Faculty of Engineering

"To Greater Heights"
Planning Document

Excellence in Engineering Education and Research: Higher Expectations

Submitted in accordance with revised plan template of February 2006

March 2006

"What attributes will the engineer of 2020 have? He or she will aspire to have the ingenuity of Lillian Gilbreth, the problem-solving capabilities of Gordon Moore, the scientific insight of Albert Einstein, the creativity of Pablo Picasso, the determination of the Wright brothers, the leadership abilities of Bill Gates, the conscience of Eleanor Roosevelt, the vision of Martin Luther King, and the curiosity and wonder of our grandchildren."

Extract from "Educating The Engineer of 2020"

National Academy of Engineering* 2005

****The National Academies - Advisers to the Nation on Science, Engineering and Medicine {USA}.***

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	Example of an EC(UK) Course Outcome	Not provided as part of main document but submitted on Faculty of Engineering 2020 intranet website.	

The Plan

"It is being said of a certain {Dean} that although he tortures the English language, he has never yet succeeded in forcing it to reveal its meaning."

J.B. Morton: M Frayn (Ed),
The Best of Beachcomber (1963)
(with apologies)

1.Executive Summary

Following the emergence of the Faculty as a stand-alone entity in 2001 after being a single AAU within a College of Engineering and Science[1] and the decision made as a consequence of *Best of Both Worlds* to invest in Engineering; the past few years have witnessed an environment of increasing undergraduate and especially graduate enrolment, new program and program option development, the establishment of a pervading culture of research with annual research revenues of up to $6M[2], an acknowledged leadership role in the development of the University's Automotive Pinnacle, the AUTO21™ NCE and the University-ITEC Centre for Innovation as well as a not insignificant role in Environmental Pinnacle activities.

Windsor is now the 19th largest Faculty of the 43[3] in Canada and has, for example, the 5th largest Mechanical Engineering undergraduate program (Waterloo is the largest, Toronto is 7th and McGill 8th) at least in terms of student enrolment. Yet despite the investments, in terms of full-time student to full-time faculty ratio, Windsor is the 2nd worst in the Country[4] although this ratio is close to the reported Windsor average across all Faculties, and also has one of the highest graduate student to faculty ratios in North America. These changes in the Faculty both in terms of size and necessary changes in program delivery methodology have highlighted the existing paucity of space - a matter which is currently being addressed at the direction of the Board of Governors as a priority within the University's overall Campus Plan. These changes and successes have been accompanied by dramatic changes in personnel demographics with in some AAUs almost 80% of the academic faculty and 100% of the support staff being new since the start of BOBW.

Thus, along with the successes of the past 5 years, there are still many challenges some which have been generated or embellished by the BOBW successes. These priority challenges can be grouped under 4 main themes; the need for improved 1st year retention, space limitations, recruitment in general, and the nature of teaching loads within faculty members' normal work-load. When set against the aims, objectives and requirements of the latest University Strategic Plan, "*To Greater Heights*," these challenges have to be addressed within the totality of a learning and learner centred environment. A key element then of all these challenges is continuous curriculum review, reform and development. The main themes and their relationship with the key curriculum aspects are addressed in the plan.

Over the next 5 years the Faculty will have in place new foundation, undergraduate and graduate programs which address many issues such as the Sword of Damocles problem of simultaneously

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[1] Essentially the Faculty of Science.

[2] In 2005, $2M from NSERC Grants alone - source - TGH Annual report

[3] 22nd in terms of graduate enrolment.

[4] Of the 32 Institutions who reported to the Canadian Council of Professional Engineers in 2004.

achieving accessibility and entry quality assurance; the recruitment and engagement of the most academically gifted students and faculty; the instilling of the desire for and the provision of career-long learning; the offering of experiential learning for all students not just a select few; the ability to address increases in graduate student enrolment; the creation of an environment conducive to self-learning; the establishment of work-loads for faculty, staff and students appropriate for an institution that aspires to be a leader in learning programs; curricula which have unequivocal learning outcomes and finally the facilities to achieves these goals. This will require a Faculty with at least 80 regular academic positions, increases in operating budget and revenues of a least 25%, a new building and through renewal of existing and dated facilities. New revenue streams will be needed in addition to the normal financial inputs.

2. Self-Assessment/Environmental Scan

"It is not enough to understand what we ought to be, unless we know what we are; and we do not understand what we are, unless we know what we ought to be."

T.S. Eliot

"Self-reverence, self-knowledge, self-control; these three alone lead one to sovereign power."

Lord Alfred Tennyson

2.1 As the Faculty of Engineering offers only accredited programs (Canadian Engineering Accreditation Board[5], American Foundry Education Foundation[6], Engineering Institute of Canada[7] and the Ontario Council for Graduate Studies[8]) and as each organization requires regularly submitted documentation that includes self-assessments and environmental scans[9] a large body of information is available although this information takes many forms and the detailed content varies depending upon the accreditation agency. All the documents associated with these accreditations and approvals are available.

2.2 In the TGH plan submitted November 2005 a Self-Assessment/Environmental Scan was provided and this is now available as part of the additament to the plan submitted to the Provost[10]

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[5]The CEAB is constituted under the Canadian Council of Professional Engineers {Conseil Canadien Des Ingénieurs} and degrees accredited by CEAB are also subject to the multinational mobility agreement between the 9 member countries under the Washington Accord.

[6]The University of Windsor is the only Canadian University with FEF accreditation.

[7]The EIC, established 1889, accredits continuous learning and professional development courses.

[8]OCGS "approves" rather than accredits graduate programs.

[9]Although not an accreditation system the UPR process also requires extensive documentation and program assessment.

[10]The document is available in the Faculty of Engineering 20/20 web-based document library.

but not as part of this document submission as per the instructions of February 23, 2006. Should members of SPARC or Senate wish to have a copy this can be arranged.

2.3 Within the limitations of this document[11] a brief summary of the various environmental scans will be provided. This summary builds on the self-assessment presented to the Board of Governors in January 2006 but is not exhaustive.

2.4 The Faculty of Engineering has experienced a period of rebuilding since 1997 and especially during the implementation of elements of the Faculty plan 1999/0 to 2004/5 under the auspices of the strategic initiative "*The Best of Both Worlds*," (BOBW). The implementation has been as a direct result of the PDC recommendation in April 2000, viz.,

> "*The PDC recommends the University invest in Engineering to enable it to increase its enrollments, and take the lead in the development of the automotive theme."*

2.5 In the 1999/2000 submitted 5-Year Plan, it was projected that the total student head count (full-time and part-time) could reach 1520 undergraduates and 235 graduate students by 2005 with a faculty complement of 90 and a support staff complement of 40. Based on the Fall 2005[12] data provided for this round of planning for program years 1st to 3rd (undergraduate) the head count using the same basis as the 1999 plan was 1059 which rises to 1412 when the 4th year are also counted[13]. The graduate numbers for Fall 2005 being 291.

2.6 Thus, the 1999 graduate forecasts have been exceed by 24% (and indeed are almost double the 1998-1999 levels) whilst the undergraduate enrolments are 7% below forecast. However, budgetary limitations have limited the faculty complement to 70% of that requested and support staff to 66% of that requested. The increases in enrolments could not have been achieved solely by the additional BOBW regular faculty positions and use has had to be made of numerous sessional instructors. It has also not been possible to reduce the undergraduate teaching loads of regular faculty to those levels normally encountered in a research orientated Faculty.

2.7 To appreciate fully what the Engineering enrolment data means for the operation of the University and the Faculty it has to be understood that Government support grants per head for

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[11] 5000 words maximum requested in TGH submission plan.

[12] In the Fall of each year there are no 4th year classes as this is a co-op term. Not all students are off-campus in the co-op stream but all 4th year students are off-campus. Thus the Fall numbers for undergraduates only represent 3 of the 4 year enrolments.

[13] The 3rd Year Summer 2005 USIS Head count for Engineering was 209 Full-time students and 144 part-time students. These in a regular program would appear on campus in the following Fall but because of the Engineering program sequence do not return to campus until Winter.

Engineering students[14] can be up to 100% more than for students in other programs. Thus, the University's use of the SEU (Semester Enrolment Unit) parameter whilst being a indicator of student numbers does not necessarily reflect how much revenue (BIUs and fees) is received for the student type. Moreover, the SEU is also not a universally meaningful indicator of either student or faculty workload. For while the bulk of the courses offered at the University consist of up to 3 hours of lectures per week, in laboratory based programs like Engineering there are few such courses as indicated in the following chart.

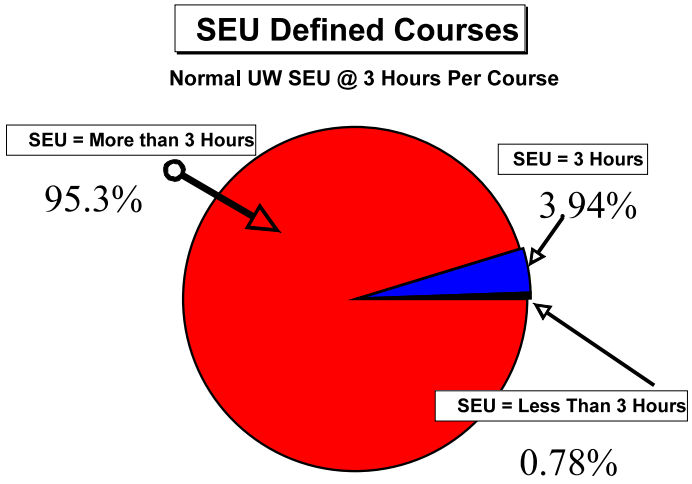


Figure 1. SEU vs Contact Hours

2.8 The Engineering co-op programs instituted in 1992 have proved to be successful in that over ⅓ of all students who enter 1st year and ½ of all graduates will have completed a co-op program. The success of the co-op program has however come at a price as those students who are not involved in the program are significantly disadvantaged in the continuum of their normal studies and the Faculty's physical and human resources, in the latter case especially the academic administrative and support staff, have overwhelming and inflexible work-loads. The requirements of the faculty Collective Agreement and the Senate By-Law Policy guidelines [15] means that rarely should more than ⅔ of the faculty, except those with academic administrative duties, be on campus during any particular semester and especially in the September to April period when much of the administrative

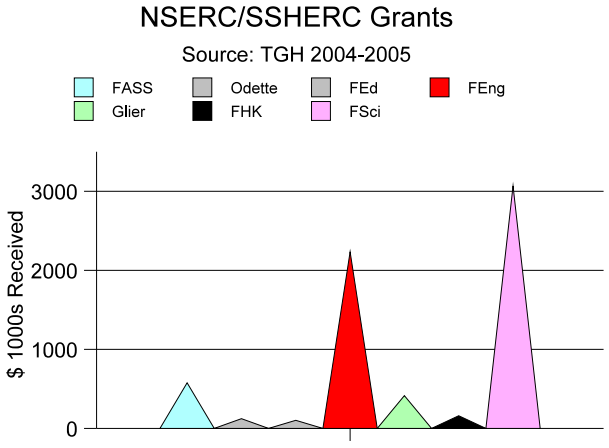
[14]Universities also receive enhanced Basic Income Units (BIU)s above the standard 1.0 BIU per student for 1st entry students in some other honours laboratory based program in addition to Engineering.

[15]Teaching assignments to be for only 2 of the three semesters and summer (or non-teaching term) Senate terms of employment stipulations; see CA Articles 5:05 and 5:07(c) and Senate Policy F1, Section II para 4.

tasks of the University are undertaken.

2.9 In addition to some of the internal vagaries associated with the offering of the successful co-op programs there some external constraints which effect work-experience program delivery, delivery method and content. For example, the Canadian Association for Co-operation Education (CACE), of which the University of Windsor is a member, will accredit co-op programs on request but the criteria they stipulate are not always fully in harmony with the needs of Engineering program delivery. For these reasons some Engineering Faculties have chosen not to wholly participate in the CACE voluntary accreditation. As of 2004, inclusion of formal terms of experiential experiences as part of Engineering has been embraced by 35 Engineering Faculties, so there can be no doubt that such schemes are attractive to students and potential employers and play a key role in the learning process and environment. Ensuring accessibility for all students to such schemes without adversely impacting the studies of those students not choosing such a learning pattern must be surely a laudable goal and be in complete harmony with this University's inherent philosophy of accessibility. However, whilst other Engineering Faculties have been able to achieve this, internal and external encumbrances have so far precluded us from achieving the same estimable goal. It is important that this situation be resolved (see section 8).

2.10 The research culture within the Faculty which was previously confined to isolated individuals or small ad-hoc groups - albeit with noted records of achievement and excellence - is now a wholly pervading aspect of the Faculty operations. In terms of research funding it is difficult to give precise comparative figures for all research income, grants, contracts, in-kind and so on within the University or within the Canadian Engineering fraternity but in the TGH Annual Report for 2004-2005 data were presented on NSERC and SSHERC funding and of the combined total of $6,679,024 awarded, Engineering received $2,234,155 or 33.5% of the TGH reported grant income. These data and are illustrated in graphical form as Figures 2 and 3.



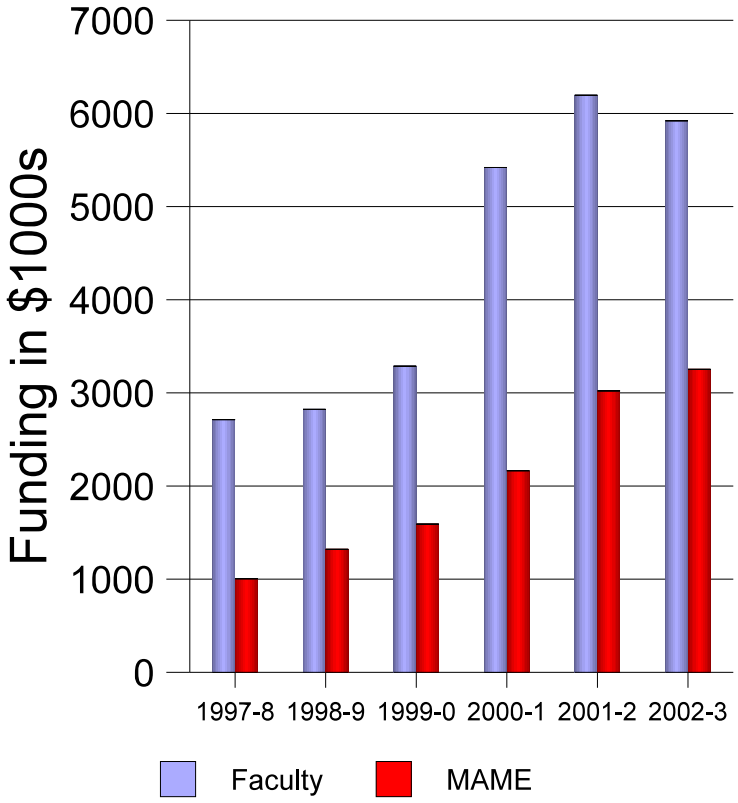


Figure 3 Faculty Research Funding 1998-2003

2.11 A thumbnail summary of the Faculty is as follows:

1. % of academic positions	~ 12%
2. % of undergraduate enrolment	~ 7-9%
3. % of graduate enrolment	~ 23%
4. % of PhD enrolment	~ 31%
5. % of NSERC/SSHERC funds	~ 34%
6. Annual Total Research Income	~ $6M
7. Undergraduate Programs	= 5 with 8 options
8. Masters Programs	= 12 with 3 fields
9. Doctoral Programs	= 6 with 2 fields

3. Enrolment Projections 2007-2011

Undergraduate

3.1 Although undergraduate 1st year enrolment peaked at over 470 during the main double-cohort year Engineering has neither the Physical or Human Resources to sustain such a Fall entry level on a single campus. Moreover competition for students is now increasingly ferocious since the other 15 Engineering Universities in Ontario have expanded their resource base so that they can sustain enrolments in the future at the double cohort level. Furthermore an entire new University has been developed in Oshawa - the University of Ontario Institute of Technology - which was originally established to provide engineering degree courses in Nuclear Engineering and Manufacturing Engineering but changed it major thrust to Automotive Engineering becoming a very aggressive competitor especially in the GTA to the award[16] winning Windsor programs. The Windsor community's energetic advocacy for increasing the Government investment in Automotive Education and Research was followed by the announcement of a $400M General Motors-Government investment program for the Oshawa region and to support the multi-university Beacon project involving such initiatives as WATCAR™ at the University of Waterloo and the special Laboratory complex at UOIT which is a smaller scale version of the some of the ARDC[17] facilities. Thus, whilst the University of Windsor remains the leader in Automotive Engineering Education and Research as manifest by being the location of AUTO21™ it needs to be acknowledged in enrolment forecasts that there is now competition for all engineering programs in the province.

3.2 With the increasing placement opportunities for engineering students in the Province and the availability of many new facilities[18] at other universities until the New Windsor Engineering Building becomes a reality recruiting from Ontario high schools will be challenging. Fortunately, it appears the high reputation of the MAME programs and the popularity of the MAME and ECE programs amongst International students should sustain enrolments during the construction period of the new building.

3.3 The Faculty is also in the process of developing new undergraduate programs and college transfer Agreements whose impact should be apparent by 2007 and will effect 2nd year enrolment as much as 1st year enrolments. It should be noted that College transfer students if admitted under an Articulation agreement normally enter the 2nd year of Engineering programs.

3.4 The enrolment forecasts for the next academic year are provided in the following table.

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[16]Yves Landry 'STAR' best program awards for MAME and IMSE.

[17]The University of Windsor/DaimlerChrysler Automotive Research and Development Centre (ARDC)

[18]For example, the world leading Integrated Learning Centre at Queen's University Faculty of Applied Science.

Student Type	Fall 2006 -Windsor	Fall 2006 - Barrie	Winter 2006 - Windsor
E&S Transition Term[19]	40		20
Returning Students	55 (68)[20]		20 (?)[21]
Visa	75 (72)		30(?)
105s	50 (44)	15 (?)	
101s	145 (101)	15	
Engg Totals	325[22] (298)	30	70
UW Totals	**365**	**30**	**70**

Table 1. Undergraduate Enrolment Targets - 1st Year 2006-2007

Graduate

3.5 Graduate enrolment has significantly expanded in the period 2000-2004 with 57% more full-time students in 2004 than 2000. Currently (Fall 2005) 31% of all University doctoral students are in Engineering programs and 23% of all graduate students are in Engineering programs, see Figure 4 on page 16. The availability of the NEB coupled with the expansion of research space in Essex Hall South and the increase of faculty complement to 80 will enable research student enrolment to increase by 18% and an overall increase in graduate student enrolment of 37% much of which will be accomplished by course-based Masters offerings in both the regular streams and by cost-recovery schemes.

3.6 The potential availability of full-time MEng programs have attracted an increasing number of International applications but some challenges exist between the interpretation of admission

[19]Not included in Engineering Program Enrolments for Fall 2006. Students can also be admitted as undeclared majors in FASS but the Engineering and Science Transition Term is a new joint initiative for 2006.

[20]Data in parentheses refer to known 2005 data

[21]Data not available

[22]Past data indicates that up to 10% of these students may choose General Engineering in their 1st year, selecting a discipline in the 2nd year.

requirements between the Faculty of Graduate Studies and the Faculty of Engineering. It is hoped that these differences will be resolved in time to allow course-based graduate enrolment expansion to take place in Fall 2005.

3.7 Based on the foregoing the following enrolment targets for graduate students were developed and agreed at the November 2005 Faculty Management Group retreat (IMSE not represented hence a more modest forecast) and presented to the Faculty at the March 2006 Assembly meeting. It should be noted that by 2007 the MEng (Auto) International) will have become an inter-department and inter-unit venture with the Centre for Executive Education. The cost-recovery business plan, curriculum, organization and delivery methods are being discussed.

AAU	**MEng**	**MASc**	**PhD**	**Total**
CEE[23]	20 (5)	50 (44)	35 (25)	110 (74)
ECE[24]	20 (3)	50 (51)	30 (22)	100 (76)
MAME[25](Mech)	25 (9)	50 (35)	25 (23)	100 (67)
MAME (EM)	5 (2)	25 (20)	15 (13)	45 (35)
IMSE[26]	10 (6)	25 (23)	20 (10)	55 (39)
Totals	**80 (25)**	**200 (173)**	**125 (93)**	**400 (291)**

Table 2. Graduate Enrolment forecast for 2006-2007 (2005)

[23]On November 15 2005, CEE were in the process of recruiting 2 new faculty members and also had 1 faculty member on an extended leave of absence.

[24]On November 15 2005 ECE were in the proess of recruiting a new faculty member.

[25]On November 15 2005 MAME had 3 academic vacancies.

[26]IMSE led a successful multi-disciplinary proposal to OCGS for a new PhD program.

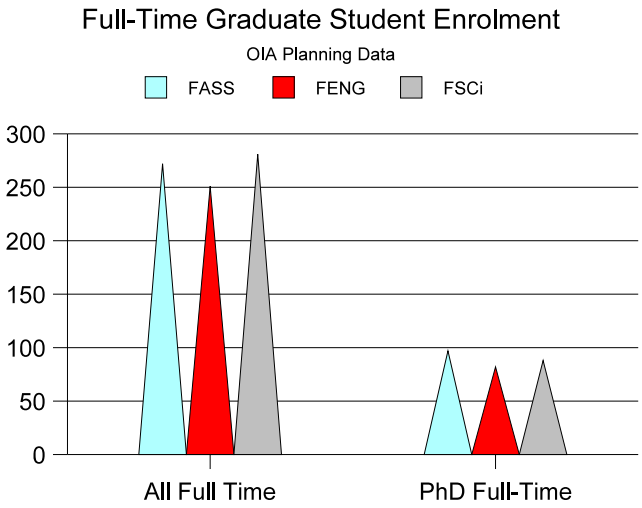

Figure 4 Current Graduate Enrolment

4. RETENTION, RECRUITMENT AND NEW PROGRAMS

"There was a young lady named Bright,
Whose speed was faster than light;
She set out one day
In a relative way
And returned on the previous night."

Arthur Buller, 'Relativity' (1923).

4.1 ***Retention***[27]: As part of the previous 5-Year planning process the Office of Institutional Analysis provided data on graduation rates. These appeared to be remarkably high but further investigation indicated that rates were applicable only for students entering their chosen discipline program which at that time was in the 2nd year of their degree[28]. Moreover it became clear that the numbers of students enrolling in 1st year engineering[29] classes enrolment numbers where significantly higher than the number of new entry students. When comparing historical enrolment patterns it was found that the average flow-through of students from 1st year to 2nd year was less than 70%. Anecdotal evidence from other leading Engineering Schools in Ontario indicated that their historical experience had been

[27]Only undergraduate retention is addressed here as data on graduate student retention are not available.

[28]Between 97% and 99% of students entering 2nd year Engineering eventually graduate.

[29]Including mandatory Mathematics and Basic Sciences courses.

for flow-through rates of 85%-90%. Was then retention a problem unique to Windsor?

4.2 The Ontario Ministry of Training, Colleges and Universities (MTCU) periodically promulgates data on graduation rates and while these and program retention rates are not wholly equivalent they do provide some insight. However, even with graduation rates the quality and usefulness of the information is significantly influenced by the methodology used in the analyses[30]. The available Province-wide data indicates that graduation rates in the 1996-2002 period were high (above 80%) in Kinesiology, Law and especially Education but low (less than 65%) in Arts, Sciences, Nursing, Humanities and especially Mathematics and 'Other Arts and Sciences' with Fine Arts being the exception. Engineering rates were in the middle ground. Overall the graduation rate was 70.2%. Therefore, it would appear that retention problems are not unique to the University of Windsor. While not being a unique problem it nevertheless needs to be addressed. With laboratory based programs like Engineering and Science an appreciable amount of resources, salaries, capital and operating funds are expended on 1st year courses. If 30% or more of these funds are essentially squandered and if students are paying fees - and perhaps going into debt[31] - with a 1-in-3 chance of failing then clearly remedies must be sought.

4.3 A plethora of historical data in the post-secondary education system worldwide has demonstrated that there is a strong link between high school or entry performance and University performance. Thus, with the help of the Office of the Vice Provost and OIA a review of a recent 3 year period was conducted from which it was found that:-

- ☐ 81% of students with an entering OAC average of 70% to 72% were not in good academic standing at the end of Semester 1.

- ☐ 62% of students with an entering OAC average of 75% or less were not in good academic standing at the end of Semester 2.

- ☐ 22% of students with an entering OAC Physics grade between 80% and 85% were not in good academic standing at the end of Semester 1.

- ☐ Only 8% of students have an OAC entering average of 72% based on a six subject calculation but between 17% and 31% of students had Maths or a combined Math and Science OAC average of less than 72%.

The Ontario OAC average for Engineering students is just over 85% and at Windsor it hovers around 80%.

4.4. Engineering also admits a significant number of transfer and college students (105s) and

[30] MTCU indicators website - University of Windsor IA.

[31] The default for Engineering students on OSAP loans is 5.9% compared with the system average of 12.9%.

International (Visa) students. These students also have to met prescribed entrance standards. An analysis of the 1st year performance of these students in comparison with their Ontario High school counterparts (101s) was also conducted see table 3 below. Clearly 1st year performance problems are not confined to high school entry students although it does appear that International students are better prepared in the Sciences.

% of Students achieving a D+ or lower in Semester 1			
Student Type	Science Course 1	Eng Course 1	Eng Course 2
101s	32%	28%	22%
105s	30%	26%	25%
VISA	22%	31%	28%

Table 3. Sample of 1st year Performance by Student Category in 'prime' courses.

4.5 Over the past few years with a scheme partly funded by the University and partly by the DaimlerChrysler 3-E[32] Fund, a Queen's-type Douglas tutorial system, has been operated, using retired faculty and senior students, in Semester 2 for all 1st year students and in particular for those experiencing academic difficulties. From the data given above and preliminary assessments of the efficacy of the system it would appear that the retention rates of students has improved especially for those with OAC entry averages below 75%.

4.6 The Engineering programs like those in almost every other Canadian University have a 1st year curriculum which is identical regardless of the chosen Engineering discipline. By semester 3 the students have started to undertake a program of study appropriate to their chosen discipline and in a sense find a 'Departmental-home' and a program identity which is absent in the first two semesters. Other Engineering Faculties, especially in Ontario and most notably Queen's, Toronto and McMaster have addressed the first year issues by forming a First Year Office headed by an Assistant Dean or similar individual. The Faculty of Engineering will adopt a similar approach as outlined in section 4.7.

4.7 ***First Year Office***. The intended First Year Office (FYO) will be the first port-of-call and the Faculty "home" for all first year students. This office will help students make the transition from high school by helping in the development of the skills needed to succeed in university. The FYO will offer or arrange individual academic counseling and tutoring services and group seminars on time management, reading and note taking, learning and assessment strategies and program selection and course sequencing. In particular the FY Office will work with *Windsor International* to provide additional transition aid for out-of-country students which now constitute 20% or more of Engineering's annual 1st year intake. This office will also provide advice on admission matters and

[32] 3-E = Excellence in Engineering Education

will work close with the Office of the Associate Dean of Engineering (Academic) as well as other appropriate offices and agencies of the University. While the establishment of a FYO will be a key element of the learning and learner focus of the Faculty its measure of success will be the improvement in retention rates. An analysis provided to the Provost's office[33] indicates that a 10% increase in 1st year retention rates could provide increased revenue to the University under steady-state conditions (i.e., by Year 4 of the Plan 2010) of $1.053M per annum. This increase would provide the funding for the sustained operation of the FY Office.

Transition Semesters and Supplementary Admissions.

4.9 It is evident that with mentoring and nurturing some students will be able to improve or sustain their academic performance to enable them remain in good academic standing and to graduate from an Engineering program. However, between 50% and 60% of students entering with grades or equivalent grades below 76% will still not attain academic good standing by the end of Semester 2. The relatively low entrance grades may be due to a multitude of reasons not necessarily associated with academic prowess. There will also be some students who have personal skills and academic attributes which would indicate they could succeed in an Engineering program but who have failed to demonstrate these qualities sufficiently in the traditional HS exam route. There are then a number of students who at present will not be offered the opportunity to succeed when entrance to the program is based exclusively on entrance marks.

4.10 To address the issues outlined in the foregoing paragraph (which have direct linkages with the philosophy of accessibility) a number of different approaches have been developed by various universities ranging from academic bridging modules offered in the Summer Semester to extended program completion times with students not being allowed to take full-course loads; to supplementary admission methods. Many of these approaches could be used at Windsor but there is concern that approaches involving academic upgrading courses are not financially viable even if they would provide a societal service. Having reviewed in some detail how other universities such as UBC, Queen's, Toronto and UOIT are addressing these issues the Faculty of Engineering is pondering the establishment of a supplementary admission route based on the UBC approach where up to 15% of 1st year engineering entry places are reserved for students not achieving the prescribed HS entrance average - which at UBC is at least 85%. However, even with this approach there will be some students who need to experience further academic preparation. With the introduction of the January Start stream for Engineering programs. some hitherto unavailable opportunities have arisen for addressing the need, enhancing academic skills of potential students.

4.11 One method of allowing students to enter the University but not directly into the Engineering programs, albeit that being their eventual goal, would be to use the undeclared majors route through the Faculty of Arts and Social Sciences. However, because Science and Engineering students have very similar backgrounds in terms of academic preparations and require similar academic credentials to enter the various programs it has been decided to introduce a Science and Engineering Fall

[33] As part of a supporting document to this submission.

Transition Semester. The details of this semester are being developed between the two Faculties for introduction in Fall 2006. Students successfully completing this semester would then be able to enter Engineering via the January Start stream or Science through a defined scheme. The supplementary admission scheme which could be used in combination with the transition semester, although not necessarily, requires further work and it is not intended to put it in operational use until Fall 2007 at the earliest.

Recruitment and New programs

4.12 Recruitment and retention have many common chromosomes as have recruitment and new programs. The former have been separated here for convenience of discussion. The relationship between recruitment and new programs is effected by the requirements of the target group. The new BASc programs are aimed at attracting students of high academic standing (Engineering Physics), students seeking to obtain a terminal University degree of the *Rae* Model, (BTech), students wishing to entry and new and growing professional discipline (Biomedical Engineering), continuous learners (MEng, DEng), studies wishing to combine a Liberal Arts approach with University level technical education methodology (BA in Engineering Studies). The choice of Engineering Physics is an obvious one because of the high quality faculty and staff available at Windsor in the participating AAUs and also as Engineering Physics/Science has becoming increasing popular in recent years, figure 5.

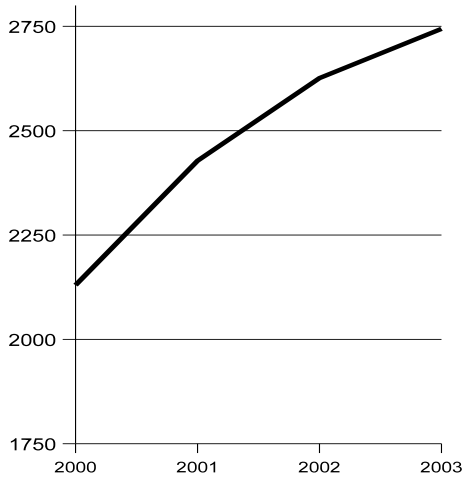

Figure 5. Engineering Science Enrolments 2000-2003 (CCPE data)

4.13 Whatever the impact of new programs, there is no doubt that the most significant challenge in terms of recruiting is the need to increase the number of Ontario High School students entering Windsor Engineering programs. Over the past 2-3 years these numbers have been falling maybe for

the reasons already discussed, e.g., increased competition especially from the new Faculties at York University and UOIT (whose applications have increased by a further 20% this year); the lack of space; no new Windsor programs since Automotive Engineering and so on. However, despite these reasons Provincial high school recruitment is disappointing when at the same time International recruiting is very encouraging. There is no doubt that this problem will need to be addressed jointly with the Office of the Vice-Provost and the efficacy of current approaches needs to be assessed and not just for Engineering.

4.14 A recruiting issue which is gaining momentum is the gradual decline of the proportion of female students entering undergraduate Engineering programs. Between 1975 and 1999 the percentage of female students - Canada wide - increased from a mere 3.6% to almost 21%. However since that time the proportion has declined to 18.5%[34] and the latest figures for Ontario - although not complete, indicate a decline of 2-3% per annum. This trend is not reflected in graduate enrolment numbers and indeed almost ⅓ of the graduate student population in the Faculty of Engineering are female. Interestingly, the proportion of female students in Mechanical Engineering appears to be much higher at Windsor than elsewhere.

4.15 While having a general philosophy of trying to attract more female students and academic faculty into the Faculty there are a number of specific initiatives underway, for example a Women's Affinity Group has been started by students in one Department and this has been a success along with Province-wide initiatives such as 'Go-Girl' in which the Faculty also participates. Donations and support have been provided for High School projects aimed at making female students more aware of Math, Science and Engineering careers and a joint proposal with the Greater Essex County District School Board has been developed for the Ontario Government's YSTOP[35] scheme. However, more needs to be done and the future BA program and the recently developed Environmental Option in Mechanical Engineering may help this improve. Another idea has been to consider including a Women's Studies module in the Engineering program which already includes 2 Women's Studies electives. However this idea is very much in its infancy and it is unlikely to be explored in more detail until later this year.

4.16 Another worrying trend is that the percentage of female faculty members is also declining and female graduate students appear to be increasingly choosing careers outside academia after graduation. Obviously the Faculty does not alone have the wherewithal to investigate the causes for this situation.

4.17 During the period of the plan, the development and offering of the following programs is envisaged:

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[34]University of Toronto is a notable exception with 29% of their students being female. Biomedical Engineering and Engineering Science attract a significant number of female students.

[35]Youth in Science and Technology Opportunities Project.

Program/Option Title	Lead AAU(S)	Projected Enrolment	Start date	[illegible]	[illegible]
Engineering Physics	ECE + MAME + PHYSICS	Target of 50 1st year entry	tbd - no later than Fall 2007	Yes Faculty	Yes
Biomedical Engineering	ECE	Target of 30[36] 1st entry	tbd - Fall 2008 as working target	Yes Faculty	Yes
Environmental Engineering Option	MAME/CEE	Target of extra 25 1st Year by Fall 2007	Program in place waiting Senate approvals	No	tbd
MEng (Auto)	Faculty/CExEd	Target between 30 and 50	July 2007	cost-recovery	cost-recovery
BTech(Auto)-Georgian	Faculty/Georgian College	20-25	Fall 2007	cost-recovery	cost-recovery
BTech(Civil)	CEE	15-20	Fall 2006 or Winter 2007	self-funding or cost-recovery	self-funding or cost-recovery

[36] Under discussion.

Program Option/Title	Lead AAU(S)	Projected Enrolment	Start date	Will there be tuition fees?	Will there be ancillary fees?
DEng	Faculty	tbd	Fall 2008?	Cost-recovery	Cost-recovery
Engineering and Science Transition Semester	Faculties of Engineering and Science	40+	Fall 2006	(Under discussion)	tbd (Under discussion)
New Experiential Offerings	Faculty + Co-op office	All students	Fall 2007 or Fall 2008	Yes	
Professional Short Courses	Faculty of Engineering and Centre for Executive Education	15-25 per course	Anytime	Cost-Recovery	Cost-Recovery
BA in Engineering Studies	Faculties of Engineering and Arts and Social Science with input from Faculty of Science and Odette	NK	NK	tbd	tbd
Women's Studies Module	Faculty and Women's Studies	NK	Preliminary talks opened.	No?	No?

Table 4. New Program Initiatives 2006-2011

5. WORKLOADS

"It was Einstein who made the real trouble. He announced in 1905 that there was no such thing as absolute rest. After that there never was."
Stephen Leacock: The Boy I Left Behind Me (1947)

5.1 ***Faculty***: For a number of years the teaching part of a regular faculty work-load was 5 courses, 4 taught courses plus involvement with the 4th year project (now the full-year capstone design course). The 4 taught courses were 3 at the undergraduate level plus laboratories and tutorials (usually with the aid of Graduate Assistant(s)) and 1 graduate course plus laboratories, where applicable. Some faculty were active researchers but rarely was teaching relief provided for research and graduate student supervision. In Engineering Faculties[37] with a strong research ethos, the normal load is 4 taught courses (although some are only 3[38]) but only 2 are at the undergraduate level. Researchers with NSERC grants and/or significant other funding and 4 graduate students are often provided with teaching relief in some form. With the move to a more universally research-focused Faculty, over 90% of faculty now with research funding and on average there are almost 5 students per faculty member, it is clear that the faculty are overloaded in comparison with their counterparts in other Engineering and research intensive Faculties as no regular relief from the historical teaching load assignments has been possible to counterbalance the research efforts.

5.2 Other Engineering Faculties that have changed from an essentially undergraduate operation to a more comprehensive mode are experiencing similar difficulties. While we have met or exceeded our original BOBW enrolment targets, this has been achieved with only 70% of the human resources being provided. Techniques for re-aligning the work-loads and especially the undergraduate courses teaching aspects have been attempted, e.g., the Lecturer/AAS, route but more needs to be done. Extra faculty will help, of course, but human resources alone will not solve teaching-load issues. Extra space, novel teaching methods and curriculum modifications will also play significant roles in the changing modus operandus of the Faculty. If we were to adopt the 2 undergraduate (plus capstone) and 2 graduate course teaching model, then the equivalent of an extra 34 FTE faculty would be required. This is obviously not possible.

5.3 ***Administration:*** While more support staff are still required, as previously mentioned in the Self-Assessment- the tri-semester program delivery method puts great burdens on support staff and Academic Administrators in particular. The Collective Agreement requires that Department Heads teach in 2 of the 3 semesters but unlike their regular faculty colleagues they do not have a 'down' semester. Moreover, as many administrative matters have to be completed in the September-to-April

[37] University of Toronto Engineering Faculty for example whilst having almost 3 times the number of students and approximately 4 times the number of faculty and 6 times the number of support staff. However, the tution fees are 60% higher as well ($7,000 domestic, $18,000 International).

[38] A Survey is currently underway by members of NCDEAS.

period and the heaviest teaching load for Engineering is in the May-to-August period, Academic Administrators are under increasing pressure and ways of addressing this have to be sought. The timely introduction of Associate Head positions would be a great help.

5.3 ***General Operations***: With a maximum presence of only ⅔ of faculty at any one time, a great burden can be placed on the governance roles (committee membership, program review documents etc) of regular faculty members especially in the crucial Fall term activities. Without extra resources, an obvious solution is to revert to the Fall-Winter program delivery which was the norm prior to 1992. However, the unavailability of classroom space and the requirements of co-op accreditation provide significant challenges to the implementation of this approach. Nevertheless the requirement for such a large amount of compulsory teaching in the Summer Semester prevents many initiatives being pursued and many innovations being introduced. The Faculty is still wrestling with this issue.

6. SPACE

6.1 The space shortages have been identified by a through study carried out under contract by Diamond & Schmidt Architects with the help of the Facilities Services, the Faculty of Engineering and the Office of the Vice-Provost. This study indicated that the Engineering programs have available only half of the space that is specified in the Council of Ontario Universities (COU) guidelines for such programs. In particular the Faculty is short of student activities space, research facilities, hands-on undergraduate laboratories and faculty and graduate student offices. Current the Faculty occupies Essex Hall and CARE and has offices in the old Drama Building, Dillon Hall, Lambton Tower, Assumption University, Odette and GLIER.

6.2 In January 2006, the Board of Governors made the decision to proceed with a split-site option as the initial step of a phased approach to provide an Engineering facility concomitant with existing COU guidelines for Engineering programs of the type offered at the University of Windsor. Board approval was received for the allocation of up to $4M for the design process expenditure for a new $53M building to be located close to the existing CARE facility. Essex Hall South would be retained in its entirety by the Faculty of Engineering and a decision on the whether the building should be renovated (estimated cost between $18M and $30M) would be made as a Phase II decision. In order to proceed with the eventual construction of the building the Board indicated that funding would be required from various levels of Government as well as private donations in addition to any funds the University may allocate.

6.3 With an architect to be selected by early April at the latest, construction of the new building could start in late Winter - early Spring of 2007 for occupation in the Fall 2008 - Winter 2009. It is envisaged that classes will commence in the new building the first week in January[39]. However, in the meantime the space shortage issues exist and are particularly detrimental to faculty research and

[39] To coincide with Elvis Presley's 74th birthday.

student activities. Some temporary arrangements have been made and space use modifications have been made but there is still a dire shortage for space for graduate student offices which will need to be addressed in the short-term.

6.4 Every effort is being made to involve students in the new building planning process. Methods of student participation which go beyond the decision-making process are being ruminated especially with regard to students involved as part of the learning process. An initial step in this direction has been the Green Building projects undertaken by students in Civil and Environmental Engineering as part of their 4th year program. Another interesting scheme is that presently being developed at the world-famous Imperial College in England in which students are being encouraged to design their own learning space. The Imperial initiative has been prompted by the establishment of the Engineering Integrated Learing Centre at Queen's University which has caught the attention of Engineering Faculties worldwide. The Faculty of Engineering intends to further explore these concepts over the next 2-3 years.

7. CURRICULUM

7.1 A Curriculum Review and Reform initiative was a key element of the original TGH strategic initiative. Since that time Curriculum changes have been on-going in the Faculty especially at the AAU level as manifest in the many program innovations which have been instituted or are in the approval process. The Engineering accreditation authorities in the USA and the UK have adopted a more learning outcome-based approach and the Canadian equivalent is exploring these options with the National Council of Deans. In the first instance the accreditation criteria are to be changed to reflect the approach and the final version is expected in late 2006. This will be a useful document.

7.2 The Université de Sherbrooke has already changed the orientation of its Engineering programs to Problem Based Learning (PBL) and Outcomes Based Assessment (OBA). Their approaches have been shared with other Engineering Faculties. Initial feedback is that the approach is valued by students of superior academic ability but students with less academic prowess are finding the approach to be very challenging. Queen's University has instituted a PBL/OBA stream within its Engineering programs now that the new Engineering Integrated Learning Centre, mentioned above, has been constructed. In our Faculty under the auspices of the 3-E Teaching Fellowship scheme a Automotive/Environmental graduate course (enrolment 24) has been re-developed[40] to a provide a PBL/OBA format and the first students should complete this course in April. The student and instructor feedback will be very useful.

7.3 Now that graduate attributes have been specified (see section 9) the Faculty Curriculum Review Committee which has been specially struck will lead the planning for the process to specify the learning outcomes by course and program. The information collected from the Engineering Council

[40] Dr E Tam.

(CGLI) on course learning outcomes will provide great insight and be a very useful benchmark. Permission is being sought to post all this information of the Faculty's Engineering 2020 website. In addition all members of the committee have been provided with the National Academy's extensive "Educating the Engineer of 2020" document and all Department Heads have been provided with the same organization's "Vision 2020" for Engineering document.

7.3 Learning Contracts In addition to developing precise learning outcome statements which are faculty derived, the associated concept of 'Learning Contracts' will also be explored. This concept is by no means new and has been increasingly used in secondary, distance-learning and adult learning college environments. The concept is now becoming more familiar in Universities such as Guelph, Athabasca and the University of California. The underpinnings of the approach have been described by Knowles (1986)[41].

7.4 Learning contracts are written agreements between a course instructor (or course teaching team) or program leader and a learner (or where appropriate a group of learners, e.g., capstone projects). The contracts as outlined in Knowles's list will concern issues of assessment which are a key element of TGH, and will provide a useful mechanism for reassuring both parties about whether a planned piece of work will meet the learning outcomes of a course.

7.5 The basic principle of learning contracts is to encourage learners to be active partners in the teaching-learning system, rather than passive recipients of whatever it is that the instructor thinks is good for them. It is about their ownership of the learning process. The development of Learning Contracts for regulated engineering courses will be a stimulating challenge.

7.6 At this stage there is not sufficient experience within the Faculty to attempt to develop Learning contracts. Once the learning outcomes and OBA issues have been dealt with then the move to learning contracts will follow for some. There are a few individuals in the Faculty however who are cognizant with the concept and who together with external expertise will be able to provide guidance on these matters. It is not anticipated that the Faculty will be at this stage of development until the next academic year.

8. ACTION ITEMS & PLAN

8.1 Many issues that have already been discussed are restated here as part of the list of Action items explicit in the Engineering Plan. Where items are listed which have not been discussed in detail some background is provided. Against each item is a label, e.g., [A/G] which identifies an associated SPARC evaluation criteria and priority - see the table provided at the end of this document. Apart from the professional/experiential learning issue the other items in this section have been dealt with in appropriate detail. Hence in the section addressing the work experiences issue, 8.7 to 8.10. Further

[41] Knowles, M. S. (1986). Using Learning Contracts. San Francisco, CA: Jossey-Bass Inc., Publishers

background information is provided.

Space (See Sections 6.1 to 6.4) [G1; A, C, D, E, F]

8.2 For the many reasons outlined in this and other supporting documents Space is the # 1 priority in the Faculty. It should also be noted that the Action Plan for Engineering space has already been approved by SMG and the Board and is therefore not repeated here. However, it is clear that the development of the design, the plans of a moving schedule, the planned reassignment of the vacated Essex Hall South space to graduate students and researchers and last, but by no means least, involvement in the fund-raising aspects will take up a tremendous amount of time over the next 2 years.

Establishment of a 1st Year Office*:* (See section 4.1 to 4.7) [G2; A, B, D, F]

8.3 This is to be in place by the Fall 2006 and a budget request will be made through the annual process for incremental funds to supplement the existing base budget and the funds available from the 3-E Fund.

New Program Introductions and Developments. (See section 4.12 to 4.17) [G3; A, B, C, D]

8.4 The planning schedule for the development and/or introduction of new courses has been delineated in Table 4. The Human and Physical Resources required for these initiatives will be included in the budget submission.

Graduate Studies Expansion. (See section 3.5 to 3.8). [G3; A, B, C, F]

8.5 The graduate student expansion explicit in the targets presented in Section 3 will mainly come about by the offering of more places for course-based Masters and additional programs of the same nature. Until such time as additional faculty and more graduate student space is available it is unlikely that it will be possible to increase the number of research-based graduate students. However, once the new building in 2009 comes into operation, it will be possible to increase research student enrolment to 320-350.

Transition Semesters and Supplementary Admissions; (See section 4.9 to 4.11) [G5; A, F]

8.6 The Transition Semester planning between the Faculties of Science and Engineering and the Office of the Vice-Provost is in its final stages and will be introduced in Fall 2006. The Supplementary Admission scheme is being developed for applications in 2007.

Review of Professional/Work Experience Methodologies (See section 2.7). [G6; A, B, F]

8.7 ***Background***: The Faculty of Engineering instituted co-op programs starting 1992. A somewhat unique delivery format was adopted enabling students to obtain not only an accredited 4-year degree

but also three or even four 4-month terms of work experience and completing both within a period of 4 years and one semester from the time of first entry. To achieve this delivery method, the Faculty moved to a year round 3-semester mandatory teaching program. Such an approach requires additional resources not only to ensure effective operation of a combined academic plus experience program but also to make certain that those students who choose not to participate in the co-op program or do not qualify for the co-op program (local regulations) are disadvantaged in their study sequence. At the time of introduction the Faculty were under the impression that such resources would be forthcoming. For whatever reasons, e.g., budgetary or policy, the resources were never provided.

8.8 In 2004[42], 35 Canadian Institutions now offer either co-op or internships or both within their Engineering programs. Sixteen institutions offer internship programs (12-16 months of continuous work experience) including the University of Windsor albeit in a yet to be fully formalized manner[43]. At 7 institutions participation in co-op/internship is mandatory and at the University of Toronto all Engineering students must have a minimum of 600 hours of validated work experience as a requirement for graduation.

8.9 About 35% of all students entering the Windsor Engineering programs and approximately half those who graduate with the BASc will have completed a co-op program. For those students not in the co-op program no courses are offered in the fall semester of the 4th year of the program or in the Winter term of the 3rd year of the program. Thus, it is not possible for these students to graduate in less than 4 years and 1 semester. It also means that these students must undertake 2 consecutive terms of full-load 13/14 week summer studies. Therefore, opportunities for these students to take part in financial gainful summer[44] work (or whatever nature) are severely limited.

8.10 The Dean of Engineering has already undertaken a review of how other Engineering Schools provided work experiences for their students. A number of Engineering Departments and individual faculty members have also been working on plans for the introduction of new methods and techniques of providing such experiences for their students. Some have been somewhat discouraged by the initial feedback from the preliminary reviews of their proposals from PDC. Nevertheless, this feedback, together with other observations from various units on campus will be taken into account into the development of a Faculty-wide[45] set of guidelines for external experiential offerings to students. The

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[42] www.ccpe.ca, page 56 of 'Engineers for Tomorrow 2005 report'

[43] To formalize the internship program will require the AAU-FCC-PDC sub-group-PDC-Senate approval process to be successfully navigated as such changes in program requirements and delivery are considered to be policy rather than operational matters. However, some pilot schemes are underway with the help of the co-op office.

[44] It could be argued that these non-co-op students could gain paid work in the Fall and Winter but because of the seasonal nature of the summer work usually available to post-secondary students the number of opportunities locally, provincially and nationally are significantly reduced.

[45] Faculty-wide does not necessarily a wholly common method of approach and individual AAUs may adopt variations within an agreed set of guidelines.

following criteria and issues will be used in the development of this plan:-

A. No non-co-op student will be adversely affected in terms of time to graduation by the provision of experiential learning opportunities to other students.

B. The learning-focused, educational and pedagogical aspects of work experiences and their intended learning outcomes must be addressed.

C. The University of Toronto system will be thoroughly investigated and will be instituted at the University of Windsor if appropriate.

D. A more formalized arrangement for the Engineering Internship program will be developed in consultation with the Co-op Education Office.

E. Where possible the University's desire to be an accredited member of the Canadian Co-operative Education Association will be accommodated.

Experiential Learning, Curriculum and Work Load Activities [G7; A-F]

8.11 All these initiatives are works in progress which will continue over the next 2-3 years and for which modest amounts of one-time funds will be required and will be requested in the budget submission process over the next three years. To improve the hands-on aspects of undergraduate laboratory experiences a 3-year plan for renewal was submitted in 2005 for ECE and CEE. This year MAME and IMSE will have similar requests. The ability to have more hands-on exercises greatly improve the options for encouraging outcome-based assessment to be included in the laboratory-based courses.

9. GRADUATE ATTRIBUTES

9.1 The prescribed graduate attributes are based on the recommendations of 'TGH', the CEAB criteria and adopted paradigm for Windsor engineering programs of a core of the experiential learning experiences {*hands-on*} to complement the traditional but necessary analytical education.

9.2 It should be noted that some of these attributes for graduate students will have been acquired by prior learning at this or other institutions.

Students will have the ability to demonstrate

(A) their mathematical, basic science, computer science, engineering science, engineering design and literacy skills.

(B) an appreciation of the need for and an understanding of the ethics, personal integrity, equity, public and worker safety and health

considerations inherent in the educational and experiential formation of an engineer and in the practice of the profession of engineering.

(C) the ability to use appropriate knowledge and information to convert, utilize and manage resources optimally through effective analysis, interpretation and decision–making; this ability being essential to the design process that characterizes the practice of engineering.

(D) their ability to be adaptive, creative, resourceful and responsive to changes in society, technology and career demands.

(E) their ability to function as an effective member of a team and clearly delineate the need to function in this manner

(F) their ability to communicate effectively by all appropriate means within the profession of engineering and within society at large.

(G) an understanding of the concepts of sustainable development and environmental stewardship associated with the practices inherent in the profession of engineering.

(H) an understanding of the virtues and limitations of the application of scientific methodology in engineering research, engineering problem solving and the engineering design process.

(I) their awareness of the role and responsibilities of the professional engineer in society.

(J) their ability to embrace and become conversant with new technologies.

9.3 The assessment of graduate attributes will be a key part of the continuing curriculum and program reviews and developments. Many of the attributes identified are already part of the CEAB criteria and accredited programs have to demonstrate that they have assessment methods which should test whether graduates do possess these attributes.

10. CONCLUDING REMARKS

"'*Blessed is the {Dean} who expects nothing for he shall never be disappointed*' was the ninth beatitude."

Alexander Pope 23 Sept 1725
(With apologies)

Selected Bibliography: (Not exhaustive)

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[47]*Op.Cit* p 289-298.

SPARC/TGH Criteria List:

In the main body of the submitted planning document where possible and where directly relevant the elements of the Plan have been compared to the SPARC/TGH criteria list in the following manner:-

Evaluation Criteria	Main Body Reference
Learning Centred – how will implementation of the plan contribute to learning-centredness on campus (eg. through enhanced services to students, contributions to student engagement and/or the learning environment)?	**[A]**
Graduate outcomes – how will the plan ensure the development of clear and measurable graduate outcomes for each academic programme?	**[B]**
Research – how will the plan advance the Faculty's promotion of a stronger research culture and the University's profile and reputation for research?	**[C]**
How will implementation of the plan contribute to an enhanced profile and reputation for the Faculty/University?	**[D]**
How will the plan contribute to the development of campus pride?	**[E]**
How will the plan addresses other priorities in TGH? (such as internationalism, further development of the pinnacle areas, etc.)	**[F]**
The major initiatives in order of priority – subsequent major requests for support should follow naturally from the priorities in the plan.	**[G-1, G-2 etc]**

FACULTY CONSULTATION PROCESS - TO DATE

F.1 Apart from numerous meetings between the Dean and Associate Deans, and the Dean and AAU Heads, other more formal steps have been taken to embrace a broad church of opinion. Even

so, the consultation will and must continue. The Plan in the same way as the Curriculum will need to be dissected and then reconstituted so that clear unequivocal road-maps and way-points can be established for the implementation of the final Plan. It is likely that this will lead to some restructuring of the shared governance arrangements within the Faculty especially with regard to the sub-committees and similar of FCC.

F.2 To aid the consultation process a Faculty website - Engineering 20/20 - has been set up as a document library so that all faculty, members of FCC, and the President of the Engineering Students Society can assess the plan and the supporting materials. A similar sites have been set up for the New Building Committee with respect to the NEB project. Some faculty have suggested that an informal forum also be set-up for F2F discussions and this could also include the establishment of a web-based chat room. These suggestions are being explored. With regard to the Vision and Mission statements it should be noted that the Director of HRG was asked to review the draft statements.

F.3 In the table below some of the steps taken in the consultation process so far are summarized. Powerpoint presentations given at Faculty Assembly meetings are also available on the 20/20 site.

Document/Event	Group	When
Original Discussion of TGH and introduction to Learning Outcomes	FMG	Feb 22-24, 2005 - Director of CFL provided the session on Learning.
NEB Documents - Phase I	NEB Committee (advisory to SMG)	Phase I website May 4, 2005
Mission and Vision Statement Development	FMG[48]	FMG Short Retreat - Aug 31, 2005
Discussion of TGH Plan and Building Options	FMG	Nov 15-16, 2005
Discussion of Draft Plan, Curriculum Review Task Group and Space	Faculty Assembly plus FCC support staff reps (open meeting)	Nov 21, 2005
SPARC Round 1 Plan	All	FMG - Dec 20, 2005 Website- March 8, 2006

[48]FMG - The Faculty Management Group consists of the Dean, Associate Deans, and Department Heads plus the Faculty Administrative Officer and at times the Faculty Advancement Officer. Other faculty may also participate in extended meetings (retreats).

Document/Event	Group	When
Establishment of 20/20 Website	faculty, student and staff reps	on-line Oct 18, 2005 active March 8, 2006
NEB Documents - Phase II	NEB Committee with additional Engineering student member	Feb 21, 2006
Elements of Plan and revised Mission Statement	FMG and some faculty	March 1, 2006
Discussion of Revised Plan and SPARC/FATF Feedback	Faculty Assembly plus FCC support staff reps (open meeting)	March 9, 2006
Draft of Provost's Additament	FMG	
SPARC PLAN 2 (23 Feb Template)	All	FMG Hardcopy March 28, 2006 Website March 29, 2006
Provost's Additament	All	FMG Hardcopy March 29, 2006 Website March 30, 2006