An Analysis Of IS 2002 Compliance in Selected US Business Schools

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Abstract

This paper examines and analyzes the current state of IS 2002 curriculum-based course offerings among a sample of Information System programs throughout the United States. Central to our examination is the concept of IS 2002 compliance. We define IS 2002 compliance in terms of the ten courses defined in the IS 2002 curriculum guidelines. An Information Systems program is considered to be fully compliant if it offers the equivalent of all ten courses. We examine the issue of compliance and attempt to correlate compliance with such variables as business school ranking, degrees offered, and geography.

Keywords: information systems, education, business school, curriculum, undergraduate business program, IS 2002

1. INTRODUCTION

IS 2002 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems (Gorgone, 2002), (hereafter referred to as IS 2002) is a result of an ongoing joint effort by three leading associations involved in this field: Association for Computing Machinery (ACM), Association for Information Systems (AIS), and Association of Information Technology Professionals (AITP). IS 2002 provides a model curriculum that could be used as guidelines in creating a new Information System (IS) curriculum or updating an existing one. IS 2002 "... reflects input from both industry and universities. It responds to industry requests for both increased emphasis in technical orientation and improved skill in individual and group interactions." (Gorgone, 2002). IS 2002 is a comprehensive report that provides detailed discussions on the needs of the various constituencies of the field: students, business, faculty, etc., and identifies a set of well-defined requirements for such a program, and finally defines a set of 10 model courses. Table 1 taken from (Ulema, 2004) shows a list of these courses along with an additional prerequisite course called IS 2002.P0. It should be noted that these courses do not necessarily correspond to individual college courses but rather they are guidelines from which one or more college courses can be developed. Detailed descriptions of these model courses can be found in (Gorgone, 2002).

Table 1.   IS 2002 Curriculum

Course ID	Course Title	Comments
IS 2002.P0	Personal Productivity with IS Technology	Prerequisite
IS 2002.1	Fundamentals of Information Systems	Required
IS 2002.2	Electronic Business Strategy, Architecture and Design	
IS 2002.4	Information Technology Hardware and Software	
IS 2002.5	Programming, Data, File and Object Structures	
IS 2002.7	Analysis and Logical Design	
IS 2002.3	Information Systems Theory and Practice	Electives
IS 2002.6	Networks and Telecommunication	
IS 2002.8	Physical Design and Implementation with a DBMS	
IS 2002.9	Physical Design and Implementation in Emerging Environments	
IS 2002.10	Project Management and Practice	

This paper is aimed at determining the level to which this model curriculum has been adopted. We attempt to determine this by examining and analyzing the current state of IS 2002 curriculum-based course offerings among a sample of business schools throughout the United States.

Landry et al. in (Landry, 2001) present the results of a survey among the IS faculty to determine the awareness and acceptance of IS 97, the predecessor of IS 2002. According to the Landry study, only 12% of the IS faculty that responded were committed users. Since then, it is commonly believed that the model curriculum, especially, IS 2002, has been widely accepted and utilized by IS programs. We attempt to measure the degree of this acceptance and determine, in some detail, the aspects of the model curriculum that are being adopted. We hope that the result of this study will provide a feedback for the committees involved in putting together the next generation of the model curriculum.

In our analysis, we focus on the concept of IS 2002 compliance. An IS program is considered to be fully IS 2002 compliant if it offers the equivalent of all ten IS 2002 courses (IS 2000.1 – IS 2002.10). We consider an IS program to be partially compliant if offers some fraction of the IS 2002 courses. For example if a particular IS program offers eight of the ten courses we state that the program is 80% compliant. Furthermore, we attempt to correlate vari-

ous characteristics of IS programs with the level of IS 2002 compliance. Some of these characteristics that we are interested are the school location (region), ranking, and degrees offered.

In this study, we make a number of assumptions. Although in this paper we use the term IS, we realize that the academic discipline of IS is associated with many terms. In this study we choose to focus on the following terms:

- Management Information Systems
- Computer Information Systems
- Information Management
- Business Information Systems
- Information Technology Systems

Therefore, during the data collection process, we focused on those programs associated with the above terms. In addition, we focused solely on undergraduate IS programs whose department is within a Business School – that is the Business School offers an undergraduate IS major.

The paper is structured as follows: the next section describes our data collection process. We discuss the type of data that we collected and the selection process. Then we present the results of the analysis of IS compliance. Finally, we present our conclusion and plan for further work.

2. DATA COLLECTION

The IS major has traditionally been considered a sub-discipline within Business edu-

cation. Students majoring in IS typically take core business courses, such as Accounting and Management, along with courses specific to their major. In our investigation we encountered a number of schools that offered IS degrees outside the context of a Business education. These schools and their associated programs were not considered in our study as different teaching constraints affected the courses that were offered.

The main goal of our study was to determine the level of IS 2002 compliance throughout U.S. Business schools. Examining every IS degree program within the U.S. would have been prohibitively expensive in terms of time and other resources. Therefore, we decided to examine a sample of U.S. Business Schools. By examining the undergraduate IS program within these schools we hoped to get a picture of IS 2002 compliance. Rather than randomly selecting a sample of business schools, we decided to create a study cohort based upon a few criteria.

Geography was the first criteria we used to select schools for inclusion in our study cohort. We utilized the four region-mapping scheme employed by (US News, 2004). In this scheme each of the fifty US states belong to one of four regions (North, South, Midwest and West). From each of these regions we selected an approximately equal number of schools. The schools selected were listed in (US News, 2004). Note that the schools listed in (US News, 2004) run the gamut from small liberal arts colleges to Ph.D. granting research institutions. Within each region we attempted to select schools of varying size and rank. That is we wished to get approximately equal representation of schools of varying size, rank, and location. We considered a Business school to be highly ranked if it appeared on the "Best Business Programs" list on page 116 of (US News, 2004). This "Best Business Programs" list consists of 45 business schools. For the purposes of our study, all schools not appearing on this list were considered to be low ranking business schools.

To get a snapshot of course offerings at the selected schools we relied on publicly available web-based information supplied by the school and its IS department. We found that IS degree requirements, and course descriptions, were typically available on the IS department's web page or the bulletin published by the associated School of Business. AACSB accreditation information was collected from the AACSB website (AACSB, 2005). We found that the AACSB web site was also useful in obtaining information concerning undergraduate and graduate student enrollment. For non-AACSB accredited schools we obtained enrollment information from (About.com, 2005), when it was not available on the associated school's web site.

If, during our research, we found that a particular IS program did not have degree requirements posted on the web (or in a downloadable bulletin) then, whenever possible, an alternative school was selected for our study. We attempted to find alternative schools that had similar characteristics (region, size, rank, etc.) to the school that had to be dropped from our study. Note that some schools had to be dropped and a suitable replacement could not be found. This was especially true with several highly ranked business schools that offered undergraduate IS degrees with a non-business focus (e.g. MIT). The size of our study cohort is 50 U.S. Business Schools.

For each school in our cohort we mapped their IS courses to a corresponding IS 2002 course. We utilized course name and description in this mapping. As described in (Daigle, 2004), mapping IS courses to IS 2002 courses is not always trivial. A truly accurate mapping requires intimate knowledge of the curriculum of each class, etc. However, we believe that our approach, of examining course titles and descriptions, allows us to get a good approximation of course content.

3.   ANALYSIS

In this section we describe the study cohort and analyze IS 2002 compliance under a number of criteria.

Cohort

Our study cohort consists of 50 business schools. At a minimum each of the business schools offers an undergraduate IS major. Table 2 lists all the schools in our cohort. The regional breakdown of our co-

hort is as follows: 12 schools from the South, 12 from the Midwest, 11 from the West and 15 from the North. Almost all schools in our cohort (48 of 50) are members of AACSB. Note that AACSB membership was not part of our criteria for selecting schools. It was only after our cohort was formed that we checked the AACSB membership status of each school.

Slightly more than half the schools in our

cohort (32 out of 50) offer Ph.D. degrees. Our cohort consists of 26 highly ranked schools and 24 low ranked schools. As stated in section 2, any business school that appeared on the "Best Business Programs" list on page 116 of (US News 2004) was, for the purposes of this study, considered to be a highly ranked school. All other schools were considered to have a low rank.

Table 2. Business School Study Cohort

Andrews University	University of Arizona
California State University, Fresno	University of Colorado
Carnegie Mellon University	University of Florida
Emory University	University of Georgia
Georgia Institute of Technology	University of Hawaii at Manoa
Georgia State University	University of Illinois
Indiana University	University of Maryland–College Park
Indiana University of Pennsylvania	University of Massachusetts Boston
Baruch College	University of Michigan
Iona College	University of North Texas
Manhattan College	University of Pennsylvania
New Jersey Institute of Technology	University of Southern California
New York University	University of Southern Maine
North Carolina A&T State University	University of Texas at Arlington
Pace University	University of Texas, Austin
Penn State University	University of Virginia
Purdue University	University of Wisconsin-Madison
Quinnipiac University	Utah Valley State College
St. Bonaventure University	Virginia Commonwealth University
St. Cloud State University	Virginia Polytechnic Institute
Texas Tech University	Wake Forest University
U of Notre Dame	Washington University in St. Louis
U of Washington in Seattle	Wayne State University
University of Central Florida	Wichita State University
University of Minnesota, Twin cities	Winthrop University

IS 2002 Compliance

The major goal of our study was to measure the level of IS 2002 compliance among IS undergraduate programs. Our definition of compliance only refers to the ten required and elective IS 2002 courses – we did not consider the prerequisite course (IS 2002.P0) in our definition of compliance. An IS program offering the equivalent of all ten IS 2002 courses was considered to be

fully IS 2002 compliant. Figure 1 shows the level of compliance among our cohort. The school names, represented by the numbers 1 through 50 (along the X axis), do not have a direct correspondence with the order of the school names in Figure 1 – we have purposely obfuscated the mapping so as to avoid labeling any particular school as one that is poorly compliant with the IS 2002 curriculum.
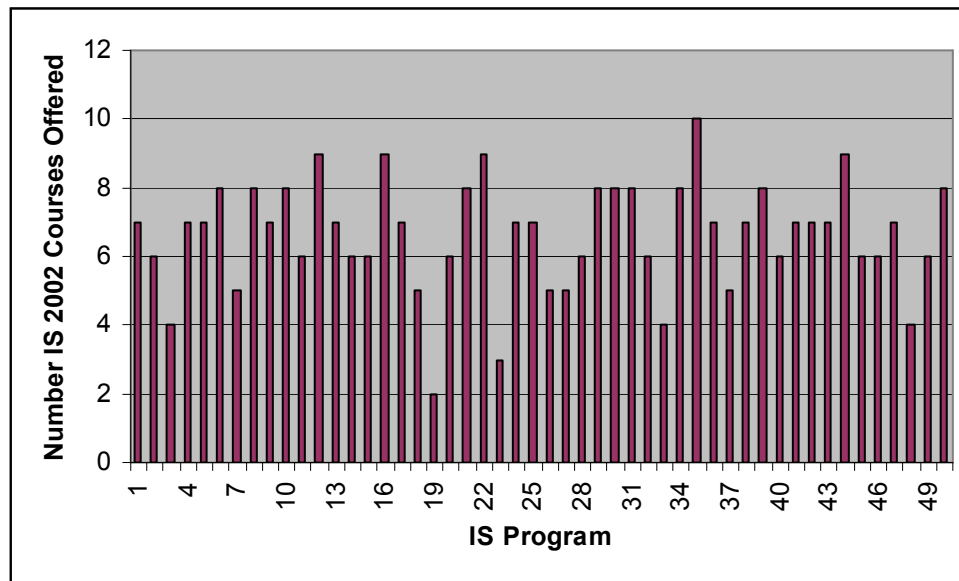
Figure 1.   Number of IS 2002 Courses Offered by Cohort Members

The average number of IS 2002 compliant courses offered by cohort members is 6.64 courses. As you can see from Figure 1, only one school was fully compliant and one school only offered the equivalent of two IS 2002 courses. For the purposes of this paper we will say that any IS program offering at least 6.64 IS 2002 courses has above-average compliance. Any school offering below 6.64 IS 2002 courses have below-average compliance.

Above-Average Compliance

Table 3 shows the breakdown by region of schools with above-average compliance. The schools in the Northern region of the U.S. showed the greatest level of compliance (86.67%). Schools within the Western region showed the lowest level of compliance (36.36%).

Table 3.   Above Average Compliance by Region

Region	Number of Schools in Region	Number of Schools with Above Average Compliance	% Above Average Compliance
South	12	5	41.67%
Midwest	12	7	58.33%
West	11	4	36.36%
North	15	13	86.67%

In our study cohort, there appears to be a strong correlation between being a school in the northern region and having above average IS 2002 compliance.

Interestingly, there does not appear to be a strong correlation between school rank

and above-average compliance. The same holds true for Ph.D. granting institutions. There are 26 highly ranked schools and 24 low ranked schools in our study cohort. Fifteen (or 57%) of the highly ranked schools and 14 (or 58%) of the low ranked schools exhibited above-average compli-

ance. There are 32 Ph.D. granting schools, and 18 non-PhD. granting schools in our study cohort. Nineteen (or 59%) PhD. granting schools exhibited above-average compliance whereas 10 (or 55%) of the non-PhD. granting schools exhibited above-average compliance.

Figure 2 shows the number of schools offering each of the IS 2002 courses. IS 2002.8 (DBMS) is offered by almost all of the IS programs (47 out of 50). Interest-

ingly, IS 2002.8 is considered to be an elective course in the IS 2002 curriculum. Among required courses IS 2002.5 (Programming) and IS 2002.7 (Analysis and Design) are the most frequently offered courses with 45 and 44 IS programs offering them, respectively. IS 2002.10 (Project Management) is poorly represented among the course offerings with only 15 of 50 IS programs offering the course.
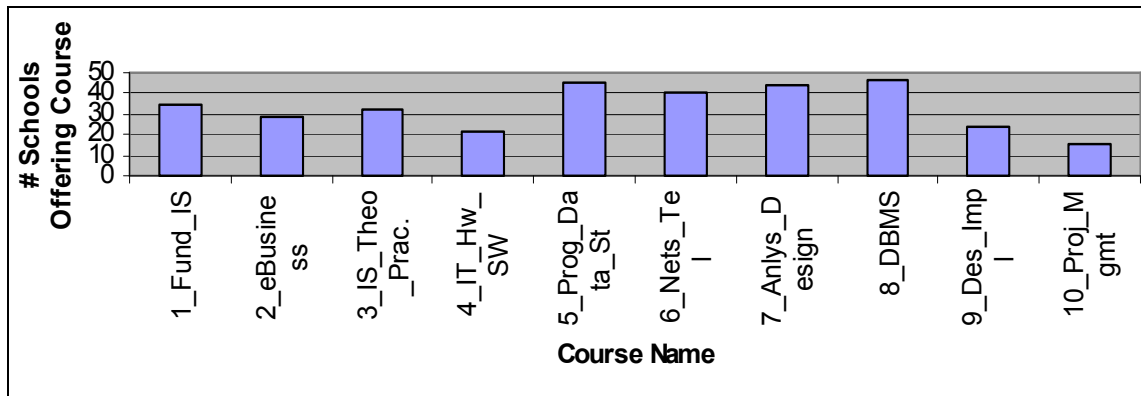

Figure 2. IS 2002 Courses Offered

Figure 3 gives us greater insight into how the IS 2002-based courses are being utilized within the curriculum of our cohort members. During the data gathering phase of our study we not only recorded whether a particular IS 2002-based course was offered, but also recorded the courses' status within the curriculum – whether it was required for the IS degree or simply an elective course. Once again we see that IS 2002.8 is considered to be an important course within IS departments, despite its status as an elective course within the IS 2002 curriculum. This course is required by 44 of the 50 IS departments in our cohort.

IS 2002.7 (Analysis and Design) and IS 2002.5 (Programming) are both required in the IS 2002 curriculum and are strongly represented among our cohort members (required by 41 and 42 IS departments respectfully).

Perhaps most surprising is the weak showing of IS 2002.2 (E-Business Strategy) and IS 2002.4 (IT Hardware and Software). Both are required under the IS 2002 curriculum, yet only about half the schools in our cohort offer courses covering this ma-

terial.

4. CONCLUSION AND FUTURE WORK

The analysis of section 3 represents the results of our preliminary work in the IS 2002 compliance study. We continue to gather information about the various IS programs. Unfortunately our data gathering method is tedious and time-consuming, as it is not amenable to automation. Each IS Department web site must be combed, by hand, for the required course information. We found many departmental web sites to be incomplete or out-of-date. This was especially true among the smaller (non-PhD. granting institutions). In addition, several IS departments are actually joint departments with other disciplines. We found IS departments that have been combined with Operations Research, Accounting and Management. This made it harder to gather some study variables such as number of faculty or number of students – the stated number, if published, represents the combination of the two departments.
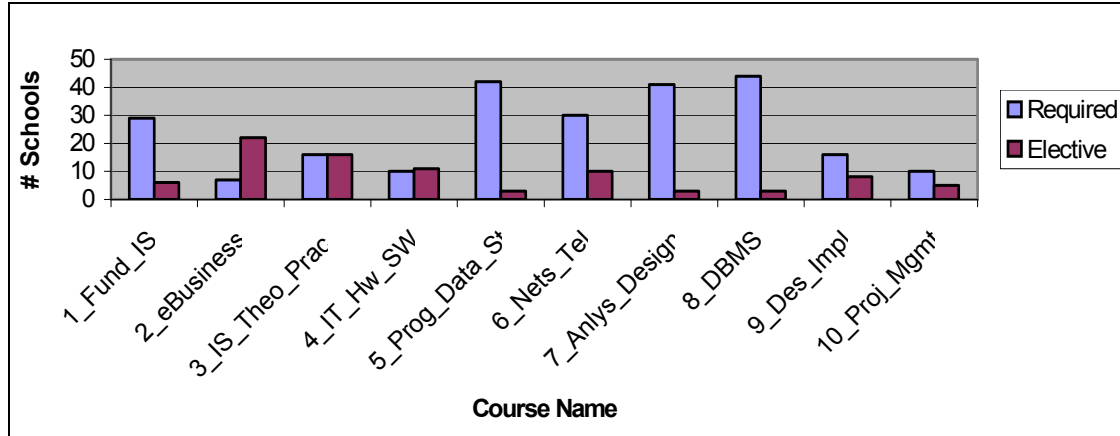
Figure 3. IS 2002 Courses Degree Requirements

Additionally, we have found that at several schools some IS 2002 courses were taught by non-IS faculty. These external faculty members typically are from the Computer Science or Information Technology departments.

Slightly more than half (58%) the schools in our study cohort offered at least 7 of the ten IS 2002 courses. However, we have found that the number of courses offered by IS programs vary greatly from school to school. Surprisingly, many of the smaller schools had a much greater selection of non-IS 2002 courses. We are currently working on categorizing these courses and hope to incorporate them into a future study.

In our study to date, only the region seems to have a strong correlation to IS 2002 compliance. Over 86% of study cohort members within the northern region had above average compliance. We have found that school rank and degree offering do not have a strong correlation to IS 2002 compliance. However, as previously stated this study is still in its infancy and more work needs to be done.

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