1993


University of Rhode Island Faculty Senate

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TO: President Robert L. Carothers  
FROM: Chairperson of the Faculty Senate  


2. The original and two copies for your use are included.

3. This BILL was adopted by vote of the Faculty Senate on January 28, 1993.

4. After considering this bill, will you please indicate your approval or disapproval. Return the original or forward it to the Board of Governors, completing the appropriate endorsement below.

5. In accordance with Section 10, paragraph 4 of the Senate's By-Laws, this bill will become effective February 18, 1993, three weeks after Senate approval, unless: (1) specific dates for implementation are written into the bill; (2) you return it disapproved; (3) you forward it to the Board of Governors for their approval; or (4) the University Faculty petitions for a referendum. If the bill is forwarded to the Board of Governors, it will not become effective until approved by the Board.

January 29, 1993

Leonard M. Kahn
Chairperson of the Faculty Senate

ENDORSEMENT

TO: Chairperson of the Faculty Senate  
FROM: President of the University  

 Returned.

a. Approved .

b. Approved subject to final approval by Board of Governors .

c. Disapproved .

2-4-93

(date)

(5/7/94)

President

Form revised 9/91
On January 28, 1993, the Faculty Senate approved the following recommendation of the Program Review Committee for 1992-93:

That the Faculty Senate approve the proposed Ph.D. in Industrial and Manufacturing Engineering without assignment of Class A, B, or C under the provisions of section 8.85.24 of the UNIVERSITY MANUAL.
TO: J. Kent Morrison
FROM: J. Vernon Wyman
SUBJECT: BUDGETARY IMPACT STATEMENT REGARDING THE PROPOSED Ph.D. IN INDUSTRIAL AND MANUFACTURING ENGINEERING

I have reviewed the package of materials forwarded to me describing the proposed Ph.D. program in Industrial and Manufacturing Engineering and have prepared this memorandum as an assessment of the expected budgetary impacts of the new program. The review is fairly straightforward in this case in that the proposal essentially recognizes formally the Department of Industrial and Manufacturing Engineering's supervision of Ph.D. students through the Department of Mechanical Engineering and through the AMS-Ph.D. Program.

The proposal documentation demonstrates in some detail that the existing resource base, the faculty, operating support, facilities, library materials, and computing facilities serving the Masters program in Industrial and Manufacturing Engineering as well as the existing Ph.D. students, will clearly address the needs of the proposed Ph.D. program. The Department has established a "sound base of Federal and Industry research funding" which provides the resources needed to offer research assistant opportunities to Doctoral students. This strong external funding base allows students to participate in cutting-edge research with some of the field's most notable faculty while providing resources to enhance various aspects of the program including the development of new courses and teaching materials and the improvement of laboratory facilities and library resources.

The Department expects that the program would involve six to eight Ph.D. students at any one time. With provisions for the program to accept graduates from any branch of engineering as well as mathematics, computer science, or physics into a field of rapidly increasing importance to the nation's economy, it should be attractive to prospective Ph.D. candidates. The offering of this degree is also expected to stimulate increased interest in the Master of Science program in the Department as well.

The University is one of the few University's with Industrial Engineering which does not offer a Ph.D. program so entitled and it is the only Department within the University's College of Engineering without a dedicated Ph.D. program. The College and the
DOCTOR OF PHILOSOPHY
in
INDUSTRIAL AND MANUFACTURING ENGINEERING

A proposal for a new Ph.D. degree program
Department of Industrial and Manufacturing Engineering,
College Engineering, University of Rhode Island
December 1987 (Revised August 1990)

The attached proposal is made following the guidelines for abbreviated presentation as given by the Rhode Island Board of Governors for Higher Education in policy document, "Policy and Procedures for the Review of Instructional Program Developments and Organizational Changes in Rhode Island Public Institutions of Higher Education," July 1984.

A. PROGRAM INFORMATION
1. Name of Institution:
The University of Rhode Island
2. Department, division, school or college involved:
Department of Industrial and Manufacturing Engineering,
College of Engineering
3. Title of proposed program and name of degree or certificate to be conferred:
Industrial and Manufacturing Engineering
Doctor of Philosophy

organization and control of manufacture, computer-aided manufacturing, design for manufacture and manufacturing automation. The program will prepare students for professional and academic careers in industrial and manufacturing engineering.

11. Statement indicating that no new or additional resources will be required to implement proposed new program:
The proposal for a Ph.D. program specifically in Industrial and Manufacturing Engineering is essentially a formalization of a situation which to some extent already exists. Although not having its own Ph.D. program at present, the Department does process students through an arrangement with the Mechanical Engineering Department whereby students follow the Ph.D. program in Mechanical Engineering but are funded and supervised by the IME Department. In addition some students are processed through the AMS - Ph.D. program. While this arrangement has allowed some Ph.D. students to be graduated, it is unsatisfactory because specific requirements for Industrial and Manufacturing Engineering cannot be included within the student's program of study.

The new Ph.D. program will be offered by the Department of Industrial and Manufacturing Engineering. However manufacturing engineering is essentially multidisciplinary and the program will take advantage of existing relevant graduate courses in the Departments of Mechanical, Chemical
and Electrical Engineering, together with Mathematics and Computer Science.

The recent appointment in 1985 of the three new faculty (Drs. Boothroyd, Dewhurst and Knight) in Industrial and Manufacturing Engineering, together with the filling of three currently vacant positions, will provide sufficient resources in the Department to teach existing graduate courses and offer the new ones listed above. It is the intention to offer this new program with no increase in resources over and above those which are expected to come about through the natural development and modernization of the Department and developments taking place in the College of Engineering. There is no additional requirement, through the offering of this program, for additional faculty, space or other resources.

The new program will build upon the M.S. program in Manufacturing Engineering, for which the University has received a grant of $494,000 from IBM for its development. The manner in which this program has been introduced and funded will serve as a model for the proposed Ph.D. program. The M.S. program in Manufacturing Engineering was recently accredited by ABET (it is only the second in the U.S.) and a copy of the report from ABET at that time is attached as Appendix I. Laboratory space and equipment now in use, together with improvements being made to these facilities will be sufficient to service the Ph.D program and the

existing graduate and undergraduate programs of the Department.

A successful Ph.D program in engineering must be based on a sound research program and the resources to attract good graduate students through the hiring of research assistants. Since its formation from the previous Industrial Engineering Department in July 1985, the new Department of Industrial and Manufacturing Engineering has established a sound base of Federal and Industry research funding. Grants which have been obtained since July 1985 and research proposals which have been submitted are listed below:

Research Grants Awarded:

N.S.F. $100,000 for one year - "Economic Applications of Robots in Assembly", 1985

I.B.M. $150,000 for three years plus two IBM robots - "Product design for robot assembly and the development of a two-arm single-station robot assembly system", 1985

A.T.&T. $100,000 for one year - "Robot Assembly of Electronic Components" (with Mechanical Engineering Department), 1986

C.D.C. $10,000 - "Design for Assembly of Printed Circuit Boards", 1986

N.S.F. $189,000 for two years "Programmable Automation and Design for Manufacture Economic Analysis", 1986
Building improvements
Addition to library resources (periodicals and books)
Additional secretarial support

It is intended that this will continue for the proposed Ph.D. program and consequently no additional resources will be required from the University for the development of the program.

A detailed description of the resources which are available to offer the new program is presented in Appendix II to this proposal.

12. Signature of President:
Dr. Edward D. Eddy

13. Persons to be contacted during review:
Dr. M. Beverly Swan, Office of the Provost (792-5911)
Dr. Hermann Viets, College of Engineering (792-2186)
Dr. Winston A. Knight, Department of Industrial and Manufacturing Engineering (792-2455)

B. RATIONALE.

The focus of the proposed program is to provide advanced interdisciplinary education in industrial and manufacturing engineering, with particular emphasis on design for manufacturability, manufacturing automation and the design and control of manufacturing systems.

Manufacturing engineering has been a neglected academic discipline in the U.S. and there is strong evidence to suggest that this is a key factor in the recent poor performance of many U.S. manufacturing industries (See Appendix III). In order to remain competitive many industries must undertake extensive development programs in their design and manufacturing methods and systems. The overall importance of this to the future well-being of the economy cannot be overstressed. A crucial factor in the necessary modernization of industry is the ability to recruit personnel with a strong educational background in industrial and manufacturing engineering. There is currently a considerable shortage of qualified graduates of US origin with the necessary experience to fulfill this need. Appendix IV contains a survey of the number of students and programs in Industrial and Manufacturing Engineering.

In response to the demand for graduates with experience in manufacturing engineering, many universities and colleges throughout the country have attempted to introduce aspects of manufacturing into their undergraduate and graduate programs. Progress with these developments in many locations has been severely limited by the shortage of suitable faculty with backgrounds in industrial and manufacturing engineering and the inability, because of the small number of Ph.D. graduates of US origin in industrial and manufacturing engineering, to recruit new faculty educated in these important areas. URI is fortunate in having a strong nucleus of faculty with industrial and
manufacturing engineering backgrounds, which has enabled a strong educational and research program in these areas to be established.

The proposed Ph.D. program is aimed at providing advanced education and research experience for graduates who will:

(i) increase the supply of industrial personnel able to provide the necessary leadership for the modernization of industrial manufacturing methods and systems, and (ii) increase the supply of potential faculty members able to contribute to the necessary expansion of educational programs concerned with industrial and manufacturing engineering.

The offering of a Ph.D. program in Industrial and Manufacturing Engineering is a logical step in the College of Engineering's objective of establishing a center for excellence in teaching and research in manufacturing engineering. Its existence will enable students interested in advanced level studies in this subject to proceed beyond the level of the already successful MS program in Manufacturing Engineering. Numerous enquiries from potential students wishing to follow a Ph.D. program in the Department are routinely turned away because of the lack of a program. Most universities with a strong graduate program and with Industrial Engineering Departments offer Ph.D. programs in this subject. University of Rhode Island is one of the few graduate schools with Industrial Engineering which does not offer such a program. However very few of these other universities are in a position to offer Ph.D programs with strong manufacturing engineering content and as far as is known only two other universities currently offer Ph.D programs in Manufacturing Engineering (Appendix IV). The existence of such a program at URI is likely to attract additional students who wish to follow a program of advanced study in manufacturing Engineering.

Graduates in any branch of engineering may follow the program, with an appropriate study plan dependent on their previous degree program content. Graduates in other subjects, such as mathematics, physics or computer science may also follow the program, with the inclusion of certain deficiency courses in their programs of study. Students without an MS degree will be advised to follow the MS program in Manufacturing Engineering prior to proceeding with the remainder of their Ph.D. studies. Graduates with MS degrees in other branches of engineering may join the program directly and follow an appropriate program of study determined in consultation with their advisor. Admission of students to the program will be dependent on obtaining a high grade point average in their previous programs and an average of 3.00 will be regarded as the norm for admission to the program. Continuation on the program will be dependent on maintaining a grade point average of 3.00 or better and will be subject to the passing of the
comprehensive examination prescribed by the Graduate School part way through the program.

It is not expected that large numbers of students will follow the proposed Ph.D. program at any one time (see Institutional Role for other comments). The likely number of students following the program at any time is expected to be around six - eight. However the offering of a Ph.D. program at URI will attract additional students to the Department and this will be absorbed without the requirement for additional resources to offer the program. It should be noted that Ph.D. students are currently being processed through the arrangement with Mechanical Engineering. This proposed program will enable these students and others to be processed through a program specifically aimed at Industrial and Manufacturing Engineering.

C. INSTITUTIONAL ROLE.

The proposed program is a logical step in keeping with current trends in the URI College of Engineering. This proposed development is an important part of a long-term plan to create a national center of excellence in manufacturing engineering education and research at URI. Parallel developments towards this goal have been the establishment of the M.S. Program in Manufacturing Engineering and the Design for Manufacturability Center based in the Department of Industrial and Manufacturing Engineering. The IME Department at URI has established a national and international reputation for its teaching and research programs.

The Department of Industrial and Manufacturing Engineering is the only Department in the College of Engineering which does not offer a Ph.D. program. Current Ph.D. students supervised by Faculty in the Department are accommodated by an arrangement, whereby the Ph.D. program in Mechanical Engineering is followed and only the thesis project supervision is carried out in the Industrial and Manufacturing Engineering Department. Two students were graduated in this way in 1989 and there are currently three Ph.D. candidates in this situation. These students, although wishing to follow a program of advanced study in manufacturing engineering, have been required to pursue this compromise situation. The growing research activities in the Industrial and Manufacturing Engineering Department will
lead to an increased number of Ph.D. students working on projects supervised and funded by this Department. Students following the MS program in Manufacturing Engineering who wish to continue their studies to a higher level for a Ph.D. cannot currently be accommodated specifically within the Department.

The Department of Industrial and Manufacturing Engineering currently participates in the AMS-PhD program. The scope of this program does not now correspond to the main emphasis of graduate work in the Department. Since its inception in 1978 6 students have graduated from the AMS-PhD program and of these 3 have been guided by Industrial Engineering faculty. However, of the 20 students following the AMS-PhD program at the present time, 18 are interested in computer science and applied mathematics, 1 in management science and 1 in Industrial Engineering. Consequently, the proposed PhD program in Industrial and Manufacturing Engineering will have little future impact on the AMS-PhD program. It is intended that faculty members in the IME Department will participate in the AMS-PhD program to about the same extent as presently, but it is expected that the majority of Ph.D. students supervised by IME faculty will follow the proposed program.

D. INTER-INSTITUTIONAL CONSIDERATIONS.

The proposed new program will have little or no impact on other post secondary institutions in Rhode Island. No other institution in Rhode Island has the facilities or faculty expertise to offer a similar program and there is no possibility of a conflict of interest with another university or college in the State. No other institutions in Rhode Island have departments of industrial engineering and no other institutions offer graduate programs in industrial or manufacturing engineering.

Within the New England state institutions, only the University of Massachusetts has a Department of Industrial Engineering and this department offers both M.S. and Ph.D. programs. None of the other state universities have departments of Industrial Engineering. Boston University offers both M.S. and Ph.D. programs in Manufacturing Engineering and at MIT, students can follow the Ph.D. program in Mechanical Engineering, with a manufacturing engineering option.

E. CONTENT

A student with a B.S. degree can pursue the PhD program directly; however, the program has been designed principally for students who hold an M.S. degree. A student entering the program with an M.S. degree in a related area would normally be granted up to 30 credits toward the PhD in Industrial and Manufacturing Engineering. Each student would be expected to satisfy all of the following requirements (no single course can be used to satisfy two course requirements):
(a) The student must complete 54 credits of course work beyond the B.S. degree in addition to 18 credits for the doctoral dissertation. (See Appendix V for some typical thesis summaries.) Courses which are normally required in the URI undergraduate program corresponding to the student's B.S. program may not be applied toward the 54 credits of course work.

(b) The following courses are required:

- IME 544* Assembly and Handling Automation
- IME 549* Product Design for Manufacturability
- IME 541 Computer-Aided Manufacturing

*URI B.S. graduates in Industrial Engineering who have taken IME 444 and IME 449 in their senior year cannot take IME 544 and IME 549 for graduate credit. For these graduate students the required core courses will be:

- IME 542 Computer-Aided Manufacturing
- IME 591 (or IME 592)
  Automation and Design for Manufacture Project
  (3 credit project with individual faculty supervision)

Students who have followed the MS program in Manufacturing Engineering will meet these requirements as part of that program.

(c) Required Elective Courses (18 or more credits)

At least two graduate courses must be taken from each of the areas of possible concentration below, with some typical courses which fit these categories included:

(i) Fundamentals of Manufacturing Processes and Manufacturing Properties of Materials
- CHE 531 Polymer Engineering
- CHE 532 Ceramic Engineering
- CHE 533 Engineering Metallurgy
- IME 541 Materials Processing and Metrology II
- IME 544 Metal Cutting and Machine Tools
- IME 546 Metal Deformation Processes
- IME 550 Design for Producibility
- MCE 608x Advanced Topics in Mechanics of Materials Processing

(ii) Control and Organization of Manufacturing Systems
- IME 513 Statistical Quality Assurance
- IME 514 Special Topics in Statistical Quality Assurance
- IME 540 Production Control and Inventory Systems
- IME 545 Manufacturing Systems: Design, Analysis and Simulation
- IME 634 Design and Analysis of Industrial Experiments
- MCE 521 Reliability Analysis and Prediction
- MCE 506 Introduction to Expert Systems for Design and Manufacturing

(iii) Computer Systems in Manufacturing and Design
- ELE 583 Computer Vision
- ELE 581 Artificial Intelligence
- IME 525 Simulation
- MCE 526 Introduction to Expert Systems for Design and Manufacturing
MCE 566 The Mechanics of Robot Manipulators

Students who have followed the MS program in Manufacturing Engineering will have taken one course from each of these areas of concentration as part of that program and must take one further course from each of the areas of concentration.

(d) Additional Elective Courses

The remaining graduate course credits to meet the required total of 54 coursework credits, will be selected with the advice of the student's major professor, as follows:

(i) The student's committee may require a foreign language and/or a course involving research tools (e.g. report writing) as necessary to the candidate's program.

(ii) Twenty four credits from graduate courses offered in the College of Engineering, College of Business and in Mathematics and Computer Science. In addition to the courses listed under (c) above, the following courses would be considered suitable, among others.

Department of Mechanical Engineering

MCE 430* Computer-Aided Design
MCE 440 Mechanics of Composite Materials
MCE 431* Computer Control of Mechanical systems
MCE 505 Optimization in Mechanical Engineering Design
MCE 523 Advanced Kinematic Analysis
MCE 524 Advanced Kinematic Synthesis
MCE 561 Computational Methods in Solid Mechanics
MCE 564 Advanced Vibration

Department of Electrical Engineering

ELE 501 Linear Transform Analysis
ELE 502 Non-linear Transform Analysis
ELE 503 Linear Control Systems
ELE 509 Systems with Random Inputs
ELE 545 Design of Digital Circuits
ELE 582 Robotics
ELE 584 Pattern Recognition

Department of Chemical Engineering

CHE 530 Polymer Chemistry
CHE 537 Advanced Materials Engineering
CHE 573 Mechanical Metallurgy

College of Business Administration

ACC 610 Financial Accounting
FIN 540 Theory of Finance
FIN 601 Financial Management
FIN 602 Advanced Financial Management
LRS 542 Labor Relations and Collective Bargaining
MGT 530 Management Theory and Practice

MCE 571 Theory of Elasticity I
MCE 572 Theory of Elasticity II
MCE 576 Fracture Mechanics
MCE 666 Nonlinear Mechanics
MCE 677 Fatigue
MCE 679 Theory of Plasticity

*Suitable electives for graduate students with Industrial Engineering B.S. degrees
In order to follow any of the courses listed above, students will, of course, be required to satisfy any course prerequisites.

(e) Manufacturing Processes Experience

Students following the program who have no previous experience with manufacturing processes and equipment will take IME 440, Materials Processing and Metrology I, as an additional course requirement for no credit.

F. EVALUATION

The program will be continuously evaluated by the Graduate Program Committee of the IME Department, in terms of its effectiveness in attracting students, quality of students and their success in professional and academic careers subsequent to graduation.
APPENDIX II

Resources presently available in the University and the College of Engineering to initiate the proposed new program are listed below.

1. Faculty who will be involved in the proposed new program in the Department of Industrial and Manufacturing Engineering:

<table>
<thead>
<tr>
<th>Name</th>
<th>Rank</th>
<th>Area of Specialty</th>
<th>Highest Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. Boothroyd</td>
<td>Prof.</td>
<td>Design for Manufacture, Automation, Machining and Machine Tools</td>
<td>D.Sc.</td>
</tr>
<tr>
<td>J. Dewhurst</td>
<td>Prof.</td>
<td>Design for Manufacture, Automation, Metal Deformation Processing</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>W.D. Lawing</td>
<td>Assoc. Prof.</td>
<td>Applied Statistics and Experimental Design</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>E. Nichols</td>
<td>Emeritus Prof.</td>
<td>Quality Assurance and Engineering Economy</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>C. Reynolds</td>
<td>Adjunct Prof.</td>
<td>Computer-Aided Manufacturing, Mechanics of Forging Processes</td>
<td>Ph.D.</td>
</tr>
<tr>
<td>W. Knight</td>
<td>Prof.</td>
<td>Computer-Aided Manufacturing, Group Technology Systems</td>
<td>Ph.D.</td>
</tr>
</tbody>
</table>

2. Other persons are hired temporarily to teach courses as required utilizing release time funds generated from research funding.

The teaching loads of the existing faculty are currently:
- Professors Boothroyd, Dewhurst and Knight - One lecture course per semester and the supervision of 3 - 4 graduate thesis projects and 2 or 3 special problems projects per semester are typical.
- Associate Professor Lawing - Two courses per semester plus graduate student supervision
- Adjunct Professors - One lecture course per semester and graduate student supervision
- Associate Dean Shao - One lecture course per semester and graduate student supervision.

3. The proposed program will utilize established courses from various departments in the College of Engineering, Departments of Mathematics, Computer Science and the College of Business Administration as electives within the program as listed in the proposal. Faculty throughout these areas

D. Olson  Adjunct  Operations Research  Ph.D.
D. M. Shao Assoc.  Operations Research and Ph.D.
& Assoc. Prof.  Simulation of Manufacturing Dean

3 vacancies  2 to be filled in 1990/91
of the University will thus contribute to the overall program.

3. Laboratory Space and Facilities

The Department of Industrial and Manufacturing Engineering has adequate basic laboratory facilities which include machining and machine tools, specimen preparation rooms, an experimental foundry, basic metrology and measurement science controlled environment rooms and a microcomputer laboratory. The total laboratory space for the Department is approximately 4,300 square feet.

Recent equipment donations from industry and purchases have allowed a computer laboratory to be established which includes a mini-computer, twenty personal computers and two workstations. Three industrial robots have been donated by IBM, which are being used for the development of laboratory experiments and research into flexible fixturing. Key Rhode Island industries have provided equipment gifts in the metrology field. Grants from the Society of Manufacturing Engineers Education Foundation have enabled a CNC Milling Machine, a small CNC lathe, and a hydraulic draw bench to be purchased to enhance the facilities for the teaching of CAD/CAM and other courses.

There is still a need to obtain some more up-to-date equipment for the manufacturing laboratory. In particular machines for metal forming and injection molding, together with some modern instrumentation for vibrations measurement are required. Plans are underway to obtain additional funding from external sources for the purchase of this equipment. However it should be pointed out that these requirements for modernization of the laboratory facilities are independent of the proposed Ph.D. program and result from a need to provide improved facilities to support all programs in the Department, but it is intended that these developments will occur without additional funds from the University.

2. Library Holdings

The library requirements for the Ph.D. program are no different from those for the existing M.S. program in Manufacturing Engineering. The Library at URI already has fairly substantial holdings in the area of industrial and manufacturing engineering. It is expected that the annual new acquisitions budget of the Department of Industrial and Manufacturing Engineering, together with supplementation from the IBM and other grants, will enable this strong library support base to be maintained.

The graduate courses which will be offered from other sections of the University as elective courses for the proposed new program, represent existing teaching and research strengths. Thus for these courses no additional library support will be required.

The present library holdings for the Department of Industrial and Manufacturing Engineering contain approximately 2,800 texts of which over one-half fall into
areas which are directly relevant to the proposed new graduate program. The areas covered are: operations research, materials processing, manufacturing facilities design, methods engineering, human factors in design, industrial safety and engineering economics. In particular the proposed minor concentration in Manufacturing Processes and Manufacturing Properties of Materials is well supported by over 300 texts in the materials processing category.

The University Library also subscribes to over 40 periodicals and journals for the Department of Industrial and Manufacturing Engineering, providing support for graduate teaching and research in manufacturing processes, organization, control and simulation of manufacturing systems, operations research and quality assurance.

Subsequent to the establishment of the M.S. Program in Manufacturing Engineering, the Graduate Committee of the Department of Industrial and Manufacturing Engineering undertook a critical review of periodical and journal usage. As a result several journal subscriptions were discontinued to enable journals in the areas of computer-aided manufacturing and manufacturing system to be obtained. Eight of these new publications have been funded initially from the IBM grant.

3. ACADEMIC COMPUTER CENTER.

Establishment of the proposed Ph.D. program will place no significant extra load on the Academic Computer Center. Efforts are continuing to develop the computer facilities within the Department and these facilities, together with those of the Engineering Computer Laboratory, will be sufficient for the requirements of all graduate students in the Department.

The active teaching and research program in the IME department currently makes very little use of the facilities of the Academic Computer Center. The College of Engineering has established an extensive computer facility based around a large Digital Vax system, with a large number of Digital workstations distributed around the College. In addition, a PC laboratory for the COE is being established and the IME Department has its own PC laboratory available to students. In the near future, the facilities will be expanded and housed in the new engineering building to be constructed. These facilities are more than sufficient for the needs of the program offered by the IME Department and consequently no additional load on the facilities of the ACC are expected from the proposed Ph.D. program.
November 3, 1988

TO: Sheila Grubman
FROM: J. Vernon Wyman
SUBJECT: Ph.D. IN MARINE AFFAIRS - BUDGETARY IMPACT REVIEW

The Graduate School forwarded the documentation supporting the proposed Ph.D. Program in Marine Affairs in order for me to conduct the normal budgetary impact review prior to Faculty Senate consideration.

The process, in this case, differs from other academic program proposals that have come forward in that this office, working with the Office of the Provost, has already assessed the resource requirements of this anticipated program proposal in the context of the development of the University's 1989-90 Budget Request. The results of this review are reflected in that budget request which has been approved by the Board of Governors for Higher Education and is currently being analyzed by the State Budget Office in accordance with the normal annual budget process.

For the 1989-90 fiscal year, the State requested that the University and all State agencies and departments present their budget in three parts. In compliance with these definitional instructions, the University's budget was submitted with a "current services level budget" designed to conform to the 5.5% budget increase guideline, a "restrained funding request" identifying funding needs in excess of this increase level essential to the delivery of current service level programs, and a "new initiatives/expansion request" identifying requirements associated with new program ventures beyond the current services level.

The anticipated first year expenditure needs associated with the Ph.D. in Marine Affairs program totaling $141,875 are currently included as part of the "new initiatives/expansion" portion of the 1989-90 Budget Request. The breakdown of this expenditure total is displayed on the last page of the enclosed documentation from the budget materials submitted to the Board of Governors and the State. Consistent with the program proposal, two faculty positions, five graduate assistants, operating expenditures, and library acquisition expenditures are requested to initiate the program. The Board of Governors approved this request in anticipation of subsequent submission for program review for approval.

The outcome of the 1989-90 budget process at the State level in which we are engaged at this time will determine the availability of positions and fiscal resources to initiate the Ph.D. in Marine Affairs. The University administration is actively pursuing these resources in the context of an overall sound budget for the institution next year.

With regard to space availability for graduate assistants, the suggestion that Ruggles House on Upper College might provide space for the program is an avenue that should be explored. Unless program changes or relocations are anticipated which would free up space in Washburn Hall, it would appear unlikely that graduate student space would be available within the next year in Washburn.

cc: David Gitlitz
    M. Beverly Swan
    Dana R. Kester
    Lawrence Juda
    Calvin Peters
    L. Allen Wells
    Larry Mann