MEMORANDUM

TO: President Ray M. Bowen

SUBJECT: Doctor of Philosophy Degree in Applied Physics

At its regular meeting on October 12, 1998, the Faculty Senate approved the following proposal as recommended by the Graduate Council and submits it for your approval. Enclosed for your information are copies of the materials sent to senators on this item.

Doctor of Philosophy Degree in Applied Physics by the Department of Physics

Thank you for your consideration of this item. I would appreciate your informing me of your action on this recommendation.

Diane S. Kaplan
Speaker, 1998-99

Enclosures

cc: Dr. Ronald G. Douglas, Executive Vice President & Provost
    Dr. J. Rick Giardino, Chair, Graduate Council
    Ms. Linda F. Lacey, Director of Academic Support Services
    Dr. Richard E. Ewing, Dean, College of Science
    Dr. Thomas W. Adair III, Head, Department of Physics

Approved:

Ray M. Bowen, President

Date 12/21/98
REVISED REPORT OF THE GRADUATE COUNCIL MEETING
10 SEPTEMBER 1998

The Graduate Council unanimously approved the proposal for the Doctor of Philosophy degree in Applied Physics offered by the Department of Physics.
May 26, 1998

MEMORANDUM

TO: Dr. Dan Robertson, Executive Director of Graduate Studies

FROM: James C. Holste, Associate Dean for Graduate Studies
       and International Programs

SUBJECT: Proposal for Applied Physics Degree

I am forwarding to you a proposal for authorization of a Doctor of Philosophy degree in Applied Physics. This proposal has been approved by the Graduate Instruction Committee in the College of Science.

The College of Engineering also has had the opportunity to review the proposal. They have lodged no objections to the proposal and have offered several helpful suggestions.

Copies of the letter from the College of Science GIC and from Dr. Karan Watson in the College of Engineering are attached.

Please contact me at 845-7363 if I can be of any assistance.

cc: Dr. Richard E. Ewing, Dean
    Dr. H. Joseph Newton, Executive Associate Dean
    Dr. Thomas Adair, III, Department Head
February 26, 1998

MEMORANDUM

TO: James Holste  
Associate Dean for Graduate Studies and International Affairs

FROM: Karan Watson  
Associate Dean of Engineering

SUBJECT: Proposal for Ph.D. in Applied Physics

In response to your memorandum requesting support for the proposal for a new Ph.D. program in Applied Physics, I asked the Graduate Instruction Committee (GIC) to forward any concerns they might have. The only concern expressed was from the Electrical Engineering Department and reads as follows:

1) The proposed program only allows two OPTIONAL courses outside the physics department. We have already had some students from the Physics Dept. taking our courses in the past, apparently they have already allowed such a practice. Why do they want to change the name for essentially the same program?

Suggestion: Make these two courses required and increase the number of allowed courses taken from outside the Physics Dept.

2) In the future, we suggest that they consult us for any new future courses to avoid the unnecessary competition. We have had bad experiences with the applied math program which blocks our proposed new courses. We hope this will not happen to us after they have their new program established. (EE does have many fundamental research activities that involve math and physics, even we have application in mind.)

3) It does have impacts on our programs such as solid state groups, optical and material groups, microwave groups, etc. We hope that the unnecessary competition, like computer engineering among different departments, will not occur again.

I appreciate the opportunity to provide this feedback to you. If you should require additional information, please feel free to contact me.
January 23, 1998

MEMORANDUM

TO:       James C. Holste
           Associate Dean for Graduate Studies and International Affairs
           College of Science

FROM:     Larry J. Ringer
           Chair, Graduate Instruction Committee

SUBJECT:  Proposal for Ph.D. in Applied Physics

The Graduate Instruction Committee has reviewed the proposal for a program leading to a Ph.D. in Physics. There is no objection to the proposed degree and the Committee recommends approval.

cc: Tom Adair, Head, Department of Physics
EXECUTIVE SUMMARY

In view of changing educational needs, global economic developments and national technological objectives, it has become clear that for students to remain competitive in the rapidly changing job markets of the future, they must have as broad a range of educational experiences as possible. To this purpose the Physics Department is requesting to offer a new Ph.D. degree program, Doctor of Philosophy in Applied Physics. This program will complement the present Ph.D. program in physics, Doctor of Philosophy in Physics, which remains an essential degree program for the Physics Department and Texas A&M University. The new Applied Physics Program, together with the present Ph.D. degree in physics, would reflect the current breadth of research within the Physics Department, the diverse interests of the student population that the Department serves, the national and state needs for more rapid transfer of ideas generated in basic research to industry and technology and the current trends in funding of science research at both the state and national levels.

The Applied Physics Program being proposed would require: 1) no additional dollars; 2) no new faculty; and 3) no new facilities. This program will be administered within the present Physics Department and no additional staff or faculty positions beyond those currently available to the department would be required to establish this program. This is possible since a large number of the faculty in the Physics Department are already involved both in basic and applied research problems. Also, the proposed Applied Physics Program provides the opportunity for participation by interested faculty from other departments, both within and outside the College of Science, as co-chairs of Ph.D. committees for students in this program. We anticipate that specific faculty from several departments (especially Mathematics, Chemistry, Chemical Engineering, Electrical Engineering, Computer Science, Mechanical Engineering and Nuclear Engineering) would participate in the Applied Physics Program based on past joint research proposals and projects. The facilities for physics research are generally suited to applied physics research as they stand.

The fundamental nature of physics and its applicability to applied research has been stressed in a recent statement by the American Physical Society Executive Council: "Historically, students with degrees in physics have succeeded in a wide range of academic and non-academic careers. Therefore it is important for physics departments and their individual faculty members to make all their undergraduate and graduate students aware of the realities of the job market and to encourage them to prepare for a broad range of careers. Academic physics departments are urged to reexamine their programs in the light of changing opportunities." The Department of Defense has reorganized its approach to the support of basic research to a "vertical" one which envisions funding of basic research that is expected to lead directly to an application that will meet specific defense needs. In physics research, this will provide a direct tie between the basic and applied aspects of physics. The division of resources in the Texas Advanced Research and
Technology Program, greater than two to one for applied research and technology transfer to basic research, further indicates the importance of applied physics to the state.

The need for an applied physics program has long been recognized by many leading research universities across the nation. In some cases this is provided through two different departments, a physics department and a department of applied physics, that consist of separate faculties with independent administrative structures, e.g. The California Institute of Technology, Columbia University, Cornell University, University of Michigan and Stanford University. In others it is a separate degree program, either administered within the physics department or as an interdisciplinary program administered as a separate center, e.g. Arizona State University, Boston University, Harvard University, Rice University, University of Washington and Yale University. To meet the need for an Applied Physics Program at Texas A&M with the most efficient use of resources and to recognize the broad range of both basic and applied physics research currently ongoing in the Physics Department, we propose that the Applied Physics Program be administered as a new degree offered within the present Physics Department. We also note that the only other Ph.D. degrees in applied physics offered in Texas are those at Rice University and the University of Texas at Arlington. While this program would not be the first of its kind in the State, the establishment of such a degree offering at Texas A&M University would bring a significant new aspect to this area of study given our broad range of research programs, thereby benefiting our students, our state and our profession and make the benefits of an applied physics degree available to a wider range of Texas students.
MEMORANDUM

TO: President Ray M. Bowen

SUBJECT: Core Curriculum Oversight Committee

At its regular meeting on October 12, 1998, the Faculty Senate approved the following two recommendations of the Core Curriculum Oversight Committee on the revisions to the University Core Curriculum:

1. Replace the existing University Core Curriculum with the attached Core Curriculum in time to meet the state compliance date.


Enclosed is a copy of the materials submitted by the committee which was sent to all senators.

Your timely approval would be greatly appreciated as the revised Core Curriculum needs to be on the December Board of Regents meeting agenda in order to meet with state requirements.

Diane S. Kaplan
Speaker, 1998-99

Enclosure
Report on Statewide Core Curriculum
September 21, 1998

SUBMITTED TO: Academic Affairs Committee of the Faculty Senate
FROM: Senate Core Curriculum Oversight Subcommittee
      Evelyn Tiffany-Castiglioni, Co-Chair
      Susan Kelly, Co-Chair
      Mary-Claire Maggio
      Emma Gibbons
      Douglas Hensley
      Thomas Lalk
      John Nielsen-Gammon
      Ben Welch
      Louis Tassinary

SUBJECT: Revisions of the University Core Curriculum

BACKGROUND

The Texas Higher Education Coordinating Board is in the process of adopting rules for a state-wide core curriculum. Charts I and II (attached) describe the course categories and semester credit hour requirements. The University must be in compliance by September 1999 and must show a “good faith” effort towards achieving compliance beginning September 1998. The Speaker of the Senate has informed us that in order to place a request for a 48 hour core curriculum on the Board of Regents' January agenda, the Faculty Senate must consider the issue at its October meeting. The Core Curriculum Oversight Subcommittee (CCOS) of the Faculty Senate, which has a member from each College, has addressed compliance issues. We therefore make the attached two recommendations. Also attached is an informational item concerning the transfer of courses in which a student has received a grade of “D.”
CHAPTER 5  PROGRAM DEVELOPMENT

Chart II - To complete the required 42-semester-credit-hour core curriculum, institutions shall select an additional 6 semester credit hours from one or more of the following:

<table>
<thead>
<tr>
<th>Component Area</th>
<th>Possible Additional Semester Credit Hours (6 Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication (composition, speech, modern language/communication skills*)</td>
<td>Up to 6</td>
</tr>
<tr>
<td>Mathematics (finite math, statistics, calculus, or above)</td>
<td>Up to 3</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>Up to 3</td>
</tr>
<tr>
<td>Humanities &amp; Visual and Performing Arts (literature, philosophy, modern or classical language/literature and cultural studies**)</td>
<td>Up to 3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences</td>
<td>Up to 3</td>
</tr>
<tr>
<td>Institutionally Designated Option (may include additional semester credit hours in the categories listed above, computer literacy, health/wellness, kinesiology, capstone or interdisciplinary courses, etc.)</td>
<td>Up to 3</td>
</tr>
<tr>
<td>Total Additional Hours</td>
<td>6 + 6</td>
</tr>
</tbody>
</table>

* Communication application of a modern language means the basic proficiency skills acquired during introductory courses and including a working competency in grammar, writing, speaking, and listening/comprehension in a foreign language.

** Humanities application of language skills includes a study of literature in the original language, and/or the cultural studies related to a modern or classical language.
### PROPOSED NEW CORE CURRICULUM (9/21/98)

<table>
<thead>
<tr>
<th>Component Area</th>
<th>TAMU Core Courses</th>
<th>Compliance with Chart I (Required credits)</th>
<th>Compliance with Chart II (Additional credits allowed)</th>
<th>Comparison to Present Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>English 104 (3 hours) and 3 hours of one of the following: ENGL 203, 210, 235, 236, 241, 301; SCOM 203, 243.</td>
<td>6 (6 required)</td>
<td>0 (up to 6)</td>
<td>No change</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Mathematical/Logical Reasoning (6 hours, at least 3 of which must be in mathematics). To be selected from any mathematics course except MATH 102, 103, 150, 365, 366; also may select 3 hours from PHIL 240, 341 or 342.</td>
<td>3 (3 required)</td>
<td>3 (up to 3)</td>
<td>No change</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>(8 hours) 4 hours to be selected from BIOL 113/123; BOTN 101; CHEM 101, 103/113; GEOL 101; PHYS 201, 218; ZOOL 107. Remaining hours to be selected from above courses and/or AGRO 105, 301, 405; ANTH 225; BESC 201; BIOL 114/124; CHEM 102, 104/114, 106/116, 222/242; FRSC 204; GENE 301, 310; GEOG 203/213; GEOL 106, 307; HORT 201/202; METR 201/202, 326; OCNG 251/252; PHYS 202, 208, 219, 306/307; RENR 205/215; ZOOL 225.</td>
<td>6 (6 required)</td>
<td>2 (up to 3)</td>
<td>No change</td>
</tr>
</tbody>
</table>

The math portion of the core curriculum for "native" TAMU students (matriculating as freshmen) will be more rigorous than for transfer students who take all or most of their core courses at community colleges. In particular, Chart I permits the use of College Algebra as a core course, which will not be allowed for native students.

The natural science requirement will be higher for native students than for transfer students, because at least one course with a corresponding laboratory will continue to be required.
<p>| B. Visual and Performing Arts | Acceptable courses are ARCH 349, 429, 440; ARTS 103, 111, 112, 149, 159, 205, 212, 350; CLAS 352; ENDS 149, 150, 311; ENGL 212, 251, 317, 340, 351, 385, 412; FREN 414; HORT 203; LAND 240; MUSC 200, 201, 202, 203, 311, 312, 315, 318, 319, 321, 324; MODL 334, 341, 352; SCOM 430; SPAN 402, 410; PHIL 330, 375; THAR 101, 110, 155, 210, 280, 281, 380, 385, 407. | 3 | (up to 3) |<br />
| Social and Behavioral Sciences |<br />
| A. Social Sciences | (6 hours) Acceptable courses are: AGEC 105, 350, 429, 430, 452; AGED 340, 440, 440; ANTH 201, 210, 225, 300, 311, 314, 403, 404, 410; ECON (any course); ENGL 209, 311; ENGR 400; EPSY 320, 321; GEOG 201, 204, 306, 311, 330, 401, 440; HORT 335; INST 322; JOUR 102, 301, 401, 440; KINE 304, 319; LBAR 204; LING 209, 311, 402; MGMT 475; POLS (any course); PSYC (any course except 203, 204); RELS 403; SCOM 105, 315, 320, 325; SOCI (any course except 220, 420); WMST 207, 300, 316, 317, 404, 424, 462; ZOOL 225. | 3 | (up to 3) | No changes |<br />
| B. U.S. History and Political Science (legislatively mandated) | POLS 206 and 207 and HIST 105 and 106 or other courses in American and Texas history, except that courses pertaining solely to Texas history may not comprise more than 3 hours. | 12 | No changes. The State guidelines have combined 3 hours of social and behavioral sciences in Chart I with 12 hours of legislatively mandated U.S. History and Political Science courses, also in Chart I. |</p>
<table>
<thead>
<tr>
<th>Institutionally designated option</th>
<th>Kinesiology requirements are to be fulfilled by selecting four KINE 199 courses, one of which must be KINE 199, Health and Fitness.</th>
<th>0</th>
<th>4 (up to 4)*</th>
<th>No change in kinesiology. The 4 hour TAMU requirement for kinesiology, which is not a specific requirement of the statewide core curriculum, will be placed in the Institutionally Designated Option on Chart II. Computer usage (typically satisfied by high school courses) has been moved out of the core curriculum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td></td>
<td>36</td>
<td>12</td>
<td>No change. Approval of 48 hour curriculum will be sought from appropriate governing board.</td>
</tr>
</tbody>
</table>

* It is our understanding that core curricula in excess of 42 hours are not bound by credit hour limits in Chart II.

Notes:

1. The current TAMU core curriculum contains requirements for foreign language and computer usage that can be met by high school courses or by demonstrated proficiency through examination. In general these requirements are in addition to the 48 hours already required by the TAMU core curriculum. The CCOS proposes that these requirements be deleted from the core curriculum (that is, delete items 1 and 2 from pp 15-16). Furthermore, Admission Criteria (p. 33 and footnote 8 on p. 38) should be modified to indicate that 1 year of high school computer usage credit (acceptable courses yet to be determined), is needed for college preparatory work in order for students to be competitive through “Early Action” or “Review” admission processes. No modification appears to be necessary for the foreign language Admission Criteria.

2. If the core curriculum is modified as proposed in the above paragraph, degree programs will no longer be able to depend on it to impose foreign language and computer usage requirements. This gap will be filled in part by more strongly worded Admission Criteria. However, for two major reasons admission criteria will not prevent the admission of inadequately prepared students. First, students in the top 10% of their high school graduating class must be admitted by law, though they may not have taken foreign language or computer usage courses in high school. Second, admissions criteria cannot guarantee a desired level of competency, particularly in computer science, because of variations in high school course content. Therefore, degree programs in which competency in foreign language and/or computer usage are desired must have requirements built into their curricula.

3. Visual and Performing Arts Courses that currently exist in the TAMU core curriculum are the only ones identified in the proposed new core curriculum. Potential additions to this list have also been identified. For inclusion in the core curriculum, however, they must be approved by the CCOS and the Faculty Senate.

4. Changes in text of the Catalog that must be made with regard to humanities requirements have been identified. Linda Lacey has assisted the CCOS in identifying all text in the Catalog that refers to the core curriculum. She and the UCC have informed the CCOS that minimal and/or
editorial changes do not need to go through the UCC. An example of a minimal change would be changing 6 hours of humanities to 3 hours of humanities plus three hours of visual and performing arts. Most Colleges have identified necessary minimal changes. Any changes in degree programs, however, must be submitted through the UCC and the Faculty Senate. In order to be included in Catalog #122, these changes must be approved and received by Ms. Lacey by January.

5. Changes in the Catalog that will be needed if the foreign language and computer usage requirements are dropped from the TAMU core curriculum have been identified in most Colleges. Some Colleges are discussing more extensive changes that must be submitted through the UCC. In order to be included in Catalog #122, these changes must be approved and received by Ms. Lacey by January.

6. All notes on page 17 of the catalog will apply except that modifications may be required in Note #6.

Page numbers refer to TAMU Undergraduate Catalog #121
Report on Statewide Core Curriculum
from the Core Curriculum Oversight Committee
September 21, 1998

Informational item: Transfer of credit in courses with a grade of “D”

Explanation: As currently written, the Coordinating Board rules allow a university to deny transfer of credit from another institution for courses with a grade of “D” as applicable to the student’s major. An amendment will be voted on in October by the Coordinating Board that requires universities to accept the transfer course with a D if it allows native students credit for a D in the same course. A copy of the amendment is attached [item 5.391(d) (3)]. If this amendment passes, Colleges should be prepared to address this issue. One possible avenue may be to deny credit for all students in “Common Body of Knowledge” courses in which the student did not earn a grade of C or better. A University policy will be needed, as College policies will probably not be recognized by the Coordinating Board.

Suggested action: Begin discussion in your College about effects of the pending amendment on your curricula, and changes you may wish to make that would be covered by a University-wide policy. Form a joint task force between the AAC and AOC with members from each College to address this issue.