



College of
Arts and Sciences
Department of
Mathematics

129 Austin

919-757-6461

MEMO TO: Members of 1993-1994 Educational Policies and
Planning Committee

FROM: Robert L. Bernhardt, ~~Chair~~
Chair

DATE: March 11, 1994

SUBJECT: New Masters Degree in Computer Science

Approved by EPPC:

3-24-94

Approved by the
Faculty Senate

4-19-94

~~Robert L. Bernhardt~~

The attached New Masters Degree in Computer Science is
being forwarded for your committee's information and
consideration. (APPROVED BY: Mathematics Graduate
Faculty, March 2, 1994)

jgs

Encls

Request for Authorization to Establish the
Master of Science in Computer Science Degree

East Carolina University
Greenville, North Carolina

February, 1994

API # 0701

going to Graduate Curriculum Cmte.

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REQUEST FOR AUTHORIZATION TO ESTABLISH A NEW
DEGREE PROGRAM
THE UNIVERSITY OF NORTH CAROLINA

Date: February 23, 1994

Constituent Institution: East Carolina University

API Discipline Specialty Title: Computer and Information Systems

API Discipline Specialty Number: 0701

Program tracks: Master of Science in Computer Science

I. DESCRIPTION OF THE PROGRAM

A. Describe the proposed degree program and associated degree program tracks.

The proposed program builds on an undergraduate degree in computer science, or its equivalent. The program focuses on providing advanced skills and knowledge in the planning, design, implementation and testing of computer software. Students completing the program will be qualified to hold administrative positions requiring planning, implementation and maintenance of large software systems, to teach computer science at the community college level, and to continue study toward a Ph.D. in computer science.

The program is based on a core of 12 semester hours that provide students in the program with a common foundation. Students must complete an additional 18 semester hours of course work at the graduate level, including either a thesis worth six semester hours or a project worth three semester hours, for a total of 30 semester hours of study. Although it is possible to complete the degree in one year, it is anticipated that most students will finish in two years.

B. List the educational objectives of the program.

The educational objective of the proposed program is both to develop the student's ability to think critically about software design and to expose the student to issues in foundations and applications of computing that are at a level that is inaccessible to an undergraduate student. A graduate of the program will have sufficient knowledge and experience to make sound, informed professional decisions, and will have a solid foundation to support further advanced study.

C. Indicate the relation of the program to other programs currently offered at the proposing institution, including the common use of (1) courses, (2) faculty, (3) facilities, and (4) other resources

The Department of Mathematics at East Carolina University currently offers six undergraduate degrees and two postgraduate degrees. Bachelor of Arts degrees are offered in Mathematics, in Mathematics with a Computer Science option, in Mathematics with a Statistics option, and in Computer Science. The department also offers the Bachelor of Science Professional Degree in Computer Science and the Bachelor of Science in Mathematics for Preparation of Teachers. Postgraduate degrees offered are the Master of Arts in Mathematics and the Master of Arts in Mathematics Education.

Sharing of resources with the other graduate programs in the department will be fairly limited. Classrooms and secretarial services will be shared. One mathematics course (MATH 5121) is part of the proposed program. Resource sharing will predominantly occur with the undergraduate program in computer science.

There are currently 9 faculty who teach courses in Computer Science, and some of those faculty will share their loads between the graduate and undergraduate programs. Some computing equipment currently available to the undergraduate program will be used for the graduate program as well. It is anticipated that, in the long run, the undergraduate program will benefit from some of the equipment that is acquired to support the graduate program. Equipment is discussed further under Section VI. Three proposed courses (CSCI 5210, 5220 and 5800) will be available to undergraduates.

The proposed Masters degree follows the Bachelors degree; initially, graduates of the East Carolina University undergraduate program in computer science will provide a significant source of students to the Masters program.

D. Identify similar programs offered elsewhere in North Carolina. Indicate location and distance from the proposing institution. Include both publicly-supported and private institutions of higher education.

North Carolina State University	90 miles from Greenville, NC
Duke University	100 Miles from Greenville, NC
University of North Carolina at Chapel Hill	110 miles from Greenville, NC
Wake Forest University	180 miles from Greenville, NC
University of North Carolina at Charlotte	250 miles from Greenville, NC

E. List the names of institutions with similar offerings regarded as high quality programs by the developers of the proposed program.

Duke University
North Carolina State University
University of North Carolina at Chapel Hill
University of North Carolina at Charlotte

F. List other institutions visited or consulted in developing this proposal. Also list any consultant reports, committee findings, and simulations (cost, enrollment shift, induced course load matrix, etc.) generated in planning the proposed program.

The preparers of this report are familiar with Master of Science in Computer Science programs at Virginia Polytechnic Institute and State University, Illinois Institute of Technology, Arizona State University, the University of Washington, Washington State University and the University of British Columbia, and consulted the catalog for the University of North Carolina at Chapel Hill. There is a broad consensus among these institutions on the main parts of the composition of such a degree program, with differences primarily in focus and administration.

The report "Computing Curricula 1991, Report of the ACM/IEEE-CS Joint Curriculum Task Force" (IEEE Computer Society Press) was consulted as an indicator of the level that incoming students can be expected to have achieved.

G. Indicate how the proposed new degree program differs from other programs like it in The University. If it is a program duplication, why is it necessary or justified? If it is a first professional or doctoral degree program, compare it with other similar programs in public and private universities in North Carolina, in the region, and in the nation.

Comparison to the the undergraduate computer science program

Most undergraduate students of Computer Science at East Carolina University choose the Bachelor of Science Professional Degree, the technically stronger of the two undergraduate degrees offered in computer science. Students receiving that degree have a broad exposure to computing, mathematics and related areas, as well as significant exposure to other areas of thought. They are prepared for further study and for jobs in industry that do not require more expertise than is provided by a broad education. The MS program concentrates on depth rather than breadth, and its graduates will be much stronger computer scientists than are graduates of the undergraduate program

Comparison to the Master of Arts in Mathematics program

Students receiving the Master of Arts in Mathematics are prepared to work in situations requiring a solid education in mathematics or to study toward a more advanced degree in mathematics. Students admitted hold a bachelors degree in mathematics or its equivalent. Students must either complete 33 semester hours of courses, including courses from a selected core, plus a research project, or must complete 24 semester hours of courses (including the same core), plus a thesis counting for 6 semester hours.

Students must satisfy a research skills requirement either in a foreign language or in Computer Science.

Students in the proposed Computer Science program may choose either the thesis option or the project option. Students who choose the thesis option must complete 24 semester hours of courses plus 6 semester hours of thesis. Students who choose the project option must complete 27 semester hours of courses plus a significant programming project, counted as 3 semester hours. The thesis option is similar in load to the MA in mathematics. The project option has a somewhat lower course load than the MA in mathematics, but it is anticipated that the programming projects chosen will be more involved than projects chosen by mathematics graduate students, since software development is difficult and time-consuming.

The proposed Master of Science degree in Computer Science has little overlap with the Master of Arts in Mathematics. Mathematics students satisfying their research skills requirement by choosing computer science have only basic skills in computing, not the advanced skills and knowledge that are expected of a Computer Science graduate. Students in the proposed program must concentrate on computing related courses to achieve the sought after expertise, and hence do not generally take many mathematics courses. It is not expected that there will be significant sharing of faculty between these two programs.

Comparison to the MAEd in Mathematics program

Students receiving the Master of Arts in Mathematics Education are prepared for teaching mathematics at the high school level, or for further study in mathematics education. Students must complete 30 semester hours of course work and pass comprehensive examinations. The overlap of this program with the proposed program in computer science is very small.

Comparison to programs offered by other departments

Some graduate programs outside the Department of Mathematics involve significant exposure to computing, but computing topics covered are very limited in scope.

The Department of Physics offers the degrees of Master of Science in Physics and Master of Physics. Neither of these degrees requires a student to study any area of computation. Two physics courses (PHYS 5850 and 5851) are available, however, that deal primarily with the interfacing of laboratory instruments and computers.

The School of Business offers two graduate programs, a Master of Science in Accounting and a Master of Business Administration. Computational studies in the School of Business are centered in the Department of Decision Science. Courses there are restricted to business applications, and focus on the use of existing software, as opposed to the development of new software.

In short, there is very little overlap between the proposed program and existing graduate programs at East Carolina University.

II. JUSTIFICATION FOR THE PROGRAM

A. Narrative Statement. Describe the proposed program as it relates to:

1. The institutional mission.

An integral part of the mission of East Carolina University is to provide educational opportunities for the relatively rural eastern regions of the state of North Carolina. The proliferation of computing equipment in rural and small town areas and the location of some national industries (Proctor and Gamble, Burroughs-Wellcome, Weyerhaeuser, for example) in Eastern North Carolina makes it important that persons in this part of the state have expertise in modern computing and software development.

In the 1980s, computer science was a "glamour" field. Large numbers of computer scientists were graduated. The available jobs filled quickly, and by the close of the decade, competition for positions had increased dramatically. The competition continues today. In a field as competitive as computer science, a Master of Science degree makes a person much more employable than does a Bachelor of Science degree.

Persons living in Eastern North Carolina are facing increased competition for the technically advanced positions. If local people have the education offered by a Masters program, companies in the region may find that employing local persons with necessary qualifications is preferable to transferring other persons into the area. We expect many graduates to find attractive employment in the eastern part of the state. The proposed program will make the economy of the region more stable, and will help to support the tax base of local municipalities.

2. Overall state plans (higher education and service programs).

In early 1992, the state of North Carolina approved the creation of an air cargo complex at the Kinston Regional Jetport. The reasoning behind this project is that light industrial and high technology companies will build facilities near the airport that will provide readily available shipping for the import of raw materials and the export of finished products. Some estimates have indicated that as many as 50,000 jobs will be created by the Jetport. The facility will be located approximately 25 miles from the East Carolina University Campus.

The presence of advanced educational programs in high technology fields in close proximity to the air cargo complex will be advantageous both to the air cargo complex

and to the University. Companies may be much more willing to relocate to the area if educational opportunities are available nearby. Indeed, the presence of such an educational opportunity might be the deciding factor in encouraging companies to relocate. Also, the University will have a larger pool of persons from which to attract students to an advanced degree program.

3. Student demand (for graduate, first professional and baccalaureate professional programs, cite manpower needs in North Carolina and elsewhere).

Several recent graduates of the undergraduate program in computer science at East Carolina University have inquired about a graduate program. Those persons clearly wish to pursue a graduate degree, and might have difficulty in relocating. Persons in local industry and persons employed in the new air cargo facility are expected to find such a program attractive.

4. Strengthening of existing undergraduate and graduate programs at your institution.

The undergraduate program in computer science can benefit greatly from the availability of graduate students as teaching assistants. Not only do teaching assistants free faculty time, they offer undergraduate students role models and a view of the subject matter that is difficult to obtain from faculty.

Any computer science program, whether graduate or undergraduate, requires modern computing equipment. Equipment obtained primarily for the graduate program will be shared partially with the undergraduate program, making advanced machines more accessible to undergraduates.

Increasingly, computers are being used in all aspects of mathematics, even in proofs, and the graduate program in mathematics will also benefit from a coexisting graduate program in computer science. Some mathematics graduate students might strengthen their backgrounds with a graduate course in computer science.

B. Enrollment

1. Likely sources of students and projected enrollment increases

Initially, the East Carolina University undergraduate program in computer science is the most likely source of students. Several graduating seniors each year, for the last three years, have expressed an interest in a graduate computer science program at East Carolina University. Over time, we expect that employees of local industry who want to improve their training, including those employed in industries related to the air cargo complex, will desire the program, and will constitute a significant source of students.

2. Four year enrollment projections

Eventually, we hope to offer twelve teaching assistant positions. A very conservative estimate of enrollment is therefore twelve, but a higher figure is far more likely, since some of the students will likely be employed elsewhere. Initially, we are requesting six teaching assistant positions, reflected in the initial years of the following table.

1994-95	1995-96	1996-97	1997-98
6	10	11	14

III. PROGRAM REQUIREMENTS AND CURRICULUM

A. Admission

1. Admissions requirements for proposed program (indicate minimum requirements and general requirements).

In addition to the requirements for admission to the Graduate School of East Carolina University, applicants for admission to the Computer Science curriculum must be proficient computer programmers in at least one high-level language. They must also present evidence of undergraduate study or significant experience in the areas of computer architecture and software design. Normally, incoming students will have an undergraduate degree in computer science.

2. Documents to be submitted for admission

The following documents must be provided to the Graduate Admissions Office by applicants.

1. A completed application for admission to the graduate program.
2. Official transcripts of all previous academic work attempted beyond high school.
3. A report of scores obtained on the Graduate Record Exam.
4. Three letters of recommendation.
5. For applicants whose native language is not English, a report of their score on the Test of English as a Foreign Language (TOEFL).

B. Degree Requirements

1. Total hours required

A candidate for the Master of Science degree in Computer Science must complete a minimum of 30 semester hours of approved graduate course work. Each student must complete four core courses (12 semester hours) which are listed below, plus an additional 18 semester hours of computer science courses numbered 5000 or above, including six semester hours in a concentration area and either six hours of thesis preparation or three hours of project preparation. At least 15 of the completed semester hours must be in courses numbered 6000 or above.

2. Proportion of courses open only to graduate students to be required in the program

Fifty percent (15 semester hours) of the required hours must be in courses numbered 6000 or above, which are open only to graduate students.

3. Grades required

The overall grade point average of all courses submitted for the degree must be 3.0 or better. No more than six hours evaluated as C may be counted toward the degree.

4. Amount of credit accepted for transfer

The proposed program will accept up to 9 semester hours by transfer.

5. Other requirements: residence, comprehensive exams, thesis, dissertation, clinical and field experience, "second major," etc.

The student must complete one area of concentration. Areas of concentration offered are software design and development, artificial intelligence, and computer architecture.

Students must attend at least five research seminars, and present at least one research seminar.

Students must pass a comprehensive examination covering the subjects that they have studied. After passing the comprehensive examination, students must arrange for an advisor and either write a thesis (CSCI 6996) or complete a significant project (CSCI 6995). The thesis or project must be successfully defended before the student's examination committee.

6. Language and/or research tool requirements

Students will not be required to be proficient in a foreign language to complete this program.

7. Any time limits for completion

Students must complete all requirements within seven years of admission.

C. List existing courses by title and number and indicate () those that are required. Include an explanation of the numbering system and describe new courses proposed.*

1. New Courses

Fourteen new courses, described below, are needed for the proposed program. They are described below. We propose a minimal number of new courses at this time. They will suffice to initiate the program, will ease the department's transition into the program, and will make it possible to teach each course once per year. More courses might be added after the department has had some experience with the program.

Of the courses described below, only MATH 5121 exists now. CSCI 5800 is a renumbering of existing course CSCI 4800. Three of the courses (CSCI 6995, 6996 and 6999) have no regular teaching duties associated with them. Course numbers are chosen to complement numbers of undergraduate courses covering similar topics or topics that lead into the given course, and to convey sequences of courses.

2. Core Requirements (12 Semester Hours)

All candidates must successfully complete the following required courses.

- *CSCI 5210 Operating Systems (3). Theory and practice of concurrent processes. Process scheduling. Memory and auxiliary storage management.
- *CSCI 5220 Program Translation (3). Formal language specification. Advanced parsing techniques. Code generation and optimization.
- *CSCI 6120 Computer Systems Architecture (3). Study of sequential architectures, instruction sets, addressing modes and control structures. Introduction to parallel architectures.
- *CSCI 6420 Computability and Complexity (3). Computability, Church's thesis. formal models of computation. Introduction to complexity theory.

3. Electives (18 Semester Hours)

The following courses are offered as electives.

- MATH 5121 Numerical Analysis in One Variable. Numerical analysis of problems with one independent variable, including solution of nonlinear equations in one unknown, interpolation and approximation of functions of one variable, numerical integration, and numerical differentiation and optimization.
- CSCI 5800 Artificial Intelligence (3). Fundamental problems and techniques of artificial intelligence. Heuristic search. Concepts of expert systems.
- CSCI 6130 Networking and Telecommunication (3). Theory and case studies of modern networking protocols and telecommunication methods. Local area and long haul networks.
- CSCI 6220 Topics in Language Design (3). Semantics and implementation characteristics of languages supporting modern computing paradigms such as functional programming, logic programming, constraint programming and object-oriented programming.
- CSCI 6230 Software Development (3). Study of management techniques for development of software systems. Project scheduling, cost estimation, personnel management. Practical experience in high level system integration.
- CSCI 6410 Design and Analysis of Algorithms (3). Methods of designing efficient algorithms. Case studies. Analysis of the complexity of an algorithm.
- CSCI 6810 Topics in Artificial Intelligence (3). A study of the state of the art in a selected topic in artificial intelligence.
- CSCI 6820 Computer Graphics (3). Principles and Techniques of image rendering. Use of image rendering software.
- CSCI 6905 Topics in Computer Science (3). May be repeated once for credit with a change of topic. A current topic in computer science.
- CSCI 6995 Project (3). Prerequisite: successful completion of the comprehensive examination in computer science. The student completes a significant programming project under the supervision of a member of the graduate faculty. The project must be approved and defended.

CSCI 6996 Thesis (6). Prerequisite: successful completion of the comprehensive examination in computer science. The student researches and studies a topic under the supervision of a member of the graduate faculty. The study culminates in a thesis that must be approved and defended.

CSCI 6999 Residence(0).

4. Areas of Concentration

The student must complete one of the following areas of concentration

Software Design and Development	CSCI 6230, CSCI 6410
Computer Architecture	CSCI 6120, CSCI 6130
Artificial Intelligence	CSCI 5800, CSCI 6810

IV. FACULTY

A. List the names of persons now on the faculty who will be directly involved in the proposed program. (Include resumes in attachment.) Provide complete information on each faculty members education, publications, teaching experience, research experience, and experience in the direction of student research, with the number of theses and dissertations directed, in addition to biographical information.

1. Dr. Karl Abrahamson (Ph.D. University of Washington)
Theory of Computation, Programming Languages
2. Dr. John Crammer (Ph.D. Clemson University)
3. Dr. Robert Fainter (Ph.D. Virginia Polytechnic Institute)
Software Engineering, Program Specification
4. Dr. Steven Gordon (Ph.D. Illinois Institute of Technology)
Artificial Intelligence, Natural Language Processing
5. Dr. Masao Kishore (Ph.D. Princeton University)
Computer Graphics
6. Dr. Ronnie Smith (Ph.D. Duke University)
Natural Language Processing
7. Dr. William Spickerman (Ph.D. University of Kentucky)
8. Dr. Mohammed Tabrizi (University of Sheffield, England)
Computer Architecture, Modeling and Simulation
9. Dr. James Wirth (Ph.D. Notre Dame University)
Computer Architecture, Object-Oriented Design

B. Project the need for new faculty for the proposed program for the first four years. If the teaching responsibilities for the proposed program will be absorbed in part or in whole by the present faculty, explain how this will be done without weakening existing programs.

With the hiring of an additional Ph.D. in computer science in 1992-1993, there are nine departmental faculty members in the computer science area, six of whom have the Ph.D in computer science, or in a closely related field with very significant experience in computing. The Department of Mathematics received an enrollment increase position in 1993-94, which was added to the computer science area, bringing the total number of faculty in the area to ten. It is felt that this number of faculty should be sufficient to offer the department's undergraduate and graduate computer science programs and, simultaneously, to offer a solid nucleus for faculty research and direction of graduate student work.

The curriculum calls for the addition of eleven new courses, not counting the thesis and project courses, or the required residence course. (MATH 5121 is currently offered. CSCI 5800 will be merged with an existing undergraduate course, so it is not counted as an added course.) The teaching responsibilities of 1.0 FTE current faculty members will be diverted to the graduate program, making it possible, with the new new position mentioned above, to teach each new course once a year, with the possible exception of CSCI 6905. At current and anticipated levels of student interest, this will not significantly weaken the undergraduate computer science programs. The availability of graduate students to assist in tutoring and operation of laboratories will compensate for the diversion of teaching responsibilities, and will strengthen the undergraduate program. Two of the new courses, CSCI 5210 and CSCI 5220, are available to undergraduate students, further improving the undergraduate student's access to a quality education.

C. If acquisition of new faculty requires additional funds, please explain where and how these funds will be obtained.

State funds will be required for the projected new faculty member. The Mathematics Department obtained this position through the University's 1993-94 enrollment expansion positions. Thus, no new funds are requested for new faculty.

D. Please explain how the program will affect faculty activity, including course load, public service activity and scholarly research

This program will increase faculty teaching loads slightly. Nevertheless, faculty research will be enhanced, since faculty research benefits from the presence of a graduate program.

V. LIBRARY

A. Provide a statement as to the adequacy of present library holdings for the proposed program

The present book holdings are adequate for the proposed program. The library is weak in computer science journal holdings, and in holdings of conference proceedings in computer science.

B. State how the library should be improved to meet new program requirements for the next five years. Explanation should cover needs for books, periodicals, reference material, primary source material, etc. What additional library support must be added to areas supporting the proposed program?

The most important improvement in the library is in the acquisition of journals and conference proceedings. Computer science is an unusual field in that conference proceedings are a primary source for up-to-date research reports. Journals are typically backlogged, conferences are refereed, and some conferences are more difficult to publish in than are journals that cover the same topics. Hence, papers that appear in conference proceedings are typically of high quality. Additionally, conference proceedings are relatively economical to obtain, compared to journals.

An annual allotment of \$5,000 is requested to cover new journal and conference proceedings acquisitions.

C. Discuss any contemplated use of other institutional libraries.

Currently, the libraries at North Carolina State University, Duke University and the University of North Carolina at Chapel Hill are available to faculty and graduate students at East Carolina University. The University makes vehicles available for travel. Realistically, one must plan to invest most of the day for such a trip, since the travel time is about two hours each way.

A continuation of inter-library access systems, such as CARL, will improve access to publications.

VI. FACILITIES AND EQUIPMENT

A. Describe facilities available for the proposed program.

The university currently provides both mainframe computers and personal computer labs. The mainframes available are an IBM 9000 and a DEC VAX 4000. Of

these, the DEC VAX 4000 will provide the most computing support to graduate students. It is a modern system that is used for software development in many industrial, commercial, academic and government installations.

There are numerous IBM-PC compatible personal computers available in laboratories throughout the campus, which graduate students can use in report preparation.

The mathematics department is developing a network of Sun Workstations for use by faculty and graduate students. These workstations will provide high computing power and make it possible for students to gain experience with a local area network.

B. Describe the effect of this new facility use on existing programs.

The mathematics department has adequate space to convert a classroom into office and laboratory space for the graduate program in computer science without adversely affecting existing programs. Additional classroom space will be shared with existing programs by offering courses in the late afternoon, when demand is currently low.

Graduate students will primarily use the DEC VAX and the Sun Workstations for their computing needs. These machines are now used mainly by faculty, so their use will not affect the undergraduate program. Graduate students will prepare reports on the department's personal computers.

C. Indicate any computer services needed and/or available.

The available computers are outlined in Part A of this section. Additional workstations are needed to expand the current Sun network. This expansion is addressed in Part D of this section.

D. Indicate sources of financial support for any new facilities and equipment.

The department needs to expand its workstation network to support the proposed program. By the third year of the proposed program, the department hopes to obtain a one-time federal grant of \$30,000 for computing equipment, with another \$30,000 in matching funds furnished by the university.

The state of the art in computing equipment is evolving rapidly, with available computing power per dollar becoming faster, with larger memories and external storage. Software is developed to take advantage of the faster and larger machines. As a result, it is not usually feasible to run leading edge software on machines that are more than about seven years old. The department is therefore requesting a permanent allotment of \$15,000 per year for computing equipment. The budget sheets show the permanent allotment beginning in year two of the program, with an additional one-time allotment of \$15,000 in year three to cover the matching funds for the federal grant that will be sought.

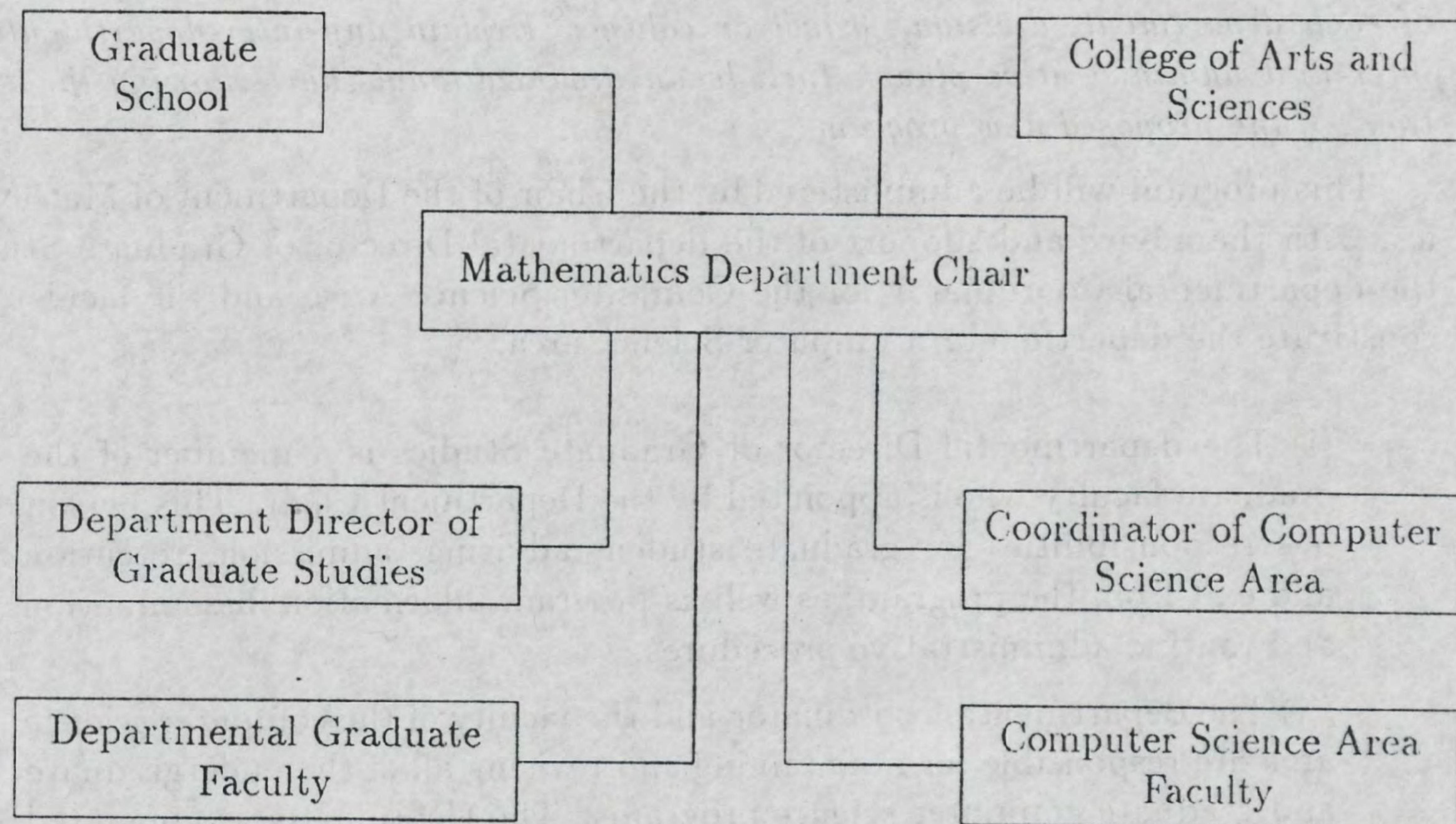
VII. ADMINISTRATION

Describe how the proposed program will be administered, giving the responsibilities of each department, division, school or college. Explain any inter-departmental or inter-unit administrative plans. Include an organizational chart showing the "location" of the proposed new program.

This program will be administered by the Chair of the Department of Mathematics, with the advice and support of the departmental Director of Graduate Studies, the departmental Coordinator for the Computer Science Area, and the faculty who constitute the departmental Computer Science area.

(i) The departmental Director of Graduate Studies is a member of the graduate faculty who is appointed by the Department Chair. This person has responsibilities for graduate student advising, admission, retention and exit from the program, as well as program information dissemination and routine administrative procedures.

(ii) The departmental coordinator and the faculty of the computer science area are responsible for maintaining and revising all of the undergraduate and graduate computer science programs. The Coordinator is appointed by the Department Chair; the faculty in the computer science area consist of all of the departmental faculty who teach computer science courses on a regular basis. The computer science faculty serve as a committee to determine the computer science courses and their contents, to develop course syllabi and choose textbooks, to revise, delete and replace courses as required, to serve as a search committee for hiring new faculty in the computer science area, and in general to propose procedures or policies that lead to the smooth functioning of the computer science programs. Procedures or policies, once proposed, are considered by the departmental undergraduate committee or graduate committee, as appropriate. The following chart shows the position of the proposed program, represented by the Chair of the Department of Mathematics.



VIII. ACCREDITATION

Indicate the names of all accrediting agencies normally concerned with programs similar to the one proposed.

The Computer Science Accreditation Board is the accrediting agency for undergraduate computer science programs. Graduate programs in computer science are not currently accredited by any national agency.

IX. SUPPORTING FIELDS

Are other subject-matter fields at the proposal institution necessary or valuable in support of the proposed program? Is there needed improvement or expansion of these fields? To what extent will such improvement or expansion be necessary for the proposed program?

The proposed program stands well on its own; no improvement in other programs is required. The program does not require courses from other disciplines. Some students might take courses from the mathematics department, or some of the other departments at the university, but the demand will be small, and existing courses in other areas are adequate.

X. ADDITIONAL INFORMATION

Include any additional information deemed pertinent to the review of this new degree program proposal.

XI. BUDGET

Provide estimates (using the attached form) of the additional costs required to implement the program and identify the proposed sources of additional funds required. Prepare a budget schedule for each of the first three years of the program indicating the account number and name for all additional amounts required. Identify EPA and SPA positions immediately below the account listing. New SPA positions should be listed at the first step in the salary range using the SPA classification rates currently in effect. Identify any larger or specialized equipment and any unusual supplies requirements.

For the purposes of the second and third year estimates, project faculty and SPA position rates and fringe benefits rates at the first year levels. Include the continuation of previous year(s) cost in second and third year estimates.

The Department of Mathematics received several enrollment increase positions in 1993-94, and one of those positions will be added to the computer science area. No further increases in the computer science faculty are anticipated. Thus, no outside funds are required for additional faculty.

Support for graduate students, in the form of Graduate Teaching Assistantships, is very important — otherwise the program will consist entirely of part-time students, making the establishment of a reasonable course rotation difficult. A reasonable number of GTAs is twelve at \$7500 each, for a total of \$90,000. The smallest number of GTAs that could still give the program a critical mass of full-time students is six, for a total of \$45,000. The program will begin with the smaller number, with additional GTA positions added over time.

The Department of Mathematics has a computer equipment budget that is adequate for the present programs; however, an increment of \$15,000 per year is needed to support the proposed program. This money will be used primarily to establish and maintain a network of advanced workstations for graduate student and faculty use. An additional one-time allotment of \$15,000 is requested in the third year of the program to cover matching funds for a federal grant that the department will seek.

Current library journal holdings are weak, especially in the research areas of the computer science faculty. An additional \$5,000 is requested to remedy this problem.

The department's current resources are sufficient for the other anticipated expenses of the proposed program, except in the three cases cited above. Sources of funding are described in the table below.

Year	Reallocation of Present Resources	Enrollment Increase Funds	New Allocations	Total
1	\$45,000	\$62,953	-	\$107,953
2	\$60,000	-	-	\$60,000
3	\$15,000	-	-	\$15,000

XII. EVALUATION PLANS

All new degree program proposals and degree program track descriptions must include an evaluation plan which includes (a) the criteria to be used to evaluate the quality and effectiveness of the program, (b) measures to be used to evaluate the program, (c) expected levels of productivity of the proposed program/track for the first four years of the program (numbers of graduates), (d) the names of at least three persons qualified to review this proposal and to evaluate the program once operational, and (e) the proposed plan and schedule to evaluate the proposed new degree program prior to the completion of its fifth year of operation once fully established.

A. Criteria to be used to evaluate the proposed program.

The quality and effectiveness of the program will be judged on the following criteria:

1. the quality of students admitted;
2. the performance of the students while pursuing the degree;
3. the perceptions of the graduates concerning the contributions of the program to their achievement of their post-graduation goals;
4. the professional achievements of graduates;
5. the effectiveness of the faculty in incorporating new developments and applications of computer science into the program.

B. Measures to be used to evaluate the program.

The measures that will be used to evaluate the quality and effectiveness of the program relative to the criteria listed in part A of this section will include, but not be limited to, the following:

1. undergraduate records, GRE scores and letters of recommendation for students, to the extent that they indicate the quality of the student on entry into the program;
2. student grades, performance on comprehensive examinations, quality of theses and projects, completion rate and student presentations at meetings of professional societies;
3. formal and informal reports by graduates;
4. the quality of job offers, positions accepted, promotions, acceptance of graduates for further academic study, the success of graduates in further study;
5. judgements of ECU faculty and of computer scientists from outside ECU who will be asked to comment on program content;
6. participation and presentations of faculty in professional meetings, and faculty publications in professional journals.

C. Projected productivity levels (number of graduates).

1996	1997	1998	1999
4	6	6	6

D. Recommended Consultants/Reviewers: Names, titles, addresses. May not be employees of the University of North Carolina.

Professor Alan W. Biermann
 Department of Computer Science
 Duke University
 Box 90129
 Durham, NC 27708-0129

Professor Michael A. Langston
 Department of Computer Science
 University of Tennessee
 Knoxville, TN 37996-1301

Professor David B. Benson
 Department of Electrical Engineering and Computer Science
 Washington State University
 Pullman, WA 99164-2752

E. Plan for evaluation prior to the sixth operational year.

Methods of evaluation:

1. an annual self-evaluation by the computer science faculty;
2. during the third and each subsequent year, conduct surveys and/or interviews to determine the achievements of graduates of the program, and to learn their opinions concerning the program's effectiveness from the standpoint of their employment or continued study;
3. during the fourth year, establish an external review committee consisting of people from outside ECU to evaluate the program and make recommendations for improvement.

Date proposed degree program was authorized for planning: March 6, 1992

Proposed date of initiation of proposed degree program: August 1994

Chancellor: _____

Appendix: Detailed Budget

SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM/TRACK

INSTITUTION East Carolina University

DATE August 1995

Program (API#, Name, Level) 0701, Computer and Information Systems, Graduate

Degree(s) to be Granted Master of Science

Program Year 1

ADDITIONAL FUNDS REQUIRED - BY SOURCE

	Reallocation of Present Institutional Resources	Enrollment Increase Funds	Federal or Other (Identify)	New Allocations	Total
<u>101 Regular Term Instruction</u>	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
1201 SPA Regular Salaries (Identify positions)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
1310 EPA Academic Salaries	\$45,000 (GTA) (Funds)	\$48,000 (New) (Faculty)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$93,000 (_____) (_____)
1810 Social Security	\$ _____	\$ 3,672	\$ _____	\$ _____	\$ 3,672
1820 State Retirement	\$ _____	\$ 5,246	\$ _____	\$ _____	\$ 5,246
1830 Medical Insurances	\$ _____	\$ 1,035	\$ _____	\$ _____	\$ 1,035
2000 Supplies and Materials (Identify)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)
3000 Current Services (Identify)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)
4000 Fixed Charges (Identify)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)
5000 Capital Outlay (Equipment) (Identify)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)	\$ _____ (_____) (_____) (_____)
TOTAL - Regular Term Instruction	\$45,000	\$57,953	\$ _____	\$ _____	\$102,953
151 Libraries (Identify accounts)	\$ _____ _____ _____ _____	\$ 5,000 (Journals)	\$ _____ _____ _____ _____	\$ _____ _____ _____ _____	\$ 5,000 _____ _____ _____
TOTAL-Libraries	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
TOTAL ADDITIONAL COSTS	\$45,000	\$62,953	\$ _____	\$ _____	\$107,953

NOTE: Accounts may be added or deleted as required

SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM/TRACK

INSTITUTION East Carolina University DATE August 1995

Program (API#, Name, Level) 0701, Computer and Information Systems, Graduate

Degree(s) to be Granted Master of Science Program Year 2

ADDITIONAL FUNDS REQUIRED - BY SOURCE

	Reallocation of Present Institutional Resources	Enrollment Increase Funds	Federal or Other (Identify)	New Allocations	Total
<u>101 Regular Term Instruction</u>	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
1201 SPA Regular Salaries (Identify positions)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
1310 EPA Academic Salaries	\$45,000 (GTA) (Funds)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$45,000 (_____) (_____)
1810 Social Security	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
1820 State Retirement	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
1830 Medical Insurances	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
2000 Supplies and Materials (Identify)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
3000 Current Services (Identify)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
4000 Fixed Charges (Identify)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
5000 Capital Outlay (Equipment) (Identify)	\$15,000 (Comp Eqpt)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$15,000 (_____) (_____)
TOTAL - Regular Term Instruction	\$60,000	\$ _____	\$ _____	\$ _____	\$60,000
151 Libraries (Identify accounts)	\$ _____ _____ _____	\$ _____ _____ _____	\$ _____ _____ _____	\$ _____ _____ _____	\$ _____ _____ _____
TOTAL-Libraries	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
TOTAL ADDITIONAL COSTS	\$60,000	\$ _____	\$ _____	\$ _____	\$60,000

NOTE: Accounts may be added or deleted as required

SUMMARY OF ESTIMATED ADDITIONAL COSTS FOR PROPOSED PROGRAM/TRACK

INSTITUTION East Carolina University

DATE August 1995

Program (API#, Name, Level) 0701, Computer and Information Systems, Graduate

Degree(s) to be Granted Master of Science

Program Year 3

ADDITIONAL FUNDS REQUIRED - BY SOURCE

	Reallocation of Present Institutional Resources	Enrollment Increase Funds	Federal or Other (Identify)	New Allocations	Total
<u>101 Regular Term Instruction</u>	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
1201 SPA Regular Salaries (Identify positions)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
1310 EPA Academic Salaries	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
1810 Social Security	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
1820 State Retirement	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
1830 Medical Insurances	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
2000 Supplies and Materials (Identify)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
3000 Current Services (Identify)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
4000 Fixed Charges (Identify)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)	\$ _____ (_____) (_____)
5000 Capital Outlay (Equipment) (Identify)	\$15,000 (Comp Eqpt) (_____) (_____)	\$ _____ (_____) (_____)	\$30,000 (Grant) (_____) (_____)	\$ _____ (_____) (_____)	\$45,000 (_____) (_____)
TOTAL - Regular Term Instruction	\$15,000	\$ _____	\$30,000	\$ _____	\$45,000
151 Libraries (Identify accounts)	\$ _____ _____ _____ _____	\$ _____ _____ _____ _____	\$ _____ _____ _____ _____	\$ _____ _____ _____ _____	\$ _____ _____ _____ _____
TOTAL-Libraries	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
TOTAL ADDITIONAL COSTS	\$15,000	\$ _____	\$30,000	\$ _____	\$45,000

NOTE: Accounts may be added or deleted as required 1 = one-time allotment

Appendix: Course Descriptions

East Carolina University
COURSE PROPOSAL FORM
 (Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <div style="text-align: right;"><input type="checkbox"/> revision of an existing course</div>
---------------------------	--

I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no) CSCI 5210 "Operating Systems"	
B. Credit Hours 3	C. Weekly (1) classroom lecture hours required <u>03</u> (2) lab/studio hours required <u>0</u>
D. Prerequisites CSCI 4630 or consent instructor.	
E. Catalogue Description Theory and practice of concurrent processes. Process scheduling. Memory and auxiliary storage management.	
F. Catalogue Placement (by page number) <u>Undergraduate Catalogue</u> P. 146	Year of Catalogue <u>92-94</u> <u>Graduate Catalogue</u> p. 90
G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO <u>ALL</u> MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S). <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <u>Undergraduate Catalogue</u> P. 146 </div> <div style="width: 45%;"> <u>Graduate Catalogue</u> MS in Computer Science (proposed) </div> </div>	

II. NATURE OF COURSE

A. Textbook(s) William, Stallings. <u>Operating Systems.</u> MacMillan, New York, 1992.
--

B. Course Objectives

To give a student an understanding of the principles of operating system design and their implementation in a sample operating system, so that the student can use operating systems for problem solution.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in Computer Science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

Weeks 1-2	Review of computer architecture and overview of operating system purpose and structure.
Weeks 3-6	Memory management. File systems.
Weeks 7-12	Processes and concurrency. Problems with concurrency. Interprocess communication. Discussion of network operating systems.
Weeks 13-14	Security issues

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be expected to complete a small operating systems project, regular homework, and two exams. Graduate students will be required to undertake a significantly more involved project than undergraduate students.

F. Competencies (for courses affecting teacher education degrees)

 X not applicable
 when applicable, attach as page 5 and label "IIE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course.

MS degree in Computer Science

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science

3. Expected yearly student enrollment 9

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe _____

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature *Robert G. Sanhardt*

Official Title Chair of Mathematics Department

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

<p>3. Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____</p>
<p>4. Statement of Director of Computing Center if computer use is anticipated <input type="checkbox"/> not applicable <input checked="" type="checkbox"/> applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs</p>
<p>5. Statement and date of Council of Teacher Education Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____</p>
<p>6. Statement and date of College of School Curriculum Committee action (Indicate College or School _____) <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____</p>
<p>7. Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____</p>
<p>8. Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____</p>
<p>DISTRIBUTION: Copies of the proposal must reach the appropriate committees at least 10 days in advance of their scheduled monthly meetings. Check with your individual college or school as to the number of copies of the proposal needed by the college's or school's curriculum committee and to whom they are to be sent. Once approval is given by the college or school, 1000-5000 level course proposals are to be sent for consideration to the University Curriculum Committee as follows: 3 copies to the chairperson, 2 copies to the secretary, 3 to the SGA office, 1 to each of the committee members (list available from Faculty Senate Office), 2 to the Vice Chancellor for Academic Affairs, and 1 to the Faculty Senate Office. All 5000 and 6000 level course proposals are to be sent for consideration to the Graduate Council Curriculum Committee; send 3 copies to the committee chair and 1 copy to each member of the <u>Graduate Council</u> and to non-council representatives on its curriculum committee (list available from the Graduate School Office).</p>
<p>Proposal prepared by Name <u>Robert J. Linnhardt</u> (Chair) Department <u>Mathematics</u> Phone <u>757-6461</u></p>

East Carolina University
COURSE PROPOSAL FORM
 (Revised 6-14-91)

Date November 27, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <div style="text-align: right; margin-top: 5px;"><input type="checkbox"/> revision of an existing course</div>
---------------------------	---

I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no) CSCI 5220 "Program Translation"	
B. Credit Hours 3	C. Weekly (1) classroom lecture hours required <u>03</u> (2) lab/studio hours required <u>0</u>
D. Prerequisites CSCI 4627 or consent of instructor.	
E. Catalogue Description Formal language specification. Advanced parsing techniques. Code generation and optimization.	
F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u> P. 146	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO <u>ALL</u> MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S). <div style="display: flex; justify-content: space-between;"> <div style="text-align: left; width: 45%;"> <u>Undergraduate Catalogue</u> P. 146 </div> <div style="text-align: left; width: 45%;"> <u>Graduate Catalogue</u> MS in Computer Science (proposed) </div> </div>	

II. NATURE OF COURSE

A. Textbook(s) A. V. Aho, R. Sethi, and J. D. Ullman. <u>Compilers: Principles, Techniques, and Tools.</u> Addison-Wesley, Reading, MA.
--

B. Course Objectives

Introduce the student to the principles and applications of parsing and the code generation methods, and to familiarize the student with the structure of a compiler.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in Computer Science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

- Weeks 1-2 Lexical Analysis. Automatic lexical analyzer generators.
- Weeks 3-8 Parsing. Top-down and bottom-up parsers. Parser generators.
- Weeks 9-12 Intermediate code and code generation.
- Weeks 13-14 Code improvement.

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be expected to complete regular homework and three exams. Each student will design a small compiler. Graduate students will be required to produce a more significant compiler than undergraduate students.

F. Competencies (for courses affecting teacher education degrees)

- not applicable
- when applicable, attach as page 5 and label "IE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course
MS degree in Computer Science.

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in computer science.

3. Expected yearly student enrollment 9

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature *Robert D. Benhardt*

Official Title Chair of Mathematics Department

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3. Statement and date of departmental, unit, or program action
 approved not approved
 not applicable other (explain) Date _____

4. Statement of Director of Computing Center if computer use is anticipated
 not applicable
 applicable; a statement of accomodation from the Director of the Computing Center is to be sent to the curriculum committee chairs

5. Statement and date of Council of Teacher Education Council Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

6. Statement and date of College of School Curriculum Committee action
 (Indicate College or School _____)
 approved not approved
 not applicable not acted upon as yet Date _____

7. Statement and date of University Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

8. Statement and date of Graduate Council Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

DISTRIBUTION: Copies of the proposal must reach the appropriate committees at least 10 days in advance of their scheduled monthly meetings. Check with your individual college or school as to the number of copies of the proposal needed by the college's or school's curriculum committee and to whom they are to be sent. Once approval is given by the college or school, 1000-5000 level course proposals are to be sent for consideration to the University Curriculum Committee as follows: 3 copies to the chairperson, 2 copies to the secretary, 3 to the SGA office, 1 to each of the committee members (list available from Faculty Senate Office), 2 to the Vice Chancellor for Academic Affairs, and 1 to the Faculty Senate Office. All 5000 and 6000 level course proposals are to be sent for consideration to the Graduate Council Curriculum Committee; send 3 copies to the committee chair and 1 copy to each member of the Graduate Council and to non-council representatives on its curriculum committee (list available from the Graduate School Office).

Proposal prepared by Name *Robert L. ...* (Chair)
 Department Mathematics Phone 757-6461

East Carolina University
COURSE PROPOSAL FORM
(Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <input type="checkbox"/> revision of an existing course
---------------------------	--

I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no) CSCI 5800 "Artificial Intelligence"	
B. Credit Hours 3	C. Weekly (1) classroom lecture hours required <u>03</u> (2) lab/studio hours required <u>0</u>
D. Prerequisites CSCI 3510 or consent of instructor.	
E. Catalogue Description Fundamental problems and techniques of artificial intelligence. Heuristic search. Concepts of expert systems.	
F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u> p. 146	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO <u>ALL</u> MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S). <u>Undergraduate Catalogue</u> p. 146 <u>Graduate Catalogue</u> MS in Computer Science (proposed)	

II. NATURE OF COURSE

A. Textbook(s) George F. Luger and William A. Stubblefield <u>Artificial Intelligence: Structure and Strategies for Complex Problem Solving</u> Second Edition. Benjamin Cummings, 1993.

B. Course Objectives

Students will be exposed to a variety of basic artificial intelligence techniques. The discussion and assignments will emphasize how each technique works, what kinds of problem it solves effectively or ineffectively, and implementation issues. Students will gain experience in implementing some of these techniques in the programming language Prolog.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in Computer Science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

Weeks 1-2	Introduction.
Weeks 2-3	First order logic.
Weeks 4-5	Heuristic search techniques.
Weeks 6-7	Prolog. Midterm.
Week 8	Introduction to expert systems.
Weeks 9-11	Knowledge representation.
Weeks 12-13	Natural language processing and parsing.
Week 14	Introduction to theorem proving.

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be evaluated on the basis of regular homework and small programming exercises, a midterm exam, a final exam, and a project. Graduate students will be required to complete a significantly more challenging project than undergraduate students.

F. Competencies (for courses affecting teacher education degrees)

- not applicable
- when applicable, attach as page 5 and label "IE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course.

MS degree in Computer Science

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science.

3. Expected yearly student enrollment 6

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe _____

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature *Robert J. ...*

Official Title Chair of Mathematics Department

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3. Statement and date of departmental, unit, or program action
 approved not approved
 not applicable other (explain) Date _____

4. Statement of Director of Computing Center if computer use is anticipated
 not applicable
 applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs

5. Statement and date of Council of Teacher Education Council Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

6. Statement and date of College of School Curriculum Committee action
 (Indicate College or School _____)
 approved not approved
 not applicable not acted upon as yet Date _____

7. Statement and date of University Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

8. Statement and date of Graduate Council Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

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Proposal prepared by Name *Robert N. Lumbard* (Chair)
 Department Mathematics Phone 757-6461

East Carolina University
COURSE PROPOSAL FORM
 (Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <input type="checkbox"/> revision of an existing course
---------------------------	--

I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no) CSCI 6120 "Computer Systems Architecture"	
B. Credit Hours 3	C. Weekly (1) classroom lecture hours required <u>03</u> (2) lab/studio hours required <u>0</u>
D. Prerequisites CSCI 4520 or consent of instructor.	
E. Catalogue Description Study of sequential architectures, instruction sets, addressing modes and control structures. Introduction to parallel architectures.	
F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u>	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO <u>ALL</u> MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S). <u>Undergraduate Catalogue</u> <u>Graduate Catalogue</u> MS in Computer Science (proposed)	

II. NATURE OF COURSE

A. Textbook(s) George W. Gornline. <u>Computer Organization: Hardware and Software</u> Prentice Hall

B. Course Objectives

Provide the student with an understanding of computer hardware sufficient to let the student write low level support software and to give an appreciation of different architectures, and a feel for the circumstances in which one architecture would be preferred over another.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in computer science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

- Weeks 1-5 Review of prerequisite material. Instructions and modalities. The control unit. Memories. Input/output, data paths, and interrupts.
- Weeks 6-7 The Von Neumann SISD computer.
- Weeks 8-10 Multiprocessors and multicomputers. MIMD systems
- Weeks 11-12 Special purpose systems.
- Weeks 13-14 Computer networks.

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be graded on the basis of regular homework, two exams and a small project on the department's local area network. The project must be accompanied by a report describing the functionality and the implementation.

F. Competencies (for courses affecting teacher education degrees)

- not applicable
- when applicable, attach as page 5 and label "IE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course.

MS degree in Computer Science.

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science.

3. Expected yearly student enrollment 6

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature [Signature]

Official Title Chair of Mathematics

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3.	Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____
4.	Statement of Director of Computing Center if computer use is anticipated <input type="checkbox"/> not applicable <input checked="" type="checkbox"/> applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs
5.	Statement and date of Council of Teacher Education Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
6.	Statement and date of College of School Curriculum Committee action (Indicate College or School _____) <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
7.	Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
8.	Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____

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Proposal prepared by Name *Paul J. Lombardi* (Chair)
Department Mathematics Phone 757-6461

B. Course Objectives

To develop an understanding of computer networks, so that the student can use and modify network software, and can appreciate the strengths and weaknesses of different network architectures.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in computer science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

Weeks 1-4 Introduction. Data communications, data encoding, digital data communication techniques. Data link control. Multiplexing.

Weeks Physical networking techniques. Circuit switching. Packet switching.

Weeks Radio and satellite networks.

Weeks Local area networks.

Weeks Protocols and network architecture. Data link protocols.

Weeks Network protocols.

Weeks Internetworking. Transport protocols.

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be graded on the basis of regular homework, two exams and a small project on the department's local area network. The project must be accompanied by a report describing the functionality and the implementation.

F. Competencies (for courses affecting teacher education degrees)

not applicable

when applicable, attach as page 5 and label "IE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course.

MS degree in Computer Science.
2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science.
3. Expected yearly student enrollment 6

B. Staff and Facilities

1. Staff needed to offer course
 present staff is adequate
 additional staff is needed; if so, how many?
2. Facilities needed to offer course
 present facilities are adequate
 additional facilities are needed; if so, describe
3. Library resources
 initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$
4. Additional cost involved See request to establish MS program in computer science
5. Unit Head's Signature *Robert J. Eschhardt*

Official Title Chair of Mathematics

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)
2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

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7.	Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
8.	Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____

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Proposal prepared by Name Robert R. Linnhardt (Chair)
 Department Mathematics Phone 757-6461

East Carolina University
COURSE PROPOSAL FORM
(Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <u> X </u> new course <u> </u> revision of an existing course
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I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? X yes no)
CSCI 6220 "Topics in Language Design"

B. Credit Hours 3	C. Weekly (1) classroom lecture hours required <u> 03 </u> (2) lab/studio hours required <u> 0 </u>
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D. Prerequisites
CSCI 3675 or consent of instructor.

E. Catalogue Description
Semantics and implementation characteristics of languages supporting modern computing paradigms such as functional programming, logic programming, constraint programming and object-oriented programming.

F. Catalogue Placement (by page number) <u> Undergraduate catalogue </u>	Year of Catalogue <u> 92-94 </u> <u> Graduate catalogue </u> p. 90
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G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO ALL MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S).

<u> Undergraduate Catalogue </u>	<u> Graduate Catalogue </u> MS in Computer Science (proposed)
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II. NATURE OF COURSE

A. Textbook(s)
Alice E. Fischer and Frances S. Grodzinsky.
 The Anatomy of Programming Languages.
Prentice-Hall, 1993.

B. Course Objectives

To introduce the student to advanced programming paradigms, as they are implemented in modern programming languages, and to the programming language features and implementation characteristics necessary to support those paradigms.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in Computer Science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

- | | |
|-------------|--|
| Weeks 1-2 | Discussion of imperative programming and imperative programming languages. Common features. Design principles and design errors. |
| Weeks 3-6 | Object-oriented programming and object-oriented programming languages. |
| Weeks 7-11 | Functional programming and functional programming languages. |
| Weeks 12-14 | Logic and constraint programming and logic programming languages. |

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be expected to implement at least one program under each paradigm. Additionally, there will be regular homework and three exams.

F. Competencies (for courses affecting teacher education degrees)

- not applicable
 when applicable, attach as page 5 and label "IE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course.

MS degree in Computer Science

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science.

3. Expected yearly student enrollment 6

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe _____

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature *[Signature]*

Official Title Chair of Mathematics Department

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3.	Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____
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6.	Statement and date of College of School Curriculum Committee action (Indicate College or School _____) <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
7.	Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
8.	Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____

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Proposal prepared by Name Robert H. L. ... (Chair)
 Department Mathematics Phone 757-6461

East Carolina University
COURSE PROPOSAL FORM
(Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <input type="checkbox"/> revision of an existing course
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I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? yes no)
CSCI 6230 "Software Development"

B. Credit Hours 3	C. Weekly (1) classroom lecture hours required 03 (2) lab/studio hours required 0
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D. Prerequisites
CSCI 4200 or consent of instructor.

E. Catalogue Description
Study of management techniques for development of software systems. Project scheduling, cost estimation, personnel management. Practical experience in high level system integration.

F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u>	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
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G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO ALL MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S).

<u>Undergraduate Catalogue</u>	<u>Graduate Catalogue</u> MS in Computer Science (proposes)
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II. NATURE OF COURSE

A. Textbook(s)
John J. Rakos.
Software Project Management for Small and Medium Sized Projects.
Prentice-Hall, 1990.

B. Course Objectives

To convey state-of-the-art techniques and theories relating to project management issues. Students successfully completing the course will be qualified to serve as team leaders or project managers on commercial software projects.

C. State how this proposed course relates to your unit's operational plan, including program assessment. This course is needed for the proposed MS program in computer science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

1. Project Planning
 - A. Personnel issues
 - B. Project Organization
 - C. Project Scheduling
2. Cons Estimation
3. Legal Aspects of Software Projects
 - A. Negotiation
 - B. Contracts
4. Project Analysis
 - A. Requirements Definition and Specification
 - B. Use of CASE Tools
5. System Design
 - A. Design techniques
 - i. Functional Design
 - ii. Object-oriented Design
 - B. Design Evaluation
 - i. Walkthroughs
 - ii. Inspections
6. System Implementation
 - A. Management of Program Teams
 - B. Code Walkthroughs and Inspections
 - C. Schedule Maintenance
 - D. Using CASE tools
7. System Delivery
 - A. Acceptance Testing
 - B. System Maintenance
 - C. Operation and Warranty

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be expected to turn in regular short papers concerning the issues being discussed. Additionally, students will be expected to participate in a small team project, will presentation of the results before the class.

F. Competencies (for courses affecting teacher education degrees)

- not applicable
 when applicable, attach as page 5 and label "IIE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course

MS degree in Computer Science.

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science.

3. Expected yearly student enrollment 6

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe _____

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature *Robert J. Donhardt*

Official Title Chair of Mathematics Department

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests

not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school

not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

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5.	Statement and date of Council of Teacher Education Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
6.	Statement and date of College of School Curriculum Committee action (Indicate College or School _____) <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
7.	Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
8.	Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____

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Proposal prepared by Name Robert J. L. Leland (Chair)
 Department Mathematics Phone 757-6461

East Carolina University
COURSE PROPOSAL FORM
(Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <input type="checkbox"/> revision of an existing course
---------------------------	--

I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? yes no)
CSCI 6410 "Design and Analysis of Algorithms"

B. Credit Hours 3	C. Weekly (1) classroom lecture hours required 03 (2) lab/studio hours required 0
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D. Prerequisites
CSCI 3650 or consent of instructor.

E. Catalogue Description
Methods of designing efficient algorithms, case studies. Analysis of the complexity of an algorithm.

F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u>	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
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G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO ALL MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S).

<u>Undergraduate Catalogue</u>	<u>Graduate Catalogue</u> MS in Computer Science (proposed)
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II. NATURE OF COURSE

A. Textbook(s)

T. H. Cormen, C. E. Leiserson and R. L. Rivest
Introduction to Algorithms
MIT Press, Cambridge, Mass., 1990

B. Course Objectives

This course introduces the student to techniques for designing efficient algorithms for solving problems on the computer, and analysis techniques suitable for determining the quality of an algorithm. This student will come out of the course better able to write efficient programs.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in Computer Science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

Weeks 1-2	Mathematical preliminaries.
Weeks 3-5	Divide and conquer algorithms.
Weeks 6-7	Dynamic programming algorithms.
Weeks 8-9	Amortized cost analysis and algorithms that are good in an amortized sense.
Weeks 10-11	Randomized algorithms
Weeks 12-14	Parallel algorithms

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will complete regular homework and pass three exams. Students will be expected to implement at least one of the algorithms discussed.

F. Competencies (for courses affecting teacher education degrees)

 X not applicable
 when applicable, attach as page 5 and label "IE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course.

MS degree in Computer Science

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science.

3. Expected yearly student enrollment 6

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe _____

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature *Robert J. Lambrecht*

Official Title Chair of Mathematics

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3.	Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____
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Proposal prepared by Name Robert J. DeLoach (Chair)
 Department Mathematics Phone 757-6461

East Carolina University
 COURSE PROPOSAL FORM
 (Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <input type="checkbox"/> revision of an existing course
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I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? yes no)
 CSCI 6420 "Computability and Complexity"

B. Credit Hours 3	C. Weekly (1) classroom lecture hours required <u>03</u> (2) lab/studio hours required <u>0</u>
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D. Prerequisites
 CSCI 4602 or consent of instructor.

E. Catalogue Description
 Computability, Church's thesis, formal models of computation. Introduction to complexity theory.

F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u>	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
---	--

G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO ALL MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S).

<u>Undergraduate Catalogue</u>	<u>Graduate Catalogue</u> MS in Computer Science (proposed)
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II. NATURE OF COURSE

A. Textbook(s)

John E. Hopcroft and Jeffrey D. Ullman.
Introduction to Automata Theory, Languages and Computation.
 Addison-Wesley, Reading, MA., 1979

B. Course Objectives

To develop an appreciation for foundational issues in computer science, and to introduce the student to methods of classifying problems according to how difficult they are to solve on a computer.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in Computer Science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

Weeks 1, 2	Models of computation and computability. Church's thesis. Partially computable sets.
Weeks 3,4	Introspection and computability. Universal computation. Diagonalization. Incomputable problems.
Weeks 5, 6	Complexity of computation. Diagonalization in a cost-conscious setting. Hierarchy theorems.
Weeks 7,8	Completeness. Completeness in a cost-conscious setting.
Weeks 9, 10	NP-completeness and PSPACE-completeness.
Weeks 11, 12	Randomization.
Weeks 13, 14	Applications to cryptography.

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will complete regular homework and pass three exams.

F. Competencies (for courses affecting teacher education degrees)

not applicable
 when applicable, attach as page 5 and label "IIE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course	
1.	Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course. MS degree in Computer Science.
2.	Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.) Needed for MS degree in Computer Science.
3.	Expected yearly student enrollment <u>6</u>
B. Staff and Facilities	
1.	Staff needed to offer course <input checked="" type="checkbox"/> present staff is adequate <input type="checkbox"/> additional staff is needed; if so, how many? _____
2.	Facilities needed to offer course <input checked="" type="checkbox"/> present facilities are adequate <input type="checkbox"/> additional facilities are needed; if so, describe _____
3.	Library resources <input checked="" type="checkbox"/> initial resources are adequate <input type="checkbox"/> initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____
4.	Additional cost involved <u>See request to establish MS program in computer science</u>
5.	Unit Head's Signature <u><i>Robert J. Samhardt</i></u> Official Title <u>Chair of Mathematics</u>
C. Miscellaneous	
1.	Interdisciplinary action and/or coordination with other affected departments or interests <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)
2.	Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3.	Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____
4.	Statement of Director of Computing Center if computer use is anticipated <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs
5.	Statement and date of Council of Teacher Education Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
6.	Statement and date of College of School Curriculum Committee action (Indicate College or School _____) <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
7.	Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
8.	Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____

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Proposal prepared by	Name <u>Robert J. Lenhardt</u> (Chair)
	Department <u>Mathematics</u> Phone <u>757-6461</u>

East Carolina University
COURSE PROPOSAL FORM
(Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <input type="checkbox"/> revision of an existing course
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I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no) CSCI 6810 "Topics in Artificial Intelligence"	
B. Credit Hours 3	C. Weekly (1) classroom lecture hours required 03 (2) lab/studio hours required 0
D. Prerequisites CSCI 5800 or consent of instructor.	
E. Catalogue Description A study of the state of the art in a selected topic in artificial intelligence.	
F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u>	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO ALL MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S). <u>Undergraduate Catalogue</u> <u>Graduate Catalogue</u> MS in Computer Science (proposed)	

II. NATURE OF COURSE

A. Textbook(s) George F. Luger and William A. Stubblefield. <u>Artificial Intelligence: Structure and Strategies for Complex Problem Solving.</u> Second Edition. Benjamin Cummings, 1993. James Allen. <u>Natural Language Processing</u> , Second Edition. Benjamin Cummings, 1994.

B. Course Objectives

To engage students in the in-depth exploration of a specific topic in artificial intelligence, and to provide students with the basis for this in-depth exploration via programming. Advanced programming techniques in Prolog will be taught. This syllabus is for the topic of Natural Language Processing. Other possible topics include knowledge representation, advanced heuristic search techniques, automated reasoning, machine learning, pattern recognition, and neural networks.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in Computer Science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

Weeks 1-3	Advanced Prolog.
Weeks 4-5	Syntax of natural languages.
Weeks 6-8	Semantics of natural languages. Midterm exam.
Weeks 9-11	World knowledge and pragmatics.
Weeks 12-14	Sentence generation and discourse.

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be evaluated on the basis of regular homework, a midterm exam, a final exam, and a project or paper with in-class presentation.

F. Competencies (for courses affecting teacher education degrees)

not applicable
 when applicable, attach as page 5 and label "IIE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course	
1.	Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course. MS degree in Computer Science.
2.	Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.) Needed for MS degree in Computer Science.
3.	Expected yearly student enrollment <u>6</u>
B. Staff and Facilities	
1.	Staff needed to offer course <input checked="" type="checkbox"/> present staff is adequate <input type="checkbox"/> additional staff is needed; if so, how many? _____
2.	Facilities needed to offer course <input checked="" type="checkbox"/> present facilities are adequate <input type="checkbox"/> additional facilities are needed; if so, describe _____
3.	Library resources <input checked="" type="checkbox"/> initial resources are adequate <input type="checkbox"/> initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____
4.	Additional cost involved <u>See request to establish MS program in computer science</u>
5.	Unit Head's Signature <u><i>Robert J. D. ...</i></u> Official Title <u>Chair of Mathematics</u>
C. Miscellaneous	
1.	Interdisciplinary action and/or coordination with other affected departments or interests <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)
2.	Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3.	Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____
4.	Statement of Director of Computing Center if computer use is anticipated <input type="checkbox"/> not applicable <input checked="" type="checkbox"/> applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs
5.	Statement and date of Council of Teacher Education Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
6.	Statement and date of College of School Curriculum Committee action (Indicate College or School _____) <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
7.	Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
8.	Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____

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Proposal prepared by	Name <u>Robert N. Lambert</u> (Chair)
	Department <u>Mathematics</u> Phone <u>757-6461</u>

B. Course Objectives

Provide the student with both a strong foundation in the theory behind computer graphics, and a knowledge of graphics in practice, to the extent that the student can achieve significant results on a computer.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in computer science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

- Weeks 1-4 Introduction and review. Graphics devices and their control. Line drawing, clipping a line, adding more drawing tools, relative polar charts. Building and drawing curves.
- Week 5 Interaction in graphics.
- Week 6 Vectors and their use in graphics.
- Weeks 7-8 Modeling surfaces.
- Weeks 9-10 Three dimensional graphics.
- Weeks 11-12 Transformations.
- Weeks 13-14 Three dimensional viewing with the synthetic camera.

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Students will be graded on the basis of regular homework, two exams and a small number of significant programming assignments involving graphics.

F. Competencies (for courses affecting teacher education degrees)

- not applicable
- when applicable, attach as page 5 and label "IIE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course.

MS degree in Computer Science.

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science.

3. Expected yearly student enrollment 6

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature *[Signature]*

Official Title Chair of Mathematics

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3. Statement and date of departmental, unit, or program action
 approved not approved
 not applicable other (explain) Date _____

4. Statement of Director of Computing Center if computer use is anticipated
 not applicable
 applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs

5. Statement and date of Council of Teacher Education Council Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

6. Statement and date of College of School Curriculum Committee action
(Indicate College or School _____)
 approved not approved
 not applicable not acted upon as yet Date _____

7. Statement and date of University Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

8. Statement and date of Graduate Council Curriculum Committee action
 approved not approved
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Proposal prepared by Name Robert J. Lambardt (Chair)
Department Mathematics Phone 757-6461

B. Course Objectives

Introduce the student in depth to a current topic in computer science.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in computer science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

Variable, depending on topic.

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

Variable, depending on topic.

F. Competencies (for courses affecting teacher education degrees)

 X not applicable
 when applicable, attach as page 5 and label "IIE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course	
1.	Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course. MS degree in Computer Science.
2.	Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.) Needed for MS degree in Computer Science.
3.	Expected yearly student enrollment _____
B. Staff and Facilities	
1.	Staff needed to offer course <input checked="" type="checkbox"/> present staff is adequate <input type="checkbox"/> additional staff is needed; if so, how many? _____
2.	Facilities needed to offer course <input checked="" type="checkbox"/> present facilities are adequate <input type="checkbox"/> additional facilities are needed; if so, describe
3.	Library resources <input checked="" type="checkbox"/> initial resources are adequate <input type="checkbox"/> initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____
4.	Additional cost involved See request to establish MS program in computer science
5.	Unit Head's Signature <u><i>Robert J. Danhardt</i></u> Official Title <u>Chair of Mathematics</u>
C. Miscellaneous	
1.	Interdisciplinary action and/or coordination with other affected departments or interests <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)
2.	Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3.	Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____
4.	Statement of Director of Computing Center if computer use is anticipated <input type="checkbox"/> not applicable <input checked="" type="checkbox"/> applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs
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Proposal prepared by Name Robert H. Benham (Chair)
Department Mathematics Phone 757-6461

East Carolina University
COURSE PROPOSAL FORM
 (Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <input type="checkbox"/> revision of an existing course
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I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no) CSCI 6995 "Research Project"	
B. Credit Hours 3	C. Weekly (1) classroom lecture hours required <u>03</u> (2) lab/studio hours required <u>0</u>
D. Prerequisites Successful completion of the comprehensive examination in computer science.	
E. Catalogue Description The student completes a significant programming project under the supervision of a member of the graduate faculty. The project must be approved and defended.	
F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u>	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO <u>ALL</u> MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S). <u>Undergraduate Catalogue</u> <u>Graduate Catalogue</u> MS in Computer Science (proposed)	

II. NATURE OF COURSE

A. Textbook(s) None

B. Course Objectives

Give the student experience in the design of a fairly large software project.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in computer science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

None

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)

The student must complete a significant project under the direction of a faculty member, and have that project approved by his committee.

F. Competencies (for courses affecting teacher education degrees)

not applicable
 when applicable, attach as page 5 and label "IIE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1. Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course.

MS degree in Computer Science.

2. Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.)

Needed for MS degree in Computer Science.

3. Expected yearly student enrollment 4

B. Staff and Facilities

1. Staff needed to offer course

present staff is adequate
 additional staff is needed; if so, how many? _____

2. Facilities needed to offer course

present facilities are adequate
 additional facilities are needed; if so, describe

3. Library resources

initial resources are adequate
 initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____

4. Additional cost involved See request to establish MS program in computer science

5. Unit Head's Signature *Robert J. ...*

Official Title Chair of Mathematics

C. Miscellaneous

1. Interdisciplinary action and/or coordination with other affected departments or interests
 not applicable
 applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)

2. Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school
 not applicable
 applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3. Statement and date of departmental, unit, or program action
 approved not approved
 not applicable other (explain) Date _____

4. Statement of Director of Computing Center if computer use is anticipated
 not applicable
 applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs

5. Statement and date of Council of Teacher Education Council Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

6. Statement and date of College of School Curriculum Committee action
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 approved not approved
 not applicable not acted upon as yet Date _____

7. Statement and date of University Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

8. Statement and date of Graduate Council Curriculum Committee action
 approved not approved
 not applicable not acted upon as yet Date _____

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Proposal prepared by Name Robert J. L. [Signature] (Chair)
 Department Mathematics Phone 757-6461

East Carolina University
COURSE PROPOSAL FORM
 (Revised 6-14-91)

Date November 19, 1993	This is a proposal for a <input checked="" type="checkbox"/> new course <input type="checkbox"/> revision of an existing course
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I. CATALOGUE INFORMATION

A. Course Number & title (cleared by the Registrar's Office? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no) CSCI 6996 "Thesis"	
B. Credit Hours 0	C. Weekly (1) classroom lecture hours required <u>0</u> (2) lab/studio hours required <u>0</u>
D. Prerequisites Successful completion of the comprehensive examination in computer science	
E. Catalogue Description The student researches and studies a topic under the supervision of a member of the graduate faculty. The study culminates in a thesis that must be approved and defended.	
F. Catalogue Placement (by page number) <u>Undergraduate catalogue</u>	Year of Catalogue <u>92-94</u> <u>Graduate catalogue</u> p. 90
G. Degree programs or courses affected by this proposal (by catalogue page number). PLEASE SEND A PHOTOCOPY OF THE CATALOGUE PAGE(S) SHOWING THE CHANGES AND THE PROPOSED CHANGES IN CATALOGUE FORMAT TO <u>ALL</u> MEMBERS OF THE CURRICULUM COMMITTEE AND TO THE APPROPRIATE CURRICULUM COMMITTEE CHAIR(S). <u>Undergraduate Catalogue</u> <u>Graduate Catalogue</u> MS in Computer Science (proposed)	

II. NATURE OF COURSE

A. Textbook(s) None

B. Course Objectives

Give the student experience in research in computer science.

C. State how this proposed course relates to your unit's operational plan, including program assessment.

This course is needed for the proposed MS program in computer science, which the Mathematics Department has been granted permission to plan.

D. Syllabus

None

E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graudate and undergraduate students.)

The student must complete a thesis involving both survey and original research under the direction of a faculty member, and have that thesis approved by his committee.

F. Competencies (for courses affecting teacher education degrees)

not applicable
 when applicable, attach as page 5 and label "IIE. Competencies"

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course

1.	Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course. MS degree in Computer Science.
2.	Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.) Needed for MS degree in Computer Science.
3.	Expected yearly student enrollment <u>2</u>

B. Staff and Facilities

1.	Staff needed to offer course <input checked="" type="checkbox"/> present staff is adequate <input type="checkbox"/> additional staff is needed; if so, how many? _____
2.	Facilities needed to offer course <input checked="" type="checkbox"/> present facilities are adequate <input type="checkbox"/> additional facilities are needed; if so, describe _____
3.	Library resources <input checked="" type="checkbox"/> initial resources are adequate <input type="checkbox"/> initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____
4.	Additional cost involved <u>See request to establish MS program in computer science</u>
5.	Unit Head's Signature <u><i>[Signature]</i></u> Official Title <u>Chair of Mathematics</u>

C. Miscellaneous

1.	Interdisciplinary action and/or coordination with other affected departments or interests <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)
2.	Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3.	Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____
4.	Statement of Director of Computing Center if computer use is anticipated <input type="checkbox"/> not applicable <input type="checkbox"/> applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs
5.	Statement and date of Council of Teacher Education Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
6.	Statement and date of College of School Curriculum Committee action (Indicate College or School _____) <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
7.	Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
8.	Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____

DISTRIBUTION: Copies of the proposal must reach the appropriate committees at least 10 days in advance of their scheduled monthly meetings. Check with your individual college or school as to the number of copies of the proposal needed by the college's or school's curriculum committee and to whom they are to be sent. Once approval is given by the college or school, 1000-5000 level course proposals are to be sent for consideration to the University Curriculum Committee as follows: 3 copies to the chairperson, 2 copies to the secretary, 3 to the SGA office, 1 to each of the committee members (list available from Faculty Senate Office), 2 to the Vice Chancellor for Academic Affairs, and 1 to the Faculty Senate Office. All 5000 and 6000 level course proposals are to be sent for consideration to the Graduate Council Curriculum Committee; send 3 copies to the committee chair and 1 copy to each member of the Graduate Council and to non-council representatives on its curriculum committee (list available from the Graduate School Office).

Proposal prepared by Name Robert J. L. Smith (Chair)
Department Mathematics Phone 757-6461

<p>B. Course Objectives</p> <p>This course is needed for administrative purposes, for students who are not enrolled in other courses.</p>
<p>C. State how this proposed course relates to your unit's operational plan, including program assessment.</p> <p>This course is needed for the proposed MS program in computer science, which the Mathematics Department has been granted permission to plan.</p>
<p>D. Syllabus</p> <p>None</p>
<p>E. Requirements of Students (For 5000-level courses, please clearly indicate the distinctions in requirements in for graduate and undergraduate students.)</p> <p>None</p>
<p>F. Competencies (for courses affecting teacher education degrees)</p> <p><input checked="" type="checkbox"/> not applicable <input type="checkbox"/> when applicable, attach as page 5 and label "IIE. Competencies"</p>

III. JUSTIFICATION FOR THE COURSE

A. Need for the Course	
1.	Degree (s), if any, for which this course is required and any changes in the credit hours required for completion of degree caused by the addition of this course. MS degree in Computer Science.
2.	Reason for offering course (If recommended to meet the standards of certain accrediting agencies, documentation should be provided to the chairs of the appropriate curriculum committees.) Needed for MS degree in Computer Science.
3.	Expected yearly student enrollment <u>0</u>
B. Staff and Facilities	
1.	Staff needed to offer course <input checked="" type="checkbox"/> present staff is adequate <input type="checkbox"/> additional staff is needed; if so, how many? _____
2.	Facilities needed to offer course <input checked="" type="checkbox"/> present facilities are adequate <input type="checkbox"/> additional facilities are needed; if so, describe _____
3.	Library resources <input checked="" type="checkbox"/> initial resources are adequate <input type="checkbox"/> initial resources are inadequate; if so, estimate the cost necessary for acquisition of initial resources \$ _____
4.	Additional cost involved <u>See request to establish MS program in computer science</u>
5.	Unit Head's Signature <u><i>Robert J. Lohmeyer</i></u> Official Title <u>Chair of Mathematics</u>
C. Miscellaneous	
1.	Interdisciplinary action and/or coordination with other affected departments or interests <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable (please clarify below, indicating affected units, and provide documentation to chairs of the curriculum committees.)
2.	Clarification on any apparent overlapping or duplication of course(s) currently offered by any other ECU department or school <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> applicable [Please clarify below and provide, to the curriculum committee chairs, documentation of notification to (and response of) those other units concerning this proposed course.]

3.	Statement and date of departmental, unit, or program action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> other (explain) Date _____
4.	Statement of Director of Computing Center if computer use is anticipated <input type="checkbox"/> not applicable <input type="checkbox"/> applicable; a statement of accommodation from the Director of the Computing Center is to be sent to the curriculum committee chairs
5.	Statement and date of Council of Teacher Education Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
6.	Statement and date of College of School Curriculum Committee action (Indicate College or School _____) <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
7.	Statement and date of University Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____
8.	Statement and date of Graduate Council Curriculum Committee action <input type="checkbox"/> approved <input type="checkbox"/> not approved <input type="checkbox"/> not applicable <input type="checkbox"/> not acted upon as yet Date _____

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Proposal prepared by	Name <u>Robert J. Leonard</u> (Chair)
	Department <u>Mathematics</u> Phone <u>757-6461</u>