PART IV

SUPPORTIVE INFORMATION

ENDNOTES

1. ACM/IEEE-CS Joint Curriculum Task Force. *Computing Curricula 1991*. ACM Press and IEEE Computer Society Press, 1991.

2. ACM Curriculum Committee on Computer Science. Curriculum '68: Recommendations for academic programs in computer science. *Commun. ACM* 11, 3 (Mar. 1968), 151-197.

3. ACM Curriculum Committee on Computer Science. Curriculum '78: Recommendations for the undergraduate program in computer science. *Commun. ACM* 22, 3 (1979), 147-166.

4. Ashenhurst, R. Curriculum Recommendations for Graduate Professional Programs in Information Systems. *Commun. ACM* (May, 1972).

5. ACM Curriculum Committee on Computer Science for Management. Curriculum Recommendations for Undergraduate Programs in Information Systems. *Commun. ACM* (Dec. 1973), 727-749.

6. ACM Curriculum Committee on Information Systems. *Information Systems, Curriculum Recommendations for the 80's: Undergraduate and Graduate Programs*. ACM Press, 1981, 77-101.

7. Nunamaker, J.F. Educational Programs in Information Systems. *Commun. ACM* (March, 1981).

8. ACM Committee on Curriculum for Community and Junior College Education. *Recommendations and Guidelines for an Associate Level Degree Program in Computer Programming*. ACM, 1981.

9. ACM Committee on Curriculum for Community and Junior College Education. *Recommendations and Guidelines for Vocational-Technical Career Programs for Computer Personnel in Operations (Data Entry Operations, Computer Operations)*. ACM, 1981.

10. ACM Task Force on Secondary School Curriculum, Task Force on Teacher Certification. *Curricular Recommendations for Secondary Schools and Teacher Certification*. ACM, 1985.

11. ACM Task Force of Pre-College Committee. *ACM Model High School Computer Science Curriculum* (Draft Report). ACM, 1991.

12. Office of Education, U. S. Department of Health, Education and Welfare. *Electronic Data Processing - I, A Suggested Two Year Post High School Curriculum for Computer Programmers and Business Applications Analysts*. FS5.280.80030. U. S. Government Printing Office, 1964.

13. Office of Education, U. S. Department of Health, Education and Welfare. *Electronic Data Processing in Engineering, Sciences, and Business Analysts*. FS5.280.80030. U. S. Government Printing Office, 1964.

14. Data Processing Management Association. *CIS '86, The DPMA Model Curriculum for Undergraduate Computer Information Systems*. DPMA, 1986.

15. Data Processing Management Association. *Information Systems: The DPMA Model Curriculum for a Four Year Undergraduate Degree*. DPMA, 1990.

16. Data Processing Management Association. *The DPMA Associate-Level Model Curriculum in Computer Information Systems*. DPMA, 1985.

17. Data Processing Management Association. *The DPMA Secondary Curriculum on Information Technology and Computer Information Systems, First Edition*. DPMA, 1984.

18. The Texas Innovation Information Network System. *Technology and Emerging Occupations, Directions for Texas in the 1990's*. TIINS, 1991.

19. Canadian Government, Employment and Immigration Canada, Sector Studies Directorate *Software and National Competitiveness: Human Resources Issues and Opportunities*. Ottawa, 1991.

20. Canadian Information Processing Society [CIPS]. *Method of Operation and Criteria for Accreditation*. College Program Accreditation Council of Canadian Information Processing Society.

BIBLIOGRAPHY

Adelman, Clifford. Transfer Rates and the Going Mythologies. *Change Magazine*. (January - February, 1988), 38 - 46.

ACM Committee on Curriculum for Community and Junior College Education. *Recommendations and Guidelines for an Associate Level Degree Program in Computer Programming*. ACM, 1981.

ACM Committee on Curriculum for Community and Junior College Education. *Recommendations and Guidelines for Vocational-Technical Career Programs for Computer Personnel in Operations (Data Entry Operations, Computer Operations)*. ACM, 1981.

ACM Curriculum Committee for Community and Junior College Education. *Recommendations for a Two-Year Associate Degree Career Program In Computer Programming*. ACM, 1981.

ACM Curriculum Committee on Computer Science. Curriculum '68: Recommendations for academic programs in computer science. *Commun. ACM* 11, 3 (Mar. 1968), 151-197.

ACM Curriculum Committee on Computer Science. Curriculum '78: Recommendations for the undergraduate program in computer science. *Commun. ACM* 22, 3 (Mar. 1979), 147-166.

ACM Curriculum Committee on Information Systems. Information Systems, Curriculum Recommendations for the 80's: Undergraduate and Graduate Programs. *Commun. ACM*. 77-101.

ACM Curriculum Committee on Computer Education for Management. Education Related to the Use of Computers in Organizations. *Commun. ACM*. (1971) 104-118.

ACM Task Force on the Core of Computer Science. Computing as a Discipline. *Commun. ACM* 32, 1 (1989), 9-23, and in *Computer*, (Feb, 1989), 63-70.

Athey, S. A Comparison of Undergraduate Information Systems Programs and the DPMA Model. *Interface*. ( ), 68-73.

Aukerman, R., R. Schooley, D. Nord, and J. Nord. The Importance of Selected Systems Analysis and Design Tools and Techniques as Determined by Industry Systems Analysts and University Educators. *SIGCSE Bulletin*, 21, 3 (1989), 30-34.

Barker, et al. Laboratory Experiences in Computer Science and Engineering. *Computer Science Education* 1, (1988), 1-10.

Chand, Donald R. Some Observations on Information Systems as an Academic Discipline. *CIS Educator Forum* 1, 3 (1989), 16-18.

Data Processing Management Association. *The DPMA Associate-Level Model Curriculum in Computer Information Systems*. DPMA, 1985.

Data Processing Management Association. *CIS '86, The DPMA Model Curriculum for Undergraduate Computer Information Systems*. DPMA, 1986.

Data Processing Management Association. *Information Systems: The DPMA Model Curriculum for a Four Year Undergraduate Degree*. DPMA, 1990.

DiBrell, Branston A., and Gwynne Larsen. Downsizing to Microcomputers: The Impact on Information Systems. *Interface* 12, 3, 30-34.

Donovan, R. A. and B. Schaier-Peleg. Making Transfer Work. *Change, the Magazine of Higher Learning*. (January/February, 1988), p. 33-37.

Drysdale, et al. Computer Science in Liberal Arts Colleges. *Computer Science Education* 1, (1988), 11-35.

Gray, J. Careers in Information Processing. *Business Week* (May, 1984), 13-17.

Henderson, P.B. Discrete Mathematics as a Precursor to Programming. *Proceedings of the Technical Symposium on Computer Science Education*. ACM Press (Feb. 1990).

Jackson, D. Curriculum Design and the Marketplace for MIS Professionals. *Interface*, 13, 4, 2-7.

Jenkins, G. Educational Requirements for the Entry Level Business Systems Analyst. *Journal of Systems Management* 30,3 (Aug. 1986), 30-33.

Juliussen, Karen Petska, and Engil Juliussen. *The Computer Industry Almanac*. Brady Co., 1990.

Little, J.C. *Computer Science-Related Degree Programs at the Associate Level*. In J. Hamblen and C.P. Landis. *The Fourth Inventory of Computers in Higher Education: An Interpretive Report*. EDUCOM and Westview Press, Boulder, CO. (1980).

Little, J. C. and H. G. Taylor. *The Implications of Supply/Demand Studies on Policy Issues for Secondary Informatics Education in the United States.* IFIP Gmunden '93 Conference.

Longenecker, H. E., Jr., Feinstein, D. L., Fournier, R., Claborn, D., and Reaugh, W. R. A Comprehensive Survey of USA Two-Year Academic Undergraduate Programs in Computer Information Systems. *Proceedings of the Information Systems Conference*. DPMA (October, 1992).

National Science Foundation. *Report on the NSF Disciplinary Workshops on Undergraduate Education.* NSF (April, 1989).

Office of Education, U.S. Department of Health, Education and Welfare. *Electronic Data Processing - I, A Suggested Two Year Post High School Curriculum for Computer Programmers and Business Applications Analysts*. FS5.280.80030. U.S. GPO, Washington, D.C. (1964).

Office of Education, U.S. Department of Health, Education, and Welfare. *Data Processing Technology - A Suggested Two Year Post High School Curriculum*. 1780-01240, U.S. GPO, Washington, DC (1964).

Office of Education, U.S. Department of Health, Education and Welfare. *Scientific Data Processing Technology - A Suggested Two Year Post High School Curriculum.* FS5.180:80068. U.S. GPO, Washington, DC. (1970).

Parnas, David Lorge. Education for Computing Professionals. *Computer* (January, 1990). 17-22.

Ralston, Anthony. The First Course In Computer Science Needs a Mathematics Corequisite. *Commun. ACM* 27, 10 (Oct. 1984), 1002-1005.

Struble, George. Most Effective Lab Exercises. *Computer Science Education* 1,

(1988), 85-87, (1989), 177-180, (1990), 273-275, 375-386.

University of Houston. *Information Systems Curriculum*. Coordinating Board, Texas College and University System, in cooperation with Association for Information Systems Professionals [AISP] (July, 1987).

Watson, H. J., Young, D., Miranda, S., Robichaux, B. and Seerley, R. Requisite Skills for New MIS Hires. *Data Base, A Quarterly Publication of SIGBDP*. ACM (21, 1), 20-29.

Zawacki, R., Scott, D. and P. Zawacki. How College Students Choose IS Careers. *Datamation* 34, 10 (Sept. 15, 1988).

CAREER INFORMATION

The following selected job descriptions are possible positions for graduates of a two-year program in informational processing. They describe the functional work to be done, but would vary by level of expertise within the position and by the configuration of the computing environment.

Computer Operator
Computer operators monitor and control computers to process data according to operating instructions. Duties include selecting and loading input and output units with materials such as tapes, or print forms, and observing the machines for stoppage or faulty output.

Business Programmer
Business programmers prepare and maintain a set of instructions, called code, that control the operation of computers that are used in business for applications such as accounting, personnel administration, marketing, and management information systems. When they write detailed computer instructions, business programmers follow specifications, usually developed by systems analysts, designed to meet the needs of the user of the business system. Business programmers also maintain computer programs and make changes as required. They use tools such as flowcharts, data flow diagrams, and decision tables.

Systems Analysts
Systems analysts work with the users of computer information systems in identifying and solving business problems. Often they are part of a team that practices a problem solving methodology, referred to as the systems development life cycle (SDLC). The SDLC has four distinct phases: study, design, development, and operation. Although systems analysts may be involved throughout the entire SDLC, they are particularly skilled in analyzing problems and designing solutions. They create the specifications that guide the programmers who develop the computer instructions. Systems analysts use tools such as prototyping (working with computer-screen models that can be shared with users) in order to customize a system to best meet users' needs. Increasingly, they are using computer aided software/systems engineering (CASE) tools to assist them with the SDLC tasks, including all aspects of documentation. An intermediate position between programmer and systems analyst exists in many organizations. This position is called

analyst/programmer, and it is consistent with many of the tasks that might be assigned to a business programmer and systems analyst.

Systems Programmer

Systems programmers maintain the computer system of an organization by installing new equipment, training people to use the system and solving problems when they occur. They may program in assembly-level language to generate the specific step-by-step instructions which enable the computer to perform the desired operations. They fix problems that prevent the system from working smoothly. When equipment is changed, they most often modify the operating system supplied with the computer hardware. They are often responsible for evaluating and selecting new equipment. In most installations, systems programmers spend most of their time doing maintenance work. But systems programmers who work for computer manufacturers (and have many years of experience) may be asked to design new operating systems or new languages for computers which are under development.

Computer Graphics/Multimedia Specialist

Computer graphics specialists use a computer to design, redesign, and produce visual images and to present and display data. They may be called an electronic artist or designer. Business computer graphics specialists may create graphic designs for letterheads, brochures, posters, and corporate logos. Media computer graphics specialists create film, television, video, and animated imagery, special effects and background scenery for movie production, and program announcements for television. In publishing they create lettering, layout and production art. In editorial art, they produce graphs, charts and drawings. This is a field in which free lance work is available.

Network Specialist

Network specialists design and develop systems for linking computers with one another, and with a variety of peripheral devices ranging from terminals and printers to analog sensing devices and telecommunication switching systems. They may diagnose and troubleshoot problems. They may work directly with systems users to analyze their specific network requirements. They may also oversee the installation of such systems. They also may be responsible for devising procedures to protect computer system security to prevent unauthorized access.

Data-Entry Operators
Data-entry operators use special keyboards to enter data from source material (paychecks and bills, records of transactions) into computers. They work at computer terminals or at other locations which are connected to a central computer.

Data Librarian
Data librarians are responsible for all data resources, including tape storage in vaults and backup of magnetic disk media. They keep detailed records of the location of all data records. They are responsible for the retention of history files, care of magnetic media, and removal of files no longer needed.

Database Manager
Database managers, or administrators, are responsible for the definition, organization, and use of databases. Because the integrity of all programs that share a database depends on the accuracy of the database, this is a critical task. In medium to large computing environments, this job requires individuals who are experienced and well trained.

Computing/Technical Resource Consultant
An exceptionally talented individual who, by virtue of education and experience, is able to analyze problems and create solutions. In the realm of microcomputers, this person is sometimes referred to as a *Guru*. Small businesses that cannot afford a large in-house staff may employ such a consultant.

Computer Sales Representative
Computer sales representatives sell computer systems, computer equipment, products, service and supplies to businesses, schools and industries. They represent the manufacturers of the products and often are the primary technical resource. They visit customers in offices in an assigned territory, or display and demonstrate products at trade shows. They market and sell computer software and hardware, set prices, prepare contracts, provide orientation and customer education, arrange delivery and installation, maintain customer contact, and handle customer complaints.

In the future, there will be more emphasis on understanding the organization, data communications, and software development using advanced development platforms such as application generators and tools for software engineering. Future positions may be even more challenging in demanding a broader spectrum of computer-based solutions be available to that organization. Because of the continual rapid change in technology and tools, tomorrow's graduate will have a very broad choice of career path options available and must have the knowledge and ability to adapt to these changes.

INDEX OF KNOWLEDGE UNITS

Problem Solution Methodologies (PS)

Social, Ethical, and Professional Issues (SP)

INDEX OF COURSES

Required Courses:

Career Electives: