Towards an Understanding of Accounting Information Systems as a Discipline: A Comparative Analysis of Topical Coverage in AIS and MIS Courses

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ABSTRACT

The accounting information systems (AIS) discipline lacks a sense of identity relative to the closely related field of management information systems (MIS). By identifying how AIS is evolving and what makes AIS unique from MIS, the field can gain a better understanding of its importance. We analyze a sample of syllabi for the introductory AIS and MIS courses, focusing on similarities and differences between the AIS and MIS fields as reflected in the topical coverage choices made by AIS and MIS educators. We also investigate the effects of the passage of the Sarbanes-Oxley Act on topical coverage in the introductory AIS course. The findings reveal that while AIS courses have a unique focus on transaction processing and internal controls relative to MIS courses, more technical topics such as hardware and software issues and IS solutions are covered more commonly in MIS courses rather than AIS courses. We also find that AIS topical coverage has changed since the passage of the Sarbanes-Oxley Act, with a more pronounced focus on internal control and security compared to the pre-Sarbanes Oxley era. The key contribution of this paper is in providing empirical evidence in support of the "intersection view" of AIS, which asserts that while AIS and MIS have some topics in common there are also many issues unique to each field.

Keywords
Accounting information systems, management information systems, course syllabi, topical coverage.

INTRODUCTION

That the field of accounting information systems (AIS) suffers from somewhat of an "identity crisis" is old news to most academics familiar with the field. Compared to other specialty fields within accounting such as auditing and tax, AIS is less well understood in terms of its "common body of knowledge." Particularly vexing is the question of how AIS differs from the closely related field of management information systems (MIS). Over fifteen years ago, Sutton (1992, p. 1) commented, "the accounting information systems (AIS) discipline has long suffered from an absence of identity." Sutton (1992, p. 2) went on to note "…before AIS moves

forward as a discipline, we need to understand our discipline; better understand the importance of that discipline to the accounting, auditing, and overall business environment." In the introductory chapter to the *Researching Accounting as an Information Systems Discipline* monograph, Sutton and Arnold suggest that the debate over defining AIS and making a distinction between AIS and MIS continues (AAA, 2002).

Several accounting scholars have sought to define AIS and make clear the distinctions between AIS and MIS. The second editor of the *Journal of Information Systems (JIS),* Bill McCarthy distinguished AIS from MIS by "…its involvement in transaction processing for accountability purposes in organizations" (McCarthy 1990, vi). Later, JIS co-editors Murthy and Wiggins (1999) defined AIS as the "logical intersection" of accounting and MIS, with AIS focusing more on the information itself and MIS focusing more on the systems that produce information. Per this "intersection view" of AIS, while there are some topics common to both AIS and MIS, a number of topics are unique to each field and more appropriate to teach and research within that field. Others, however, have taken a much broader view of AIS. Sutton (1992) and Sutton and Arnold (2002) in particular suggest that AIS is becoming a major force within the field of accounting, and accounting itself is being subsumed within (M)IS. They state "…accounting today is becoming AIS—a growing sub-discipline in the domain of IS" (Sutton and Arnold 2002, p. 4). In this "sub-discipline" or "subset" view, virtually all AIS topics are also MIS topics and vice versa. Under such a "subset view," it becomes difficult (or impossible) to identify and claim ownership of topics unique to teach and research within AIS in contrast to MIS.

In this paper, we adopt an inductive approach to discerning the similarities and differences between AIS and MIS with the goal of better understanding: (1) AIS as a discipline and (2) the unique aspects of AIS as an academic field. Instead of focusing on similarities and differences on the research dimension, we contend that a potential answer to the AIS identity crisis and the "AIS vs. MIS" conundrum lies in the teaching dimension of the academic enterprise. Specifically, we focus on the views of AIS and MIS educators regarding the "common body of knowledge" in their fields as reflected in topical coverage in their course syllabi. By analyzing AIS course content and the similarities and differences between AIS and MIS courses as reflected in choices made by AIS and MIS faculty, this study seeks to shed light on the questions of "what is AIS?" and "how does AIS differ from MIS?" While there have been several articles published pertaining to the topical coverage of AIS, there is no prior research comparing and contrasting topical coverage between AIS and MIS. In addition to comparing topical coverage between AIS and MIS courses, we also examine how AIS courses have changed in recent years since passage of the Sarbanes Oxley Act of 2002, given that this legislation brought a renewed focus on the topic of internal controls. Whether AIS courses have changed materially in response to the Sarbanes Oxley Act is a question that should be of interest to AIS educators..

The method used to achieve the research objective comprises: (1) reviewing prior research pertaining to AIS introductory course syllabi data, (2) collecting syllabi of introductory AIS and MIS courses, (3) codifying AIS and MIS syllabi by topical area, (4) providing descriptive analysis of the similarities and differences in topical coverage between AIS and MIS courses, and (5) providing descriptive analyses of the changes in topical coverage in the AIS course in response to the passage of the Sarbanes-Oxley Act. The results reveal that, not surprisingly, AIS courses tend to emphasize internal controls, system documentation technology, transaction processing cycles and computer fraud whereas MIS courses tends to focus more on the technical IT topics such as hardware and software issues and IS solutions. The results also indicate that AIS courses are shifting to a greater focus on internal control issues since the passage of the Sarbanes-Oxley Act. Although these findings might seem intuitive and consistent with one's prior beliefs, the contribution of this paper is in providing empirical evidence in support of these beliefs. In effect, we provide an empirical basis for arguing the intersection view of AIS. Thereare fundamental differences between AIS and MIS and a background in

accounting and auditing would greatly facilitate coverage of the topics we find are unique to AIS. These findings should be of interest to AIS educators and researchers seeking to better understand the unique aspects of AIS and the linkage between AIS and MIS.

The remainder of the paper is organized as follows. The second section of the paper reviews the prior literature related to AIS and MIS topical coverage. The third section provides the research methodology including detailed information on current topical coverage in AIS and introduction to MIS courses. The fourth section provides the results of the research and the fifth section provides limitations and the conclusion.

BACKGROUND AND PRIOR LITERATURE

AIS Introductory Course Topical Coverage Content

In 1987, the American Accounting Association's (AAA) Committee on Contemporary Approaches to Teaching AIS identified topics that should be considered a "common body of knowledge" for introductory AIS courses (AAA 1987). Some of the main areas of suggested coverage include internal control, database management systems, introduction to systems, introduction to transaction processing systems (revenue, purchasing, and general ledger reporting), hardware/software issues, and system analysis and design.

Davis and Leitch (1988) surveyed AIS faculty and working professionals to identify AIS topics that they felt were important or would be important to AIS in the future. Topics emerging as being important included internal control, transaction processing cycles (revenue, purchasing, and production), database management, and systems documentation techniques. Subsequently, Heagy and Rakow (1991) surveyed AIS professors to assess the degree of consensus on topical areas they felt were important to cover in the AIS course. Similar to the Davis and Leitch (1988) study, the areas of importance found in the Heagy and Rakow (1991) study included internal control, introduction to transaction processing, file organization and access, introduction to systems, and database/file systems architecture.

In a slightly different vein, Smith and Bain (1993) investigated what authors of introductory AIS textbooks deemed necessary as part of topical coverage in their textbooks. After surveying faculty to elicit their perceptions of appropriate AIS topics, they then compared those perceptions with actual coverage in introductory AIS textbooks from the 1980s to the early 1990s. Smith and Bain (1993) found that textbook authors had changed the breadth and depth of topical coverage, presumably in response to changing faculty needs. Their results showed that topics emphasized included internal control, traditional systems analysis and design, transaction processing-revenue, transaction processing-purchasing, and database/file systems architecture.

Groomer and Murthy (1996) compiled comprehensive research data related to the introductory AIS course. They surveyed both department chairpersons and AIS faculty to obtain data on the institutions offering AIS courses and information about the materials used in the course, topics covered, projects assigned, and instructional approaches employed. Among the findings, topical data deemed important for the introductory AIS course includes internal control, systems documentation techniques, transaction processing-revenue, transaction processing-purchasing, introduction to systems, database management systems and general ledger reporting.

Following the complete and thorough review of past research findings related to topical course content recommended in introductory AIS courses, Bain et al. (2002) completed a ranking of the topics deemed most important (as to coverage) according to an overall consensus from the past research. The topics found important (in order of importance) include internal controls, transaction processing-revenue, transaction processing-

purchasing, traditional systems analysis and design, introduction to systems, database/file systems, architecture, database management systems, communications systems and technology, general hardware issues, and general software issues.

Table 1
AIS Topical Coverage
(Based on sample of 46 syllabi. Source: Table 9 in Bain, Blankley and Smith, 2002)

General Topics	# of syllabi covering	% of syllabi covering	Average % class time
Introduction to Systems	46	100.0%	8.4%
Internal Control	45	97.8	11.7
Systems Documentation Techniques	34	73.9	6.6
Transaction Processing-Purchasing	33	71.7	4.0
Transaction Processing-Revenue	32	69.6	3.6
Traditional Systems-Analysis and Design	32	69.6	8.3
Database Management Systems	30	65.2	5.2
Introduction to TP	29	63.0	4.4
Communication Systems and Tech.	29	63.0	4.6
Transaction Processing-G/L Reporting	22	47.8	2.6
Computer Fraud	21	45.7	2.5
Transaction Processing- Production	20	43.5	1.8
IT Audit	19	41.3	2.5
File Organization and Access	17	37.0	2.3
End User Computing	17	37.0	2.6
Transaction Processing-HR/Payroll	15	32.6	1.7
General Hardware and Software Issues	14	30.4	2.5
Data Modeling Techniques	14	30.4	2.0
Other	12	26.1	2.0
Database/File Systems Architecture	9	19.6	1.1
Client/Server and Networking	8	17.4	0.7
Ethics	6	13.0	0.3
Structured Query Language	5	10.9	1.1
Event Based Systems Architecture	4	8.7	1.1
Enterprise Wide Systems	2	4.3	0.2
Strategic Information Systems	2	4.3	0.2
Executive Information Systems	2	4.3	0.1
Intelligent Agents	2	4.3	0.5
Programming	2	4.3	0.2
Expert Systems	1	2.2	0.1
Decision Support Systems (DSS)	1	2.2	0.2
International Issues	1	2.2	0.2
Business Process Modeling	0	0.0	0.0
Artificial Intelligence	0	0.0	0.0
Projects			
DBMS	16	35.6	4.1
Manual Systems	16	35.6	1.9
Spreadsheets	14	31.1	2.8
G/L Software	13	28.9	3.6
Other	12	26.0	1.2
Communication	7	15.6	0.2
Internet	6	13.3	0.8
Flow Charting	6	13.3	0.3
ERP Systems	1	2.2	0.1
CASE Tools	1	2.2	0.1
Practice Problem	1	2.2	0.1
General Office	0	0.0	0.0
Business Process Software	0	0.0	0.0

Following the analysis and synthesis of the prior literature related to topical coverage in introductory AIS courses, Bain et al. (2002) collected a sample of 46 on-line AIS syllabi and analyzed topical coverage listed in that sample. Of the syllabi collected, 33 contained course topic content and data sufficient to determine the percentage of time allocated in class for each topical area. The results of their analysis of AIS course syllabi are summarized in Table 1, which lists the topics covered in the AIS course, the number and percentage of syllabi

covering the topic, and the average percentage of class time spent on the topic.

As shown in Table 1, the findings emerging from the Bain et al. (2002) analysis of AIS course syllabi indicate that the introductory AIS course pre-2002 tended to put the most emphasis on the following topics: (1) introduction to systems with approximately 100% of syllabi covering and each syllabus allocating approximately 8.4% of class time to cover, (2) internal control with approximately 98% of syllabi covering and each syllabus allocating approximately 11.7% of class time to coverage, (3) system documentation techniques with approximately 74% of syllabi covering and each syllabus allocating approximately 6.6% of class time to cover, (4) transaction processing-purchasing with approximately 72% of syllabi covering and each syllabus allocating approximately 4% of class time to coverage, (5) traditional systems analysis/design with approximately 70% of syllabi covering and each syllabus allocating approximately 8.3% of class time to coverage, and (6) transaction processing-revenue with approximately 70% of syllabi covering and each syllabus allocating approximately 3.6% of class time to coverage.

MIS Introductory Course Syllabi Topical Coverage Content

Over the last 30 years, The Association for Computing Machinery (ACM), The Association for Information Systems (AIS) and The Association of Information Technology Professionals (AITP) have worked together to produce a recommended "model' curriculum for IS courses. The "model" curriculum is presented in the IS 2002 report (Gorgone et al. 2002).[1] As shown in Table 2, the IS 2002 model curriculum clearly identifies areas deemed important in the introduction to MIS course.

Table 2
The IS 2002 Model Curriculum

The basic topical components recommended for the Introduction to MIS course

(1) Systems concepts, system components and relationships
(2) Cost value and quality of information
(3) Competitive advantage of information
(4) Specification, design and re-engineering of information
(5) Application versus system software
(6) Package software solutions
(7) Procedural versus non-procedural programming languages
(8) Object oriented design
(9) Database features
(10) Functions and architecture
(11) Networks and telecommunication systems and applications
(12) Characteristics of IS professionals and IS career paths
(13) Information security, crime and ethics
(14) Practical exercises-including usage of database software etc.

Wang (2007) sought to develop a consistent set of pedagogical and assessment approaches for the introductory MIS course. As a starting point, Wang (2007, p. 137) acknowledged that the IS 2002 report presented "a description of IS as a field of academic study, presents general course description of the model curriculum, and outlines exit characteristics for graduates." Based on an analysis of MIS textbooks, Wang

[1] As stated in the foreword to the IS 2002 report, "The IS 2002 model curriculum is the first update of the curriculum effort of the ACM, AIS and AITP societies since IS' 97. IS 97' has been widely accepted and has become the basis for accreditation of undergraduate programs of information systems" (Gorgone et al. 2002, p. 5).

ascertained that the topics for the MIS course could be grouped into the following five units: Unit 1 -- Roles of MIS in the organization (Competitive advantage of information and MIS; Systems concepts; MIS components and their relationships; Value and quality of information and MIS), Unit 2 -- Information technologies in business (MIS infrastructure and architectures; Computer hardware; System software, application software, package software solutions; Database features; Data management; Telecommunication systems and networks), Unit 3 -- Types of management information systems (Enterprise MIS, e-business, and MIS in business functional areas; E-commerce; Decision support systems; Artificial intelligence techniques in business), Unit 4 -- Information systems development process (Systems specification, systems analysis and design, and MIS re-engineering; Roles of MIS professionals in system development; Structured approach and object-oriented approach), and Unit 5 -- Social and managerial issues of information systems (Information and MIS security; Cyber-crime; MIS ethics).

While there have been efforts in both the AIS and MIS areas to survey educators and analyze syllabi and textbooks as the basis for understanding each field, what is lacking in the literature is a comparative analysis of topical coverage across the two fields. The present study seeks to fill this gap in the literature, with the goal of shedding light on the similarities and differences between the two closely related fields.

METHOD

The Bain et al. (2002) study discussed earlier already provided detailed information regarding AIS topical coverage pre-2002. The first step in our study involved collecting data about current (post-2002) AIS and MIS topical coverage as revealed in course syllabi. The objective of collecting post-2002 AIS syllabi was to determine the impact of the Sarbanes-Oxley Act on AIS topical coverage, if any. MIS course syllabi were collected to compare AIS and MIS syllabi in terms of the similarities and differences in topical coverage. To accomplish these objectives, 50 syllabi pertaining to introductory AIS and MIS courses from various universities within the United States and Canada were retrieved through Internet searches.[2]

Data collection and coding of AIS and MIS syllabi

The 50 AIS syllabi were collected from introduction to AIS syllabi posted on-line at the American Accounting Association's web site at aaahg.org and from a Google search. The search terms used in the collection process included "introduction to accounting information systems course" and "syllabus." The 50 MIS syllabi were collected from introduction to MIS syllabi posted on-line at IS World's web site at www.isworld.org and from a Google search. The search terms used in the collection process included "introduction to MIS course" and "syllabus."

Following the collection process, each syllabus was coded and categorized based on the topical content listed in the course syllabus.[3] The criteria for eligibility used in the study included the following: the syllabus must contain an outline (class schedule) for the course and the schedule must include topical coverage, the syllabus must be from a university that is accredited by the Association to Advance Collegiate Schools of Business (AACSB) and each syllabus must be relatively current (2002-2008 for both AIS and MIS). Within the current sample, 92% of the AIS syllabi and 83% of the MIS syllabi collected are dated between 2004 and 2008. It is reasonable to assume that the textbooks on which the AIS syllabi are based include coverage of the Sarbanes-Oxley Act of 2002, given the typical two to three year textbook publishing lag.

[2] We chose 50 syllabi so that our sample size would be similar to that in the Bain et al., (2002) study. During the collection process, however, it was apparent that 50 was close to the upper limit of complete AIS and MIS syllabi that are available on the Internet.
[3] The categorization process was consistent with that of Bain et al. (2002).

Of the syllabi collected, 48 AIS syllabi and 40 MIS syllabi met the criteria for eligibility in the study. The usable syllabi come from mid-size to large size universities from across the United States and Canada. Specifically, 37.5% of the AIS syllabi (37.5% of the MIS syllabi) come from universities in the South, 23% of AIS syllabi (7.5% of the MIS syllabi) come from universities in the West. 16.5% AIS syllabi (27.5% MIS syllabi) come from universities in the East, and 21% of the AIS syllabi (22.5% of the MIS syllabi) come from universities in the North along with 2% (5.% from MIS) coming from Canadian Universities.

RESULTS

Part of the initial analysis includes identifying the topical coverage content in the AIS syllabi. It appears that, post-2002, the introductory AIS course is placing an emphasis on the following topics: (1) introduction to systems with approximately 100% of syllabi covering and each syllabus allocating approximately 5.7% of class time to coverage, (2) internal control with approximately 98% of syllabi covering and each syllabus allocating approximately 15.7% of class time to coverage, (3) system documentation techniques with approximately 92% of syllabi covering and each syllabus allocating approximately 9% of class time to cover, (4) transaction processing-revenue with approximately 81% of syllabi covering and each syllabus allocating approximately 6.6% of class time to coverage, (5) introduction to transaction processing with approximately 75% of syllabi covering and each syllabus allocating approximately 5.6% of class time to coverage, and (6) database management systems with approximately 75% of syllabi covering and each syllabus allocating approximately 5.4% of class time to coverage.

AIS Topical Coverage After the Sarbanes-Oxley Act

In comparing the (current) post-2002 AIS topical coverage to Bain et al.'s (pre-2002) findings, the results reveal many changes. As might be expected, more class time is being devoted to internal control issues, with topical coverage increasing from 11.7% to 15.7% of class time. Transaction processing cycles (e.g., revenue) are also receiving greater attention, with coverage going from 3.6% of class time to 6.6% of class time. Additionally, more class time is being devoted to covering REA modeling (from less than .1% of class time to 3.8% of class time). Other topics receiving greater attention are e-commerce, which has increased from less than .1% of class time to 2.3% of class time, and system documentation techniques, which has increased from 6.6% of class time to over 9% of class time.

In terms of areas where coverage has decreased, post-2002 the AIS course appears to be placing less of an emphasis on topics such as traditional systems development, communication technologies, introduction to systems, end-user computing and hardware and software issues. In particular, AIS has decreased class time spent on traditional systems development (from 8.3% to 3.9% of class time). In addition, less class time is being devoted to discussing communication systems and technologies (from 4.6% of class time to .2% of class time). Related, AIS instructors appear to be allocating less class time to the topic of "introduction to systems" (decreasing from 8.4% of class time to 5.7% of class time). Other more technical topics that are receiving less attention are end-user computing (decreasing from 2.6% to .2% of class time) and hardware and software issues (decreasing from 2.5% of class time to only .4% of class time).

Table 3
AIS Topical Coverage
Pre-2002 (Bain et al. 2002) compared to Post-2002

	Pre-2002			*Post-2002*			*Difference*	
General Topics	# of Syllabi	% of Syllabi Covering	Average % of Class Time	# of Syllabi	% of Syllabi Covering	Average % of Class Time	% of Syllabi Covering (Post-Pre)	Average % Class Time
Introduction to Systems	46	100.0 %	8.4%	48	100.0%	5.7%	0.0%	-2.7 %
Internal Control	45	97.8	11.7	47	97.9	15.7	0.1	4.0
Systems Documentation Techniques	34	73.9	6.6	44	91.7	9.0	17.8	2.4
Transaction Processing-Purchasing	33	71.7	4.0	36	75.0	5.2	3.3	1.2
Transaction Processing-Revenue	32	69.6	3.6	39	81.3	6.6	11.7	3.0
Traditional Systems-Analysis & Design	32	69.6	8.3	30	62.5	3.9	- 7.1	-4.4
Database Management Systems	30	65.2	5.2	36	75.0	5.4	9.8	0.2
Introduction to Transaction Processing	29	63.0	4.4	36	75.0	5.6	12.0	1.2
Communication Systems and Tech.	29	63.0	4.6	2	4.2	0.2	-58.8	-4.4
Transaction Processing-G/L Reporting	22	47.8	2.6	19	39.6	1.9	-8.2	-0.7
Computer Fraud	21	45.7	2.5	24	50.0	3.2	4.3	0.7
Transaction Processing- Production	20	43.5	1.8	13	27.1	1.6	-16.4	-0.2
IT Audit	19	41.3	2.5	11	22.9	1.2	-18.4	-1.3
File Organization and Access	17	37.0	2.3	17	35.4	4.2	-1.6	1.9
End User Computing	17	37.0	2.6	2	4.2	0.2	-32.8	-2.4
Transaction Processing-HR/Payroll	15	32.6	1.7	21	43.8	2.2	11.2	0.5
General Hardware and Software Issues	14	30.4	2.5	3	6.3	0.4	-24.1	-2.1
Data Modeling Techniques	14	30.4	2.0	25	52.1	3.8	21.7	1.8
REA Modeling	0	0.0	0.0	19	39.6	3.8	39.6	3.8
Other	12	26.1	2.0	9	18.8	2.5	-7.3	0.5
Database/File Systems Architecture	9	19.6	1.1	9	18.8	1.2	- 0.8	0.1
Client/Server and Networking	8	17.4	0.7	2	4.2	0.2	-13.2	-0.5
Ethics	6	13.0	0.3	11	22.9	0.9	9.9	0.6
Structured Query Language	5	10.9	1.1	4	8.3	0.3	-2.6	-0.8
Event Based Systems Architecture	4	8.7	1.1	4	8.3	0.5	-0.4	-0.6
Enterprise Wide Systems	2	4.3	0.2	9	18.8	1.7	14.5	1.5
Strategic Information Systems	2	4.3	0.2	7	14.6	0.9	10.3	0.7
Executive Information Systems	2	4.3	0.1	0	0.0	0.0	-4.3	-0.1
Intelligent Agents	2	4.3	0.5	0	0.0	0.0	-4.3	-0.5
Programming	2	4.3	0.2	0	0.0	0.0	-4.3	-0.2
Expert Systems	1	2.2	0.1	0	0.0	0.0	-2.2	-0.1
Decision Support Systems (DSS)	1	2.2	0.2	3	6.3	0.5	4.1	0.3
International Issues	1	2.2	0.2	1	2.1	0.1	-0.1	-0.1
E-Commerce	0	0.0	0.0	17	35.4	2.3	35.4	2.3
Projects								
Database/Access	16	35.6	4.1	21	43.8	2.8	8.2	-1.3
Manual Systems	16	35.6	1.9	0	0.0	0.0	-35.6	-1.9
Spreadsheets	14	31.1	2.8	7	14.6	0.9	-16.5	-1.9
G/L Software	13	28.9	3.6	14	29.2	2.0	0.3	-1.6
Other	12	26.0	1.2	5	10.4	0.4	-15.6	-0.8
Communication	7	15.6	0.2	0	0.0	0.0	-15.6	-0.2
Internet	6	13.3	0.8	0	0.0	0.0	-13.3	-0.8
Flow Charting	6	13.3	0.3	4	8.3	0.4	-5.0	0.1
ERP Systems	1	2.2	0.1	5	10.4	0.4	8.2	0.3
CASE Tools	1	2.2	0.1	1	2.1	0.2	-0.1	0.1
Practice Problem (e.g., SUA)	1	2.2	0.1	7	14.6	1.9	12.4	1.8
General Office	0	0.0	0.0	1	2.1	0.1	2.1	0.1
Business Process Software	0	0.0	0.0	0	0.0	0.0	0.0	0.0
Web Page/E-commerce	0	0.0	0.0	5	10.4	0.6	10.4	0.6

MIS Syllabi and the Model MIS Curriculum

Turning to the MIS syllabi, 40 syllabi met the eligibility criteria for this study. Table 4 shows the number of syllabi covering each topic, the percentage of syllabi covering the topic and the percentage of class time spent on each topic. The topics listed on each of the course syllabi were separated into categories based on the outline

of the topics presented in the "Model" MIS curriculum (Gorgone et al. 2002). The process was subjective for some syllabi, when the topic listed did not clearly map to one of the model curriculum list of topics. For example, the model MIS curriculum lists 'competitive advantage of information' as a recommended topical coverage, whereas some syllabi (e.g., 14 out of 27 syllabi that cover the topic of 'competitive advantage') list 'strategic decision management and competitiveness' as the covered topic.

Table 4
MIS Topical Coverage
(Based on sample of 40 syllabi, current study)

General Topics	# of syllabus covering	% of syllabus covering	% class time spent on topic
Introduction to MIS/IT Value	40	100.0%	8.5%
E-Business	38	95.0	11.7
Hardware/Software	37	92.5	10.0
Ethics and Security	34	85.0	8.6
Networks/Telecommunications	31	77.5	6.4
System Development	29	72.5	8.0
Inform. Mgmt (Knowledge/Data Mgmt)	29	72.5	7.2
Strategic Decision Mgmt/Competitiveness	27	67.5	5.8
Artificial Intelligence/DSS	23	57.5	4.0
IS Solutions/Redesigning/Specialization	20	50.0	4.1
Databases/Database Warehouse	18	45.0	3.6
Outsourcing	12	30.0	2.0
ERP/ER Diagrams	12	30.0	2.1
ERP-Management	11	27.5	1.7
Emerging Trends	9	22.5	1.7
Project Management	9	22.5	1.5
Global Mgmt of IT	5	12.5	0.9
SCM-Supply Chain Management	4	10.0	0.7
Change Management	3	07.5	0.6
CRM-Customer Relationship Management	3	07.5	0.5
Funding of IT	3	07.5	0.5
Information Politics	1	02.5	0.2
Transaction Processing Systems	1	02.5	0.1
Sarbanes-Oxley	1	02.5	0.1
Intellectual Property and Open Sourcing	1	02.5	0.1
Careers In IS	1	02.5	0.1
Projects			
Access/Database	12	30.0	4.8
Spreadsheets	9	22.5	1.6
Web-page-HTML Projects	6	15.0	0.9
Power-point	3	07.5	0.4
Office-Word Processing	3	07.5	0.2
Operating Systems	2	05.0	0.3
E-mail, WWW	1	02.5	0.2
Personal Productivity-Problem solving	1	02.5	0.2
Ubiquitous computing	1	02.5	0.2
Group Collaboration	1	02.5	0.2
Pod Casting	1	02.5	0.2
Disruptive Technology and BRP	1	02.5	0.1
Flowcharting	1	02.5	0.1

As can be seen in Table 4, the introduction to MIS course tends to put the most emphasis on the following five topics: (1) introduction to systems, with 100% of syllabi covering this topic and each syllabus allocating approximately 8.5% of class time to coverage, (2) e-business, with approximately 95% of syllabi covering and each syllabus allocating approximately 11.7% of class time to coverage, (3) hardware and software issues, with approximately 93% of syllabi covering the topic and each syllabus allocating approximately 10% of class time to coverage, (4) ethics and security, with approximately 85% of syllabi covering and each syllabus allocating approximately 8.6% of class time to coverage, and (5) networks and telecommunications, with approximately

78% of syllabi covering and each syllabus allocating approximately 6.4% of class time to coverage. Not surprisingly, these five topics have a technical "IT" focus.

By way of further analysis, the current research details the percentage of syllabi that cover the IS 2002 recommended topical content to cover in class. The comparison results are presented in Table 5.

Table 5
Comparison of MIS recommended topical coverage based on IS 2002 Report and random sample

IS 2002 Recommended Topical Coverage	(From random sample) % of syllabus covering
- Systems concepts, system components and relationships	100%
- Cost value and quality of information	100%
- Application versus system software	93%
- Package software solutions (software component)	93%
- Procedural versus non-procedural programming languages (software)	93%
- Functions and architecture (hardware and software)	93%
- Security and Ethics	85%
- Networks and telecommunication systems and applications	78%
- Specification, design and re-engineering of information	73%
- Object oriented design (part of design)	73%
- Database features/data management	73%
- Competitive advantage of information	68%
- Career Paths	03%

As can be seen from the analysis in Table 5, an overwhelming majority of syllabi in the MIS sample are in consensus with the IS 2002's recommendations regarding topical coverage in the introduction to MIS course. It should be noted, however, that the topic of "career paths" was covered in only 3% of the syllabi. It is possible that this topic is covered as a sub-category of another topical area. Alternatively, it is possible that although they cover the topic in class, MIS professors do not feel it necessary to formally delineate the topic of career paths in their syllabi. [4]

AIS Topical Coverage Compared to MIS Topical Coverage

A descriptive analysis of the topical content of the introduction to AIS course compared to topical content of introduction to MIS course is the main focus of the research. Using the AIS course topical coverage categorization performed in the current research, the similarities and differences between AIS and MIS courses were examined.

[4] The Sarbanes-Oxley Act of 2002 was an event that would be expected to influence topical coverage in the AIS course. To evaluate whether MIS courses also underwent a change, we compared MIS syllabi from the earlier portion of our sample to the later portion of our sample. We found very little change in MIS topical coverage over the last nine years. The only notable change we found was for e-business. The percentage of class time devoted to the topic increased by 3.2%. This increase may be reflective of a shift in topical coverage related to the "internet boom" in the early 2000s.

Table 6
AIS Topical Coverage (Post-2002) Compared to MIS Topical Coverage (Post-2002)

	AIS		*MIS*		*Differences* (AIS-MIS)	
General Topics	% of Syllabi Covering	% of class Time	% of Syllabi Covering	% of class Time	% of Syllabi Covering	% of Class Time
Introduction to Information Systems	100.0%	5.7%	100.0%	8.5%	0.0%	-2.8%
Internal Control	97.9	15.7	2.5	0.1	95.4	15.6
Systems Documentation Techniques	91.7	9.0	---	---	91.7	9.0
Transaction Processing-Revenue	81.3	6.6	---	---	81.3	6.6
Transaction Processing-Purchasing	75.0	5.2	---	---	75.0	5.2
Database Management Systems	75.0	5.4	72.5	7.2	2.5	-1.8
Introduction to Transaction Processing	75.0	5.6	2.5	0.1	72.5	5.5
Traditional Systems-Analysis/Design/Dev.	62.5	3.9	72.5	8.0	-10.0	-4.1
Data Modeling Techniques- General	52.1	3.8	---	---	52.1	3.8
Computer Fraud	50.0	3.2	---	---	50.0	3.2
Transaction Processing-HR/Payroll	43.8	2.2	---	---	43.8	2.2
REA Modeling	39.6	3.8	---	---	39.6	3.8
Transaction Processing-G/L Reporting	39.6	1.9	---	---	39.6	1.9
File Organization and Access	35.4	4.2	---	---	35.4	4.2
E-Commerce	35.4	2.3	95.0	11.7	-59.6	-9.4
Transaction Processing- Production	27.1	1.6	---	---	27.1	1.6
IT Audit	22.9	1.2	2.5	0.1	20.4	1.1
Ethics (MIS includes Security)	22.9	0.9	85.0	8.6	-62.1	-7.7
Other	18.8	2.5	---	---	18.8	2.5
Enterprise Wide Systems/ERP	18.8	1.7	27.5	1.7	-8.7	0.0
Database/File Systems Architecture	18.8	1.2	45.0	3.6	-26.2	-2.4
Strategic Information Systems	14.6	0.9	67.5	5.8	-52.9	- 4.9
Structured Query Language	8.3	0.3	---	---	8.3	0.3
Event Based Systems Architecture	8.3	0.5	30.0	2.1	-21.7	-1.6
Decision Support Systems (DSS)	6.3	0.5	57.5	4.0	-51.2	-3.5
General Hardware and Software Issues	6.3	0.4	92.5	10.0	-86.2	-9.6
End User Computing	4.2	0.2	---	---	4.2	0.2
Communication Systems/Networking	6.3	0.4	77.5	6.4	-71.2	-6.0
International Issues	2.1	0.1	12.5	0.9	-10.4	-0.8
IS Solutions/Redesigning/Specialization	---	---	50.0	4.1	-50.0	-4.1
Outsourcing	---	---	30.0	2.0	-30.0	-2.0
Emerging Trends	---	---	22.5	1.7	-22.5	-1.7
Project Management	---	---	22.5	1.5	-22.5	-1.5
SCM-Supply Chain Management	---	---	10.0	0.7	-10.0	-0.7
Change Management	---	---	7.5	0.6	-7.5	-0.6
CRM-Customer Relationship Management	---	---	7.5	0.5	-7.5	-0.5
Funding of IT	---	---	7.5	0.5	-7.5	-0.5
Information Politics	---	---	2.5	0.2	-2.5	-0.2
Intellectual Property and Open Sourcing	---	---	2.5	0.1	-2.5	-0.1
Careers In IS	---	---	2.5	0.1	-2.5	-0.1
Projects						
Access/Database	43.8	2.8	30.0	4.8	13.8	-2.0
G/L Software	29.2	2.0	---	---	29.2	2.0
Problem solving/ SUA	14.6	1.9	2.5	0.2	12.1	1.7
Spreadsheets	14.6	0.9	22.5	1.6	-7.9	-0.7
Web-page-HTML	10.4	0.6	15.0	0.9	-4.6	-0.3
Other	10.4	0.4	---	---	10.4	0.4
REA	10.4	0.4	---	---	10.4	0.4
Flowcharting	8.3	0.4	2.5	0.1	5.8	0.3
CASE Tools	2.1	0.2	---	---	2.1	0.2
Office-Word Processing	2.1	0.1	7.5	0.2	-5.4	-0.1
Power-point	---	---	7.5	0.4	-7.5	-0.4
Operating Systems	---	---	5.0	0.3	-5.0	-0.3
E-mail, WWW	---	---	2.5	0.2	-2.5	-0.2
Ubiquitous computing	---	---	2.5	0.2	-2.5	-0.2
Pod Casting	---	---	2.5	0.2	-2.5	-0.2
Disruptive Tech. BRP	---	---	2.5	0.1	-2.5	-0.1

The similarities in topical coverage between AIS and MIS courses are shown in Table 7. Similarity was defined in terms of at least 30% of the syllabi in both AIS and MIS covering a particular topic. As can be seen

in Table 7, the introduction to AIS and MIS courses tend to cover many of the same topics. Both present a basic overview of the introduction to information systems (with AIS allocating 5.7% of class time and MIS allocating 8.5 % of class time). The topic of systems analysis and design, referred to more generically as "systems development" in MIS courses, is also covered in both courses, with 63% of AIS syllabi indicating coverage (average of 3.9% of class time) and 73% of MIS syllabi indicating coverage (average of 8% of class time). Further, both also cover database management (AIS allocates 5.4% of class time and MIS allocates 7.2% of class time).

Table 7
Similarities of Topical Coverage in Introduction to AIS and MIS courses

	AIS Syllabi coverage	(% class time)	MIS Syllabi coverage	(% class time)
Introduction to Information Systems:	100%	(5.7%)	100%	(8.5%)
Database/Data Management Systems	75%	(5.4%)	73%	(7.2%)
Systems Analysis & Design / Development	63%	(3.9%)	73%	(8.0%)
DBMS/Access Projects	44%	(2.8%)	30%	(4.8%)
E-Business	35%	(2.3%)	95%	(11.7%)

Also relevant is the finding that both AIS and MIS courses tend to cover database projects (AIS allocates 2.8% of class time and MIS allocates 4.8% of class time). In addition, the topic of e-commerce also appears to be covered in both AIS and MIS courses (AIS allocates 2.3% of class time and MIS allocates 11.7% of class time).

Table 8
Differences in Topical Coverage for AIS and MIS Courses

	AIS Syllabi coverage	(% class time)	MIS Syllabi coverage	(% class time)
Internal Controls	98%	(15.7%)	----	
System Documentation Technology	92%	(9.0%)	----	
Transaction Processing--Revenue	81%	(6.6%)	----	
Introduction to Transaction Processing	75%	(5.6%)	3%	(0.1%)
Transaction Processing--Purchasing	75%	(5.2%)	----	
Data Modeling Techniques	52%	(3.8%)	----	
Computer Fraud	50%	(3.2%)	----	
Transaction Processing--Payroll	44%	(2.2%)	----	
REA Modeling	40%	(3.8%)	----	
Transaction Processing--G/L	40%	(1.9%)	----	
File organization and access	35%	(4.2%)		
Ethics and Security	23%	(0.9%)	85%	(8.6%)
Database/File System Architecture	19%	(1.2%)	45%	(3.6%)
Competitive Opportunities/Strategies	15%	(0.9%)	68%	(5.8%)
Hardware & Software	06%	(0.4%)	93%	(10.0%)
Expert Systems/DSS	06%	(0.5%)	58%	(4.0%)
Networking/Telecommunications	06%	(0.4%)	78%	(6.4%)
IS Solutions/Re-design	----	----	50%	(4.1%)
Outsourcing	----	----	30%	(2.0%)

Shown in Table 8 are the differences found in topical coverage between AIS and MIS courses. The focus in Table 8 is on topics being covered by at least 30% of the syllabi in one of the two courses that are *not* being covered in the other course. As Table 8 reveals, the introduction to AIS and MIS courses tend to uniquely emphasis specific topics related to their fields of study. For example, AIS covers the topic of internal controls, spending 15.7% of class time on the topic, while this topic was not covered in any of the MIS courses sampled in the current study. This difference is the most salient finding in this study and validates the intuition that internal controls in accounting systems is one of the unique topics covered in AIS and not MIS courses.

The findings further reveal that AIS courses tend to cover the topic of systems documentation techniques (9.0% of class time), while MIS courses tend to not cover this topic. Also, AIS courses devote between 1.9% and 6.6% of class time to each of the various transaction processing topics, while the topics only receive a total average time of 0.1% in MIS courses. Also important is the finding that AIS courses cover the topic of computer fraud, spending 3.2% of class time to the topic, while MIS courses tend not to cover the topic. Additionally, AIS courses cover the topic of file organization and access spending 4.2% of class time to the topic, while MIS courses do not report specific coverage to the topic. Furthermore, AIS courses tend to cover REA modeling (3.8% of class time) while MIS courses do not report coverage on the topic. With the emphasis in AIS courses on transaction processing cycles, internal controls, and computer fraud, these findings further validate the intuition that AIS as a field has a strong transaction processing and IT controls focus in contrast to the MIS field.

Turning to topics covered in MIS courses but not AIS courses, MIS courses tend to cover the topic of hardware and software issues, spending 10% of class time on the topic, whereas AIS courses tend to only spend .4% of class time on this topic. This difference is another salient finding in this study and validates the intuition that MIS and not AIS courses tend to focus on emerging technologies. In further analysis, the findings reveal that MIS courses cover the topic of ethics and security (8.6% of class time) and AIS courses spend only 0.9% of class time covering the topic.

Also interesting is the finding that MIS courses cover the topic of competitive opportunities in IT, spending 5.8% of class time on the topic while AIS courses spend only .9% of class time on this topic. In addition, MIS courses cover the topic of IS solutions (4.1% of class time) while AIS courses do not report any coverage for this topic. MIS courses cover expert systems/DSS, spending 4% of class time on the topic, which received on average only 0.5% of class time in AIS courses. Related, the MIS courses in the sample spend 3.6% of class time on file system architecture while the AIS courses in the sample spend only 1.2% of class time. In addition, MIS courses cover IT outsourcing (2% of class time), but AIS courses do not typically cover this topic. In line with the more technical orientation of MIS courses, the topic of networking received an average of 6.4% of class time in MIS courses but only .4% of class time in AIS courses. These topics that appear to be unique to MIS also validate the intuition that MIS courses tend to have a stronger technical IT-flavor than AIS courses.

Based on the overall comparative analysis, both AIS and MIS have many core topical coverage areas that overlap due to the natural "information systems" link common to both AIS and MIS. However, the courses do have some major differences, with AIS courses emphasizing internal controls, transaction processing cycles, systems documentation, and IT fraud, and MIS courses emphasizing more technical IT topics such as hardware and software issues, ethics and security, competitive advantage of IT, and IT outsourcing. These findings validate our intuition regarding the inherent differences between AIS and MIS.

DISCUSSION AND CONCLUSION

Shedding light on the questions of "what is AIS?" and "how does AIS differ from MIS?" can help the AIS

discipline gain a better sense of identity. The current study analyzes syllabi for introductory AIS and MIS courses, taking an inductive approach to ascertaining the unique aspects of each field as evidenced by instructor choices regarding topics to be covered in the introductory courses. The research identifies, in terms of the common body of knowledge taught, the similarities and differences between AIS and MIS courses. We also consider the effect of the Sarbanes-Oxley Act on changes in topical coverage in the AIS course. The overall findings indicate that: (1) the AIS and MIS disciplines can each claim special ownership rights to certain information systems topics, and (2) the AIS discipline is shifting its focus more towards internal control issues since passage of the Sarbanes-Oxley Act, as revealed by a comparison of topical coverage before and after 2002. In particular, the topics of transaction cycles, internal control, and computer fraud appear to be unique to AIS, while more technical topics such as competitive advantage of IT, hardware and software issues, expert systems and DSS, and IT outsourcing are unique to MIS. Although the results of this study will hardly settle the "what is AIS"? and "how is AIS different than MIS?" debate, our inductive approach examining topical coverage in AIS and MIS courses provides evidence of distinct differences between the two fields. Our analysis is more supportive of the "intersection" views of AIS espoused by McCarthy (1990) and Murthy and Wiggins (1999) rather than the "subset" views of AIS put forth by Sutton (1992) and Sutton and Arnold (2002).

The analysis sheds light on AIS and MIS topics that are seen by educators as being particularly useful in today's classrooms or technologically advanced businesses, with topical coverage being used as an indicator of the core knowledge base as deemed by instructors. In addition, the analysis indicates that recent technology advancements are deemed uniquely important to be covered in AIS and MIS courses (Bain et al. 2002). For example, the topical coverage analysis revealed that AIS courses are beginning to cover subject matter related to the Sarbanes-Oxley Act and the need for new internal control (safeguarding) measures. For the MIS field, on the other hand, we find that a few MIS courses are beginning to cover new business trends such as outsourcing of the IT function.

The current research is exploratory in nature and is subject to several limitations. The syllabi used in the research were collected via a Google search and may not be fully representative of the "typical" introduction to AIS or MIS university level course. In addition, every university (within the sample) has a different professor teaching the AIS and MIS courses. As such, the actual extent of topical coverage is subject to each instructor's individual teaching style and philosophy. The allotment of class time spent on each topic is a calculated estimate based on the listing of topics in the syllabus course schedule. Actual discussion times may vary. The current research takes a snap shot in time of current available AIS and MIS course syllabi. It should be expected that the syllabi are being continuously updated. Finally, the topical coverage disclosed in this study may not be completely representative of actual topics covered. Some important topics may be erroneously excluded from the study because they are sub-categories of other related topics. Despite the limitations, our findings provide insights about the uniqueness of AIS to MIS, as well as how AIS has evolved in response to events such as the Sarbanes-Oxley Act.

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