A Comparison of CIS Degree Programs

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In recent years, the computer information systems field has changed dramatically: going through several iterations. Therefore, it is unclear how computer information systems educators should respond when updating their respective programs. As a result, this paper will report the results of a study which compared the computer information systems' required courses at several undergraduate-only institutions which are schools certified by the Association to Advance Collegiate Schools of Business (AACSB) with those IS 97 curriculum areas and courses specified by the Association of Information Technology Professionals (formerly known as the DPMA/Data Processing Management Association). .

This information can be utilized by CIS curriculum developers and other educators. It can provide helpful information to non-educators and prospective students when they are attempting to compare and analyze the quality and effectiveness of a given IS program. The information was extracted from various websites of undergraduate-only AACSB institutions as they appeared between 11/1/00 and 12/1/00.

SURVEY METHODOLOGY

In beginning this study, the researcher examined the IS97 Curriculum Areas and Courses as specified by the DPMA (now known as the Association of Information Technology Professionals). The 11 areas are shown in Table 1:

Table 1: IS Curriculum Areas - Course Requirements

	Curriculum Areas	Schools where Required	Required as one of two courses	Total Schools where Required
0	Knowledge of Software Tools	2		2
1	Fundamental of IS	7		7
2	Personal Productivity with IS Technology	1		1
3	IS Technology Practice	1		1
4	Information Technology Hardware and Software	1		1

5	Programming Data and Object Structures	6		6
6	Network and Telecommunications	5	1*	6
7	Analytical and Logical Design	9		9
8	Physical Design with DBMS	9		9
9	Physical Design with Programming	1		1
10	Project Management and Practice	5	1*	6

* Required as one of two courses

To determine how well schools were following these guidelines, the areas of study were compared to the areas of study in Computer Information Systems as required by AACSB schools with undergraduate-only programs and that have CIS type majors within the business curriculum. Initially, the course names were utilized to determine if the course fit within a given curricula area. When further clarification was needed, the course descriptions were also utilized to categorize the data. All information related to the schools was retrieved from the individual schools' Internet web site. Information related to the listing of the AACSB's listing of schools was also retrieved from the AACSB's web site.

The listing of AACSB Schools with Undergraduate-Only Majors consisted of 28 schools and was utilized to insure that the data used for this study would not be impacted by any residual effect present due to the presence of the university's graduate program and/or courses.

Web search engines were utilized to look for web sites for each of the schools. Web sites were found for 17 of these schools. After examining the web sites for each of the schools, it was determined that 11 (eleven) of these schools had information system type majors. Included in the study were majors with titles such as: Information Systems Management, Computer Information Systems, Information Systems, Computer Information Management Systems, Computer Information Science, Major in Business Administration with an option in Information Systems, Management Information Systems, Computer Science and Information Systems, and Decision Sciences.

The IS97 courses recommended by AITP were then compared to the required courses (as represented by their respective course names and course descriptions) specified for each of the schools. Additional course requirements, differing from those listed by AITP, were also listed. Some schools presented options, wherein the student needed to select a course from a list of 2 or more. The number of schools requiring each of the courses was then tallied to determine IS Curriculum Course Requirements and other Additional IS Courses Required. These courses are shown in Table 2.

Table 2: Other Additional IS Courses Required

Additional Required IS Courses	Schools Where Required	Required as One of Two Courses	Total Schools Where Required
Computer Algorithms	5		5
Business Programming I & II	1		1
Cobol	5		5
C++	1		1
Project Management		1*	1
Systems and Simulations	2	1*	3
Current Issues in IS	3	3*	6
Expert Systems and DSS	2	1*	3
Software	2		2
Unix	1		1
Information Research Management	2		2
Geographic Information Systems	1		1

* Required as one of two courses

If there were courses required which were IS related but not listed and/or taught within the IS curriculum, they were not considered in the study. Those courses required by more than half of the schools were ranked to determine the courses required by most of the schools and categorized to determine the required course concepts for the majority of these schools.

RESULTS

After examining the IS Curriculum Areas Course Requirements (see Table 1), results indicate that 6 of the curriculum areas were required by the majority (6 or more) of the schools. These specific curriculum areas were Fundamentals of IS, Programming Data and Object Structures, Networking and Telecommunications, Analytical and Logical Design, and Physical Design with DBMS, and Project Management and Practice.

When examining the other additional courses (see Table 2) required by the various schools, there were 3 courses that appeared to be either required or listed as being 1 of 2 required courses at 3 or more schools. Current Issues in Information Systems was required at 3 schools and was listed as one option of two choices at 3 schools. COBOL and Programming Algorithms was required at 5 schools. The Systems and Simulations course and Expert Systems and Decision Support Systems course were required at 2 schools and listed as 1 option of 2 choices at another school. Software Engineering and Information Resource Management were required at 2 schools. C++, Unix, Geographic

Information Systems were required at one school with two other courses, Business Programming I & II (with programming languages not specified) being listed as a requirement at one school – but without specifying the actual programming language to be taught. Project Management was listed as 1 option of 2 choices at one school.

After looking at the list of curriculum areas and required courses at the schools, they were combined and ranked. The Course or Curriculum Areas, which were specified most frequently, were listed first. Table 3 provides the rankings for those courses or curriculum areas specified by at least half (5 or more) of the schools.

Table 3: Ranking of Required Courses at More than Five Schools

Ranking	Course or Curriculum Area	Number of Schools Where Required
1	Analytical and Logic Design	9
2	Physical Design with DBMS	9
3	Fundamentals of IS	6
4	Network and Telecommunications	6
5	Current Issues in IS	6
6	Project Management and Practice	6
7	Project Data and Object Structure	6
8	Computer Algorithms	5
9	COBOL	5

Analysis & Logical Design and Physical Design with DBMS's were each required in 9 of the schools. Six schools required the following courses: Fundamentals of Information Systems, Programming Data and Object Structures, Project Management and Practice, Networking and Telecommunications, and Current Issues in Information Systems. Computer Algorithms and COBOL were listed as part of the requirements at 5 schools.

After examining this information, each of the course descriptions was further examined to determine how it could fit into the various curricular areas as specified by DPMA. The required courses were categorized where required by more than half the schools (see Table 4) were grouped and listed.

Table 4: Required Curricular Areas Required by More Than 1/2 of the Schools

Curriculum Areas	Number of Schools Requiring
Analytical and Logical Design	9
Physical Design with DBMS	9
Fundamentals of IS and/or Knowledge of Software	8
Programming Data and Object Structures and/or Computer Algorithms and/or	8

COBOL and/or C++ and/or Business Programming	
Project Management and Practice	6
Network and Telecommunications	6
Current Issues in IS	6

The two curriculum areas that were required by the most (9) schools were: (1) Analysis & Logical Design and (2) Physical Design with DBMS. Fundamental of IS and /or Knowledge of Software were cited as a requirement at 8 schools. The programming component was also listed as a requirement at 8 schools. Those courses were listed as Programming Data and Object Structures and/or Computer Algorithms and/or COBOL and/or C++ and/or Business Programming.

Additionally, six schools specified a Project management and Practice course and six schools required that students take a Network and Telecommunications course. Six schools listed a course labeled Current Issues in IS with required courses.

CONCLUSIONS

The information from this research indicates that these schools have chosen to develop their programs in very different ways. Information System majors number of credit hours in major varied greatly between schools, ranging from a requirement of: 15 IS hours to 32 IS hours, required in major before electives. As a result, there is no consensus regarding the number of IS credit hours one should complete to be classified as a IS major. However, when categorizing the information, there does seem to be agreement that IS majors should still complete certain courses: Analytical and Physical Design, Physical Design with DBMS, Fundamentals of IS and/or Knowledge of Software, Programming Data and Object Structures and/or Computer Algorithms and/or COBOL and/or C++ and/or Business Programming, Project Management and Practice, Network and Telecommunications, and Current Issues in IS.

RECOMMENDATIONS

IS Curriculum developers should be aware of those 7 areas cited as required by the majority of the schools studied. However, finding out specific information regarding the software, hardware, and ancillary tools being utilized for these classes provides a broad area to yet examine. Also, information regarding the Current Issues in IS courses and some of the additional IS required courses could be studied to determine what cutting edge technology related concepts are being covered, and those concepts that might yet be offered.

In the CIS discipline, assuring that programs remain current is difficult---with new information technology announcements being made on a daily basis. However, from the information examined, there does yet seem to be a core group of concepts that needs to be a part of an IS program. They are: (1) Analytical Design and Logical Design, (2) Physical Design with DBMS, (3) Fundamentals of IS and/or Knowledge of Software, (4) Programming Data and Object Structures and/or Computer Algorithms and/or COBOL and/or C++ and/or Business Programming, (5) Project Management and Practice, (6) Network and Telecommunications, and study of (7) Current Issues in IS.

References

Online website for AACSB (Association to Advance Collegiate Schools in Business); www.aacsb.edu

Information Systems Management Curriculum in the Online Catalog at the College of New Jersey; www.tcnj.edu/~is/courses.htm

Computer Information Systems Curriculum in the Online Catalog at University of Houston Downtown; www.dth.edu/degree/bmas/core.htm

School of Business and Economics – Computer Information Systems Concentration in the Online Catalog at Longwood College; www.longwood.edu/catalog/2001/SOBE3.htm

Computer and Information Sciences Department Curriculum in the Online Catalog at Minnesota State University, Mankato; www.mankato.msus.edu/dept/UGBulletin/undergrad_site/Programs/coms.htm

Information Systems Department Curriculum within the College of Business in the Online Catalog at Montana State University; www.cob.mnsu.edu/mgmt/degree.html

Department of Business Information Systems Major Curriculum in the Online Catalog at University of Idaho; www.uidaho.edu/catalog/5bus.html

Management Information Systems Curriculum in the Online Catalog at North Carolina A&T; www.ncat.edu/~lindm/oscar/mis.html

Computer Science and Information Systems Curriculum in the Online Catalog at Susquehanna University; www.susqu.edu/catalog/main.asp?major=38

Decision Sciences Curriculum in the Online Catalog at Valparaiso University; www.valpo.edu/cba/curriculum/decision.html

Information Systems Curriculum in the Online Catalog at Western Kentucky University; www.wku.edu/Dept/Academic/COBA/MgtIS/IS/courseDesc.html

Management Information Systems in the Online Catalog at University of Wisconsin - Eau Claire; www.uwec.edu/Admin/Registrar/Course/9900/pg_mis.htm

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