

Internal Memorandum

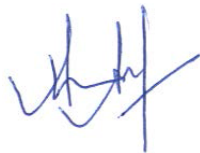
To: M. Catherine Bolton, Vice-Provost, Teaching and Learning
From: Amir Asif, Dean, Faculty of Engineering and Computer Science
Date: May 16, 2015
Re: Implementation Plan for Department of Mechanical and Industrial Engineering

Dear Dr. Bolton,

Please find enclosed the finalized Implementation Plan for the Department of Mechanical and Industrial Engineering (MIE) as part of the academic appraisal process in the Faculty of Engineering and Computer Science. This Plan was duly discussed with the MIE Department Chair, Prof. Martin Pugh.

As mentioned in the Concordia University Academic Program Appraisals Manual, 5th edition revised, the Faculty and Department will follow-up on this Plan in two years when prompted by your office.

Sincerely,



Amir Asif
Dean
Faculty of Engineering and Science

cc. Prof. Martin Pugh, Chair, Department of Mechanical and Industrial Engineering

Dean's Implementation Plan: Department of Mechanical and Industrial Engineering

Submitted May 10, 2015

| Recommendation | Prioritized timeline for completion | Responsibility (specify if possible) | Resources required? | Dean's additional comments |
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| FACULTY HIRING | | | | |
| DAC-1: Align university hiring strategies with needs of the department to address the student/professor ratio, the new programs, and the critical mass required for current programs and accreditation. Section 9: Align university hiring policies with the Department's needs and do not restrict new hirings to strategic hirings only. | Ongoing | MIE and ENCS in consultation with the Provost Office | New faculty positions for MIE | ENCS strongly supports further hiring in MIE to achieve a student to faculty ratio of between 25:1 to 30:1, aligning it with the stipulation of CEAB. Due to a consistent increase in ENCS student enrolment, this is an important issue for several departments within ENCS. In the upcoming hiring plan, MIE will be given priority along with other departments with comparable student to faculty ratios to improve its student to faculty ratio over the next few years. MIE is also advised to complete a strategic planning exercise to identify hiring needs based on both teaching and research needs of the department. |
| DAC-73, 82: Hire the two full-time faculty members in Industrial Engineering recommended for implementation of the PhD in Industrial Engineering. | Ongoing | MIE and ENCS in consultation with the Provost Office | 2 MIE faculty positions in Industrial Engineering | ENCS will work with MIE to get approval from the Provost Office to fill the two positions recommended by Le Bureau de coopération interuniversitaire (BCI). |
| FACULTY ISSUES | | | | |
| DAC-11: Reinstate two, and one, course remissions for new Assistant Professors in their first two years. | Completed | ENCS | | For new hires, ENCS Dean has implemented the policy of two course releases in the first year and one in the second year of employment. |
| DAC-4: Provide incentive for full-time faculty to be Professional Engineers in Canada (required for UG accreditation) | Ongoing | ENCS and MIE | Law/Ethics Workshop | ENCS is already covering the Professional Engineering (PEng) membership fees for faculty holding the PEng status. In consultation with MIE, ENCS will organize workshops to help faculty members prepare for the Law & Ethics exam required for PEng status. MIE faculty members are encouraged to make use of the French courses delivered by the University (Continuing Education and the Oui Can Help! programs) offered at no expense to the faculty and their dependents, to increase membership in the OIQ, which requires a French language test. |
| DAC-3, 35, 41, 66: Implement Department grant application review program to improve chances of obtaining NSERC Discovery Grant (recommended for faculty members; PhD MECH; MAppSci MECH; MAppSci INDU) | Ongoing | ENCS and MIE | None | ENCS will help MIE coordinate the implementation of a review program for grant applications, where senior faculty on the Faculty Research Committee, who have an established track record in obtaining grants, will review junior faculty members' grant applications and provide mentoring. |

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| DAC-16: Plan for extra space requirements for new faculty and new programs. | Ongoing | ENCS and MIE in consultation with the Provost's Office | Additional space | The faculty has a transparent process for allocating space for research through the ENCS Research Space Committee on which MIE Chair sits as a member. ENCS will work with MIE to develop their space needs. Space is limited in the EV Building and the University should provide additional space for the launch of new programs and the expansion of existing ones. |
| DAC-15: Reinstate frais indirects for MIE or provide guarantee for equipment installation and maintenance and safety costs. | Completed | ENCS and MIE | None | ENCS will continue the ongoing policy of sharing frais indirects with MIE. The department should continue to work with the Dean's office to share the cost of installation for major research equipment. |
| DAC-13: Review the university's IP policy so that it encourages, rather than discourages, industrial sponsors to bring their more innovative ideas to their work with students and faculty members at Concordia. | Ongoing | ENCS | None | The University has adopted a revised IP policy. ENCS will work with MIE to implement the revised policy within the Department. |
| DAC-2: Reduce average course load of faculty members to the level of other engineering departments in Canada and other Faculties in the university. | Completed | ENCS | None | The average course load of faculty in ENCS is around 3 courses, commensurate with other universities. The ENCS teaching remission policy recognizes the supervision of graduate students as "teaching" and grants course releases according to the number of graduate students supervised. Course releases are also given for undertaking major administrative roles in the department. |
| DAC-10: Lower the number of students required for course remissions and give additional financial compensation to faculty members. | Ongoing | ENCS and MIE | None | A more generous teaching remission policy is difficult in the current fiscal environment. ENCS will work with MIE to explore other options. |
| PUBLICITY AND VISIBILITY | | | | |
| DAC-27, 40, 65, 77: Improve the visibility of the program. <i>(recommended for PhD MECH; MAppSci MECH and INDU; MEng INDU)</i> | Ongoing | ENCS, MIE and the University Communication Services | None | ENCS communication advisor will work with MIE to develop a communications plan to improve the visibility of the department's research achievements. More coverage will be given to MIE faculty in the ENCS biannual newsletter. |
| DAC-64, 76: Update information available on the website associated with the program to attract more potential students. | Ongoing | ENCS, MIE and the University Communication Services | None | ENCS communication advisor will work with MIE to keep the department's web site current and topical. |
| NEW PROGRAMS | | | | |
| DAC-48: Introduce graduate certificates in ME areas important to major Montreal and Quebec industries that would attract and enable local students and industrial practitioners to acquire advanced level education in a relatively short period of time. | Ongoing | MIE | Additional course sections | MIE should consider offering graduate certificates, which could be planned to lead to a course-masters degree. |
| DAC-78: Introduce graduate certificates in IE areas important to major Montreal and Quebec industries to attract local students and industrial practitioners (e.g., certificates in Lean Manufacturing, Operations Management, Logistics, and Healthcare Systems). | Ongoing | MIE | Additional course sections | MIE should consider offering graduate certificates, which could be planned to lead to a course-masters degree. |
| ADMISSIONS AND RECRUITMENT | | | | |

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| DAC-6: Implement a strict quota system for (undergraduate) admission. <i>Section 9: until sufficient resources can be allocated to cope with the increased enrollment.</i> | Ongoing | ENCS and MIE in consultation with the Provost's Office | More resources such as TA hours, infrastructure, consumables for labs | In consultation with MIE, ENCS has raised the admission cutoff to balance enrolment with available resources. This policy ensures controlled growth of the programs that can be sustained by gradual increases in the number of faculty members and in the capacity of laboratories. ENCS and MIE will revisit the cutoffs in subsequent years. |
| DAC report page 72-Maximize the recruitment of local students - use governmental agencies to increase internship positions such as MITACS, CRIAQ, and NSERC (not included in Section 4) | Ongoing | ENCS and MIE | Graduate scholarship stipends and scholarships | MIE is encouraged to recruit more of the department's undergraduates into graduate programs, using collaboration with local industry through CRIAQ, MITACS and other funding sources to generate opportunities. |
| DAC-46: Improve the capture rate by actively pursuing good students through frequent follow-ups. | Ongoing | ENCS and MIE | None | MIE is encouraged to develop a process to identify excellent applicants to the graduate programs and ensuring that these applicants find a supervisor and get an admission letter very quickly. |
| DAC-22: Provide additional incentives for NSERC and FQRNT awardees to join our department to increase the capture rate. | Ongoing | ENCS and MIE | Some additional funding may be needed | The GSSP policy is under review. Offering the GSSP to scholarship holders may make Concordia more attractive to them. |
| DAC-25, 38, 61: Increase the number of entrance scholarships allocated to the department. <i>(recommended for PhD MECH; MAppSci MECH and INDU)</i> | Ongoing | SGS and MIE | None | Allocation of entrance scholarships is done by the School of Graduate Studies. MIE and the Associate Dean for Research and Graduate Studies are encouraged to submit a plan for increased scholarships to SGS that focuses on expediting the allocation of graduate scholarships. |
| DAC-47: Provide Teaching Assistantships and other scholarships for high quality applicants, to improve the capture rate. | Ongoing | SGS, ENCS, and MIE | None | The allocation of teaching assistantships is currently under review in conjunction with the GSSP policy. |
| DAC-29, 36, 62: Use Teaching Assistantships to attract new applicants. <i>(recommended for PhD MECH; MAppSci MECH and INDU)</i> | Ongoing | SGS, ENCS, and MIE | Some additional funding may be needed | The allocation of teaching assistantships is currently under review in conjunction with the GSSP policy. |
| DAC-63: Update admission assessment form to show different research topics. | Ongoing | SGS and MIE | None | |
| DAC-75: Re-evaluate the qualifying program requirements. | Ongoing | MIE | None | MIE is encouraged to develop qualifying programs for its students. |
| DAC-57: Offer more courses in the summer to further attract students. | Ongoing | SGS and MIE | additional course sections | MIE is encouraged to offer additional courses in the summer. |
| GRADUATE STUDENT FUNDING | | | | |
| DAC-9: Improve planning of GSSP funding both at the Faculty and University levels to successfully run this program and sustain the graduate student population at the current level. | Ongoing | ENCS | Some additional funding may be needed | The GSSP program is currently under review. ENCS is examining the broad issue of graduate student support, including the GSSP, support from individual grants, and TA assignments, as part of a support package lasting over the whole period of the degree program. |
| DAC-8: Make GSSP funding more flexible to encourage hiring more students. | Ongoing | ENCS | Some additional funding may be needed | As previously mentioned, the GSSP program is currently under review. |
| DAC-24, 37, 60: Relax GSSP rules to allow using funds allocated for students with no financial need to support students with financial need. <i>(recommended for PhD MECH; MAppSci MECH and INDU)</i> | Ongoing | ENCS | Some additional funding may be needed | As previously mentioned, the GSSP program is currently under review and the suggestion to relax GSSP allocation rule will be considered . |

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| DAC-7: Raise the minimum COPTA score required to be hired as a TA from 4 to 5. As the number of applicants for TA positions is high, this should lead to more of our TAs having better communication skills. | Not to be implemented | | | This recommendation is in contradiction to the desire to attract more graduate students by promising TA positions as part of a support package. |
| DAC-23, 36, 59: Spread tuition fees over a longer period of time. <i>(recommended for PhD MECH; MAppSci MECH and INDU)</i> | Not to be implemented | University | | The University sets the number of years over which fees must be paid and the suggestion will be forwarded to the University. |
| COURSES AND TEACHING | | | | |
| DAC-19, 21: Integrate the new system for Graduate Attribute Assessment into the culture of the Department and improve the mindset of the faculty members through workshops and discussion groups as well as in the use of the faculty online AAS. <i>(recommended for both BEng programs)</i> | Ongoing | ENCS and MIE | None | A "curriculum director" has been appointed in each department to work with the Dean's Office in developing and implementing a comprehensive approach to assessing graduate attributes across the faculty. The Attribute Assessment System software is under revision. |
| DAC-14: Set up web-based registration for graduate students in all programs, not just course-based programs. | Ongoing | ENCS and Registrar Office | None | The new SIS implements web-based registration for course-masters graduate students. As far as we know, the system does not support the need to obtain the supervisor's approval. The recommendation will, however, be forwarded to the Registrar Office. |
| DAC-5: Offer additional sections of the same course to reduce class sizes and improve quality of classrooms, or allow Departments more flexibility in assigning increased workload through large class sizes with multiple workshop-style tutorials. | Ongoing | MIE | Additional course sections | MIE should continue its policy of a balanced course offering. ENCS will continue its policy of supporting courses with large lecture sizes with workshop tutorials in groups of 25 to provide personal contact between individual students and teaching assistants. It is suggested that MIE considers on-line courses in a blended format for large-section-sized classes. |
| DAC-34, 45: Increase the diversity and frequency of advanced specialization courses that cover some areas relevant to various research topics. <i>(recommended for PhD MECH and MAppSci MECH)</i> | Completed | ENCS and MIE | None | ENCS will work with MIE to plan and coordinate the offering of advanced level courses such that sufficient enrolment is achieved to allow the courses to run. |
| DAC-72: Introduce new specialization courses to cover some areas relevant to various research topics. | Ongoing | ENCS and MIE | None | Again, ENCS will work with MIE to offer courses in specialized research area. Slot courses can be planned on specific research topics and coordinated so that each course has sufficient enrolment to run. |
| DAC-87: Section 9: Allow graduate courses with enrollments of 5 or more students to run, rather than cancelling courses with less than 10 students. | Ongoing | ENCS and MIE | None | ENCS allows a limited number of low-enrolment courses to be run in each department to support the need for PhD level courses on specialized topics. Careful planning is required at the department level. |
| DAC-50: Make two-year course offerings available at the time of registration in order to allow students to better plan their course of study. | Ongoing | MIE | None | More structure for the course-masters programs should be considered, including recommended course sequences to ensure timely graduation, with a guarantee that the needed courses will be offered. This can include summer courses so that students study in all three semesters. |
| DAC-51: Advise students to register for the core courses in their specialization whenever available to reduce the number of students staying beyond 2 years for want of required courses. | Ongoing | ENCS and MIE | None | ENCS will work with MIE to better structure its course-masters programs to help students to graduate in a timely fashion. |
| DAC-74: Minimize the number of cross-listed courses to make the program more appealing and increase enrollment. Section 9: Reduce the number of cross-listed courses to provide the right level of material to each group of students and improve the quality of the programs | Ongoing | ENCS and MIE | None | ENCS will work with MIE to balance the number of undergraduate, cross-listed and graduate-only courses. Cross-listed courses, however, allow us to offer undergraduates a rich choice of elective courses. Graduates also benefit from a wide selection of courses, helping them to graduate in a timely fashion. Programs should be designed to include some cross-listed courses and some strictly graduate-level courses. |
| DAC-56: Offer condensed courses with all lectures given in one week to attract engineers that are working in aerospace. | Ongoing | MIE | None | MIE should consider new formats for course offerings that might be attractive to working engineers as an alternative to evening classes over a full semester. ENCS encourages MIE to do so. |

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| DAC-17: Upgrade and improve equipment in some teaching labs. | Ongoing | ENCS and MIE | Capital funding to renew lab equipment. | ENCS encourages MIE to develop a comprehensive plan for replacing aging equipment in teaching labs. Requests can be made through the Faculty to the University for capital funding. Plans for increased lab capacity should be developed to support controlled expansion in enrolment. |
| DAC-80: Strengthen the current area of specialization of Quality Engineering with additional advanced courses in time series analysis, statistical decision-making, quality assurance, and lean six sigma. | Ongoing | MIE | None | ENCS encourages MIE to strive to keep course offerings fresh and aligned with topics of current interest. |
| DAC-81: Add a new core course, in particular, Advanced Quality Control, to cover the fundamental topics of IE. | Ongoing | MIE | None | Suggestions 80, 81, 83 and 84 are within the jurisdiction of the Department and ENCS encourages MIE to explore these suggestions. |
| DAC-84: Increase the number of credits required to take from specialization areas. In this way, graduating students will have a working knowledge of several IE disciplines. | Ongoing | MIE | None | |
| DAC-83: Have a list of available elective courses to narrow choices outside IE topics to ensure students are not taking easy courses not closely related to IE. | Ongoing | MIE | None | Review the requirements of the program to ensure that students take relevant elective courses. |
| DAC-79: Introduce new areas of specialization in Logistics and Transportation, Healthcare Engineering, and Financial Engineering to increase the relevant practical areas of IE. | Ongoing | MIE | None | MIE should consider new areas of specialization. |
| GRADUATION | | | | |
| DAC-18, 20, 52: Conduct more analysis to identify the root causes of the somewhat low graduation percentage <i>("within 4 years": BEng MECH and PhD MECH; "within 2 years": MEng MECH)</i> | Ongoing | ENCS and MIE | Data gathering by Student Academic Services. | ENCS will work with MIE to identify courses that have poor success rates as an underlying cause of delayed graduation and low graduation rates. These courses can be reviewed to see how students' learning can be improved. |
| DAC-29, 42, 69: Encourage students to graduate within the time limit by providing graduation bonuses. <i>(recommended for PhD MECH: 4 years; MAppSci MECH and INDU: 2 years)</i> | Implementable | | | Investing in graduation bonuses diverts money from a comprehensive graduate-student support package. A better means of encouraging timely graduation is needed. |
| DAC-30, 43, 70: Encourage professors to graduate students within the time limit by recognition in the form of some financial award/course remission, etc. <i>(recommended for PhD MECH: 4 years; MAppSci MECH and INDU: 2 years)</i> | To be considered | SGS, ENCS and MIE | Additional incentives to faculty members | GSSP support is provided for a limited time to encourage students to graduate on time before financial support is exhausted. ENCS provides teaching remissions for professors so that they have sufficient time to spend with each student while he is in progress in the program. For additional incentives, MIE is encouraged to consult SGS. |
| DAC-31, 44, 71: Provide placement services that act as motivation for students to finish. <i>(recommended for PhD MECH; MAppSci MECH and INDU)"</i> | Ongoing | ENCS, SGS and MIE | None | ENCS will work with MIE to publicize graduating students to their contacts in industry, and conversely publicize job opportunities for graduating students. There are job fairs to bring together graduating students and employers, which should be advertised to graduating students. |
| DAC-28: Be more rigorous in ensuring that students follow the PhD program milestones/ timelines. | Ongoing | MIE | None | The Departments are responsible for monitoring progress of graduate students. Stricter monitoring of milestones for graduate students should be implemented by MIE with incentives for students to remain on schedule. |
| DAC-33: Encourage supervisors to identify innovative projects with a potential for commercialization and leading to a start-up company for PhD students. | Ongoing | ENCS and MIE | None | MIE should encourage professors to work with District 3 when a project has the possibility of spinning off a start-up company. Students can develop their ideas and learn about the possibilities for commercialization. ENCS will help develop collaboration between MIE and District-3. |
| SEMINARS and GradProSkills | | | | |

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| DAC-12, 68, 86: Increase Department budget to 2012-2013 level at least (recommended for Research; MAppSci INDU and MAppSci MECH: to re-invigorate the research seminar program. | To be considered | ENCS and MIE | Additional funding | Consideration will be given to increasing the budget for research seminars. |
| DAC-49, 85: Organize regularly scheduled seminars by inviting experts from industry. The importance of attending such seminars in order to broaden the horizons of graduate students is important. This will also help in honing their presentation and communication skills. Section 9: Provide the required budget to increase the number of graduate research seminars in the department to broaden the horizons of graduate students. | Ongoing | ENCS and MIE | Additional funding | Some steps have been taken in increase the frequency of research seminars within ENCS and constituent Departments. ENCS has initiated a Distinguished Research Seminar Series through which MIE can invite top researchers to give research seminars. ENCS also encourages MIE faculty to give research seminars within the Faculty, which will increase awareness of the kind of research happening within ENCS. ENCS also encourages MIE PhD students to participate in research seminars by presenting their work. |
| DAC-67: Organize regularly scheduled seminars by inviting experts from academia and industry. This will help improve students' presentation and communication skills, and provide networking opportunities for students to find PhD scholarship opportunities, postdoctoral fellowships, and research positions in international research centres. | Ongoing | ENCS and MIE | Additional funding | Same as above |
| DAC-32: Enforce/encourage PhD students to take various GradProSkills courses to improve their writing, presentation, and other soft skills (<i>in report: Requiring a certain number of GradProSkills courses in their curriculum is currently being considered</i>). | Ongoing | MIE | None | ENCS encourages MIE to explore ways to increase the participation of MIE graduate students in the GradProSkills courses. |
| DAC-58: Advise students to enroll in GradProSkills courses to improve their interview skills in order to increase their chances of securing an internship. | Ongoing | MIE | None | |
| INTERNSHIPS | | | | |
| DAC-53: Introduce an industrial internship with a credit value to help these students gain the necessary experience and find jobs, for gainful employment is the best motivation for graduation. | Completed | MIE | None | A nine-credit internship is already offered for graduate students. The department should work with their industrial partners and with the Co-op Institute to identify job opportunities for students in this program. |
| DAC-54: Recruit undergraduate CIADI students in the M.Eng program as they are more likely to be offered internships. | Ongoing | ENCS and MIE | None | ENCS encourages MIE to work with industrial partners to identify job opportunities for student who are members of CIADI. Conversely, students should be encouraged to participate in CIADI. |
| DAC-55: Increase the number of internships available through collaboration with CIADI. | Ongoing | ENCS and MIE | None | Same as above. |