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December 1999

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Recommended Citation

Gray, Robert and Russell, David, "A Review of the ACM/AIS Model and a Survey of Existing Programs with Respect to Curriculum Challenges in a Part Time Master of Science in Information Systems Program" (1999). *AMCIS 1999 Proceedings*. 66.
<http://aisel.aisnet.org/amcis1999/66>

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A Review of the ACM/AIS Model and a Survey of Existing Programs with Respect to Curriculum Challenges in a Part Time Master of Science in Information Systems Program

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Abstract

This paper presents a survey of MSIS curricula and a review of the ACM/AIS model for the Master of Science in Information Systems in terms of the requirements of a private, part-time, applied degree program.

The Association for Information Systems (AIS) and the Association for Computing Machinery (ACM) recently formed a joint task force to develop a model curriculum for the Master of Science in Information Systems (MSIS) (Gorgone 1996). This model has not yet been finalized and is, presumably, subject to change. This paper describes some of our concerns in attempting to design a part-time, professional MSIS program for the authors' institution in light of the ACM/AIS model. We believe this discussion will be worthwhile as a means of stimulating discussion of the model and the changes that may be legitimately made in deriving a curriculum from it.

Our MSIS program, offered exclusively as a part-time, evening program, poses several challenges. Those challenges are almost certainly not unique and may be common to most institutions with similar programs. The School of Business offers a variety of part-time Masters programs including an MBA with a concentration in MIS. The School of Engineering offers an MS with a concentration in Computer Engineering. Thus, courses typically include both MBA and MSIS students and occasionally include engineering students. The interests of MBA and MSIS students are often complementary; MBA students tend to be more interested in management and to have little interest in, or tolerance for, technical content. MSIS students are normally far more interested in technical material. Levels of preparation also vary. For example, MBA students typically do not have prior experience or training in MIS; MSIS students are frequently practicing MIS professionals.

As part of an investigation into problems with their own part-time MSIS program, Armstrong and Motilla (Armstrong, 1999) identified a number of factors they believe to be important to the success of a part-time program. These include:

- student career motivations
- time to completion and number of required courses
- geographic convenience
- scheduling convenience and consistency
- perceived value and relevance (application)

Noting that their students do not respond well to theoretical content, they observed that their part-time students are interested primarily in career enhancement; theoretical courses do not respond to that motivation. Time to completion is also a critical factor, and, for part time students, this is a function primarily of the number of courses. In our case, time to completion is a significant problem. A part-time student taking one course per semester may require six or more years to complete the program. This poses particular difficulties for curriculum maintenance in a rapidly changing field like MIS. Generations of technologies may come and go in the time required for the normal student to complete the degree, and curriculum revisions will almost certainly be required during the time that a student is enrolled. Dealing with those changes often requires special arrangements that are inconvenient for the students and the institution.

What these considerations suggest is that a part-time MSIS program should be an applied program, designed to maximize adaptability to changes in technology, requiring a minimal number of courses. There are, of course, other constraints on program and curriculum design. The chief one is resources. The curriculum must be one that faculty resources can effectively support. A relatively small faculty such as ours inherently limits a program's flexibility.

Responding to declining enrollments and dissatisfaction within the local business community, we recently undertook a complete restructuring of our MSIS program. We began by looking for insights and guidance from a number of sources, including a review of MSIS programs offered by other Schools of Business and the ACM/AIS model curriculum.

Reviewing other curricula is a means of assessing the state of opinion regarding degree requirements. Moreover, it reveals the ingenious means by which other faculties have addressed comparable challenges. As part of this review we identified 25 MSIS programs offered by business schools within the U.S. Because we are interested in accreditation issues, we did not consider

non-business programs. Our interests focused in two areas: what subjects other departments consider to be fundamental and, because they affect time to completion, how other departments handle foundation subjects.

Table 1 summarizes required courses among the programs reviewed. It is reasonable to suppose that the field is defined, as an academic discipline, at least in part by the consensus among university faculty and departments on what courses or subjects must be required. In that light, we might conclude that the field of MIS is uniquely defined by only three courses: analysis and design, database management systems, and communications and networking technologies. It is tempting to include MIS management as a fourth defining component since, of the 25 institutions surveyed, 19 require a course in MIS management of some sort, but there is no general agreement about what the content or direction of that course should be. Interestingly, of those 19, eight require two or three courses in MIS management, and of those eight, five require at least one course in another non-MIS management area. A total of 21 require at least one course in management, whether or not in MIS; 13 require two or more. So, if we use this as a basis, we should presumably conclude that an MSIS program ought to consist minimally of four components: analysis and design, DBMS, communications and networking, and some kind of management course. Several programs require capstone courses, but they vary greatly in kind. In some cases, the project course serves this purpose; in others it is a topics course or a seminar.

Since our students have such varied levels of preparation and since the number of courses required to complete the degree is a significant program concern, we were also very interested to learn how other institutions handle prerequisite and foundation requirements.

Prerequisite course requirements for the 25 programs surveyed are summarized in Table 2. Three of the institutions surveyed determine prerequisites on an individual basis. Of the remaining 21, except for an undergraduate degree, three require no prerequisites at all. This was most interesting to us since each of these programs are AACSB accredited, and all three are offered by highly regarded universities. For the other programs, the number of business prerequisites ranges from one to ten with a median and mode of 5. It is also interesting to note that only eight programs require an undergraduate course in programming, although several do require that applicants have programming experience.

It is worthwhile to compare the general consensus regarding MSIS requirements with the model, summarized here in Table 3, currently under development by the ACM/AIS joint committee (Gorgone, 1998). The model requires a total of six courses. If the model followed current practice, we might expect it to consist of

the four courses listed above; it goes beyond that, however, by proposing two, specific management courses and an integration course.

Table 1. MSIS Course Requirements

Course Title/Subject	Number of Programs Requiring
MIS Courses	
Systems Analysis and Design	24
DBMS	21
Communications and Networking	20
Project/Practicum	14
MIS Management	13
Programming/Software Development	11
Introduction to MIS	7
Client/Server Technologies and Development	6
Decision Support Systems	6
Expert Systems and Artificial Intelligence	6
MIS Project Course	6
IT Infrastructure and Architecture	5
Strategic MIS Management	5
Ethics and Social Issues	4
MIS Change Management	3
Business Courses	
Management	9
Marketing	5
Accounting	3
Economics	2
Finance	2

Table 2. MSIS Foundation Courses

Course Title/Subject	Number of Programs Requiring
Accounting	14
Economics	14
Management	14
Statistics	13
Marketing	10
Finance	7
Math/Calculus	6
Management Science	3
Business Law	2
Introduction to MIS	3
Computer Tools/Productivity Software	3
Programming/Software Development	8

The model curriculum has several features that are worth noting. By intent, it is a ten-course program which increases its attractiveness to us. A curious feature, however, is that the MSIS core requirements are dependent on the student's undergraduate major; thus, for example, database is not required for those students whose undergraduate major was in information systems (Davis, 1997). Since this is the case, it might be preferable to view the core as consisting of five courses with the database course serving as a remedial course for those lacking the appropriate undergraduate preparation. On this interpretation, the model curriculum would include five electives. Electives provide the flexibility for students to structure their degree programs around career tracks (defined as three or more related courses) fitted to their interests and career goals. However, for a small school such as ours with limited faculty resources, the number of electives necessary to support multiple career tracks is not feasible.

Table 4 summarizes the ACM/AIS model's foundation course requirements. For a student with a non-business or non-computer sciences major, there are six undergraduate prerequisites. For those students, who make up a substantial portion of a typical part-time program's enrollment, this effectively converts the model MSIS curriculum to a 16-course program. Clearly, this is impractical; it would deter many very capable people from enrolling; and, for private institutions such as ours, would represent a potentially significant revenue loss.

However, based on the MSIS programs that we surveyed, there appear to be acceptable alternatives. For example, it should be possible to include those business courses appropriate to an applied MSIS degree (e.g., accounting, marketing, organizational behavior) in the graduate program. This would reduce the number of available MIS electives, but for programs such as ours that is a benefit.

Table 3. ACM/AIS Model

MIS Core Courses (6 courses, 18 units)
1. Database Management
2. Analysis, Modeling, & Design
3. Data Communications & Networking
4. Project & Change Management
5. IT Policy & Strategy
6. Integration (any one of the following)
Integrating the Organization
Integration Technologies
Integrating the IT Resource
Career Electives (4 courses, 12 units)

Table 4. ACM/AIS Foundations

IT Foundations
Fundamentals of IS (IS97.1)
IT Hardware & Software (IS97.4)
Programming, Data, & Object Structures (IS97.5)
Business Foundations
Financial Accounting & Micro Economics
Marketing
Organizational Behavior

Our presentation will include an outline of an MSIS program loosely derived from the ACM/AIS model to fit our institution's requirements. Of necessity, it will include a larger and less flexible core of required courses, fewer electives, and a reduced number of prerequisite course requirements. We also alter the two proposed MIS management courses to better reflect the needs of our mixed student body. Whether and to what extent this curriculum can be said to be derived from, or to adhere to, the model is a reasonable question for discussion.

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