

**CCWE⁺²⁰ National Workshop
(Canadian Committee on Women in Engineering)**

Ottawa, ON
April 29 – 30, 2011

**Presentation of the National Council of Deans of Engineering and Applied Science
(NCDEAS | CCDISA)**

by

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1. Quick facts about NCDEAS | CCDISA

- Member institutions offer undergraduate engineering programs that are accredited by the Canadian Engineering Accreditation Board (CEAB); member institutions can be autonomous schools (e.g. École de technologie supérieure, École polytechnique), colleges or faculties of engineering, departments or programs of engineering.
- Current membership: 41 regular members and 1 associate member (i.e. institution who has applied to CEAB for the accreditation of at least one programs of studies).
- 3 of 42 representatives are currently women.
- All 3 female representatives are members of NCDEAS | CCDISA Executive Committee.
- Current focus of NCDEAS | CCDISA: New CEAB graduate attributes criteria that will become fully effective in 2014:
 - NCDEAS | CCDISA has taken a proactive role in the development of methods and tools to demonstrate compliance with the new criteria and in the sharing of this information among all NCDEAS | CCDISA member institutions.
 - Actions to date: Multi-institution task force; information workshops (Ottawa (April 2010), Québec (January 2011)).
 - Goal of NCDEAS | CCDISA is to rapidly demonstrate that member institutions can successfully meet the requirements associated to the new criteria so that the current reliance on input-based accreditation criteria (i.e. accreditation units) can be reduced and ideally eliminated.
 - This would allow for more differentiation, flexibility, and creativity in undergraduate engineering education across the country.

2. Observations on the issues related to women in engineering since 1992

- Observations aligned with recommendations 8 to 17 of the 1992 CCWE Report.
- Recommendation 8: *That universities create attractive environments for women and commit – in principle and practice – to the recruitment and retention of women faculty, especially in faculties of engineering:*
 - Report of the NSERC Chairs for Women in Science and Engineering shows that the 3-year averages (2004 – 2005 to 2006 – 2007) of the proportion of women appointed to faculty positions in the engineering and applied science disciplines (19.2%) compared favourably with the proportion of female Ph.D. graduates in those fields during the same period (16.8%).

- The same report presents data collected within the scope of Ontario's Ready, SET, Go awareness and information program for pre-university students. These data show that only 10% of girls (vs. 25% of boys) have a definite interest for engineering.
- Recommendation 9: *That faculties and schools of engineering develop programs to attract women into undergraduate engineering programs to increase the pool of well-qualified, talented engineers:*
 - Many examples of such programs are presented in the report of the NSERC Chairs for Women in Science and Engineering. The real challenge in future years will be to increase the level of interest for engineering among young girls and boys above the current 10 and 25% levels reported above.
- Recommendation 10: *That faculties of engineering encourage mature and other non-traditional students to enter engineering programs:*
 - Many engineering schools across the country have established college – university bridging programs to facilitate the transfer of college students or graduates in technology programs.
 - It is possible for part-time students to complete engineering programs at many institutions.
- Recommendation 11: *That faculties of engineering establish academic adjustment and social support programs for undergraduate students and especially for women students:*
 - Mentorship and tutoring programs, especially targeted at 1st-year students are available at many institutions.
 - Similarly, many engineering schools support local Women in Engineering committees that develop activities and programs aimed at female students and faculty members.
 - The report of the NSERC Chairs for Women in Science and Engineering indicates that 70% of graduating female engineering students would make the same choice of program.
- Recommendation 12: *That faculties of engineering create an environment that ensures the physical, emotional and psychological security of all students, and contributes to a more positive image of engineering students:*
 - Questionable morale-boosting activities by engineering students are gradually giving way to more positive ones.
 - Many universities have implemented or are developing student codes. However, students and student associations are often reluctant to the inclusion of provisions related to behaviours or responsibilities into such documents.
- Recommendation 13: *That faculties of engineering accelerate efforts to attract women to graduate studies and to ensure they continue to graduation so that the pool of candidates for faculty positions and senior positions in industry is increased:*
 - The report of the NSERC Chairs for Women in Science and Engineering shows that the proportions of master's and doctoral degrees in engineering awarded to women have increased from 11.9 to 24.1% and from 5.4 to 22.4% respectively between 1990 and 2009.
 - Because they tend to perform better than men at the undergraduate level, female engineering students are generally better prepared than their male colleagues for graduate studies.
- Recommendation 14: *That faculties of engineering develop an action plan to increase the number of women faculty in engineering so that a more gender balanced engineering faculty is created and all engineering students have women role model:*
 - As was indicated under recommendation 8, Canadian engineering schools are currently recruiting women professors in the same or even at a higher proportion than their representation in the pool of Ph.D. graduates; however, recruitment of female faculty members in certain disciplines remain very challenging because of the very low numbers of potential candidates.
 - The appointment of female to academic leadership positions (i.e. department chair, vice-dean, dean) remains an issue.

- Recommendation 15: *That universities design tenure and promotion criteria and processes to allow for family responsibilities so that maternity, paternity and parental leaves do not jeopardize career progression or achievement of tenure and promotion:*
 - Criteria for tenure and promotion have evolved in this direction since 1992.
- Recommendation 16: *That the engineering curriculum be made relevant to current societal realities and future needs so that engineering students are conscious of the effects of engineering decisions and designs, and develop an understanding of and appreciation for the humanities and social sciences:*
 - The introduction of the graduate attributes accreditation criteria and the anticipated reduced reliance on input-based criteria should allow for more diversified engineering programs.
 - The CEAB has not increased the minimum required number of accreditation units in the ‘complementary studies’ category.
- Recommendation 13: *That faculties of engineering develop and expand work-experience programs and encourage women students to participate so that they are able to validate their career choice and relate engineering studies to the workplace:*
 - The number of institutions that offer cooperative education or internship programs as well as the number of engineering students enrolled in these programs continue to increase.

3. **Looking forward**

- NCDEAS | CCDISA will continue to work with granting agencies, especially NSERC, to develop and expand programs that allow for the recruitment and support of new female faculty members and also for the provision of financial support to female engineering students.
- NCDEAS | CCDISA member of institutions will need to integrate the ‘30 by 30’ goal expressed by Engineers Canada (i.e. women representing 30% of licensed professional engineers in Canada by 2030) into their activities (e.g. proportions of female students, of female graduates, of female faculty members) to contribute to that national objective. One major challenge will be to rapidly and significantly increase the level of interest for engineering among the young girl population.
- NCDEAS | CCDISA member institutions will continue to adapt and to improve their programs of studies to respond to the needs and expectations of the profession, of employers, and of students: outcome-based assessment of learning; program delivery mode; add-on or built-in options, dual-degree streams, etc.

Respectfully submitted,

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