

## MEMORANDUM

**To:** University Council  
**From:** Janusz Koziński, Dean  
**Date:** June 7, 2010  
**Re:** College of Engineering Department Restructuring

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On behalf of the College of Engineering, I submit the request to the University Council to approve the *merger of the departments of Chemical Engineering and Agricultural & Bioresource Engineering into a renamed Department of Chemical & Biological Engineering effective July 1, 2010.*

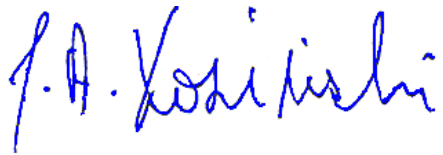
This request is based on a comprehensive analysis of engineering programs, plans, and our vision for the future. We considered the academic benefits, increased research intensity, improvements in the administrative structure and efficiency, and alignment with the strategic plans of the college and the university.

We are a proud College with strong foundations based on our history, traditions, and character. The past made us who we are. We now want to be responsible for our future. By merging two relatively small departments, we want to establish four equally strong academic pillars supporting our accredited programs.

We will continue delivering all current engineering programs, maintain our contributions to the College of Agriculture & Bioresources, and stimulate interdisciplinary collaborations thus creating new partnerships focused on targeted Tri-Council and industrial research funding.

The College is moving ahead guided by a strong spirit of collegiality. We have conducted an unprecedented level of consultations across the College, on campus and beyond. We obtained the mandate for this request from the Engineering Faculty Assembly through an open and a democratic vote. We gave all faculty an equal opportunity to express their voice. People from all departments, including those directly affected by the merger, presented a variety of opinions as they should, for department mergers are complex tasks and decisions are neither unanimous nor easy.

People are not known by their abilities, they are known by their choices. The College of Engineering has chosen wisely. We now ask the University Council to support our choice.

A handwritten signature in blue ink, reading "J.A. Koziński". The signature is written in a cursive style with a prominent initial "J.A." and a long, sweeping tail for the name "Koziński".

Sincerely,

Dr. J.A. Koziński  
Dean, College of Engineering

## College of Engineering Department Restructuring

### Request:

*The College of Engineering requests that Council:*

- *approve the merger of the departments of Chemical Engineering & Agricultural and Bioresource Engineering into a renamed Department of Chemical & Biological Engineering effective July 1, 2010; and,*
  - *amend Section IV of the Council Regulations to reflect this change to the College of Engineering's departments.*
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### Proposal

Based on the analysis of the internal and external environment, Engineering is proposing to restructure the College to create four strong departmental pillars, each supporting the academic mission of the College. The new structure would better support existing programs and administrative obligations so that the College operates more effectively for faculty, staff and students.

The College currently has eight undergraduate programs primarily delivered by five departments, as shown in the following table:

#### Current Structure

Department	Program
Chemical Engineering	Chemical Engineering Environmental Engineering
Agricultural & Bioresource Engineering	Agricultural & Bioresource Engineering Environmental Engineering
Civil & Geological Engineering	Civil Engineering Geological Engineering Environmental Engineering
Mechanical Engineering	Mechanical Engineering
Electrical & Computer Engineering	Electrical Engineering Computer Engineering

Note: In addition, Engineering Physics is offered by the Department of Engineering & Engineering Physics in the College of Arts & Science. No changes are proposed to that program/department.

Implementing the plan requires a number of steps. The most significant structural step is merging the departments of Agricultural & Bioresource Engineering and Chemical Engineering into a new ***Department of Chemical & Biological Engineering***.

At the conclusion of the restructuring, the College structure is envisioned as follows:

### Proposed Structure

Department	Program
Chemical & Biological Engineering	Chemical Engineering Agricultural & Bioresource Engineering* Environmental Engineering*
Civil & Geological Engineering	Civil Engineering Geological Engineering Environmental Engineering*
Mechanical Engineering	Mechanical Engineering
Electrical & Computer Engineering	Computer Engineering Electrical Engineering

\* These programs will continue to be supported by faculty in both the departments of Chemical & Biological Engineering and Civil & Geological Engineering. A process is underway to consider options for placing the Environmental Engineering program in a single department, most likely CGE.

### Rationale

These structural changes will support more efficient management of the College's programs, activities and expenditures, aiming to work smarter and realize efficiencies while maintaining the high quality of the academic curriculum. The departments have compatible and complementary profiles and therefore a blending of the faculty is logical and should lead to synergies as new research teams are created.

Combining these two departments will allow for a more strategic sharing of program and research support in the College. Although the two departments have similar numbers of faculty and staff, the undergraduate programs and the research outputs are quite different. For example, the undergraduate student to faculty ratio in 2009-10 was 6.1 in ABE and 15.8 in CHE. The average NSERC funding per faculty in 2008-09 was \$26,359 in ABE and \$131,666 in CHE. The new structure will create the basis for development and growth that would not be available in the present department configuration.

All undergraduate and graduate programs will be retained at this time. In the future, it is envisioned that the departments will consider program changes to adapt to changing student and research needs as warranted, mindful of accreditation processes and timelines. Faculty – not College administration - are expected to lead this work in the coming months and years.

The newly created Department of Chemical & Biological Engineering will be better positioned to compete and flourish in the College and University. The Department will be larger, have greater synergies and be administratively more efficient, ultimately improving outcomes for students, faculty and the College as a whole.

We envision even closer alliance of the new department with relevant academic and research programs in the College of Agriculture & Bioresources, the College of Arts & Science (Chemistry, Biology), and the School of Environment & Sustainability. Consequently, our initiative would be well aligned with both the Engineering Strategic Plan and the University's 2<sup>nd</sup> Integrated Plan. The proposed merger should stimulate interdisciplinary collaborations and contribute to the creation of new partnerships focused on targeted Tri-Council and industrial research funding.

### **Impact of the Changes**

The primary types of impacts are as follows.

#### ***Impact on Students***

The immediate impact on students will be minimal as no program changes are proposed. However, over the coming years, the newly formed department will better support students and their activities by aligning the College's structure with emerging trends in engineering research and education.

The following table details the 2009-10 enrolment in the three programs directly affected by the changes.

Department	Undergraduate Students	Graduate Students	Total Students
Ag & Bioresource	72	30	102
Chemical	206	35	241
Environmental	49	8	57
<b>Total</b>	<b>327</b>	<b>73</b>	<b>400</b>

Independent of the restructuring, ABE is considering changing its program name to *Biological Engineering* and has previously discussed this with students.

The College held an information session for ABE students on March 31, 2010. Over 20 undergraduate students attended. Student's questions focused on:

- the specifics of the changes;
- effects on programs and accreditation; and
- impact of a potential program name change in the future on students' career.

When the departments are merged, the administration of the graduate programs will be placed in the new Chemical & Biological Engineering department. The transition is expected to be relatively seamless for students, who will continue to be registered with the College of Graduate Studies & Research. If a faculty member requests a transfer to a department not directly involved in the merger, the College will work with the College of Graduate Studies & Research to ensure there is no impact on the faculty member's graduate students.

***Impact on Faculty and Staff***

The following number of people (not full time equivalents) were initially in the departments being merged.

Department	Faculty Members	Staff (ASPA and CUPE) Members	Total
Ag & Bioresource	13	5	18
Chemical	12	8	20
<b>Total</b>	<b>25</b>	<b>13</b>	<b>37</b>

Recently, the College has reduced our staff complement by two positions in the Department of Agricultural & Bioresource Engineering. In addition, two part-time faculty in Agricultural & Bioresource Engineering are parting ways with the College effective July 1, 2010. These changes are consistent with the Engineering Financial Plan approved by the College Executive and the University. The plan was related to the reduction of the College of Engineering base budget by \$337,000. This target was set by the University in response to a combination of risks to pension funds, endowment funds and investment income, caused by the economic downturn and it was a part of the institution's permanent reduction to its operating budget of three per cent (\$10 million) over the 2009-10 and 2010-11 fiscal years. To meet our targets, the College of Engineering considered its strategic priorities, aligned with the University's 2<sup>nd</sup> Integrated Plan, as guideposts for targeted cuts (as opposed to allocating the cuts evenly across the College).

Although most faculty from ABE are expected to move to the newly merged department, three faculty have expressed an interest in transferring to the Department of Civil & Geological Engineering.

As no changes to program content are proposed, in the short-term, faculty are expected to continue to contribute to the programs as they have in recent years. For example, any faculty who are transferred into Civil & Geological Engineering will continue to teach courses in the ABE program, and faculty transferred into Chemical & Biological Engineering will continue to teach Environmental Engineering courses. Department heads and the Dean's Office will work together to ensure the assignment of duties adequately supports all existing programs.

Faculty and staff have been extensively engaged, including:

- Consultation at an ABE department meeting in Fall 2008;
- Clarifications offered to the College by the Dean in the form of open memos sent on May 25, 2009 and September 16, 2009;
- Presentation at Faculty Assembly on June 19, 2009;
- Specific considerations and discussions at College Executive Committee numerous times during 2009-10;
- Consultation with Agricultural & Bioresources Engineering and Chemical Engineering departments in September 2009;
- Open discussion and explanations during two town hall meetings (September 21, 2009 and October 8, 2009) involving the entire College;
- Creating a blog to provide information to faculty and staff ([www.engr.usask.ca/aboutus/financialblog.php](http://www.engr.usask.ca/aboutus/financialblog.php)); posted items include:
  - an overview of the nature of restructuring (March 9, 2010)
  - a “what we heard” memo from Associate Dean Bergstrom (March 17, 2010)
  - a more comprehensive outline of the restructuring (March 18, 2010)
  - an update from the Dean (April 23, 2010) focused on informing faculty of recent department meetings and the general themes of those discussions;
- Consultations with each department:
  - ABE department meeting (March 9, 2010)
  - CHE department meetings (February 24 and March 17, 2010)
  - Civil & Geological Engineering department (March 30, 2010)
  - Mechanical Engineering (April 19, 2010)
  - Electrical & Computer Engineering (April 22, 2010)
- Departments of ABE and CHE met to discuss the merger (March 23, 2010);
- Received Department of Chemical Engineering support for the name change (positive vote March 24, 2010);
- Consultation with ABE and CHE departments on May 11, 2010 lead by the Dean and Associate Dean – Faculty Relations; and
- Faculty Assembly vote of support on May 13, 2010, based on a comprehensive analysis, discussion, and supported by additional background information and a ‘questions and answers’ document.

### ***Programs Affected***

No program changes are proposed as part of this administrative restructuring.

However, administrative structure cannot be entirely divorced from program delivery. The College offers three programs directly affected by the restructuring: Chemical Engineering, Environmental Engineering and Agricultural & Bioresource Engineering.

*Agricultural & Bioresource Engineering*, often referred to as Biosystems Engineering, integrates engineering science and design with applied biological sciences to solve problems involving

plants, animals, and the natural environment. It deals with patterns of relationships among organisms and their environments, and engineering design to develop processes, machines, and systems that influence, control, or utilize biological materials and organisms for the benefit of society. Graduates are employed in the agricultural and food industries, as well as in other resource industries such as forestry and mining. The program has three themes:

- Agricultural Systems Engineering,
- Bioprocess Engineering, and
- Natural Resources Engineering

This program is currently offered by the Department of Agricultural & Bioresource Engineering and will be offered by the newly merged department. If faculty from the existing ABE department choose to transfer to Civil & Geological Engineering, these faculty members will continue to support the program.

This configuration is not without precedent in the College. The Environmental Engineering program was successfully created and is currently delivered by faculty from three departments. Furthermore, the Geological Engineering program – and the faculty supporting the program – were transferred into the then-department of Civil Engineering from the College of Arts & Science, creating a single department with two distinct but related undergraduate programs.

ABE program enrolment has been low for many years, as shown in the following table.

<b>Program Year</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>
Year Two	34	27	34	32
Year Three	21	26	30	17
Year Four	21	24	18	23
<b>Total</b>	<b>76</b>	<b>77</b>	<b>82</b>	<b>72</b>

Delivering this program on an ongoing basis is very resource intensive as evidenced by the low student:faculty ratio (6.1 in the most recent year). This trend is continuing: only seven first-year engineering students have identified ABE as their first choice engineering discipline for the 2010/11 course year.

The Department has been working to correct its low enrolment and is in the process of considering changing the program to Biological Engineering. The new department is expected to continue this work to examine the program and assess whether the mandate and scope of the program is appropriate given the goals and vision of the department, college and university. The new department configuration is expected to offer different opportunities to grow the program than have been available in the past.

*Environmental Engineering* is a multidisciplinary blend of skills and strategies from agriculture and bioresource, chemical, civil and geological engineering. Environmental engineers find solutions to the environmental challenges associated with resource development, waste

management, urbanization, industry and many other aspects of our modern technological society.

Currently the advantages of housing this program in the Department of Civil & Geological Engineering are being reviewed. Faculty currently located in ABE who are closely associated with the program may consider moving to Civil & Geological Engineering as part of the restructuring. Faculty in other departments (namely the newly merged department) will continue to support this program.

*Chemical Engineering* is the understanding, designing, and analyzing of chemical, biochemical and electrochemical systems, environmental and waste issues, fluid flow and fluid properties, heat transfer, power and energy, process control, and separation and purification of materials. Chemical engineers manipulate chemicals on a large scale by designing and operating complex processes that convert raw materials into more useful products.

This program will be offered by the newly renamed Department of Chemical & Biological Engineering. No changes are anticipated directly as a result of the restructuring, however, the departments are exploring the possibility of offering a common second year in the ABE and CHE undergraduate programs. Furthermore, the new department configuration will enable Chemical Engineering to consider a greater focus on biological systems in its undergraduate program, which is an appropriate strategic direction for this university.

Changes to the administrative structure will require collaboration in preparing the assignment of duties. Teaching assignments have been developed for 2010-11 and department heads will need to work together to ensure program needs continue to be met under the new configuration.

Maintaining program accreditation is paramount. The College has received clarification from the Engineers Canada that departmental names or structures do not affect accreditation.

Discussions about the restructuring have brought some issues with respect to these programs to the forefront. The Dean has asked groups of faculty to examine the Environmental Engineering program and report to his office by December 31, 2010, and the new department will continue its work to examine the ABE program.

### ***Impact on Alumni***

The impact on alumni is expected to be minimal. Alumni from the ABE and CHE departments may be slightly less likely to identify with a newly renamed department.

Similar adjustments were made in the past when the College created Civil & Geological Engineering and Electrical & Computer Engineering departments. It did not affect the strength and loyalty of Engineering alumni.

### ***Impact on Physical Facilities***

The College plans to move towards creating a single physical location for the new department. However, with the current financial constraints and the anticipated complexity of any significant reconfiguration of space, these changes will not occur in the immediate future. The College will more fully consider all space needs within the context of developing a plan for the new building, which is being considered for the next planning cycle.

No changes to the way research infrastructure and space is allocated in the current engineering building will occur as a result of the restructuring, nor will the restructuring affect the allocations of college resources for research to faculty members and students. Over the longer term, financial and space allocations will routinely be examined to ensure they remain fair and appropriate.

### ***Impact on Research***

Research outputs are expected to increase due to expected higher levels of collaboration among faculty members. Care will be taken to maintain the research link between the colleges of Engineering and Agriculture & Bioresources and with agricultural stakeholders. Establishing a Western Centre for Agricultural & Bioresource Engineering could communicate the ongoing focus on agricultural engineering research regardless of the department structure.

### ***External Impact***

The Department of Agricultural & Bioresource Engineering works closely with the College of Agriculture & Bioresources. Maintaining this linkage during and after the restructuring is important to the College. Engineering will continue to deliver the current complement of service courses to the College of Agriculture & Bioresources in 2010-11, and will collaborate with the College to discuss future year's teaching needs.

The changes are not expected to have a significant impact on external partners beyond a period of readjustment. The College's relationship with external partners in the agricultural field such as the Canadian Society for Bioengineering, Saskatchewan Agriculture, Agriculture and Agri-Food Canada may need to evolve slightly to fit the new structure. No changes with other external partners, such as the Association of Professional Engineers and Geoscientists of Saskatchewan (which has been consulted) are envisioned.

The College will seek external input regarding the creation of the 'Western Centre for Agricultural & Bioresource Engineering' in order to support and enhance the research portfolio in this area.

Within the University, the change will necessitate some administrative changes to rename funds, update report formats, etc, in university systems including SiRIUS, UniFi, PAWS, and AboutUS.

The Department of Human Resources and the three relevant unions (Faculty Association, ASPA and CUPE) have been and will continue to be significantly involved to ensure the collective agreements are followed.

Transition funds in the amount of \$180,000 were requested and obtained in order to support both the proposed restructuring and the approved financial plan.

### **Questions and Concerns Raised**

The College held extensive meetings with faculty to discuss the changes, culminating with a Faculty Assembly vote on May 13, 2010. Forty nine faculty voted with twenty-six in favour, three abstentions and twenty opposed.

The general theme of faculty comments at the meeting indicated broad support for the idea of merging the departments but equally broad concern that the details of the merger had not been fully disclosed and/or were not broadly understood. Some faculty requested a six month delay and proposed establishing a committee to work through the details of implementation.

Specific concerns raised at the Faculty Assembly and in other recent faculty meetings include:

#### **1. Concerns about how the budget reduction will affect accreditation**

Accreditation is a fundamentally important consideration for the College. Engineers Canada has confirmed department names and structures do not affect accreditation.

The Executive has considered how the budgetary cuts will affect accreditation and is confident it is implementing the obligatory reduction in a way that is optimal for the College and with minimal impact on the undergraduate programs. Throughout most of the discussion, specifics were not broadly shared out of respect for the individuals who are directly affected by the budget cuts.

The budget reductions related to the restructuring were implemented on June 3, 2010 and communicated to faculty and staff. The reductions included the elimination of two part-time faculty positions and two staff positions in the ABE department. The impact on accreditation of programs carried out by the new/merged department is expected to be minimal.

- The eliminated faculty positions focused almost exclusively on delivering service courses to the College of Agriculture & Bioresources. The College of Engineering has committed to continue to deliver these service courses in 2010-11 and can do so with existing resources. Future years' course delivery will be discussed with the College of Agriculture & Bioresources.

- Merging the departments will result in administrative efficiencies that facilitate effective management with 3 administrative staff positions, consistent with the structure of the other departments in the College including those delivering two undergraduate programs.
- The merged departments will share technical support in the laboratories. The College has identified synergies that allowed for the reduction of one technical position without significant impact to the programs delivered. The technical support complement of the new department will be consistent with the structure of the other departments in the College including those delivering two undergraduate programs.

## 2. Concern about how faculty will technically be transferred to the new department

The College is committed to following both the intent and specifics of the Collective Agreement and is seeking University guidance on these issues.

The Vice-Provost, Faculty Relations, has informed the College the following process will be used:

- In accordance with Article 29 of the Collective Agreement, after Council approves a merger, affected faculty will be asked to indicate in which academic unit they would like to be placed.
- When a faculty member requests a transfer, the Dean would provide a memo of support to the Provost, who ultimately approves the transfer. Letters of transfer would address assigned duties including teaching commitments to existing programs.
- Article 30 of the Collective Agreement does not come into effect in this restructuring as no academic programs are eliminated.

Subsequent transfers to another department in the College will be considered as requested. There may be value in a staged approach where the departments are first merged, then other transfers are considered.

## 3. Questions about how the undergraduate programs will be delivered in the new department

The 2010-11 Assignment of Duties is being completed by the existing department heads; therefore, teaching will be assigned to support both the ABE and CHE program as it has been in the past.

Any ABE faculty choosing to transfer into another department, such as Civil & Geological Engineering, will continue to teach in the ABE program.

Once the new Department is approved, the Department's committee structure will need to be revised to ensure all program issues are appropriately covered.

4. Concerns about research space being reallocated

No changes to research space are contemplated as part of this restructuring. Over time, the College will continue to examine how research space is allocated to ensure it best supports the long-term goals of the College.

5. Concern the College was moving too quickly to implement the changes

An unprecedented level of consultation was exercised by the College and extensive discussions about the proposed changes have been underway since fall of 2008. Although there has not been full transparency about the personnel-related budget reduction plans due to confidentiality constraints, the College believes moving forward is the best option given the programmatic, financial and human dimensions of the changes.

6. Concerns with the lack of transparency from the Dean's Office, specifically with not knowing the financial details of the budget adjustment plan related to the merger

The Dean's office has made a significant effort to share the plan with faculty, however, the details of the budget adjustment related to personnel reduction were not shared out of respect for the people directly affected. There has been a genuine attempt to engage and involve faculty while respecting the confidentiality of personal information. Details of staff and part-time faculty reductions were announced to the College by the Dean on June 3<sup>rd</sup> during the public meeting and communicated *via* memos sent on June 3<sup>rd</sup> and June 7<sup>th</sup>.

Faculty also spoke in favour of the plan at Faculty Assembly. Some of their points include:

- College Executive is taking leadership to implement the budget reduction in a strategic way;
- the process of transition has been disruptive and emotionally draining for the faculty and staff most directly affected, and at this point there is a need to move forward;
- larger departments are better able to compete for resources including national research grants;
- there are opportunities for efficiencies including the possibility of a common second year in the ABE and CHE undergraduate programs; and,
- the faculty should place some level of trust in its Executive to implement the cuts in the best way possible, despite the inability to share the sensitive, personnel-related financial details.

## **Timeline**

The College has been working towards this change since Fall 2008. Council approval is requested so that the merged department is in place on July 1, 2010.

Subsequent steps will include:

- appointing an acting department head for July 1<sup>st</sup> and shortly thereafter commencing a full search for a department head;
- supporting department efforts to examine the programs to ensure they fit with the new department mandate ; and
- revising the College Constitution to reflect the new structure.