

PART V

LETTERS OF SUPPORT

TO: ECOB Curriculum Committee
University-Wide Curriculum Committee

FROM: Wayne Moore, Chair
Office Systems and Business Education Department
Kenneth Shildt, Chair
Management Information Systems Department

DATE: May 6, 1998

SUBJECT: PROGRAM REVISIONS

Both the Management Information Systems and the Office Systems and Business Education Departments realize that major curriculum revisions are necessary to keep our graduates competitive in the ever changing field of information technology. In an effort to strengthen the programs within the Eberly College of Business, the two departments (Management Information Systems and Office Systems and Business Education) have been meeting for the past three months to develop curriculum revisions. These revisions: (1) reflect the delineation between the two departments, (2) enhance both the Eberly College of Business and departmental missions, and (3) provide clear career paths for the students.

OFFICE SYSTEMS

Office Systems has evolved over the past ten years to encompass the knowledge, skills and attitudes required of a professional who bridges the gap between the developer of information technology systems and the typical computer user. The proposed program changes as well as the name change, Business Technology Support, provides the students and employers with a better understanding of the field.

The proposed major requires courses that prepare students to pursue various career paths as they relate to customer-focused solutions, support services and technical training. Careers in the Business Technology Support field require strong communication and leadership skills.

MANAGEMENT INFORMATION SYSTEMS

MIS majors analyze and design business information systems and their inherent application through a curriculum which includes programming, database, networking, analysis and design courses.

The Management Information Systems and Decision Sciences Department Curriculum Committee has worked with their Office Systems counterpart to develop a curriculum which will provide the Eberly College of Business with a presence in the evolving field of information technology.

RATIONALE FOR COOPERATION

We have attempted to develop programs that are not redundant and permit each department to fulfill its mission of training high-quality graduates. These graduates will support the growing technical needs of organizations.

The MIS courses will focus upon programming, database management and administration, project management, and the planning and implementation of enterprise-wide information systems. New courses are being prepared to provide students with knowledge relative to networks, data warehouse technology, and electronic commerce. The Seminar course will provide an opportunity to explore current developments in the field.

The Business Technology Support program will place emphasis on understanding how technology contributes to individual and work group performance and to behavioral factors, such as communications, ergonomics, training, and change. The curriculum is designed to challenge students to understand their dynamic role from both an organizational and individual viewpoint.

Although there is a degree of overlap in several of the basic courses, the scope varies according to the requirements of each major. An attempt has been made to limit the requirements which crossover to each other's program so students will not be repeating the material at the introductory levels. An evidence of this is the decision to permit either IM 350 or OS 313 to serve as the prerequisite for IM 352, Computer Network Installation and Administration.

In summary, both departments have contributed to and support the proposed curriculum and program changes for the Management Information Systems program and the Office Systems program. The College Curriculum Committee should provide guidance in the revision of the programs to meet the needs of our students.

This memo was written jointly to show the curriculum committees that the departments have collaborated to develop two unique programs. We support the program revisions of the Management Information Systems program and the Office Systems program.

24 November 1998

To: Ken Shildt, Chair
MIS and Decision Sciences Department

From: Jim Wolfe, Chair Computer Science Curriculum Committee *JW*
Bill Oblitey, Chair Computer Science Department *WWE*

Subject: Program Revision

The Computer Science Department is pleased to support the revision of the Management Information Systems program.

After extensive discussions involving several faculty from the Management Information Systems, members of the Curriculum Committee and the Department Chair believe we have reached an understanding regarding the overall thrust and emphasis of each of our departments' programs and regarding the courses proposed as part of the Management Information Systems program. Because both of our departments deal with computer technology, all involved felt it was important to clearly delineate our programs where they are different and to cooperate where possible to avoid duplicating efforts. To that end, we have identified courses in each other's departments that can be listed as required or elective in each other's programs. We have also found ways to cooperate on the use of facilities and in teaching courses.

Three significant areas of the new MIS program, from our perspective, are the continued requirement for MIS students to take CO 220, the cross listing of CO/IM 352 and CO/IM 354, and the creation of IM435. Our two departments have agreed on a mechanism that can advise MIS students appropriately so they will possess the prerequisite knowledge needed to take CO 220 - part of this agreement includes the continued inclusion of CO 110 as a controlled elective. The cross listing of the two networking courses CO/IM 352 and 354 represents an extensive effort on the part of the two departments. Each had taught experimental versions of these courses; they have come to agreement on the course proposals, the facilities to be used, and the method and frequency of teaching the courses. The IM 435, Data Warehousing & Mining, course will provide an opportunity for Computer Science majors, as well as MIS majors, to expand their knowledge of database applications. We are hoping to continue the cooperation our two departments have started in these areas during an upcoming revision to our own program. We believe that cooperating in this manner will benefit students in both of our departments, as well as students in the Office Systems department which is also requiring one of the networking courses in their proposed program.

Given the effort each department has put into this proposal and into finding consensus regarding our missions, we feel that it is important that all who teach the courses proposed in the new program and the courses under development in each of our departments adhere to the agreed upon course outlines. By so doing, students will know what to expect regardless of who is teaching a course; and faculty can plan future courses with the expectation that the outlined topics have been covered. We recognize that technology is an ever-changing field and that, as time goes on, additional coordination efforts between the departments will be needed as our curricula evolve. We will be happy to be a party to that effort.

Finally, we see the revision of the Management Information Systems program as a very positive step in meeting the current industry demands for MIS majors. We are pleased to be contributing to that program.

APPENDIX

IS'97

Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems

Association for Computing Machinery (ACM)
Association for Information Systems (AIS)
Association of Information Technology
Professionals (AITP) (formerly DPMA)

Gordon B. Davis, ACM Co-Chair
John T. Gorgone, ACM Co-Chair
J. Daniel Couger, AIS Co-Chair
David L. Feinstein, AITP (DPMA) Co-Chair
Herbert E. Longenecker, Jr., AITP (DPMA) Co-Chair

The model Information Systems undergraduate curriculum report has several intended classes of users who have a stake in the achievement of quality IS degree programs:

- academic executives to whom the information systems program reports
- academic heads of units where information systems programs are housed
- information systems faculty
- other faculty in the school or college where the information systems program resides
- information systems practitioners
- information systems students

In this section, the uses of the report by these intended stakeholders are described and its value explained.

Academic Executives to Whom the Information Systems Program Reports

The IS discipline is an essential part of business and government organizations. Information systems are complex systems requiring both technical and organizational expertise for design, development, and management. They affect not only operations but also competitive strategy.

The nature of this rapidly changing field requires a unique set of resources. The minimal level of resources required to provide a viable undergraduate degree program in Information Systems is outlined below. Specifics of the resource requirements are detailed on pages 21-24. Additional resources are necessary to support the service courses provided by the IS faculty to other academic units of the university.

1. Faculty Resource Recommendations

The number of faculty will depend upon the number of students majoring in Information Systems. However, a critical mass of faculty is needed to provide the degree of specialization essential for proper coverage of the curriculum. The rapid increase and change in knowledge in the Information Systems field require that faculty continuously upgrade their skills. A significant part of each faculty member's workload needs to be spent in receiving training and acquiring new knowledge and skills. The changes in the field place heavy demands on IS faculty relative to tailoring the curriculum to local conditions, developing up-to-date instructional cases, and managing student projects and internships. Beyond normal teaching, research and service activities, IS faculty need to participate in these additional activities:

- a. Technology assessment for maintaining currency of hardware and software in computer labs used in the program.
- b. Serving as a high-level faculty resource about computing for other faculty in the college/university.
- c. Seeking, obtaining and nurturing partnerships with hardware/software suppliers and users to keep computer labs current.
- d. High level of participation in academic and professional societies in order to develop the field. A high level is necessary because there are fewer numbers of faculty in this discipline compared to other university disciplines.
- e. Representing the academic unit on committees dealing with university information systems.

2. Computing Facilities Recommendations

Students must have access to computing facilities equivalent to those they will use in industry. The rate of change in technology suggests a maximum three year upgrading cycle. University laboratories must be maintained with these requirements in mind.

- a. While some of the hardware/communications equipment available in the central campus computing facility may meet the needs of Information Systems, special equipment is necessary. This includes client server architectures, networks, graphics, and multimedia.
- b. The IS students should have access to large databases and development systems used in large organizations such as computer-assisted system engineering and development tools. These systems typically require powerful computing capabilities.

3. Physical Space Recommendations

Because of the need for computer lab support, physical space requirements for the Information Systems program are more like that of the engineering and the biological and physical sciences than the professional programs in business administration and the social sciences. Laboratory facilities should include:

- a. Laboratories equipped with computer work stations.
- b. Laboratories to provide experience in designing, installing, and running networks.
- c. Project team laboratories to accommodate team projects essential to the IS program.

4. Laboratory Support

In addition to facilities and physical space, IS laboratories require ongoing support for personnel, maintenance, and supplies.

Academic Heads of Units Where Information Systems Program are Housed

The report provides the rationale for adopting the curriculum recommendations for an undergraduate degree program in Information Systems. The curriculum recommendations are based on an assessment of industry expectations for entry level professional employees in the Information Systems field. Industry has expressed a need for both increased emphasis in technical orientation and improved skill in individual and group interactions. Graduates need to be able to interact more effectively with clients and to work effectively in teams. Students must have good written and oral communication skills. This report gives the specific recommendations necessary to successfully implement and maintain a program in Information Systems meeting both technical and behavioral emphases. A summary of the resource requirements necessary to support a viable Information Systems program is outlined above (and detailed on pages 21-24).

Information Systems Faculty

The curriculum recommendations are described with different levels of detail. Courses are defined at a high level with course descriptions. These include course title, catalog description, scope, and topic list. A detailed description of each course is given in Appendix 8. Each course is described in terms of learning units for the course. Each learning unit is explained by a goal, objectives, and elements from an IS body of knowledge that fit the objectives. The IS body of knowledge was derived from industry and university

Courses

Courses (see Figure 3) in IS'97 are the building blocks that implement the broad curriculum presentation areas diagrammed in Figure 2. The courses are labeled IS'97.P0 through IS'97.10. IS'97.P0 is considered to be a prerequisite to the program. Courses are described later in the report with course title, scope and topics. They are further defined by a catalog description, outcome expectations, and a set of learning units in Appendix 8. Courses are based on a semester calendar of 16 weeks with 48 lecture hours.

The set of courses represents a complete model that includes all of the learning units. As a model, they are presented to provide guidance. Institutions may develop their own courses based on learning units to accommodate unique individual missions. The set of courses can be mapped to the IS curriculum requirements for all students, IS minors, and IS majors (Figure 4) and to the IS curriculum presentation areas (Figure 5).

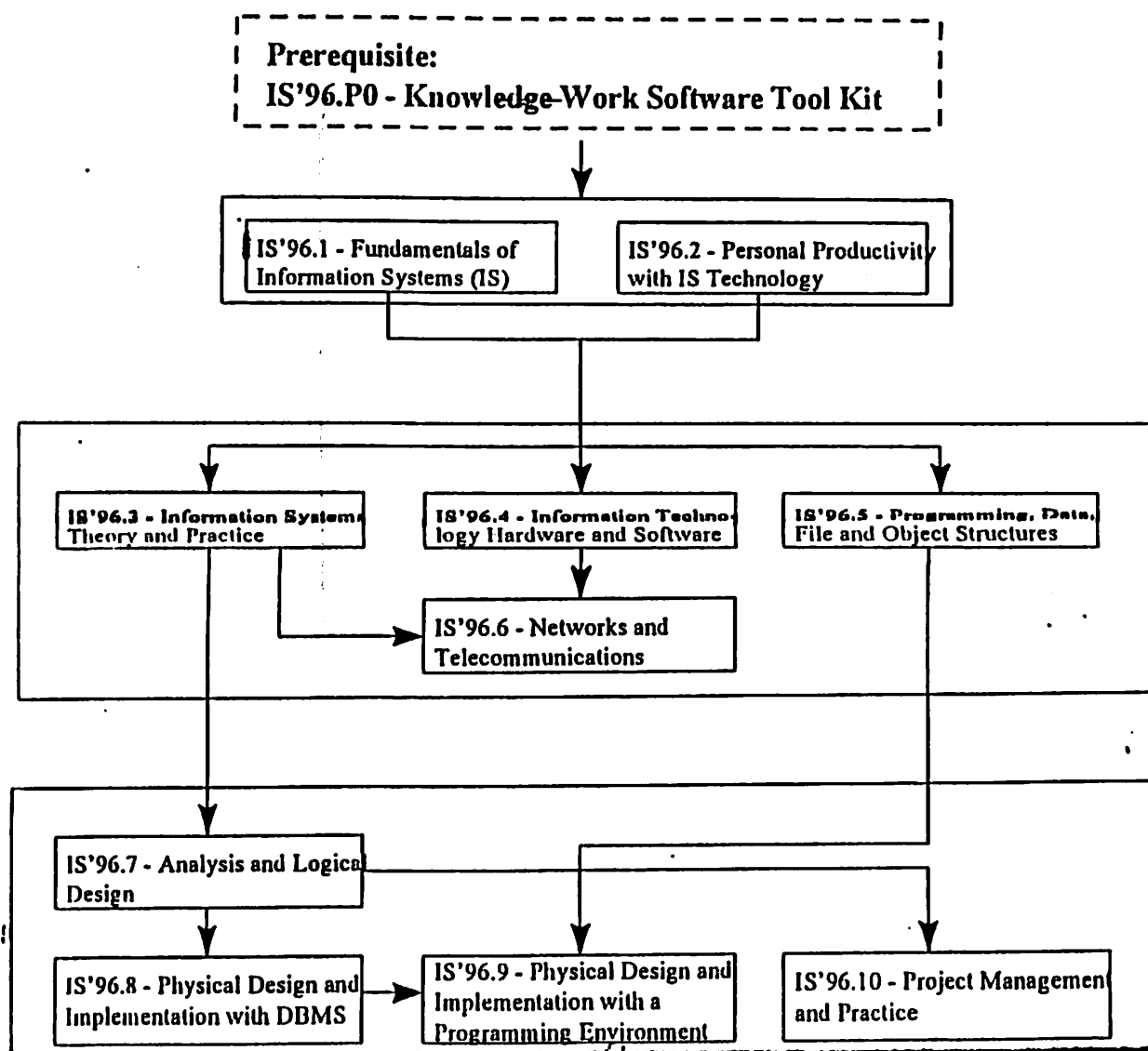


Figure 3. IS'97 Course Sequence.

IS'97.3 – Information Systems Theory and Practice (Prerequisite: IS'97.2)

SCOPE This course provides an understanding of organizational systems, planning, and decision process, and how information is used for decision support in organizations. It covers quality and decision theory, information theory, and practice essential for providing viable information to the organization. It outlines the concepts of IS for competitive advantage, data as a resource, IS and IT planning and implementation, TQM and reengineering, project management and development of systems, and end-user computing.

TOPICS Systems theory and concepts; information systems and organizational systems; decision theory and how it is implemented by IT; quality, TQM and reengineering; level of systems: strategic, tactical and operational; system components and relationships; information system strategies; roles of information and information technology; roles of people using, developing and managing systems; IS planning; human-computer interface; network and telecommunications systems management; electronic commerce; implementation and evaluation of system performance; societal and ethical issues related to information systems design and use.

IS'97.4 – Information Technology Hardware and Software (Prerequisite: IS'97.2)

SCOPE This course provides the hardware/software technology background to enable systems development personnel to understand tradeoffs in computer architecture for effective use in a business environment. System architecture for single user, central, and networked computing systems; single and multiuser operating systems.

TOPICS Hardware: CPU architecture, memory, registers, addressing modes, busses, instruction sets, multi processors versus single processors; peripheral devices: hard disks, CDs, video display monitors, device controllers, input/output; operating systems functions and types; operating system modules: processes, process management, memory and file system management; examples of hardware architectures; examples of operating systems; basic network components, switches, multiplexers and media; installation and configuration of multiuser operating systems.

IS'97.5 – Programming, Data, File and Object Structures (Prerequisite: IS'97.2)

SCOPE This course provides an understanding of algorithm development, programming, computer concepts and the design and application of data and file structures. It includes an understanding of the logical and physical structures of both programs and data.

TOPICS Data structures and representation: characters, records, files, multimedia; precision of data; information representation, organization and storage; algorithm development; object representation compared to conventional data flow notation; programming control structures; program correctness, verification, and validation; file structures and representation.

IS'97.6 – Networks and Telecommunication (Prerequisites: IS'97.3, IS'97.4)

SCOPE This course provides an in-depth knowledge of data communications and networking requirements including networking and telecommunications technologies, hardware, and software. Emphasis is upon the analysis and design of networking applications in organizations. Management of telecommunications networks, cost-benefit analysis, and evaluation of connectivity options are also covered. Students learn to evaluate, select, and implement different communication options within an organization.