A NEW MASTER'S DEGREE PROGRAM AT DARTMOUTH COLLEGE

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For some years now, business and industry spokesmen have lamented the inability of many with degrees in computer science to handle the computing demands of business and government [1,2,3,4,5,6]. They have protested the overly academic content of graduate programs, and the lack of emphasis on solving practical problems. From their perspective, these basic deficiencies further aggravate the overall shortage of personnel in the computer field, forcing many employers to provide additional in-house training for new personnel.

The surveys of computer manpower needs conducted by John Hamblen underscore the shortage of trained personnel and reveal that the need for qualified employees is particularly acute in applied areas of computing. Hamblen estimates that the United States is producing only 9 percent of its current needs at the master's level [7].

In response to this national need, Dartmouth College has decided to complement its current widespread instructional use of computing by establishing a new Program in Computer and Information Science. A two-year course of study is being developed leading to a Master of Science in Computer and Information Science. The Program will have a professional orientation focusing on the design, implementation, and management of the complex information systems which are becoming increasingly common and essential in today's society. Considerable attention will be given to the social, ethical, and organizational issues surrounding the use of such systems.

The curriculum, an outline of which is given at the end of this paper, has been conceived with two goals in mind. The first is to acquaint students with current technology and methodology. The second is to provide the background necessary to keep abreast of future developments and their likely impact on business and society. Considerable attention was given in the planning stages to the recommendations provided by the ACM Curriculum Committee on Computer Education for Management. However, the Program's course of study places more emphasis on computing technology and methodology, giving a lower priority to business practices per se than does the C.EM curriculum.

Dartmouth's Program places great emphasis on a required internship with a cooperating business or government office. During the internship, students will be expected to treat a practical problem in information science and develop a concrete solution to that problem. The internship is intended to provide a testing ground for classroom knowledge and also to acquaint students with the skills needed to work in an organization towards the solution of complex information problems.

What is novel about the envisioned internships is their integral role in the Program. As part of the planning process, we solicited information from over 180 other master's programs in computer and/or information science. Our sample response suggested that no more than 5 percent of these programs include an internship as part of the curriculum. Where there is an internship, it is usually optional; in some cases, students must find their own positions. We recognize that there is value to the student in the experience of locating and securing a challenging position. However, we feel that internships should be developed by the Program staff itself to insure that the work experience is coordinated with the curriculum, to provide opportunities not ordinarily available through individual initiative, and to enable students to concentrate on the academic program rather than on locating internships.

This approach benefits the Program in another way as well. A professionally oriented program has a responsibility to

convey knowledge and techniques which are germane to the needs of those it is trying to serve--in this case both business and government. Since relationships with non-academic organizations are an important vehicle for staying informed about these needs, it is essential to develop and maintain good working relationships with those who can provide valuable feedback about the curriculum.

The first class in Dartmouth's Program in Computer and Information Science will be admitted in September 1980. In the coming year, Program faculty will be engaged in further development of the curricular plan and in the detailed design of the first-year courses. Comments and suggestions are invited from others in programs with a similar emphasis, as well as from business and government representatives, concerning the thrust and content of the Program.

References

1. Archibald, J.A., Jr. and M. Katzper. "On the Preparation of Computer Science Professionals in Academic Institutions." AFIPS Conference Proceedings, Vol. 3, 1974, p. 313.

2. Glaser, George. "Keynote Address." 1974 National Computer Conference.

3. ____. "Education and Competence: The Odd Couple." Keynote address to Tenth Annual EDUCOM Council Meeting and Conference. Toronto, Ontario, October 16-18, 1974.

4. Kapur, Gopal K. "EDP Education--An Acute Crisis." _____ Conference Proceedings, Vol. 3, 1974, p. 321.

5. Shelly, Gary B. "Why Industry Won't Hire Your Graduates." AFIPS Conference Proceedings, Vol. 3, 1974, p. 227.

6. Testa, Charles J. "An Undergraduate/Graduate Program in Information Systems." AFIPS Conference Proceedings, Vol. 3, 1974, p. 327.

7. Hamblen, John W. Computer Manpower Supply and Demand by States. Information System Consultants, 1979.

Outline of Curriculum

Term	Courses
1	System analysis Algorithms and data structures
2	Software design and development Computer architecture
3	System design Data base systems Internship
4	Programming languages Operating systems
5	Networks and communication systems Information system administration
6	System development case studies Ethical and social implications of information systems