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FACULTY SENATE
CURRICULUM COMMITTEE

Approval Form

Department Mathematics (Computer Science Dept)

Title Advanced Computer Programming

Sponsor(s) Jack Clarich and Dan Trinkle No. of Credits 3

COURSE SPECIALIZATION CONCENTRATION CERTIFICATION MAJOR PROGRAM

Approved by the department YES Graduate ()

Not recommended by the department Undergraduate (X)

Information copies forwarded: Academic Dean; Chairperson, Curriculum Committee

David J. Travis Date 4/11/78
Signature: Department Chairperson

DIVISION

Consultation on proposal has been held

Comments:

W. J. Davis Date 4-9-78
Signature: Academic Dean and/or Divisional Committee

CURRICULUM COMMITTEE

Proposal received 4-11-78

Open Hearing held 5-4-78

AA:it
M. West
② Copies of comm. forwarded

Returned to the department for the following reason(s):

Approved by the Curriculum Committee

Presented to Executive Committee of the Faculty Senate as information

Notifications forwarded: Vice President for Academic Affairs

D. J. Travis Date 5-14-78
Signature: Chairperson, Curriculum Committee

Academic Dean

I have reviewed the final documents as approved and concur with same. Budget, faculty, library allocations and Academic Support Services are adequate for immediate implementation.

I have reviewed the final documents as approved and concur with same. Budget, faculty, library allocations and Academic Support Services for the current academic year are inadequate for immediate implementation or implementation in the next fiscal year. The earliest that the proposal might be implemented would be

HEGIS Taxonomy Number: _____

Alan Brown
Signature: Academic Dean

Date 7/18/78

Copies forwarded: Chairperson, Curriculum Committee, Department Chairperson, Registrar

REGISTRAR

Approved course description received

Signature: Registrar

Date _____

Vice President for Academic Affairs

Official copy and approval sheet filed

Alan Brown
Signature: Vice President for Academic Affairs

Date 7-17-78

- Note
- 1) Course proposal format is attached
 - 2) A copy of this approval form should accompany each proposal
 - 3) A copy of a proposed catalogue description of the course must accompany the proposal as a separate page.

GLASSBORO STATE COLLEGE
DEPARTMENT OF MATHEMATICS
NEW COURSE PROPOSAL

4/15/81

I. IDENTIFICATION:

- A. Title: Advanced Computer Programming
- B. Sponsor: Ben Trimble and Jack Cimprich, Department of Mathematics
- C. Administrative Responsibility: Dr. David Travis, Chairman, Department of Mathematics

II. ESSENCE:

- A. Undergraduate Course
- B. Semester Hours Credit: 3
- C. Course Level: Junior/Senior
- D. Prerequisites: Computers and Programming (#0704.204), and Programming Languages (#0704.315)
- E. Curricular Pattern: This course will be an elective for those wishing to extend their studies of computer science beyond the limited requirements of the present concentration in computer science. This course will be a requirement in a future major in computer science.
- F. Time and Scale of Implementation: This course will be offered in the Fall of 1978. It would be offered once a year with an expected enrollment of 25 students.

III. OTHER DETAILS

- A. Staff and Resources: There are three full-time faculty teaching computer science courses and four others in the department who often teach one or more computer courses. Present staffing is adequate as is the availability of computing facilities.
- B. Library Resources: The department has been actively acquiring books in computer science for the library and will continue to do so. Present holdings are satisfactory.
- C. Space Needs: Adequate
- D. Course Uniqueness: There is no overlap with existing courses.

III. OTHER DETAILS (CONT'D)

- E. Specific Objectives - Student Outcomes: Upon completion of this course, a student should be able to:
1. Construct a program that is highly structured, well documented, and easy to modify and maintain.
 2. Write the appropriate job control language (JCL) statements for a wide range of program requirements including specification of secondary storage files, utility programs, and needed operating system resources.
 3. Use the programming language COBOL at advanced levels of application involving such language features as REPORT WRITER, COPY, debugging aids and file storage interfaces.
 4. Test large scale programs for correctness and use a variety of debugging techniques on programs containing subtle types of errors.
 5. Organize a collection of programs and routines for efficient use by constructing object code versions within a library of programs on the computer.
- F. Evaluation Procedures of Students: This course will determine a student's attainment of the objectives in two ways:
1. Written examinations
 2. Programming assignments that the student is to run on the computer

IV. TOPICAL OUTLINE:

- A. Top-down, structured programming and particular requirements of large-scale programming projects (4 weeks).
- B. Advanced topics in COBOL programming - REPORT SECTION, COPY, trace feature, and file descriptions within the ENVIRONMENT and DATA divisions. (2 weeks).
- C. Job Control Language, operating system requirements and capabilities, utility programs (4 weeks).
- D. Program libraries - creation, use, maintenance (1 week).
- E. Data files on magnetic tapes and disks, random access storage concepts and uses (2 weeks).
- F. Program interfaces, subroutine calls, high-level/low-level language linkages (1 week).
- G. Error detection and correction using system dumps, and diagnostic aids (1 week).

V. RATIONALE: This course serves to bring together many of the concepts and skills individually acquired in previous computer courses, and merge them with new programming features in order to prepare the student for the demands of programming in industry. This course is needed because there is an increasing demand for computer usage in all areas of our society and, consequently, an increasing need for people to work in computer-related positions. The number of our graduates who find employment as computer professionals has been increasing. This need is emphasized by a recent survey of the Math. Department's graduates which shows that 75% would have taken more computer science courses had they been offered and that 25% of recent Math Department graduates have found computer-related employment.

VI. CONSULTATION:

1. Representatives from the computer departments of PSFS Bank, Prudential Insurance Company, Glassboro State College, Bank of New Jersey, and Bell Labs have recommended the topics in this course proposal.
2. Recent Math. Department survey of 300 graduates to determine interest and need of computer offerings.
3. "Data Processing and Computer Science Graduates", SIGSCE Bulletin, February 1975.
4. "A Computer Science Course Program for Small Colleges", Comm. of the ACM, March 1973
5. Catalog descriptions of computer science programs at Montclair State College, and University of Pennsylvania.
6. Representatives from the Administrative Studies, Industrial Ed and Technology, and the Psychology departments at Glassboro.

VII. CATALOGUE DESCRIPTION

Advanced Computer Programming (Prerequisites: 0704.204 and 0704.315)

Advanced programming in COBOL, sophisticated debugging techniques, job control language and operating system requirements and features, top-down, structured programming methods, program libraries, subroutine calls and linkages, system and program interfaces to data files.

Texts & References:

1. IBM OS ANS COBOL PROGRAMMER'S GUIDE #SC28-6456
2. THE ELEMENTS OF PROGRAMMING STYLE;
KERNIGHAN AND PLAUGER; MC GRAWHILL; 1974
3. STRUCTURED PROGRAMMING;
DAHL, DIJKSTRA, HOARE: ACADEMIC PRESS; 1972
4. SYSTEM/360 JOB CONTROL LANGUAGE
BROWN; WILEY; 1969
5. INTRO TO I/O CONCEPTS AND JOB CONTROL
LANGUAGE FOR THE IBM OPERATING SYSTEM 360
ASHBY, HEILMAN; DICKENSON; 1971
6. HIGH-LEVEL COBOL PROGRAMMING;
WEINBERG, KAUFFMAN, WRIGHT, GOETZ;
WINTHROP; 1977
7. STRUCTURED COBOL; DHILIPPACIS, KAZIMIER; 1977