

This series describes the experiences of a medium size comprehensive urban university in implementing the DPMA four year model curriculum. It begins by describing the process used to select a curriculum for a new MIS program. Subsequent columns in the series will report on the text selection and pedagogy for courses IS-1 through IS-9. The final column of the series will evaluate the implementation of these courses and make recommendation on ways to improve the delivery of these courses.

JISE invites other institutions to share their experiences in implementing the four year model curriculum. Those institutions that wish to contribute to this series of columns should send a manuscript of no more than 10 double spaced pages to Kathryn McCubbin, CNU, 50 Shoe Lane, Newport News, Virginia 23606.

## Implementing the Four Year Model Curriculum

## Article 1

# THE SELECTION OF THE DPMA MODEL CURRICULUM AS THE FOUNDATION FOR THE MIS PROGRAM IN THE BUSINESS COLLEGE OF A PUBLIC UNIVERSITY

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*ABSTRACT: The management information systems curriculum at Christopher Newport University (CNU) initially developed by adding computer courses with a business emphasis to the traditional computer science/computer engineering programs. This initially appeared as an efficient approach to course delivery since many of the courses in the first two years could be shared. As the years passed the Business College faculty became convinced that management information systems was an independent discipline that should be integrated into the business management degree. This article describes the major steps taken by the Business College faculty to establish a concentration in management information systems within the BSBA degree and, in particular, the rationale used in deciding upon the DPMA 4 year model curriculum for this concentration.*

### INTRODUCTION

For all, 1992 was a year marked with change -- the last of the troops came home from the Persian Gulf War, the communist empire split into its constituent bodies, Christopher Newport College (located in Newport News, Virginia) became the newest University within the system of

higher education for Virginia and the list goes on. But, for the purpose of discussion here, one of the most significant events during 1992 was Christopher Newport University's approval of a Bachelor of Science in Business Administration degree with a concentration in Management Information System

### BACKGROUND

Christopher Newport University is the youngest comprehensive university in the Commonwealth of Virginia. Established in 1960 as a two-year branch of the College of William and Mary, it came into being as a part of the second oldest

academic institution in the nation. Christopher Newport became a four-year, baccalaureate institution in 1971 and in 1977 became totally independent of the College of William and Mary. The University began offering graduate programs in 1991 and, within its heritage of liberal education, is an urban institution that provides opportunities for self-development and a number of career options to the constituent needs of a largely part-time and mobile student body.

In 1990, the Dean of the College of Business initiated an effort to establish a Management Information System concentration within the School of Business. The Physics and Computer Science Department (College of Science and Technology) already offered a Bachelor of Science in Information Science (BSIS) degree, based upon the liberal arts tradition, with a broad background of courses from business, computer science, economics, mathematics, and psychology -- with primary emphasis in the field of computer science. The BSIS degree graduates enjoy an excellent reputation for their technical comprehension as to how computers work and are recognized by employers to be proficient in data processing, computation, techniques, and programming ability.

It must be recognized here that any decisions about the role of information systems within the Business College curriculum were made and were strongly influenced at times by colleagues from other disciplines. The liberal arts heritage of the University, the technical nature of the BSIS program, the strong personalities of colleagues -- all had considerable influence while implementing our new MIS concentration. The compelling reasons for a business school MIS concentration are similar to the reasons for having accounting, marketing, finance, or management concentrations. Each concentration represents specialized activities that are best supported by specialized knowledge.

Carving out a new academic niche when resources are constrained is no trivial matter to administrators and faculty -- Christopher Newport University being no exception. Implementation requires a keen

appreciation for intricate relationships from the past. But, with a decision to proceed in concept, CNU first set out to find an acceptable curriculum for its fledgling MIS BSBA concentration.

### SELECTING A CURRICULUM

Selecting a curriculum involved three separate processes: identifying an appropriate model for the curriculum, performing a feasibility analysis for the acceptability of a MIS concentration, and convincing the University to accept the proposed curriculum. The first two processes, identifying the model and

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performing a feasibility analysis, were performed in parallel in order to lead to an effective, defensible final curriculum proposal. Convincing the University to proceed was yet another process.

Curricula are central to the implementation of degree programs. Selection of a model curriculum is an essential step in implementing any information system program since similar academic experiences may be achieved through different structures and approaches. The general undergraduate university-wide and business core requirements were previously established and not subject to change in the short run as a MIS curriculum model was sought. The existing business curriculum provided the proposed MIS program with the liberal arts, broad context, general education setting for the study of business. The general business core required for all Christopher Newport University business students includes two introductory courses in accounting

principle, a set of micro and macro economic courses, introductory courses in finance, management, marketing, statistics, business law, quantitative techniques, policy and strategy -- typical foundation courses in business.

When attempting to identify a model curriculum, it becomes readily apparent that no single source is available to identify undergraduate information programs. Three sources of accreditation body models were considered for our use -- the Computer Science Accreditation Commission (CSAC), the Association of Computing Machinery (ACM), and the Data Processing Management Association (DPMA). There are other information science groups that have influence upon information systems education (International Conference on Information Systems (ICIS), Information Systems Education Conference (ISECON), The Institute of Management Science (TIMS) and the Decision Science Institute (DSI) for example) but none of these groups publish curricula models.

The CSAC or Computer Science Accreditation Commission accredits programs for the Computing Science Accreditation Board (CSAB). The CSAB was founded in 1984 by the ACM and the IEEE Computer Society to address concerns about the quality, consistency, and professional outcomes for graduates of programs in computer science. At the time of our evaluation, there were 95 programs accredited by CASC. [1] Our review indicated that the CSAB requirements were "too technical" in nature to be considered for our business related MIS program in terms of curricula, faculty, laboratory, and computing resources. Our students would not be ideal candidates for the CSAB model. [2] The ACM and DPMA curriculum models were initially considered but Christopher Newport University quickly shifted towards the DPMA model for two reasons. The first reason is that the ACM model curriculum was the essential basis of the existing BSIS degree. This well entrenched computer science perspective required mathematics skills and abilities beyond those expected within the existing BSBA business concentrations. Additional prerequisite courses made the ACM focus,

as locally implemented, incongruent with the locally established business curriculum. The straight forward design of the DPMA model was a powerful aid to non-technical members of the Christopher Newport University during the curriculum proposal review process.

A second and more compelling reason, however, is that the majority of American Association of Collegiate Schools of Business (AACSB) member institutions have adopted the DPMA model curriculum [3,4]. The AACSB is the sole accrediting agency for baccalaureate and graduate degrees in business administration [5]. AACSB acceptance validated our perspective that the DPMA model curriculum would result in a strong academic program that would incorporate the necessary computer skills needed for our graduates to meet entry level job requirements.

Considerable nationwide data had been collected that showed that over half of the undergraduate business programs have an MIS program of some kind. Furthermore, vis-a-vis all other business majors, it appeared that Christopher Newport University could expect approximately 15% of the enrollment to be within a MIS program [6]. Two informal surveys of the geographical area served by the University were conducted to provide us with a better understanding of the local need for a MIS program.

The first survey was an open ended letter request for comments and perceptions about our proposal to expand the BSBA degree to include the MIS concentration. The letter was mailed to various local private and public MIS directors as well as to members of the Hampton Roads Chapter of DPMA. The director of Data Processing operations for the City of Newport News, Gaddis Key, suggested that "the curriculum should contain at least three programming languages." He also emphasized that, "the students need to be able to communicate effectively in clear, concise English."

Eileen Maeso, the president of a local consulting company, suggested that, "all business graduates need to be exposed to MIS and how it is used to drive the

business." She thought that MIS skills are essential for survival in today's business community. Norman Hann, an instructor at a local community college expressed that we show that, "the way (MIS) is managed can be illustrated and practiced in the classroom so to prevent mismanagement of the needed information when the student becomes an employee. Comments from these sources came in letter format and were not provided by category. The comments in general indicated a strong need for an understanding of the basics of business: accounting, finance, marketing, personnel, leadership and motivation, statistics, psychology and communications.

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Additionally, local MIS concerns included: Data Files, Databases, Systems Design, Networking, Business Applications Software, COBOL, and Data Processing for Small Businesses (the Director of the Christopher Newport University Small Business Institute advises that approximately 95% of the local firms employ less than 250 people). The local support for a MIS program indicated the need for the program. We anticipated that local support would lead to an escalating demand for graduates as we develop and cultivate our BSBA-MIS program.

The second survey was an informal telephone interview conducted during summer 1991 with the department chairman or MIS director of all public colleges and universities in Virginia to determine the scope and nature of their MIS programs,

the degree awarded, and the enrollment experiences. Estimates of enrollments ranged from five to forty percent of the total school of business. Table 1. shows that Virginia Colleges and Universities usually award the BSBA (or BA) with a concentration in Management Information Systems. We felt that the degree would be best recognized locally if Christopher Newport University designated the degree to be a Bachelor of Science in Business Administration with a concentration in Management Information Systems.

### DEFENDING THE PROPOSAL

Governance at CNU requires that curricular changes be approved by the faculty curriculum committee, the faculty senate, and the Provost. Major program introductions such as the MIS concentration invite the concerned attention of these groups since it is not always apparent how a new program will affect other established programs. The Provost made it clear from the outset that a duplication of the BSIS course content in the MIS concentration would not be acceptable. The following facts were demonstrated to the Provost and the concerned groups to gain their approval:

1. Information technology has developed to the point that the knowledge of the field of application and system development methodology is more important than the knowledge of computer internals to the computer applications professional. The BSIS program was devised in the 1970's at a time when computer systems were developed from second and third generation computer languages and most were developed "in-house" by the organization's programming staff (there was no shrink-wrapping going on then). This demanded that information science students receive extensive instruction not only in programming but also in theoretical computer software and hardware concepts. The BSIS program has changed in no essential way since that time and shares the first two years of courses with computer science and computer engineering

**Table 1: DEGREE AWARDED VIRGINIA COMMONWEALTH PUBLIC INSTITUTIONS**

Bachelor of Science In Business Administration or Commerce with MIS or MCIS.....	3
Bachelor of Science In Business Administration with CIS.....	1
Bachelor of Arts with a concentration in MIS.....	1
Bachelor of Science In Business Administration with a concentration in Information Systems.....	2
Bachelor of Science In Information systems and Management or Decision Sciences.....	2
No MIS program.....	3

**Table 2: COMPUTING PROGRAMS AT CHRISTOPHER NEWPORT UNIVERSITY**

<u>Program</u>	<u>Department</u>	<u>Areas of Specialization</u>
Computer Science	Physics and Computer Science	Scientific Applications Systems Programming Preparation for Graduate Studies
Computer Engineering	Physics and Computer Science	Modeling, analysis, and design in the solution of computer hardware problems
Teacher Education Program in Computer Science	Physics and Computer Science	Teacher Certification (9-12)
Bachelor of Science in Information Systems	Physics and Computer Science	Interdisciplinary Systems, Analysis and Design, requiring courses in Psychology, Economics, Business Management, and Accounting
Management Information Systems	Management, Marketing, and MIS	Management and development of computer applications systems used in business and industry
Geographic Information Systems	Political Science	Social Science, Geography, Applied Physics

majors. Hence, there does not exist a program that prepares students to develop business systems using state-of-the-art commercial software

while emphasizing the need to match the technology to the business entity. The MIS concentration provides such a program. The relationship of

the various computing programs at CNU to each other is illustrated in Table 2.

- The DPMA model curriculum is built upon knowledge clusters which are introduced at the beginning of the program. As the student progresses the knowledge clusters remain fixed but the depth of understanding in each cluster increases. Thus advancement through the program follows a spiral path through the knowledge clusters integrating what has been learned before into the growing complexity of concepts and practices. The approach used by the BSIS curriculum is vertical, that is, as the student advances through the courses, the material is increasingly specialized and more technically detailed, separate physical concepts being emphasized more than the integration of system concepts. The spiral approach supports the need of business application specialists to solve system problems, not computer specific problems.

The concentration in MIS for the BSBA degree was approved by all relevant groups with some caveats:

- The existing computer literacy course taught by the department of physics and computer science would satisfy the requirements of IS-1.
- The computer concepts course, IS-3, would be taught by the department of physics and computer science.

#### STATUS OF THE MIS CONCENTRATION

The first public disclosure of the MIS concentration was made in summer 1992 by distributing a pamphlet of the program to the Admissions Office and Department Chairmen. The approval of the concentration occurred too late to be included in the University Catalogue. Despite this sparse exposure there are now 28 declared majors and an active MIS student DPMA chapter of 15 students. The schedule of courses for the concentration is shown in Table 3 on the next page.

The schedule for the remaining courses, IS-7 through IS-9, will be determined after the Fall, 1993 enrollment statistics are available.

The next article in this series will describe the course content, texts selection, projects, and student and faculty reactions for courses IS-1 through IS-4.

**REFERENCES**

1. "Computer Science programs Accredited by the Computer Science Accreditation Commission of the Computing Sciences Accreditation Board", Communications of the ACM, (November 1990/Vol. 33, No. 11, pp. 134-135.
2. For more information about CASC accreditation, please contact Executive Director; Computing Sciences Accreditation Board; 345 East 47th Street; New York, New York 10017.
3. Kenneth T. Forgere, "A Profile of Colleges and Universities that Have

**Table 3: MIS SCHEDULE OF DPMA MODEL CURRICULUM COURSES**

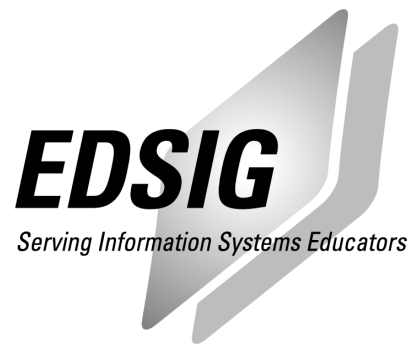
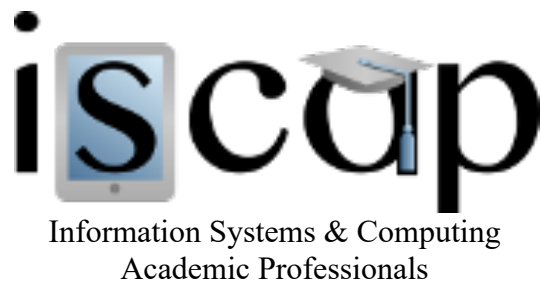
<u>DPMA Course</u>	<u>Title</u>	<u>Schedule</u>
IS-2	Information System Concepts	Every semester since Fall, 1992
IS-4	Application Development for Systems of Limited Complexity	Every semester and summer beginning Spring, 1993
IS-5	Application Design and Implementation for Systems of Limited Complexity	Every semester and summer beginning Summer, 1993
IS-6	Systems Development 1.	Every semester beginning Fall, 1993

- Adopted the Data Processing Association's Model Curriculum'' CIS Educator Forum, Vol. 2, No. 1, Fall 1989, pp. 2-10.
4. Herbert E. Longenecker, Jr. and David F. Feinstein. "A Comprehensive Survey of USA and Canada Undergraduate Programs in Information Systems'', Journal of Information Systems Education. Vol. 3, No. 1, pp. 8-13.
5. The Association of Collegiate Business Schools and Programs (ACBSP) accredits business schools and programs at the bachelor, master and community college level.

**AUTHORS' BIOGRAPHIES**

*Mayes Mathews is an Associate Professor of Management and Department Chair for the Department of Marketing, Management, and MIS at Christopher Newport University. He received his doctorate degree from Virginia Commonwealth University in 1990, specializing in MIS. He has been the major force behind the University's acceptance of the DPMA 4 year model curriculum. He is currently involved in research in the decision sciences.*

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