

October 25, 2011

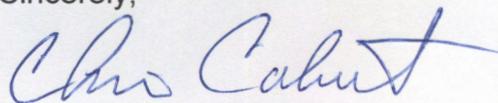
**LINDA BISSON, Chair**  
Davis Division of the Academic Senate

Dear Linda,

The Executive Committee of the College of Agricultural and Environmental Sciences (CA&ES) is submitting to the Davis Division of the Academic Senate a formal proposal (attached) from the Division of Textiles and Clothing and the Department of Biological and Agricultural Engineering to consolidate into one academic unit. The CA&ES Executive Committee unanimously supports the proposal.

The faculty of these two academic units are excited about the opportunities that consolidation will bring. The faculty of both academic units are unanimous in their agreement to the proposed consolidation.

Sincerely,



Chris Calvert, Chair  
CA&ES Executive Committee

/bn  
Encl.

c: Neal Van Alfen, Dean  
Mary Delany, Associate Dean  
Jan Hopmans, Associate Dean  
Raul Piedrahita, Chair  
You-Lo Hsieh, Chair

October 21, 2011

To: Enrique J. Lavernia, Dean  
College of Engineering

Fr: Marjorie Longo, Chair  
Engineering Executive Committee

Re: Proposal to Merge Textiles with Biological and Agricultural Engineering

The College of Engineering Executive Committee met and discussed the proposed merger between BAE and Textiles, today, the first scheduled meeting for academic year 2011/12. CEC members agree with the proposed merger, without further comment.

Thank you.

A handwritten signature in black ink, appearing to read "Marjorie Longo", with a long horizontal flourish extending to the right.

June 13, 2011

TO: Prof. Matt Farrens, Chair Executive Committee, College of Engineering  
Prof. Jeffrey Williams, Chair, Executive Committee, College of Agricultural and  
Environmental Sciences

FROM: Raul Piedrahita, Chair   
Department of Biological and Agricultural Engineering

You-Lo Hsieh, Chair   
Division of Textiles and Clothing

RE: Proposal for the Consolidation of the Department of Biological and Agricultural  
Engineering and the Division of Textiles and Clothing

Prompted by budgetary realities, and as recommended in reports by two committees in the College of Agricultural and Environmental Sciences, the BAE and TXC faculty propose the consolidation of the two departments as described in the proposal attached. We have prepared the proposal in accordance with PPM200-20.

The faculty were asked to vote on the Consolidation Proposal and support of the proposal was unanimous by both faculties. The votes and comments submitted are attached to this memo. Whereas the faculty are excited by the opportunities that the consolidation will bring about, they also recognize that there will likely be difficulties as the consolidation is implemented.

We would be happy to provide additional information as required in your review of the proposal and we thank you for your consideration.

cc. Dean Neal Van Alfen, College of Agricultural and Environmental Sciences  
Dean Enrique Lavernia, College of Engineering  
Associate Dean Jim McDonald, College of Agricultural and Environmental Sciences  
Associate Dean Jan Hopmans, College of Agricultural and Environmental Sciences  
Associate Dean Bruce Hartsough, College of Engineering

**Faculty Votes and Comments for Consolidation of  
the Department of Biological and Agricultural Engineering  
and the Division of Textiles and Clothing**

**Academic Senate  
Department of Biological and Agricultural Engineering**

- Yes** It's time to move ahead with this new arrangement and make it work
- Yes** The consolidation will create research synergies in a promising new area of biomaterials. I am still concerned about the future of the TXC major and how delays in closing it might affect the department. Event though BAE will not be responsible for administering the TXC major, the need to see students through and offer the necessary courses for that will limit our ability to grow in new areas.
- Yes** This consolidation proposal seems reasonable.
- Yes** This will be a good match for all involved.
- Yes** This merger is the result of an unfortunate budget situation and administrative decision to consolidate smaller organizational units, like TXC, into larger a departmental structure. The TXC faculty, to their credit, have made a reasonable consolidation plan to become members of BAE. The success of this consolidation depends upon the CAES Dean's Office to fulfill their commitments to support the TYXC faculty during the phase out period of the undergraduate program in TXC. It is also important for the success of this action that the CAES Dean's Office does not penalize the BAE department for failing to meet the FTE target created as a result of the administration's desire for consolidation.
- Yes** I look forward to working with my new colleagues from Textiles and Clothing. They have been very positive throughout this difficult process. I was disappointed to learn that despite the evidence that we have a major budget crisis and that Colleges are being asked to make strategic decisions about their investments in programs that the Undergraduate Council of the Academic Senate voted to continue the undergraduate major. Their lack of insight into the impact their decision will have on future TXC students, the consolidated department and College as a whole is unfortunate.
- I am happy to see that the Dean of CA&ES understands that the current faculty in BAE do not have the expertise to teach courses in the TXC major and he will provide the administrative and teaching support needed to continue the undergraduate program.
- Yes** No comment
- Yes** No further comment

*Yes* No comment

**Academic Senate**  
**Division of Textiles and Clothing**

*Yes* No comment

**Academic Federation**  
**Department of Biological and Agricultural Engineering**

*Yes* I support the consolidation of the BAE and TXC department. I think the consolidation will make BAE even stronger than before and will increase our research diversity.

*Yes* No comment

*Yes* No comment

*Yes* No comment

**Proposal for the Consolidation of the Department of  
Biological and Agricultural Engineering  
and the Division of Textiles and Clothing**

**into**

**the Department of Biological and Agricultural Engineering**

**Prepared in accordance with PPM 200-20  
Department of Biological and Agricultural Engineering  
Division of Textiles and Clothing  
June 2011**

## Table of Contents

<b>Introduction.....</b>	<b>3</b>
<b>A. Justification .....</b>	<b>3</b>
1. Objectives .....	4
2. Budgetary Impact and Space Requirements .....	4
3. Impact on Instructional Programs.....	5
4. Administrative Staffing.....	6
<b>B. Phase Out Plan .....</b>	<b>6</b>
<b>C. Implementation and Timetable.....</b>	<b>6</b>
<b>D. Consultation Method.....</b>	<b>7</b>
<b>E. Relationship of Proposal to Academic Plans.....</b>	<b>7</b>
<b>F. Appendices.....</b>	<b>9</b>
1. MOU (Accepted by Deans of CAES and CoE on April 6 & 7, 2011, respectively).....	9
2. MOU Submission Letter (submitted on April 6, 2011) .....	12
3. Votes and Comments on MOU (voted on March 31, 2011) .....	13
4. Resource to Phase-out TXC Major (approved by CAES on April 6, 2011) .....	15
5. Biomaterials Curriculum Development (brief summary) .....	16
6. Textiles and Clothing Responses to CPC's Request for Information (Jan. 21, 2010) .....	18
7. Textiles and Clothing Academic Plan Update (submitted to CAES on Feb. 14, 2011).....	22

## **Introduction**

The consolidation of the Department of Biological and Agricultural Engineering (BAE) in the College of Agricultural and Environmental Sciences (CAES) and in the College of Engineering (CoE) and the Division of Textiles and Clothing (TXC) in the CAES is proposed. This consolidation stems from the CAES College Planning Committee report (CPC, March 31, 2010). The CPC report recommended that BAE "maintain its current structure while exploring a merger with Textiles and Clothing". The same report recommended that TXC "pursue merging with Biological and Agricultural Engineering". Other possible merging partners were also mentioned in the CPC report. The CPC's recommendation was largely based on the Academic Prioritization Committee's (APC) report released in Fall 2009 that recommends "redistribution" of TXC, stating "This division has medium to high demographic risk and is so small it cannot continue unless substantial resources are invested, which is unlikely given the current fiscal climate." The CPC suggested that a merger with BAE would "create a teaching and research program focusing on bio-materials, an area that the college and campus should strengthen in order to build sustainable agriculture and environment programs".

The proposed consolidation would bring three TXC faculty members into BAE. The fourth TXC faculty member will remain in the CAES but unattached to a department. The I&R appointment of the fifth TXC faculty member will move to the College of Letters and Sciences (L&S). The consolidated department will retain the name of Biological and Agricultural Engineering. The areas to be deemphasized due to FTE loss will be the behavioral and sociocultural science areas pertaining to textiles and clothing, including a) industry, marketing and trade (from pending retirement of the faculty member who will remain in CAES unattached to a department); b) fashion and consumer cultural studies (from FTE realignment to L&S).

The faculty from the two departments developed a memorandum of understanding (MOU) that was voted on by both faculties. The MOU lays out the terms of the consolidation that were agreed to by both departments and addresses in detail many of the issues presented in this proposal. The MOU and the vote and comments submitted by the faculty are included in the appendices (App. F.1 – F.3).

## **A. Justification**

The department of Biological and Agricultural Engineering is one of the top-ranked such programs in the nation. The department's historical association with the CoE and the CAES reflects the disciplinary expertise of its faculty and the strength of its programs and mission-oriented research activities. The department's size and existence in two colleges creates particular challenges at this time of lowered FTE targets and of budgetary pressures to align teaching effort (as measured by student credit hours) with the I&R appointment in the corresponding college. Consolidation with TXC will provide an opportunity for the department to increase its teaching in the CAES while creating a core of faculty with expertise in bio-materials.

The CPC's recommendation for TXC to merge with another department was based primarily on the size of its faculty and their demographics. The CPC's report did not address undergraduate

programs. The proposed consolidation between BAE and TXC recognizes the potential synergies made possible by the disciplinary focus of the three TXC faculty with materials science and engineering expertise and whose research is in areas of organic materials chemistry, soft matter physics and engineering, and human- material-environment interactions and sustainability. The expertise of these faculty will complement that of current BAE faculty with expertise in biological materials, bioenergy, and biosensors, among other areas. Given the complementary strengths of the current BAE faculty and of the incoming TXC faculty, we envision increased research and teaching activity in the biomaterials area, an area of great potential benefits to the State of California.

The two TXC social science faculty are not included in this consolidation due to the differences between their area of expertise and that of BAE faculty. This is mutually understood.

### **1. Objectives**

This proposed consolidation is to provide an academic environment conducive to academic excellence of individuals as well as the whole faculty in the areas of biological and agricultural engineering.

### **2. Budgetary Impact and Space Requirements**

The BAE department faculty have FTE in CoE and in CAES. As a result, the department receives budget allocations from both colleges and those allocations are based largely on the corresponding FTE. The CAES allocates funds to departments using a formula (RAC) that is driven largely by faculty FTE. Following the CPC report, the CAES Dean set faculty FTE targets for each department in the college and those FTE targets (not the actual FTE) are used as drivers in the RAC formula. The new 2010 CAES faculty FTE target shows the combined BAE and TXC FTE to be 3.78 I&R and 8.29 AES for a total of 12.07 FTE. The filled and authorized positions (search in progress) as of Dec 2010 were 3.13 I&R (in CAES) and 7.74 AES for BAE and 3.0 I&R and 2.0 AES for TXC or a total of 15.87 FTE in CAES. Upon consolidation in which three TXC faculty join BAE and the completion of the current faculty search, the actual BAE FTE in CAES will be 5.13 I&R and 8.74 AES, for a total of 13.87. This is 1.80 (1.35 I&R and 0.45 AES) above the new 12.07 FTE, a major driver for RAC formulated allocation.

The current BAE and TXC programs are located in two different buildings. The BAE faculty offices and teaching and research facility are located in Bainer Hall. The TXC faculty have their offices and teaching and research laboratories in Everson Hall. Challenges in space for the consolidated faculty include insufficient space in Bainer Hall to accommodate both BAE and TXC faculty and their laboratories and the overdue safety and long standing quality and quantity space issues with respect to the chemical and analytical laboratories in Everson Hall. Several approaches toward these space and facility needs have been discussed and are included in the MOU. Faculty office space in Bainer Hall will be made available to incoming TXC faculty to foster full integration and collegiality. Costs associated with improving the space used by TXC faculty to meet safety guidelines, especially as they relate to the chemical fume hoods, will be borne by the CAES Dean's Office. Whereas TXC faculty maintain offices as well as teaching and research labs in Everson for the immediate future, CAES has requested BAE and TXC to consider moving part of the consolidated department to the old Food Science and Technology building where another BAE faculty member has research laboratories already. CAES, working

with the campus, would finance the necessary renovation and upgrading of the old Food Science and Technology building to meet the research and teaching needs of the consolidated department, including chemical and analytical laboratories, clean room for nanomaterials and constant temperature and humidity facility, as well as moving of equipment and instruments.

### **3. Impact on Instructional Programs**

The Biological Systems Engineering (BSE) major will not be affected by the proposed consolidation. BAE will also continue to teach Applied Biological Systems Technology (ABT) courses that are either service courses or that are required for minors offered by the department.

Currently, the Division of Textiles and Clothing has two undergraduate majors, Textiles and Clothing (TXC) and Fiber and Polymer Science (FPS). The loss of disciplinary expertise in behavioral science from a pending retirement is such that marketing-related courses for the TXC major cannot be offered in the future. The CAES Executive Committee recommended that the major be closed to admissions for Fall 2012 and 2013 but the proposal was denied by Undergraduate Council. However, the MOU agreed to by BAE and TXC faculties is predicated on the discontinuation of the major.

A TXC course plan has been proposed for 2011-2015 (App. F.4) in preparation for the pending retirement of one faculty member, the FTE realignment to HARCs in L&S of a second faculty member and the loss of their expertise, and assuming that the major is closed to new admits as of Fall 2012. This plan calls for temporary Lecturer and TA support to deliver all necessary courses to graduate all TXC majors by 2014-15 academic year. The lecturer supports have been approved by CAES (April 6, 2011) (App F.4). In the event that students are admitted into the major for Fall 2012 and beyond, CAES will extend the time during which the College will provide the necessary Lecturer and TA support to offer the courses to graduate those students. This would, in effect, extend the approved Lecturer supports (App F.4). The CAES Dean's office will be responsible for the administration of the TXC major in collaboration with a Master Advisor selected from the current TXC faculty.

The current FPS curriculum includes essential biobased polymers and fibrous materials content and, along with the physical science TXC courses, will serve as the core for a minor and a foundation for building a biomaterials curriculum. FPS courses have been cross-listed with Materials Science and Engineering (EMS) at the undergraduate and graduate levels. Following consolidation, the department will update its academic plan, including a thorough review of the textile science TXC, FPS and BAE courses to consider curricular development options to take advantage of synergies created by the combined faculty. Efforts to develop a biomaterials major have been ongoing for some time, and an early draft of what such a major would look like is included here as a reference (App F.5).

The BAE department has a departmentally based graduate program (Biological Systems Engineering) through which it offers the degrees of Master of Science, Master of Engineering, Doctor of Philosophy, and Doctor of Engineering. The department will continue to offer these degrees and the new faculty members will become members of the graduate program, consistent with program bylaws. The three incoming TXC physical science faculty will maintain their

current membership in the Textiles Graduate Group and the Chemical Engineering and Materials Science Graduate Program as well as other graduate programs and groups.

The Textiles Graduate Group, which offers Master of Science degrees, will continue to be supported by current faculty membership across campus.

#### **4. Administrative Staffing**

BAE and TXC have been in the same administrative cluster since Summer 2010. This consolidation is not expected to create further changes in administrative structure.

### **B. Phase Out Plan**

The Division of TXC has five faculty members currently. Three faculty with physical science and engineering expertise will join BAE as described in this document. These three faculty will continue to teach the textile science TXC courses and the FPS courses. A fourth faculty member is expected to retire in about one year and will remain in CAES unattached to a department. A fifth faculty member, currently the Master Advisor for the TXC major, will move 60% of her I&R FTE to the Women and Gender Studies program in the HArCS division of the College of Letters and Science (with her 40% Agricultural Experiment Station appointment remaining in the CA&ES), but she will continue to teach TXC 7, a required course for the TXC major.

Administrative support for the faculty moving into BAE and for the faculty member remaining in CAES unattached to a department will be provided by the BFTV administrative cluster.

Administrative support for the faculty member moving to L&S will be provided through her new departmental affiliation.

Current staff in the BFTV administrative cluster will remain in the cluster. The current lecturer in TXC will continue to teach the behavioral science TXC courses with Lecturer funds approved by the CAES during the phase out of the TXC major as described above. Support for TXC and FPS course/laboratory materials will be provided through the BFTV cluster with RAC formula funds allocated to BAE based on enrollment in the TXC and FPS courses and majors. i.e. RAC cells for undergraduate student advising and course support (specifically B1, B3, B4a, C1a and C2). The CAES Dean's office will be responsible for the administration of the TXC major in collaboration with a Master Advisor selected from the current TXC faculty. Administration and student advising for the FPS major will be handled through the BFTV cluster.

### **C. Implementation and Timetable**

April 2011: Consolidation MOU voted on by the two departments (Appendix F.1)

June 2011: Proposal to consolidate the Department of Biological and Agricultural Engineering (BAE) in the College of Agricultural and Environmental Sciences (CAES) and in the College of Engineering (CoE) and the Division of Textiles and Clothing (TXC) in the CAES voted on by the two departments.

June 2011: Consolidation proposal forwarded to the CAES and CoE Executive Committees (ECs)

?? 2011: Proposal for consolidation submitted to the Provost with comments from both CAES and CoE ECs

?? 2011: Consultation from the Academic Senate on the proposal for consolidation

?? 2011: Proposal for consolidation submitted by the Provost to the Chancellor for final approval

## **D. Consultation Method**

TXC faculty have discussed potential affiliations with various academic programs prior to and since the release of the APC report in mid-September 2009. The discussions have been elaborate and extensive, focusing on the impact on academic programs and faculty and potential merits. All options were discussed from merging the entire faculty with a single department to dispersing individual faculty to different departments. The consensus at the time of the CPC process was to affiliate the entire faculty with the Department of Biological and Agricultural Engineering. The BAE and TXC Chairs discussed this option informally prior to and since the CPC process. The BAE faculty hosted a social for both faculty in April 2010. The BAE and TXC faculty were formally introduced to each other for the first time in a joint faculty meeting in May 2010. The discussions became formal since the appointment of a new BAE chair in September 2010. The Textiles and BSE Graduate Groups held the first joint seminar series in Fall 2010 where all five TXC faculty gave seminars. These interactions between BAE and TXC faculty uncovered some potentially fruitful areas for collaborative research, but there were concerns about the disciplinary fit of the TXC social scientists into BAE. Therefore, the appointments for the social scientists were considered and changed independently from this proposal.

The chairs of BAE and TXC appointed a four member ad-hoc committee to examine issues and concerns related to the consolidation in November 2010 and, based on the committee's report (February 2011), drafted the MOU. The BAE and TXC chairs consulted their faculty individually for input over several meetings and email communications. The MOU was voted favorably by both faculty (16 Yes and one No in BAE and 5 Yes and no No in TXC) on March 31 and signed and submitted by the Chairs on April 7 to the Deans of CAES and CoE.

## **E. Relationship of Proposal to Academic Plans**

Faculty in the department of Biological and Agricultural Engineering have diverse research interests, which can be grouped in a number of programmatic areas of strength: agricultural engineering (precision agriculture, equipment and system development, instrumentation, ergonomics, waste management); biological engineering (biotechnology, bioprocessing, bioenergy, biosensing); food engineering (processing, packaging, human health); and natural resources engineering (water, land, air, forests). A number of retirements are possible within the next five years. These would reduce the number of faculty in three of the current areas of

strength (agricultural engineering, food engineering, and natural resources engineering). The faculty joining the department through this consolidation will strengthen the biological engineering area, which will be able to expand into bio-based materials. Whereas the incoming faculty will strengthen the biological engineering area, the department will endeavor to replace retiring faculty such that we are able to maintain excellence and core strengths in the programmatic areas listed above.

BAE currently offers a major in CoE (Biological Systems Engineering) with about 140 students. The department also offers two minors in CAES (Precision Agriculture and Geographic Information Systems) and two in CoE (Energy Science and Technology and Energy Policy). The Fiber and Polymer Science major currently offered by TXC is envisioned as the possible foundation for a new major in biological materials. Similarly, courses that are offered by TXC could also become parts of new minors developed by the consolidated department. Following consolidation, the department will undergo a thorough review of its academic plan to explore the ideas mentioned here and to develop concrete plans for its future academic offerings.

The research and educational programs of the Division of Textiles and Clothing, in their focus on fibrous materials, are unique to the U.C. system and make significant contributions to California's competitive position in fibrous materials and biobased products. In the 2009-14 Academic Plan (available on the CAES website), the TXC faculty envision the Division of Textiles and Clothing as the premier, global generator and disseminator of knowledge in the development and acceptance of novel and sustainable fibrous materials that promote benefits for human health, performance, protection, safety, and well-being. This vision is based on the idea that materials matter and change in accordance with production and consumption. This interplay relies upon a fundamental connection between the physical and social sciences, in order for material properties to be culturally, economically, environmentally, and functionally relevant to changing human needs. One particular interest is in pursuing new physical and social science approaches toward the development of biobased materials that address natural resource issues (i.e., beyond a reliance on fossil fuels); human concerns, on the part of producers and consumers alike; and lifecycle and environmental considerations (i.e., more sustainable processes and products).

The recommendations of the APC and CPC for TXC were based mainly on the size and demographics of the faculty, not on the merits of teaching nor research programs. The APC report recommended TXC, along with two other departments, for reorganization/consolidation with other departments and justified the recommendation by stating "All have medium to high demographic risk and are so small they cannot continue unless substantial resources are invested, which is unlikely given the current fiscal climate. It is recommended that faculty be incorporated into other units where their expertise can be well utilized." The Dean's action plan further stated "We do not have the resources to build this area of scholarship into a critical mass, but we feel that the reassigned faculty of this division could help seed an interdepartmental research and teaching focus in "biobased materials" with faculty in our various departments.

The TXC responses to the CPC's request for information (App F.6) and the Academic Plan update request by the CAES are included in the appendices (App F.7).

## F. Appendices

### **1. MOU (Accepted by Deans of CAES and CoE on April 6 & 7, 2011, respectively)**

March, 2011

#### **Memorandum of Understanding**

#### **Consolidation of the Department of Biological and Agricultural Engineering and the Division of Textiles and Clothing**

This Memorandum of Understanding (MOU) identifies major academic and programmatic issues, including faculty FTEs, academic programs and curricula, budget, and space and facilities, and serves as a working document to facilitate the immediate integration of the two groups of faculty and transition into one academic program. This document provides general principles guiding the consolidation and may be revisited as needed.

#### Faculty FTEs

1. Consolidation of the Division of Textiles and Clothing (TXC) in the College of Agricultural and Environmental Sciences (CAES) and the Department of Biological and Agricultural Engineering (BAE) in both the College of Engineering (CoE) (~20% I&R) and CAES (~20% I&R, 60% AES) involves the transfer of three TXC faculty FTEs (60% I&R, 40% AES) into the BAE department. These three faculty have expertise and research activities in physical sciences and engineering related to materials including fibers, polymers and biomaterials and teach courses in these areas.
2. Current BAE faculty have appointments in the CAES and the CoE, whereas current TXC faculty's appointments are in the CAES only. The goal is for all faculty in the new BAE department to have comparable appointments as the new faculty start teaching in the CoE and as new engineering FTE becomes available.

#### Academic Programs

3. The consolidated academic department retains the name of Biological and Agricultural Engineering with the same mission stated in the department's 2009-2014 Strategic Plan:

**"The department mission is to discover, develop, apply, and disseminate knowledge for the sustainable production, management, and use of biological materials, and to educate students for this work."**

4. While the primary undergraduate educational focus of the department is the Biological Systems Engineering major in the CoE, the faculty will develop a new academic plan by June 2012. The new academic plan will address academic priorities including new curricular developments and course offerings taking into account new strengths gained and potential synergism built.
5. The department will work to expand its educational offerings and student enrollment in the CAES by means of minor(s) and new and updated course offerings.

6. The CAES Executive Committee has voted, 6-2, to close admissions to the TXC major for Fall 2012 and Fall 2013 and forward the decision to the Undergraduate Council. The CAES Dean's Office has indicated that it will not fund the required teaching resources to support the major in the long term. As a result, the TXC faculty see the discontinuation of the major as inevitable. Given these circumstances, the TXC faculty will accept the discontinuation of the TXC major. During the time necessary to graduate all TXC majors, support for lecturers and TAs will be provided by CA&ES and decreased in a step-wise fashion as existing students in the major complete their requirements. When the last student graduates there will no longer be support from CA&ES for the Textiles and Clothing major. The current TXC physical science faculty will continue to deliver existing TXC textile science courses.

#### Budget

7. The current BAE and TXC are in the same administrative cluster. Contributions to the administrative cluster will be re-negotiated with the cluster partners as needed. It is expected that contributions will continue to be proportional to departmental FTE.

8. BAE and TXC faculty acknowledge that the two departments have used certain funds (Hatch, multi-state, and indirect cost returns (ICR)) differently. The departments further recognize the need to have a uniform policy by which all faculty are treated equally with respect to departmental funds and allocations to faculty. As a transition measure and depending on budgetary constraints and availability of funds, current TXC faculty may receive allocations proportional to what they receive under current TXC practices for a period of two years. Management of the BAE budget will be the responsibility of the Department Chair, who will make the requisite decisions in consultation with department faculty and in accordance with University guidelines and policies.

9. All TXC carry forward funds, including all 19900, ICR and intramural and extramural grants, on June 30, 2011 belong to the current TXC faculty. The I&R carry forward funds will be used for the undergraduate programs in TXC and FPS and the Textiles graduate group, including funds set aside for the hiring of lecturers to cover for current TXC faculty's sabbatical leaves for a period of up to four years. The OR carry forward funds are set aside to maintain and upkeep research equipment and capabilities in Everson Hall for Hatch and multi-state projects. Current TXC I&R carry forward funds for TXC major not used by June 30, 2015 will be used for curricular development for CAES courses offered by BAE.

10. Support for lecturers and TAs to deliver TXC courses to graduate all TXC majors will be provided by the CAES Dean's office and decreased in a step-wise fashion as existing students in the major complete their requirements. Undergraduate student advising and course materials will be supported with RAC formula funds, namely, RAC cells B1, B3, B4a, C1a and C2 for undergraduate student advising and course support.

#### Space and Facilities

11. The current BAE and TXC programs are located in two different buildings, Bainer and Everson Hall, respectively. There is insufficient space in Bainer Hall to accommodate the consolidated BAE and TXC faculty and their laboratories. Faculty office space in Bainer Hall will be made available to incoming TXC faculty to foster full integration and collegiality.

12. TXC faculty have their offices and teaching and research labs in Everson Hall. There are overdue safety and long standing quality and quantity space issues with respect to the chemical and analytical laboratories in Everson Hall. Costs associated with improving the space to meet safety guidelines, especially as they relate to the chemical fume hoods, will not be borne by BAE but by the CAES Dean's Office.

13. While the current BAE faculty office and laboratories will remain in Bainer, assessment is being made on the necessary upgrading and remodeling of the old FST building to meet the research and teaching needs of the consolidated department. All costs of renovation and upgrading of the old FST building, including chemical and analytical laboratories, clean room for nanomaterials and constant temperature and humidity facility, as well as moving of equipment and instruments to meet the needs of the consolidated BAE will be borne by the CAES Dean's Office.

## 2. MOU Submission Letter (submitted on April 6, 2011)

DAVIS: DEPARTMENT OF BIOLOGICAL AND AGRICULTURAL ENGINEERING

2011, April 6

TO: Dean Neal Van Alfen, College of Agricultural and Environmental Sciences  
Dean Enrique Lavernia, College of Engineering

FROM: Raul Fedrahita, Chair   
Department of Biological and Agricultural Engineering

You-Lo Hsieh, Chair   
Division of Textiles and Clothing

RE: Consolidation Memorandum of Understanding

As you know, the BAE and TNC faculty have worked diligently to develop an MOU to guide the consolidation of the two departments. The faculty were asked to vote on the consolidation as described in the MOU. Support of the consolidation was unanimous by the TNC faculty and 16 in favor with one opposed by the BAE faculty. In voting as they did, faculty and we as chairs, expect that all terms in the MOU will be honored.

The faculty see opportunities for collaboration and growth in the area of bio materials, but there were also expressions of concern with potential difficulties in certain areas. Ultimately, success will depend in large part on the support provided by your offices.

The next step for us in the consolidation process is the preparation of a formal proposal in accordance with PDM200-20.

UNIVERSITY OF CALIFORNIA

### **3. Votes and Comments on MOU (voted on March 31, 2011)**

BAE

#### Academic Senate

*support* The MOU is a reasonable compromise between the faculty in BAE and TXC. I expect the CA&ES executive committee will vote to discontinue the TXC major prior to June 30, 2011. The decision and actions required to discontinue the major should not be the responsibility of the current BAE faculty.

*support* I support the consolidation of BAE and TXC if at the end of this process we remain a department of biological and agricultural engineering, but with added faculty strength and expertise in the area of biological materials. I do not support the expansion of our mission beyond biological and agricultural engineering.

*support* I think the proposed consolidation is an excellent approach to help solve the problems faced by CA&ES. I think it will strengthen BAE and I look forward to more collaboration and increased interactions with our colleagues from TXC.

*support* Under the terms of the MOU draft, the consolidation should result in a strengthened department with an increased breadth of activities in research and teaching. There will certainly be challenges as the faculty integrate and as administrative issues come up and are resolved. Of special concern are budget and space issues and I hope that Dean Van Alfen will provide the necessary support to deal with unexpected situations.

*support* The MOU provides a win-win opportunity for the Department and the Division.

*support* The merging of TXC and BAE is acceptable. I do not care for the differences in treatment of BAE and TXC faculty in regards to Hatch, multi-state, and ICR funds. I think all faculty in the same department should be treated equally from the beginning of the merger.

*support* I vote in favor of this consolidation and welcome our colleagues into the department. There are opportunities for this consolidation to benefit the faculty and programs involved.

An unfortunate situation was created for the faculty in Textiles and Clothing by the CA&ES Dean and the CA&ES Executive Committee. Diligence is advised in the future to make sure the CA&ES Dean's Office honors the commitments it is making as part of the MOU and that no undue advantage is taken of the collegiality of the faculty in this consolidation.

<i>support</i>	They appear to have responded to most of the concerns of our faculty quite well. Providing Engineering teaching FTE and thereby engineering scale may not be straight forward and I hope it is clear to T & C faculty. The consolidation can be very helpful in establishing a bio-material related major in CAES.
<i>support</i>	The terms of the consolidation sound reasonable and appropriate.
<i>support</i>	No comment.
<i>no support</i>	No comment

Academic Federation

TXC

Academic Senate

<i>support</i>	No comment.

#### 4. Resource to Phase-out TXC Major (approved by CAES on April 6, 2011)

##### Suspend Admission to TXC Major Fall 2012, 2013

TXC/FPS Course Plan - Stop Admission F12, F13

Fall 2010	Winter 2011	Spring 2011	SSI - 2011	SSII - 2011
TXC 6	TXC 171	TXC 7	CNS 100	TXC 8
TXC 8	TXC 164*	TXC 173*	TXC 7	TXC 107
TXC 107*	TXC 174	TXC 162, 162L	TXC 173	TXC 174
WMS138		TXC 163, 163L	TXC 164	
FPS 161,161L	FPS 100/EMS 147	FPS 150	TXC6	FPS 110

Fall 2011	Winter 2012	Spring 2012	SSI - 2012	SSII - 2012
TXC 6	TXC 171^	TXC 7	CNS 100	TXC 8
TXC 8	TXC 174	<del>CNS-100</del> *TXC 173*	TXC 7	TXC 107
TXC 107*	<del>TXC-164</del> *	TXC 162, 162L	TXC 173	TXC 174
WMS138		TXC 163, 163L	TXC 164	
FPS 161,161L	FPS 100/EMS 147	FPS 150	TXC6	FPS 110

Fall 2012	Winter 2013	Spring 2013	SSI - 2013	SSII - 2013
TXC 6	TXC 171^	TXC 7	CNS 100	TXC 8
<del>TXC-8</del>	TXC 174*	TXC 173*	TXC 7	TXC 107
TXC 107*	<del>TXC-164</del> *	TXC 162, 162L	TXC 173	TXC 174
WMS 138		TXC 163, 163L	TXC 164	
FPS 161,161L	FPS 100/EMS 147	FPS 150	TXC6	FPS 110

Fall 2013	Winter 2014	Spring 2014	SSI - 2014	SSII - 2014
TXC 6	TXC 171^	TXC 7	CNS 100	TXC 8
<del>TXC-8</del>	TXC 174*	<del>CNS-100</del> *TXC 173*	TXC 7	TXC 107
TXC 107*	<del>TXC-164</del> *	TXC 162, 162L	TXC 173	TXC 174
WMS138		TXC 163, 163L	TXC 164	
FPS 161,161L	FPS 100/EMS 147	FPS 150	TXC6	FPS 110

Fall 2014	Winter 2015	Spring 2015	SSI - 2015	SSII - 2015
TXC 6	TXC 171^	TXC 7	CNS 100	TXC 8
<del>TXC-8</del>	<del>TXC-174</del> *	<del>CNS-100</del> *TXC 173*	TXC 7	TXC 107
<del>TXC-107</del> *	<del>TXC-164</del> *	TXC 162, 162L	TXC 173	TXC 174
WMS138		TXC 163, 163L	TXC 164	
FPS 161,161L	FPS 100/EMS 147	FPS 150	TXC6	FPS 110

**REVISED REQUEST  
FROM Y.L. HSIEH  
2007/3/7**

Lecturer (%course)

**2011-12**  
TXC 107 (100%)  
TXC 171 (50%)  
~~CNS-100~~  
TXC 173 (100%)

**2012-13**  
TXC 107 (100%)  
TXC 171 (50%)  
TXC 173 (100%)  
TXC 174 (100%)

**2013-14**  
TXC 107 (100%)  
TXC 171 (50%)  
~~CNS-100~~  
TXC 173 (100%)  
TXC 174 (100%)

**2014-15**  
TXC 171 (50%)  
~~CNS-100 (100%)~~  
TXC 173

**APPROVAL  
FROM DEAN's OFC  
~~2007/3/17~~  
2007/3/31**

**2011-12**  
TXC 107 (100%)  
TXC 171 (50%)  
-----  
0% - Alt Years Only

**2012-13**  
TXC 107 (100%)  
TXC 171 (50%)  
TXC 173 (100%)  
TXC 174 (100%)

**2013-14**  
TXC 107 (100%)  
TXC 171 (50%)  
-----  
0% - Alt Years Only  
TXC 174 (100%)

**2014-15**  
TXC 171 (50%)  
-----  
TXC 173 (100%)

Textile science and FPS courses

\*Courses taught by Lecturer

^0.5 Lecturer to include materials from TXC 164

Stop offering: TXC 164\* starting 2011-12, TXC 8 starting in 2012-13

3/8/11 revision

**TXC 173 has been funded only in  
alternate years by the dean's office.  
Lecturer funding will continue only in  
alternate years thru 2014-15.**

## **5. Biomaterials Curriculum Development (brief summary)**

### Initial Meeting of Chairs and Associate Deans:

December 9, 2009

Mike Delwiche, You-Lo Hsieh, Chris Van Kessel, James N. Seiber, Ronald Tjeerdema  
Diane Ullman, Jan Hopmans

### Planning Meetings:

Jan. 19, 26, Feb. 16, 26, March 5, April 26, 2010

### Contributing Faculty:

Diane Beckle/Plant Sciences  
Stephanie Dungan/Food Science and Technology  
Zhiliang (Julia) Fan/Biological and Agricultural Engineering  
You-Lo Hsieh/Textiles and Clothing  
Tina Jeoh/Biological and Agricultural Engineering  
John Labavitch/Plant Sciences  
Nitin Nitin/BAE/Food Science and Technology  
Charles Shoemaker//Food Science and Technology  
Jean Vandergheynst/Biological and Agricultural Engineering

### Invited Participants:

Kenneth Shackel  
Johan Six  
Diane Ullman

### Proposal Draft Outline:

Background and Rationale

Scope, Guiding Principles and Future Prospects

Curriculum

    The Program

    Career Alternatives

    B.S. Major Requirements

Administrative and Advising

Internship

Other Issues

Appendices

A. Description of core courses

B. Faculty

C. Science course requirements among comparable programs at UC Davis

D. Comparable Programs across US

**Biomaterials****B.S. Requirements:**

	UNITS
<b>English Composition Requirement</b>	<b>4-8</b>
See College requirement, must include Communications 1	
<b>Biological Track:</b>	<b>54</b>
<b>Preparatory Subject Matter</b>	
Mathematics 16A-C	9
Physics 7A-C	12
Chemistry 2A-C	15
Biological Sciences 2A-2C	14
Statistics (Statistics 13 or Plant Sciences 120)	4
<b>Depth Subject Matter</b>	<b>38</b>
Chemistry 118A-C	12
Chemistry 107A, B	6
Engineering: Biological Systems 75	4
Fiber and Polymer Science 161	3
Fiber and Polymer Science 100	3
Fiber and Polymer Science 150	3
Engineering: Biological Systems 162	4
Plant Sciences 100A or Plant Biology 111	3
<b>Restricted Electives (listed below)</b>	<b>30</b>
<b>Unrestricted Electives</b>	<b>23</b>
<b>Physical Track:</b>	
<b>Preparatory Subject Matter</b>	<b>60</b>
Mathematics 21A-D	12
Physics 9A-C	15
Chemistry 2A-C	15
Biological Sciences 2A-2C	14
Statistics (Statistics 13 or Plant Sciences 120)	4
<b>Depth Subject Matter</b>	<b>41</b>
Chemistry 128A-C	9
Chemistry 110A-C	12
Engineering: Biological Systems 75	4
Fiber and Polymer Science 161	3
Fiber and Polymer Science 100	3
Fiber and Polymer Science 150	3
Engineering: Biological Systems 162	4
Plant Sciences 100A or Plant Biology 111	3
<b>Restricted Electives (listed below)</b>	<b>30</b>

## **6. Textiles and Clothing Responses to CPC's Request for Information (Jan. 21, 2010)**

CPC Departmental Information Requested on January 5, 2010

### ***Textiles and Clothing***

January 21, 2010

*The Division of Textiles and Clothing (TXC) is staffed with five physical and social science faculty (3.0 I&R and 2.0 AES) and one lecturer (0.5 FTE). The Division hosts several integrated academic programs, i.e., two undergraduate majors (Fiber and Polymer Science, Textiles and Clothing), one graduate program (Textiles Graduate Group), and the National Textile Center, an eight-university research consortium. Our undergraduate curriculum consists of three lower division courses (TXC 6, 7, 8), seven upper division TXC courses (TXC 162, 163, 164, 107, 171, 173, 174) and three FPS courses (FPS 100, 150, 161) and three laboratory courses (TXC 162L, 163L, FPS 161L). Laboratory is also an integral part of TXC 6 and discussion sessions are included in four courses. There are a total of 12 lower division units and 24 upper division units in TXC courses and 10 upper division units in FPS courses. All TXC and FPS courses are core courses, i.e., required for the two undergraduate majors. All TXC and FPS courses also serve the campus and fulfill one or more of the GE components. In addition to about 100 majors in our undergraduate student body, there are about 50 minors. The faculty also offers five graduate courses (TXC 230, 293, FSP 250A, 250B, 250E), typically in alternate years. On an average, each faculty teaches three courses a year, in addition to team-taught, graduate and seminar courses for a total of 12 units teaching load. The anticipated retirement of a faculty member at the end of the 2010-11 academic year represents a 20% FTE reduction.*

#### **A. Teaching:**

- *The most immediate and critical teaching issue of concern is the FTE attrition associated with a retirement in the social science area starting in Fall 2011, specifically in textile marketing and international trade, core for our Economics and Marketing option within the TXC major. The loss of this expertise will be quite problematic for the major, as well as the College and campus, especially given the recent elimination of ARE 113. Other courses that purport to include at least some material on international trade are being examined as alternatives to fill the gap in our curriculum. One example is ECN 115A (Economic Development).*
- *Another major teaching issue of concern is the continuing reduced TA support which impacts our ability to maintain the size of large enrollment courses and laboratory and discussion sessions. Our largest enrollment course has about 200 students and six other courses have enrollments of 80 to 120.*
- *Our highest priorities in undergraduate education are our two majors, i.e., TXC and FPS. There are over 100 students in these majors and approximately 50 minors. We are exploring options with faculty across the campus to revise these programs to become inter-departmental and inter-college in scope and delivery.*

- *Recent and proposed changes in our undergraduate curriculum include the ongoing development of a inter-departmental biomaterials science curriculum using the FPS major as a platform. We are also pursuing ways of streamlining our TXC curriculum and collaborating in curricular development with other departments and colleges.*
- *Potential inter-departmental and inter-college synergies can be built between TXC and several other programs on campus. The FPS major is currently under discussion to become the biomaterials science major in collaboration with BAE and FST. We envision that the TXC major can connect and coordinate curricula with the Design, Women and Gender Studies, and Asian American Studies undergraduate programs in Humanities, Arts, and Cultural Studies (HArCS) in L&S. Although these connections and collaborations can add new dimensions to the existing curriculum, the critical marketing or international trade components will still be lost unless supplemented with future faculty or lecturer FTE.*
- *We are making some revisions to the Textiles Graduate Group to include a core interdisciplinary (physical and social science integrative course in concepts and methods) course, three interdisciplinary research seminars, and disciplinary coursework in Textiles or other graduate programs. The latter will be affected by the previous stated retirement, which will cause us to lose the ability to teach the graduate level class on textile and apparel marketing concepts and methods. Depending on students' interests and backgrounds, they can take advantage of other classes such as SOC 201 (Social Research), SOC 206 (Quantitative Analysis in Sociology), MGT 248 (Marketing Strategies), MGT 249 (Marketing Research), VEN 200 (Introduction to Scientific Methods), and PSC 207 (Survey and Questionnaire Research Methods). Members in the graduate group from other departments who can direct students with an interest in consumer psychology and decision making include Joel Johnson and Hildegard Heymann.*

## **B. Research:**

*Anticipated additional FTE reduction will impact social science research as well as interdisciplinary research programs where social science plays a major role. For example, we are currently completing a multi-year, interdisciplinary research grant from NSF's Material Uses in Science and Engineering (MUSES) program in the area of medical textiles to develop and extend better materials and approaches that are not only health-protective, but also economically, environmentally, and politically sustainable. We are also leading a cross college and school interdisciplinary collaboration in an Integrated Graduate Education and Research Training (IGERT) preproposal on "green textiles for human and environmental health".*

- *highest priority (a) disciplinary research areas:  
Fibrous and biobased materials; consumer behavior or consumer cultural studies (including a transnational trade and marketing perspective)*
- *highest priority (b) interdisciplinary research areas:  
Sustainable materials for human health and safety and environmental protection*

- *highest priority for future FTE hires for both (a) disciplinary and (b) interdisciplinary areas*  
*Biologically derived fibers, chemicals (dyes, finishes, coatings) and materials;*  
*Consumer cultural studies (including a transnational trade and marketing perspective)*
- *Inter-departmental FTE that meets the needs and strengthens two or more departments*  
*TXC/FST: natural products; fiber/food macromolecules; packaging*  
*TXC/BAE/FST: biobased materials including biorefining*  
*TXC/ETX: green chemistry; impact of textile finishes and chemicals on human health and environment; nanomaterials; industrial effluent*  
*TXC/FST/VEN: sensory science; processing and utilization of byproducts*  
*TXC/FST/VEN/ARE/HCD: consumer science (behavior, marketing, trade, culture)*  
*TXC/Public Health: human protection, occupational safety*  
*TXC/Plant and Animal Sciences: biomimetics, plant/animal cells and byproducts*  
*TXC/ Chemical Engineering and Material Science/Chemistry: advanced materials for solar and electronic applications; flexible high temperature inorganic fibers; soft materials (biological, fibrous); nanotechnology (nanofibers, nanowiskers, nanoparticles, nanoassemblies); forensic science*  
*TXC/HARCs: fashion/cultural studies; functional product design*
- *New research centers on biomaterials and bioproducts, consumer culture and sensory science that would enable interdisciplinary research across departments within the College. Some aspects of “identities” (organic materials science, consumer behavior) will not only be retained, but new areas will emerge and flourish in a more expansive way.*

### **C. Outreach:**

- *TXC does not have any Cooperative Extension (CE) FTE. New CE FTE in the area of bioproducts and biomaterials is critically needed due to the vast quantity and diverse range of biomass, feedstock and bioresources as well as the value added nature and the importance of consumer behavior in the perception, acceptance, consumption and life cycle aspects of the new and alternative products.*
- *Both sustainable materials and consumer behavior areas find beneficial collaboration and alignment with the Agricultural Sustainability Institute, Institute of Bioenergy, International Programs, California Institute of Food and Agricultural Research, Research Information Center, DANR’s Research Extension Center.*

### **D. Strategies:**

- *TXC has been actively consulting and directly collaborating with other departments within the College in academic (BAE, FST, ETX) as well as administrative (ETX, WFCB) collaborations.*

- *A simple and universally recognized organizational model that provides disciplinary identity (I&R) as well as programmatic vision (AES) would well serve the College's long-term interests in terms of scholarship and service to society:*
  - *Human Sciences/Ecology*
  - *Agriculture/Life Sciences*
  - *Environment/Ecosystem*

## **7. Textiles and Clothing Academic Plan Update (submitted to CAES on Feb. 14, 2011)**

February 14, 2011

This update reflects the decision of the College of Agricultural and Environmental Sciences not to invest in this unique multi-disciplinary area of scholarship. Specifically, the recognized physical science and engineering strength of the program is expected to find synergism with compatible academic programs whereas the social science aspect will be lost due to pending retirement and realignment to another college.

### 1. Research

Research areas to invest in fibers, polymers and biomaterials science and engineering:

- a. Materials chemistry (synthesis, reaction), biophysics (sensory, mechanics) and engineering (conversion, processing) of soft matter, including biopolymers, bioproducts, fibers, biomaterials and nanomaterials
- b. Human-material-environment interactions including safety, protection and health of humans and the environment
- c. Sustainable production and consumption including system and life cycle issues

Research areas to be deemphasized due to FTE loss:

Behavior science research pertaining to textiles and clothing, including a) industry, marketing and trade (from pending retirement); b) fashion and consumer culture (from FTE realignment to HArCs in L&S).

### 2. Curricula

Based on the 6-2 vote by the CAES Executive Committee to suspend admission to the Textiles and Clothing (TXC) major for Fall 2012 and Fall 2013, a course plan for 2011-2015 has been proposed (detailed in email dated January 25, 2011). This plan includes course consolidation (TXC 164 into TXC 171) and alternating offering of Consumer Science 100 (with TXC 173) to serve broad interest of CAES and student across campus. The physical science TXC courses and Fiber and Polymer Science (FPS) courses will be integrated into the Biomaterials curriculum upon the alignment of the physical science and engineering faculty.