

October 24, 2011

Linda Bisson, Chair
Academic Senate

I would like to hereby respectfully request the review by the designated Davis Division committees of the attached proposal to formally close the Department of Applied Science, per PPM 200-20. The College of Engineering Executive Committee concluded its review of the proposal on 21 October, and a letter from Executive Committee Chair Marjorie Longo with the Committee's recommendation is also attached.

A appreciate the guidance and advice received to date from members and committees of the Senate, especially past Chair Powell, past Vice Chair Oakley and Graduate Council Chair Knoesen. I sincerely thank the Applied Science faculty for their efforts to define a smooth path for the transition, and for working with my office to resolve the many issues that needed to be addressed. Through the faculty's hard work, I believe we have been able to adhere to the principle that the well being of the students and the faculty is paramount to the success of this change.

Sincerely,



Enrique Lavernia, Dean

Attachments: Proposal to Disestablish the Department of Applied Science
Report of the vote of the Department of Applied Science on transfer of
faculty to other departments
Letter from CoE Executive Committee Chair Marjorie Longo

Proposal to Disestablish the Department of Applied Science
College of Engineering Deans Office
July 5, 2011

1. Justification of the proposed action including analysis of costs and benefits to the campus and expected budgetary impact; an outline of changes in instructional programs; a statement about the expected impact to enrollment, changes in staffing and space requirements.

The proposed closure of the Department of Applied Science (DAS) is not a decision considered lightly, and in fact is the result of a lengthy evaluation of the circumstances that surround this department. It is important to state at the outset the motivation for this closure is a strategic one aimed at enhancing the welfare of our College, including our Applied Science faculty, while accommodating the needs of the current students in Applied Science.

The original intellectual reasons that led to the establishment of DAS have evolved and changed. The Department was created in 1962 so scientists at Lawrence Livermore National Laboratory (LLNL) could participate in graduate education, and to allow many employees at LLNL to obtain graduate degrees as well as advanced training in areas of importance to LLNL. Other students in the program benefited from working in a national lab environment. Faculty members had joint appointments at LLNL and UC Davis, and their research interests therefore paralleled the programs at LLNL. Many of the department's courses were offered at Livermore. The core focus area for the department was applied nuclear physics.

Over time, the links to LLNL have diminished. The number of joint appointments of those in the Professor series decreased; the last one ended a few years ago. Now, few DAS faculty conduct research at Livermore, and the one who has a laboratory in UC's Hertz Hall at Livermore is working on topics that differ from the current interests of LLNL. Before 2002, many first-year students were funded by LLNL as student employees; this arrangement no longer exists. In short, many of the aspects that supported the establishment of the department have diminished. It is now clear that LLNL, the original DAS research partner, would like to engage UC Davis via a broader framework. The Laboratory's interests now extend to biology and medicine as well as physical sciences, for example.

To its credit, DAS has evolved to address new areas of scholarship, and, in contrast to the situation when the Department was established, the current faculty have a very diverse range of research interests. The department's 2009-2014 Academic Plan lists: applied biosciences and biotechnology; computational science; materials science and condensed matter physics; optical, atomic, and molecular science; and plasma science. These areas are all applied sciences, but so are those of essentially every other faculty member in the College of Engineering (CoE). In fact, the evolution of Applied Science has over time produced substantial overlap with the research areas of other departments, especially those of (in alphabetical order) Biomedical Engineering,

Chemical Engineering and Materials Science, Computer Science, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering. A review of the faculty profiles in DAS clearly suggested that all faculty had potential homes within other departments in the College of Engineering. It seemed that these faculty would strengthen the reputations of the other departments, and help create more vibrant intellectual environments there. This assumption was borne out by the results of the subsequent effort to identify new homes: all 14 continuing ladder-rank faculty have been warmly welcomed by six other departments, five of them in CoE. The Applied Science faculty are indeed excellent scholars, as revealed by their extramural research funding, research productivity and honors.

During the decade in which the department established and offered undergraduate programs, the faculty faced a difficult challenge in recruiting students to their majors. DAS offered only graduate education until 2000, when it established the undergraduate Optical Science and Engineering (OSE) major. This major initially attracted interest, but total enrollment peaked at 112 students in 2003, then declined each year, to only 14 in Fall 2010. During 2010-11, the department graduated one student. Much of modern technology relies on optics, yet the major did not attract a critical mass of students even after being in existence for a decade.

| Optical Science and Engineering undergraduate program | | | | | | | | | |
|---|------------|--------|----------|------------|--------|----------|-------------------|---------|-------------------|
| | Freshman | | | Transfer | | | Total Enrollments | | Degrees Awarded |
| | Applicants | Admits | Enrolled | Applicants | Admits | Enrolled | | | |
| Fall 2000 | n/a | n/a | n/a | n/a | n/a | n/a | 3 | | |
| Fall 2001 | 69 | 59 | 31 | 5 | 4 | 3 | 63 | 2001-02 | 1 |
| Fall 2002 | 52 | 40 | 22 | 17 | 10 | 10 | 98 | 2002-03 | 5 |
| Fall 2003 | 42 | 37 | 21 | 16 | 13 | 5 | 112 | 2003-04 | 22 |
| Fall 2004 | 41 | 26 | 12 | 20 | 10 | 5 | 109 | 2004-05 | 32 |
| Fall 2005 | 24 | 17 | 5 | 8 | 5 | 4 | 72 | 2005-06 | 24 |
| Fall 2006 | 22 | 17 | 8 | 3 | 1 | 0 | 45 | 2006-07 | 22.5 ¹ |
| Fall 2007 | 33 | 22 | 10 | 2 | 1 | 1 | 29 | 2007-08 | 8 |
| Fall 2008 | 29 | 21 | 6 | 2 | 0 | 0 | 19 | 2008-09 | 3 |
| Fall 2009 | 28 | 13 | 6 | 2 | 2 | 0 | 18 | 2009-10 | 3 |
| Fall 2010 | 21 | 11 | 3 | 1 | 0 | 0 | 14 | 2010-11 | 1 |
| Fall 2011 | 43 | 12 | (2 SIR) | 8 | 0 | 0 | | | |

| | | | | | | | | | |
|----------------|--|--|-----|--|--|----|--|--|-------|
| Totals: | | | 124 | | | 28 | | | 121.5 |
|----------------|--|--|-----|--|--|----|--|--|-------|

First admissions: Fall 2000

Admissions suspended for Fall 2012

¹ Students with double majors are counted as a half degree in each major.

To fill another potential need and provide undergraduate teaching opportunities for other members of the DAS faculty, the department began the Computational Applied Science major in 2004. Enrollment in this program peaked at 11 in Fall 2006. Due to the limited interest (only 2-4 newly enrolled students each year in 2005 through 2007), admissions were suspended for 2008.

| Computational Applied Science undergraduate program | | | | | | | | | |
|---|------------|--------|----------|------------|--------|----------|-------------|--------------------|---|
| | Freshman | | | Transfer | | | Total | Degrees Awarded | |
| | Applicants | Admits | Enrolled | Applicants | Admits | Enrolled | Enrollments | | |
| Fall 2003 | | | | | | | | | |
| Fall 2004 | 16 | 14 | 7 | 0 | 0 | 0 | 8 | | |
| Fall 2005 | 10 | 10 | 3 | 1 | 1 | 1 | 10 | | |
| Fall 2006 | 12 | 10 | 3 | 1 | 1 | 0 | 11 | 2006-07 | 1 |
| Fall 2007 | 11 | 6 | 0 | 7 | 4 | 2 | 8 | 2007-08 | 2 |
| Fall 2008 | | | | | | | 3 | 2008-09 | 0 |
| Fall 2009 | | | | | | | 2 | 2009-10 | 2 |
| Fall 2010 | | | | | | | 0 | 2010-11 | 0 |
| Fall 2011 | 13 | 3 | (1 SIR) | 3 | 0 | 0 | | | |
| Totals: | | | 13 | | | 3 | | | 5 |

First admissions: Fall 2004

Admissions suspended for Fall 2008 through Fall 2010

Reopened to admissions for Fall 2011, due to lack of action to close the major

Admissions suspended for Fall 2012

Closed in mid-2011

A number of factors may have resulted in the low enrollments, a primary one being the lack of visibility of the department to potential undergraduates. For example, US News has no category for Applied Science programs. In recent years the DAS faculty and staff made a concerted outreach effort to advertise and promote the OSE major to students at high schools and community colleges. This did increase the number of applicants, from 20-35 per year during 2005-2010, to 51 for Fall 2011. Put in context, however, even at this increased level, the Department's applicants represent less than half a percent of the applicants to all programs in the College of Engineering.

CoE was previously assigned a target student-faculty ratio of 13.1 by then-PEVC Virginia Hinshaw. The target has just been increased by PEVC Hexter to 14.0. During the decade 2000-01 through 2009-10, the student-faculty ratio for DAS averaged 8.6, and was 8.0 in 2009-10. It seems best to redirect faculty and other resources to support the teaching needs of the other departments in the College.

As have other units, CoE has been directed to reduce faculty FTE by approximately nine percent over three years. These reductions will occur only as faculty retire. After the reductions eventuate, one possible model is to assign reduced target faculty numbers to each department, but this would produce weaker programs across the

board. The 13.5 FTE in Applied Science are nearly equivalent to the required reduction. It seems preferable to transfer the current faculty to strengthen the other departments, offsetting the losses to retirement in these departments while allowing CoE to meet its reduction target. Thus, a primary benefit of the proposed action will be to improve the vitality of the College's seven other departments and their teaching and research programs.

CoE recently moved to a formula-based budget model that factored in numbers of faculty and students, student credit hours and research grants. It was apparent that, with the new budget, DAS also would not have the critical mass to support a standard complement of staff including an MSO, student affairs officer, contract and grants analyst, etc., so a combined administration with another department would be necessary even if the Department remained. In fact, this had already occurred in the 2010-11 academic year, when DAS administratively merged with the Department of Chemical Engineering and Materials Science.

Few budget savings are anticipated in the short term, as current services must be provided for faculty and students no matter which department they are in. The arguments for revision are primarily intellectual rather than for short-term budget savings. The only immediate gains are in the elimination of two departmental positions: an SAO and a development engineer. (The formula-based budget had already caused DAS to eliminate its MSO position by the administrative merge mentioned above.)

Unless a new home for OSE is identified during 2011, CoE will initiate a proposal to close the major, and will eliminate the OSE minor. (The minor is new, and no students graduated with it in 2010-11.) Dropping the major will of course eventually empty the pipeline of the 14 students enrolled as of Fall 2010. (One of these students graduated in 2010-11.) The current DAS faculty will be participating in the teaching programs of their new departments, and therefore increase the enrollment capabilities there.

The Applied Science Graduate Program will continue until all current students have departed, at which point it will be closed. However, we anticipate little net effect on numbers of graduate students for CoE. The 2009-2014 DAS Academic Plan implied that most applicants have learned about and contacted potential major professors prior to applying, probably due to the reputation of the faculty member rather than by conducting a search for Applied Science programs, therefore it seems likely that students will make these connections in the future whether or not the Applied Science graduate program exists. In fact, the transferring faculty may have access to more students, since the ratios of applicants per enrolled new student in the new home departments range from 7 to 15, while that for Applied Science averaged around 5 in recent years.

There will be no change in space requirements for continuing faculty and research staff, as the offices and labs will just be shifted to other departments. Laboratory classrooms will remain available for the OSE-related laboratory courses until the current students have completed degrees or left the program. The department's office suite of

approximately 2000 square feet will become available for reassignment by the dean's office.

2. Phase-out plan, including an explicit description of the accommodations to students, faculty, staff, and non-academic appointees.

The following plan was prepared by Chair Yin Yeh in consultation with the other DAS faculty, along with members of the CoE dean's office.

The few students currently enrolled (and any who enroll this fall) in the OSE undergraduate major will be guaranteed the opportunity to complete their current degree objective if they meet the requirements and wish to do so. Chair Yeh and his faculty have mapped out the Applied Science courses (or acceptable substitutes) and the faculty who are available to teach them over the next four years. Our memorandums with the new home departments will ensure these courses are taught as needed. For electives, the major includes a large number of course options offered by departments such as Electrical and Computer Engineering. Students will receive advice from Professor Hector Baldis (OSE Major Adviser) as well as staff in the CoE undergraduate office.

The CoE dean's office will ensure that adequate teaching laboratory classrooms are available to provide for the laboratory components of the EAD courses required for the current OSE students.

All 45 students currently enrolled in the Graduate Program in Applied Science will be able to complete their current degree objectives if they meet the requirements and wish to do so. Admissions to the program have been closed, and most students completed the core requirements prior to or during 2010-11. Chair Yeh has identified satisfactory substitute courses for the few students who must still complete one or more core courses. Programs of study will be written or modified to include courses that will be available from departments other than DAS. Professor Niels Jensen has been appointed by Graduate Studies to serve as chair of the graduate program while current students remain in it. Students will receive advice from Chemical Engineering and Materials Science Student Affairs Officer Kate Shasky. The CoE dean's office will compensate ChMS for a portion of Ms. Shasky's time, to devote to the Applied Science students.

Two ladder-rank faculty retired at the end of June 2011. The CoE dean's office has allocated an office for these emeriti for the 2011-12 year.

The other 14 ladder-rank faculty have transferred² to other departments:

- Biomedical Engineering: Yong Duan, Atul Parikh (50%), David Rocke (50%)
- Mechanical and Aerospace Engineering: Hector Baldis, Walt Harris, David Hwang, Niels Jensen (50%)

² One transfer is still pending as of 1 July 2011, and is expected to be finalized by the end of August 2011.

- Chemistry: Steve Cramer (50%), Bill McCurdy (an additional 50%, as he already has a 50% appointment in Chemistry)
- Computer Science: Francois Gygi (an additional 50%, as he already has a 50% appointment in Computer Science)
- Electrical and Computer Engineering: Brian Kolner
- Chemical Engineering and Materials Science: Niels Jensen (50%), Denise Krol, Greg Miller, Ann Orel, Atul Parikh (50%)

Academic and non-academic employees associated with the research groups of these faculty will transfer to the same departments. Offices and labs assigned by DAS to these faculty will in most cases be transferred by CoE to the departments. In a few cases, CoE will retain the facilities for multi-department use.

Independent Academic Federation appointees – Adjunct Professors and Professional Researchers – have, with three exceptions, transferred to other departments within CoE. One Professional Researcher transferred to the Air Quality Research Center (an ORU). One WOS Adjunct Professor moved to the School of Medicine, and another has as yet been unable to identify a new home department, so the CoE dean's office will serve as home through the end of the faculty member's current contract with LLNL.

DAS currently employs no Unit 18 Lecturers.

Of the three general-funded staff in DAS, two were laid off as of 1 July, while the other transferred to Chemical Engineering and Materials Science.

3. Complete statement of all steps required for adoption and implementation of the proposal and the timetable of target dates for completion of each step.

Identify new home departments for all continuing ladder-rank faculty. All faculty explored one or more options, and met with chairs and faculty of candidate departments. Each faculty member received strong positive votes in the department(s) formally proposed. With one exception³, all the transfers were recommended by the relevant dean(s) and approved by Vice Provost Horwitz. The transfers became effective 1 July 2011.

Identify new departments for Federation members with independent programs, i.e. Adjunct Professors and Professional Researchers. One Adjunct Professor has not identified a new department. His appointment will end on 30 September. All others have found new departments or research units, effective 1 July 2011.

Transfer employees working in the research groups of faculty. Such a transfer requires the consent of the employee and the new department. All such transfers were completed by 1 July 2011, or will be shortly thereafter.

³ The receiving department voted positively on the transfer; the request is awaiting action by the dean of the new home college.

Discontinue the Computational Applied Science undergraduate major. DAS initiated this process within the past year. The proposal has been reviewed as described in PPM 200-25 and will soon reach Chancellor Katehi's desk for approval, if it has not already.

Retain or discontinue the Optical Science and Engineering undergraduate major (and minor). Admissions to OSE have been suspended for Fall 2012. A small group of faculty are discussing the possibility of one or more departments taking on the major. If no new departmental home has been identified by the end of 2011, CoE will initiate a formal proposal to discontinue the major, as described in PPM 200-25, and will plan to eliminate the minor.

Discontinue the Applied Science Graduate program. Admissions for Fall 2011 were suspended by Graduate Council. CoE will initiate a proposal to disestablish the program, per PPM 200-25. Some faculty members from DAS and a number in other departments have been discussing with Graduate Council Chair Knoesen and Graduate Studies Dean Gibeling the potential formation of a graduate group in Engineering Physics.

Transfer to other departments any courses to be continued after current students in DAS programs complete their degrees. DAS offers two high-enrollment undergraduate courses (ENG 10 and EAD 115) that serve students in many majors. These courses are in the process of being adopted by Chemical Engineering and Materials Science, and Civil and Environmental Engineering, respectively. Most of the other approximately 20 undergraduate EAD courses were established to serve students in the CAS and OSE majors, and most will be dropped if the two majors are closed. Very few of these courses have had more than single-digit enrollments in recent years. Many of the Applied Science graduate courses may be transferred with the faculty in those specialties, if the new home departments see advantages in offering them.

4. Explanation of the method of consultation that was employed in the review process with students and faculty members from potentially affected units and with appropriate college or Senate committees.

During 2009 and 2010, a number of discussions were held by then-Dean Bruce White and members of his staff, highlighting concerns about the amount of undergraduate instruction within DAS. Dean White shared these concerns with the DAS chair and faculty. He distributed data on teaching and other metrics to the CoE chairs and the CoE Executive Committee.

Upon Dean Lavernia's return to the College of Engineering as dean in January 2011, he met with DAS Chair Yin Yeh, and shortly after with the DAS faculty, to discuss the rationale for closure of the department, propose a strategy, and listen to concerns.

Especially for the phase out plan, Dean Lavernia felt it critical to allow the DAS faculty leeway to explore options, e.g., merging with another department versus individual transfers of faculty to departments of most interest, moving the undergraduate major to

a new home versus closure, etc. He informed the faculty that he would personally help those who wished to pursue positions outside of the College, by working with PEVC Hexter and Mathematical and Physical Sciences Dean Winston Ko. He met with Chair Yeh on a regular basis to address the most critical points in the plan: arrangements for faculty, current undergraduate and graduate students, and the future of the undergraduate and graduate programs.

DAS Chair Yeh, Associate Dean Jean VanderGheynst and staff members in the CoE undergraduate office met with every student enrolled in the OSE undergraduate major, informing them of the proposed closure of the department and majors, offering options, while reassuring the students they would be able to complete their current degree objectives if they chose to do so.

Chair Yeh and others met with the students in the Applied Science graduate program, informing them of the proposed closure of the department and reassuring the students the closure would not prevent them from completing their intended degrees.

Dean Lavernia and his staff communicated with Graduate Council Chair Andre Knoesen, Graduate Studies Dean Jeff Gibeling and Academic Senate Chair Bob Powell about the proposed closure of the Department, the implications for the departmentally-based graduate program and options for a graduate group with similar emphasis, if such would be of interest to the faculty.

5. Description of the relationship of the proposal to the campus and unit's academic plan.

The proposal is consistent with the Campus Vision of Excellence, as it will help “Foster a Vibrant Community of Learning and Scholarship” and “Drive Innovation at the Frontiers of Knowledge.”

By concentrating CoE's faculty resources in its remaining seven departments, the College will strengthen its capabilities to offer comprehensive undergraduate and graduate programs, encouraging recruitment of the brightest and most qualified students, and promoting retention and timely matriculation. Larger departments (relative to eight somewhat smaller ones) will also help us attract, hire and retain a diverse group of faculty, including top-tier newer appointees as well as distinguished members.

We anticipate the increased within-department interaction will also help promote collaborative efforts in research and entrepreneurship.

6. Appended comments of students, faculty, academic non-Senate appointees, and committees.

(none requested)

July 5, 2011

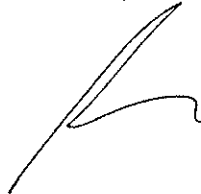
MATT FARRENS, CHAIR

College of Engineering Executive Committee

I would like to hereby respectfully request the review by your committee of the attached proposal to formally close the Department of Applied Science, per PPM 200-20. After receiving your committee's input, I will forward the proposal to the Davis Division of the Academic Senate and the campus administration.

I sincerely thank the Applied Science faculty for their efforts to define a smooth path for the transition, and for working with my office to resolve the many issues that needed to be addressed. Through the faculty's hard work, I believe we have been able to adhere to the principle that the well being of the students and the faculty is paramount to the success of this change.

Sincerely,

A handwritten signature in black ink, appearing to read 'Enrique Lavernia', with a stylized flourish at the end.

Enrique Lavernia, Dean
College of Engineering

Attachments: Proposal to Disestablish the Department of Applied Science
Report of the vote of the Department of Applied Science on transfer of
faculty to other departments

October 21, 2011

To: Enrique J. Lavernia, Dean
College of Engineering

Fr: Marjorie Longo, Chair
Engineering Executive Committee

Re: Proposal to Close the Department of Applied Science

The College of Engineering Executive Committee met and discussed the proposed closure of the Department of Applied Science, today, the first scheduled meeting for academic year 2011/12. CEC members agree with the proposed closure, without further comment.

Thank you.

A handwritten signature in black ink, appearing to read "Marjorie Longo". The signature is fluid and cursive, with a long horizontal stroke extending to the right.