NSU, and over 40 courses are available as part of the IMIS program at CNU, whereas the MIS program at NSU is limited to 15 courses. Similarly, the comprehensive training that is completed by the IMIS students at CNU is more specific to the major than the broader capstone course that is taken by MIS majors at NSU. The implication would be that CNU graduates are much better prepared in their major area of study. On the other hand, American students complete more General Education courses, as well as a core set of business courses, which might imply that they are receiving a more well-rounded education, and as a result might be better prepared for the transition from a college life to a professional life.

Another difference is the emphasis on military training in China, whereas the USA uses a “volunteer army” to help protect its borders. Military training, while mandatory at CNU, is not an option at NSU. This difference is a result of cultural differences between the two countries, but has little overall impact on the rest of the curriculum.

In terms of other cultural differences, Chinese students do not work prior to graduating from college. Conversely, most American students work to put themselves through school. A large percentage of the NSU students work part time and many work fulltime while working toward their degrees. Then again, the project training that is completed by IMIS students helps provide the experiences needed to transition from an educational setting to a work environment. It would appear that Chinese students might be better prepared for specialized careers in information systems, whereas American students might be better prepared to take on a bigger variety of roles in business and industry, due to the broader nature of the curriculum. However, regardless of the size or cultural differences of the two institutions, or the overall preparedness of either group of graduates for future career opportunities, the authors have determined that there are certainly aspects of the curriculum at each university in which we can learn from each other.

Further Study

This has been a preliminary descriptive comparison of the Information Systems major at two different schools, one in American and one in China. There are several dimensions in which this study could be expanded. One direction is a further examination of the curriculum at the course level at each institution, which would compare textbook selection, lecture styles, form of testing and examination, and most importantly, assessment of learning outcomes, as well as teaching performance. Another direction might be to compare faculty qualifications, including their degrees, educational backgrounds, and experience in industry. A third direction might be to compare job opportunities for graduates by comparing the types of jobs available to Information Systems graduates and the competitiveness of the job market in each region or country. A fourth dimension would be to include further comparisons among additional universities within these two regions or countries, as well as further expansion into other countries.

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Table 1
Institutional Comparisons

	CNU	NSU
Number of students	27,500 students (approx. 10,000 undergraduate students; 15,000 adult education students; 2,500 graduate students)	Approx. 2,500 students (approx. 200 graduate students, the rest undergraduate students)
Number of faculty	2,465 faculty members (1,156 fulltime; 685 professors and associate professors, 256 with doctorates and 406 with master's degrees.	93 fulltime faculty members (76 with terminal degrees; 21 full professors, 25 associate professors, 34 assistant professors, and 13 instructors)
International students	300	100
Local population	Approx. 15,000,000	Approx. 25,000
Degree requirement	4-year, 196 credits (252 available)	4-year, 128 credits
Semester term	18-week	15-week
Typical class hour	40 minutes (3 times / week)	50 minutes (3 times / week)

Table 2
Curriculum Comparisons

	CNU Credits		NSU Credits
		System Gen Ed	32
General education	34	NSU Gen Ed	11
Other requirements	27	BS Gen Ed	8-9
Program core	31	Business core	46
IM/IS major	92	MIS major	24
General electives	12	General electives	6-7
Total	196	Total	128

Table 3:
Course Offering Comparisons

CNU			
Course No.	Course Name	Credits	Category
3103337	MIS (Integrated Curriculum Design)	2	OR
3100103	Major Internship	6	OR
3050306	Probability & Statistics	3	MR
3103334	Principles of Economics	4	MER
103342	Accounting Principles / Accounting Information System	4	MER
3103025	VB Programming	2	ME
3103049	Web Programming	3	ME
3103313	Decision-making Support System	3	ME
3103343	Webpage Design	2	ME

OR = Other Required; MR = Major Required; MER = Required Major Elective; ME = Major Elective

NSU			
Course No.	Course Name	Credits	Category
MIS 325	Management Information Systems	3	BC
BADM 494	Internship	3	O
BADM 220	Statistics	3	BC/GE
ECON 201	Principles of Microeconomics	3	BC/GE
ECON 202	Principles of Macroeconomics	3	BC/GE
ACCT 201	Principles of Accounting I	3	BC
ACCT 202	Principles of Accounting II	3	BC
ACCT 360	Accounting Systems	3	M*
CSC 130	Visual Basic Programming	3	M
CSC 140	Web Programming	3	M*
MIS 384	Decision Support Systems	3	M*
MIS 210	Web Authoring	3	M*

GE = Gen Ed requirement; BC = Business Core; M = Major; O = General Elective

Table 4
Sample NSU Undergraduate Schedule

Management Information Systems, NSU			
GE = Gen Ed requirement; BC = Business Core; M = Major; O = General Elective			
Course No.	Course Name	Credits	Category
2006-2007 Fall		Year:	FR
MIS 205	Advanced Computer Applications	3	BC
ENGL 101	English Composition I	3	GE
	Laboratory Science	3	GE
	Social Science	3	GE
	Humanities & Fine Arts	3	GE
	Subtotal	15	
2006-2007 Spring		Year:	FR
English 201	English Composition II	3	GE
	Humanities & Fine Arts	3	GE
SPCM 101	Fundamentals of Speech	3	GE
	Laboratory Science	3	GE
	MATH 102 or above	3	GE
	Wellness	2	GE
	Subtotal	17	
2007-2008 Fall		Year:	SO
ECON 201	Principles of Microeconomics	3	BC/GE
ACCT 201	Principles of Accounting I	3	BC
BADM 220	Statistics	3	BC/GE
	Humanities & Fine Arts	3	GE
BADM 244	Business Communications	3	BC/GE
BADM 284	Career Planning	1	BC
	Subtotal	16	
2007-2008 Spring		Year:	SO
ECON 202	Principles of Macroeconomics	3	BC/GE
ACCT 202	Principles of Accounting II	3	BC
CSC 130	Visual Basic Programming	3	M
MIS 325	Management Information Systems	3	BC
BADM 360	Organization & Management	3	BC
	General Elective	2	O
	Subtotal	17	
2008-2009 Fall		Year:	JR
CSC 273	Computer Math w/Excel/VB	3	M/GE**
BADM 370	Marketing	3	BC
BADM 310	Business Finance	3	BC
	MIS/CSC Elective	3	M*
	Humanities & Fine Arts	3	GE
BADM 350	Legal Environment of Business	3	BC
	Subtotal	18	

2008-2009 Spring		Year:	JR
	MIS/CSC Elective	3	M*
	Social Science	3	GE
MIS 335	Telecommunications & Networks	3	M
	General Elective	3	O
	Econ 301 or 302 or 304 or 441	3	BC
	Subtotal	15	
2009-2010 Fall		Year:	SR
MIS 332	Structured Systems Analysis & Design	3	M
BADM 457	Business Ethics	3	BC/GE
	Internship	3	O
	General Elective	3	O
	MIS/CSC Elective	3	M*
	Subtotal	15	
2009-2010 Spring		Year:	SR
MIS 484	Database Management Systems	3	M
BADM 482	Business Policy & Strategy	3	BC
	General Elective	3	O
	General Elective	3	O
	General Elective	3	O
	Subtotal	15	
	Grand Total	128	

** CSC 273, Computer Math, Satisfies MIS elective & "Math Above 102/104" GE requirement

* The 12-credits of MIS electives can be selected from any 4 of the following courses:

ACCT 360	Accounting Systems	3
CSC 140	Web Programming	3
CSC 273	Computer Mathematics with Excel & VBA	3
MIS 150	Computer Science I	3
MIS 210	Web Authoring	3
MIS 250	Computer Science II	3
MIS 371	Survey of Data Structures	3
MIS 384	Decision Support Systems	3
MIS 461	Programming Languages	3

Summary of Credits	
GE	56
BC	46
M	24
O***	20
Subtotal	146
Dbl BC/GE	15
Dbl M/GE	3
Total	128

*** Some courses can be applied to both the Business Core and to the Gen Ed requirements

Therefore, the "other" category must be enough to bring the total credits to 128

Table 5
Sample CNU Undergraduate Teaching Plan

Information Management and Information System					
Course No.	Course Name	Credit Points	Weekly Hours	Evaluation	Category
2006-2007 Fall					
2055001	Military Training	2	0	Exam	Required
3700006	Ideal, Moral, and Indrocution to Law	3	3	Exam	Required
3720001	Physical Education 1	1	2		Required
3730001	College English Band 1	4	4	Exam	Required
3050301	Advanced Mathematics (A-1)	6	6	Exam	Required
3050305	Linear Algebra	3	3	Exam	Required
3103075	C Language Programming	3	3	Exam	Required
3103001	An Introduction to Information Science	2	2		Elective
	Subtotal	24	23		
2006-2007 Spring					
3700007	China's Modern History	2	2	Exam	Required
3720002	Physical Education 2	1	1		Required
3730002	College English Band 2	4	4	Exam	Required
3050302	Advanced Mathematics (A-2)	6	6	Exam	Required
3065001	College Physics (A-1)	4	4	Exam	Required
2050013	College Chinese	2	2	Exam	Elective
3085074	An Introduction to Modern Bioscience	3	3	Exam	Elective
3090801	Foundation of Geosciences (1)	2	2	Exam	Elective
3103076	C Language Programming Practice	3	3	Exam	Required
3103059	Discrete Mathematics	3	0		Required
3103301	Introduction to Information Management	3	3		Required
3103303	Basis of Management	3	3	Exam	Required
	Subtotal	36	33		
2007-2008 Fall					
3103334	Principles of Economics	4	4	Exam	Elective
3700008	Marxist Philosophy Principle	3	3	Exam	Required
3720003	Physical Education 3	1	2		Required
3730003	College English Band 3	4	4	Exam	Required
3065002	College Physics (A-2)	4	4	Exam	Required
3065004	Fundamental Physical Experiment B	1	2	Exam	Required
3070150	General Chemistry	3	3	Exam	Elective
3090802	Foundation of Geosciences (2)	2	2	Exam	Elective
3103142	Data Structure	4	0		Required
3103143	Data Structure Lab	1	0		Required
3103146	Digital Logic Circuit	3	0		Required
3103147	Digital Logic Circuit Lab	1	0		Required
3050306	Probability & Statistics	3	3	Exam	Required
3103034	Numerical Analysis	2	2		Elective
3103343	Webpage Design	2	0		Elective
	Subtotal	38	29		

2007-2008 Spring

3103344	Production Operation and Management	3	0		Elective
3700009	Introduction to Mao Zedong, Deng Xiaoping and Three Representative Important Ideas I	3	3	Exam	Required
3720004	Physical Education 4	1	2		Required
3730004	College English Band 4	4	4	Exam	Required
3103135	Object-Oriented Programming (Java)	3	0		Required
3103136	Object-Oriented Programming Lab (Java)	1	0		Required
3103128	Computer Network	3	0		Required
3103129	Computer Network Lab	1	0		Required
3103130	Principle of Computer Composition	3	0		Required
3103131	Principle of Computer Composition Lab	1	0		Required
3103302	Operational Research of Management	4	4	Exam	Required
3103028	Principles of Database	2	2		Required
3103121	Program Design , Integrated Curriculum Design and Practice (Java)	2	0		Elective
	Subtotal	31	15		

2008-2009 Fall

3103342	Accounting Princiles and Accounting Information System	4	0		Elective
3700010	Introduction to Mao Zedong, Deng Xiaoping and Three Representative Important Ideas II	3	3	Exam	Required
3103033	Network Engineering	3	2		Elective
3103144	Fundamentala of Database Applications	2	0		Elective
3103149	Network Programming (Java)	3	0		Elective
3103305	Indroduction to E-Commerce	3	3		Elective
3103079	Operating System	3	3		Required
3103025	VB Programming	2	2		Elective
3103056	An Introduction to Software Engineering	3	3		Elective
3103327	Modern Multi-media Making Technology	3	3		Elective
3103145	Database Applications System Design	2	0		Elective
3103324	Information Retrieval	3	3		Elective
	Subtotal	34	22		

2008-2009 Spring

3103333	Analysis of Cases in Information Management Systems	3	3	Eaxm	Elective
3103337	MIS (Integrated Curriculum Design)	2	0		Required
3103312	Project Management	3	3		Elective
3103049	Web Programming	3	3		Elective
3103053	Network and Information Security	2	2		Elective
3103119	Operating System Analysis and Practice (UNIX)	2	0		Elective
3103139	Software Testing Technique	2	0		Elective
3103140	Software Testing Practice	2	0		Elective
3103313	Decision-making Support System	3	3		Elective
3103315	Logistic Management of E-business	3	3		Elective
3103316	Network Marketing	3	3		Elective
3103318	Management of Human Resource	3	3		Elective
3103335	Securities Investment Analysis	3	3	Eaxm	Elective
3103114	Network Design and Management Practice	3	2		Elective
3103120	Operating System Analysis and Practice (Windows)	2	0		Elective
3103141	Software Engineering Design Practice	2	0		Elective
	Subtotal	41	28		

2009-2010 Fall

3103338	Information System Analysis and Design (Integrated Curriculum Design)	2	0		Required
3100103	Major Internship	6	0		Required
3103310	Information System Analysis and Design	5	5		Elective
3103104	Higher Mathematics Research	2	0		Elective
3103105	Advanced Date Structure	2	0		Elective
3103106	Advanced Operating System	2	0		Elective
3103325	E-government	3	3		Elective
3103328	Information Economics	3	3		Elective
3103331	Intellectual Property and Information Law	3	3		Elective
3103336	Online Banking	3	0		Elective
	Subtotal	31	14		

2009-2010 Spring

3100065	Graduation Design	12	0		Required
	Subtotal	12	0		

Other Courses

3100101	Creative Credit	2	0		Elective
3103071	Electronic Process Internship	2	0		Required
3104072	Understanding Intership	1	0		Required
	Subtotal	5	0		
	Grand Total	252	164		

Table 6
CNU Information Management and Information Systems Curriculum

College: College of Information Engineering, CNU											
Major: Information Management and Information System											
Category	Course No.	Course Name	Hour	Credit	Lec	Lab	Exp	Exam	Sem	CR	
Other required courses	R 2055001	Military Training	160	2			0		1		
	R 3103337	MIS (Integrated Curriculum Design)	0	2			0		6		
	R 3103338	Information System Analysis and Design (Integrated Curriculum Design)	0	2			0		7		
	R 3100101	Creative Credit	0	2			0		1	27	
	R 3100103	Major Internship	0	6			0		7		
	R 3100065	Graduation Design	540	12			0		8		
	R 3103071	Electronic Process Internship	36	2			0		1		
	R 3104072	Understanding Intership	0	1			0		1		
General Education										34	
Required	R 3700006	Ideal, Moral, and Indrocution to Law	54	3	3		0	Exam	1		
	R 3700007	China's Modern History	36	2	2		0	Exam	2		
	R 3720001	Physical Education 1	36	1	2		0		1		
	R 3720002	Physical Education 2	36	1	2		0		2		
	R 3730001	College English Band 1	72	4	4		0	Exam	1		
	R 3730002	College English Band 2	72	4	4		0	Exam	2		
	R 3700008	Marxist Philosophy Principle	54	3	3	54	0	Exam	3		
	R 3700009	Introduction to Mao Zedong, Deng Xiaoping and Three Representative Important Ideas I	54	3	3		0	Exam	4	34	
	R 3720003	Physical Education 3	36	1	2		0		3		
	R 3720004	Physical Education 4	36	1	2		0		4		
	R 3730003	College English Band 3	72	4	4		0	Exam	3		
	R 3730004	College English Band 4	72	4	4		0	Exam	4		
	R 3700010	Introduction to Mao Zedong, Deng Xiaoping and Three Representative Important Ideas II	54	3	3		0	Exam	5		
Elective										12	
Major Courses										92	
Major Required	R 3103076	C Language Programming Practice	54	3	3	18	0	Pass	2		
	R 3103135	Object-Oriented Programming (Java)	54	3			0		4		
	R 3103136	Object-Oriented Programming Lab (Java)	36	1			0		4		
	R 3103142	Data Structure	72	4			0		3		
	R 3103143	Data Structure Lab	36	1			0		3		
	R 3103059	Discrete Mathematics	54	3			0		2		
	R 3103079	Operating System	54	3	3		0		5		
	R 3103128	Computer Network	54	3			0		4		
	R 3103129	Computer Network Lab	18	1			0		4		
	R 3103130	Principle of Computer Composition	54	3			0		4	45	
	R 3103131	Principle of Computer Composition Lab	18	1			0		4		
	R 3103146	Digital Logic Circuit	54	3			0		3		
	R 3103147	Digital Logic Circuit Lab	18	1			0		3		
	R 3103301	Introduction to Information Management	54	3	3		0		2		
	R 3103302	Operational Research of Management	72	4	4		0	Exam	4		
	R 3103303	Basis of Management	54	3	3		0	Exam	2		
	R 3050306	Probability & Statistics	54	3	3		0	Exam	3		
	R 3103028	Principles of Database	36	2	2		0		4		

Major Elective									47
		Analysis of Cases in Information Management							
	E	3103333	Systems	54	3	3	0	Exam	6
	E	3103334	Principles of Economics	72	4	4	0	Exam	3
	E	3103342	Accounting Princiles and Accounting Information System	72	4		0		5
Required	E	3103344	Production Operation and Management	54	3		0		4
Major	E	3103033	Network Engineering	54	3	2	0		5
Elective	E	3103144	Fundamentala of Database Applications	36	2		0		5
	E	3103149	Network Programming (Java)	54	3		0		5
	E	3103305	Indroduction to E-Commerce	54	3	3	0		5
	E	3103310	Information System Analysis and Design	90	5	5	0		7
	E	3103312	Project Management	54	3	3	0		6
	E	3103324	Information Retrieval	54	3	3	0		5
	E	3103025	VB Programming	36	2	2	0		5
	E	3103034	Numerical Analysis	36	2	2	0		3
	E	3103049	Web Programming	54	3	3	0		6
	E	3103053	Network and Information Security	36	2	2	0		6
	E	3103056	An Introduction to Software Engineering	54	3	3	0		5
	E	3103104	Higher Mathematics Research	36	2		0		7
	E	3103105	Advanced Date Structure	36	2		0		7
	E	3103106	Advanced Operating System	36	2		0		7
	E	3103119	Operating System Analysis and Practice (UNIX)	36	2		0		6
	E	3103121	Program Design , Integrated Curriculum Design and Practice (Java)	36	2		0		4
	E	3103139	Software Testing Technique	36	2		0		6
	E	3103140	Software Testing Practice	36	2		0		6
Major	E	3103313	Decision-making Support System	54	3	3	0		6
Elective	E	3103315	Logistic Management of E-business	54	3	3	0		6
	E	3103316	Network Marketing	54	3	3	0		6
	E	3103318	Management of Human Resource	54	3	3	0		6
	E	3103325	E-government	54	3	3	0		7
	E	3103327	Modern Multi-media Making Technology	54	3	3	0		5
	E	3103328	Information Economics	54	3	3	0		7
	E	3103331	Intellectual Property and Information Law	54	3	3	0		7
	E	3103335	Securities Investment Analysis	54	3	3	0	Exam	6
	E	3103336	Online Banking	54	3		0		7
	E	3103343	Webpage Design	36	2		0		3
	E	3103114	Network Design and Management Practice	54	3	2	36		6
	E	3103120	Operationg System Analysis and Practice (Windows)	36	2		0		6
	E	3103141	Software Engineering Design Practice	36	2		0		6
	E	3103145	Database Applications System Design	36	2		0		5

Fundamental Courses for Engineering Majors										31
	R	3050301	Advanced Mathematics (A-1)	108	6	6	0	Exam	1	
	R	3050302	Advanced Mathematics (A-2)	108	6	6	0	Exam	2	
Fundamental	R	3050305	Linear Algebra	54	3	3	0	Exam	1	
Courses	R	3065001	College Physics (A-1)	72	4	4	0	Exam	2	27
Required	R	3103075	C Language Programming	54	3	3	18	0	Exam	1
	R	3065002	College Physics (A-2)	72	4	4	0	Exam	3	
	R	3065004	Fundamental Physical Experiment B	18	1	2	18	Exam	3	
Fundamental Courses										
Elective										4
	E	2050013	College Chinese	36	2	2	0	Exam	2	
	E	3085074	An Introduction to Modern Bioscience	54	3	3	0	Exam	2	
Elective	E	3090801	Foundation of Geosciences (1)	36	2	2	0	Exam	2	2
	E	3070150	General Chemistry	54	3	3	0	Exam	3	
	E	3090802	Foundation of Geosciences (2)	36	2	2	0	Exam	3	
Required	E	3103001	An Introduction to Information Science	36	2	2	18		1	2
Elective										
Grand Total				252						
R = Required										
E = Elective										
Lec = Lecture										
Exp = Experiment										
Lab = Lab (In-class)										
Sem = Semester										
CR = Credit Requirement										

Table 7
Management Information Systems Curriculum

Management Information Systems		
CSC 130	Visual Basic Programming	3
MIS 335	Telecommunications and Networks for Business	3
MIS 332	Structured Systems Analysis and Design	3
MIS 484	Database Management Systems	3
12-credits of MIS electives can be selected from any 4 of the following courses:		
ACCT 360	Accounting Systems	3
CSC 140	Web Programming	3
CSC 273	Computer Mathematics with Excel & VBA	3
MIS 150	Computer Science I	3
MIS 210	Web Authoring	3
MIS 250	Computer Science II	3
MIS 371	Survey of Data Structures	3
MIS 384	Decision Support Systems	3
MIS 461	Programming Languages	3