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John Gorgone
Bentley College

Paul Gray
Claremont Graduate University

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The Master of Science in Information Systems Curriculum

John T. Gorgone, Bentley College, jgorgone@bentley.edu
Paul Gray, Claremont Graduate University, paul.gray@cgu.edu

Abstract

A joint ACM/AIS Committee on Graduate IS Curricula was appointed in January 1998 with the charge of recommending a curriculum guideline for MS programs in Information Systems. This paper describes several of the areas of work and accomplishment of the Committee.

Introduction

At AIS Americas '98 , we reported the initial work of the joint ACM/AIS Committee on Graduate IS Curricula. In brief, the committee was charged with developing a replacement for the graduate portion of ACM Curriculum '82, the most recent MS recommendation and guideline available. A joint committee of ACM and AIS was appointed.

In June 1998, the committee met and developed an initial program outline, which was reported at this meeting last year. The purpose of the present paper is to outline what has occurred since then. Inasmuch as the Committee is still working and expects to have additional results by the time of AMCIS '99, this paper concentrates on the assumptions, the current shape of the program, and the process being followed to develop the final report.

Summary Of Accomplishments

The following items were already been accomplished by 1 May 1999:

1. Input skills and output characteristics of potential MS students have been defined.

2. The philosophies and principles underlying the MS program are established.

3. The program structure was developed from a set of building blocks.

4. The suggested program has been reviewed by the IS community through briefings at nine separate national and international meetings.

5. The comments received are now incorporated into the program.

A June 1999 meeting of the Committee will finalize the program and create a report for presentation at a panel session at AMCIS '99. The following sections describe the accomplishments listed above.

Input Skills And Output Characteristics

We anticipate that the MS program will attract students with a wide range of backgrounds. Those entering straight from undergraduate college may have a BS degree in IS, computer science, business, or some outside field. The graduate program will also draw individuals with experience including both IS professionals and those seeking career changes. The latter group will usually be part-time students studying either in the evenings or through remote learning.

The output should create people with the following characteristics:

- Communication, interpersonal, and team skills

- Analytical and critical thinking skills

- Integration of IT & business foundations

- A core of IS

- Specific skills leading to a career.

- Broad business and real world perspective

Underlying Principles And Philosphy

The following underlying principles and philosophy were developed:

- The MS is a professional degree that integrates information and organizational cultures. We recognize the difficulties that people trained purely in one culture or the other have in communicating and believe that MS graduates should have the knowledge and sophistication to bridge the existing chasm.

- The degree adds value both to students studying beyond the bachelor's degree and to the organization. Students invest a year or more of their lives and organizations often sponsor the student financially. Both are entitled to a return.

- The degree includes an IS core consistent across institutions. As a result, employers are ensured that the MS graduates are competent in fundamental set of professional knowledge.

- The curriculum is flexible for students with differing backgrounds, skills, and career objectives. Students with specific background in IS should complete the program in a year. Students missing prerequisite knowledge, should expect to take at most one additional year to complete. This model (based on the principles of the MBA degree) allows all students to graduate with a given level of skill.

- The program focuses on current and emerging concepts through 'career tracks'. These tracks should allow students (within the competency of the faculty) either (1) to 'major' in a specific subject area for which there is demand or (2) to achieve breadth across an issue.

- The following themes run through the program: oral, written, and graphic presentation skills; promoting ideas and negotiating; people skills; business skills; customer orientation; real-world focus; and ethics and professionalism. Each topic is important and, some would argue, each is worth a course of its own. However, given the limited time available for MS work, we believe that the optimum way the topics can be presented is by integrating them tightly into the courses. Furthermore, despite their importance, these topics are exceedingly difficult to teach in the abstract.

- The recommended program must be compatible with institutional unit requirements for an MS degree. These requirements range from 30 to 60 units, depending on the school. Schools with long programs are able to extend their offerings beyond the 30-unit minimum to go into greater depth in the prerequisites, the core, and the career tracks.

- A practicum is recommended. A practicum is a term-long project solving a real problem for a real client against a time deadline. For full-time students, it is recommended that they work in teams and that industry support the project by providing stipends to the students for their work because the financial incentive has been shown to improve the quality of the project topic and the student output. For part-time, working students a project for their employer is usually appropriate as a practicum.

- Masters courses are typically treated as independent entities. As a result, students are not able to see or understand how the pieces integrate into a whole. Some schools create capstone courses, usually built around policy and strategy. However, such a course focuses only on the integration of information systems with the business enterprise and on the role of the CIO. With systems integration being a major source of employment for MS graduates, the present curriculum looks to a new course (described below) to achieve the needed integration. This course can be offered in one of four options.

These general principles lead to the idea that programs should ensure that students have solid foundations in information systems and business before they enter. Furthermore, students should have a common body of knowledge (i.e., a core) yet be sufficiently flexible to meet both institutional and student needs and objectives. From an operational point of view, flexibility implies that students may gain advanced standing credit and/or substitute other courses for material they already know, thus enabling them to take electives outside IS. Students should also have the opportunity to obtain practical experience through practicums in industry.

A student entering with an undergraduate IS degree in a business school could complete the program with 10 courses (30 units) whereas a student with no experience and a non-technical degree would be required to take 17 courses (51 units). The core represents the fundamental knowledge all students know when they have completed an MS in IS.

Operational Principles

These general principles lead to the idea that programs should ensure that students have solid foundations in both information systems and business. Furthermore, students should have a common body of knowledge (i.e., a core) yet be sufficiently flexible to meet both institutional and student needs and objectives. Students should also have the opportunity to obtain practical experience through practicums in industry.

The length of the program depends on the specific regulations for MS degrees in a student's school. We assumed that the MS curriculum had to be capable of being offered within 30 units (10 3-unit courses) but that options should be available to expand the program to as many as 60 units.

From an operational point of view, flexibility implies that students may gain advanced standing credit. Such advanced standing can be obtained either by testing or, for core courses, by taking an advanced course in the same subject area.

The program is designed so that a student entering with an undergraduate IS degree could complete the program with 10 courses (30 units) whereas a student

with no experience and a non-technical degree would be required to take 16 or 17 courses (48-51 units).

For programs longer than 30 units, additional course work can be offered. Thus, for example, a school could increase the business content or the IT content of the degree or offer the student the opportunity to take a second career track.

Proposed Degree Structure

The degree structure (described in detail in http://cis.bentley.edu/msis) consists of the following elements:

1. IS core (5 courses)
2. career tracks(4 courses)
3. integration (1 course)
4. Prerequisite: IT foundation (3-4 courses)
5. Prerequisite: Business foundation (3 courses)

The career tracks are in keeping with the philosophy that MS students should be able to specialize in a field. It is assumed that each school would choose tracks based on its local market and its faculty expertise. Although 18 tracks have already been identified, a typical institution would be able to offer between one and four tracks with its available resources in faculty, hardware, and software. It is assumed that the practicum would be a part of most career tracks.

The integration course, a new feature, can be offered in four different forms: (1) integrating the organization, (2) integrating the IT resource, (3) integrating the technology, and (4) a combination of the previous three.

Response Of The Is Community

The MS program has been thoroughly vetted by the IS community through a series of presentations at ten national and international meetings:

AIS Americas	Baltimore	Aug 1998
IACIS	Cancun	Oct 1998
ISECON	San Antonio	Oct 1998
INFORMS	Seattle	Oct 1998
DSI	Las Vegas	Nov 1998
CONF. BOARD	Washington	Nov 1998
ICIS	Helsinki	Dec 1998
IAIM	Helsinki	Dec 1998
HICSS	Hawaii	Jan 1999
ACM SIGCSE	New Orleans	Mar 1999

At these meetings, the concepts described above and the proposed curriculum were discussed in detail.

Participants in these meetings filled out forms listing what they liked best and least about the curriculum and made suggestions for changes. Many of these suggestions are included in the final recommendations.

Conclusions

The work of the Committee was nearly done at the time of preparing this paper. The new curriculum provides a basis for schools to develop their own master's program because "one size fits all" is not appropriate. Thus, the program can be sized between 10 and 20 courses. Furthermore, the MS program can accept both beginner and experienced students from a variety of academic backgrounds. The new features of the program – a core that guarantees the fundamental knowledge possessed by an MS, provides an integration and a practicum experience, and a career track— are both natural extensions of what came before and the direction appropriate for the 21st century.

Acknowledgement