

**APDC/ASA EXECUTIVE SUMMARY TEMPLATE**

**FOR PROGRAM REVIEW 2009/10**

*The Executive Summary will be presented to the Academic Planning and Development Committee and the ASA Committee of the Board of Governors for information and feedback.*

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| **Subject:** | *School of Environmental and Natural Resource Sciences* ***Program Review Report:******Arboriculture******Forestry Technician******Earth Resources Technician*** |  |
| **Presented by:** | Linda Skilton |
| **Action:** | **For Discussion / Information**  |

**SOURCE**

• Fleming’s Quality Assurance Process (College Policy 2-207)

• ASA Committee mandate (Board Policy 1-102J) to conduct reviews of existing programs of instruction on an ongoing basis, subject to current regulation, legislation and policy directives

**BACKGROUND**

Fleming’s quality assurance process includes a two-staged process that includes: Curriculum Renewal (conducted annually) and Program Review (conducted every five years). These two internal processes are integrated so there is an *ongoing* focus on curriculum quality.

The Program Review process is characterized by both depth and breadth of analysis. Program data is collated, reviewed and assessed against given criteria, providing a measure of both the vitality and viability of each program. Based on this analysis, long-term plans are then created to guide continuous curriculum improvement and build on the cumulative outcomes of annual curriculum renewal. At the end of this process, a Program Review Panel (convened by the Dean) is charged with the responsibility of making recommendations concerning program viability as well as suggesting program/curriculum revisions.

In adhering to the mandate of the APDC/ASA Committee to receive reviews of existing programs of instruction, the Executive Summary for the School of **Environmental and Natural Resource Sciences** is hereby provided, for the Committee’s information.

**1.0 Arboriculture Certificate Program (ARB)**

**PROGRAM STRENGTHS**

Strengths identified as a result of the review.

Graduates of the Arboriculture program are in high demand across the country (for example, an employer from Vancouver flies here to interview, and flies candidates to Vancouver to work). There has been a 100% employment rate for program graduates since 1988. The program is always among the top 5 programs in annual Key Performance Indicators (graduate satisfaction/placement statistics). The program applications and conversions are solid and the program is wait-listed with at least 100 prospective students told not to apply. The College recently hired a new full-time faculty member – Tom Mikel – who has proven to be an important asset to program operations.

The program’s safety record is almost flawless. An expanded Urban Forestry Program will provide excellent partnerships with Arboriculture. There are already excellent community / industry partnerships and some, such as that with the City of Kawartha Lakes can be expanded.

 A joint degree program with University of Guelph is under development.

**PROGRAM CHALLENGES**

May include implications associated with any of the following: Enrolment, Human Resource issues, Marketing, Budget, etc.

There is pressure for the program to grow, given the number of applicants, but there are very real concerns about flooding the market as well as finding appropriately qualified teaching faculty. Currently, program graduates find full time, year round work. This may change if numbers grow disproportionate to industry needs. It is also difficult to find qualified people to teach in the program; however, the new faculty hire will help in this regard. The program is expensive operationally from both a campus and system perspective. It requires a lot of labs and technical support as well as student transportation. Safety is an issue and the faculty is always trying to improve program safety given that students work in all weather conditions (e.g. very cold weather is an issue). There is also a high level of technical support required in labs because of the nature of the equipment used; unfortunately, there is no immediate prospect of being able to elevate tuition fees.

It is often a challenge to find work sites for labs during the academic school year; in addition, locating suitable co-op placements may prove a challenge (60 placements are required).

The student attrition rate between semester one and two of the program was 33% in 2009, which is somewhat higher than the average for the program; however, this rate is always somewhat higher than that for most other programs in the School. This directly relates to student performance in the field and safety, specifically with respect to the tree climbing course that students must complete. These are standards that cannot be compromised. Traditionally forestry students have filled the ‘attrition gap’.

Labour data indicates more graduates could find employment if we produced more graduates, but the quality of the jobs in question may diminish. Industry representatives are concerned that professional development opportunities be created for industry professionals, at all levels. There is some urgency around meeting this need.

The proposed joint degree in Urban Forestry may have an impact on the incoming student profile.

**Concluding Remarks**

In summary, it could be said that the Arboriculture Certificate program represents a model of what an Ontario College Certificate could be. It is a college level program that offers an exemplary approach to applied learning with appropriate levels of supervision, and practice as well as rigour of assessment. While operating with a limited faculty complement for many years, the program has none the less become established as an industry leader in the province and beyond. No other programs come close to the depth and breadth of the curriculum offered; in effect there are no other competitor programs. Student satisfaction is high and graduate placement in the field is enviable. Industry comes to the college to recruit and student alumnae continue that tradition as they themselves become established practitioners. Recent curriculum modifications to include apprenticeship outcomes, co-op and a focus on the meaningful development of Essential Employability Skills will further enrich the program.

In fact the Arboriculture program serves as an unusual model of what can happen if higher education fills a much needed gap that is not being adequately addressed by existing industry players.

On a more cautionary note, the program must continue to grapple with the ways and means to grow sustainably in a developing industry that requires high cost, high maintenance equipment and in which safety cannot be compromised. The development of the Urban Forestry diploma / degree will further test program resources and capabilities and possibly change the demographic mix in Arboriculture.

**SUMMARY OF RECOMMENDATIONS**

**Program Review Panel Meeting Date**: Monday, December 8, 2009

**Program Review Panel Participants**: Joe Outram, Steve Adams, Barb Elliot, Lawrie Gulston

Helen Knibb, Linda Skilton, Kevin Williams

**Summary Recommendations:**

1. Maintain industry currency in terms of curriculum and skills. This will require on-going research, industry and alumnae liaison and discussion with the professional bodies, as well as the deliberations of a sub-committee of the Advisory Committee.

1. Promote graduate performance in the soft skills (communication, customer service, time management, interpersonal skills, etc.). This will require a development strategy carefully integrated into program curriculum (e.g. gap analysis, identification of when, where and how essential employability skills are taught, reinforced and assessed; new strategies for learning activity and assessment; and consistent validation by program faculty).
2. Incorporate outcomes from the **Utility Arborist Apprenticeship** curriculum into the Arboriculture program in order to provide students with further options in job readiness.

1. Develop an Arboriculture Human Resource Development plan that aligns with the SENRS HR plan and which addresses the anticipated skills shortages and needs required to grow and maintain the quality of the program. In particular it must address the transition to an Urban Forestry diploma and potential joint degree and include desirable skill sets, cross appointments, positions (faculty and technologist) and time frame in relation to program need and growth.

1. Implement and evaluate the new co-op component of the program including job availability and remuneration, staffing and administration, student preparation and preparedness for work experience and changes in student performance / attitude on return. Findings will be compared to the previous internship experience.

1. Ensure that space requirements for the program are considered in the 2010 campus master planning process.

**2.0 Earth Resources Technician Program (ERT)**

**PROGRAM STRENGTHS**

The ERT program is a unique program offering in the province of Ontario.

Graduates of this program have significant employment opportunities and attractive starting salaries.

The Earth Resources Technician Program provides positive dollar figures to overhead and a positive increase to student numbers.

Enrolment data for the past three years indicates that student numbers in the program have remained fairly consistent (2007-2008 academic year – 57 students; 2008-2009 academic year – 46 students; 2009-2010 academic year – 50 students).

**PROGRAM CHALLENGES**

One of the significant challenges the program faces is the challenge of attracting students. It is hoped that the inclusion of the co-op semester will serve as an attractor to increase student numbers in the program. The College is currently hiring new full time faculty members. Some will have direct impact on this program. For example, an environmental chemist will be hired in fall 2009. This person should have impact upon program courses such as Sampling Protocols. This rejuvenation is very important as the capacity of the program to inter-relate to the earth science industries has been hampered by the limited availability of full time program related faculty to address the plethora of developments in the earth sciences. The full time Faculty compliment has diminished from 7 to 2 during a 3 year period. Those that remain are actively engaged in professional development; however there is a significant drop in that external activity. One faculty member has been immersed in industry training via a corporate invitation to experience environmental “in house” technical training courses. It is noteworthy that the selection is complex because one is confronted with the constant need to stay up to date in too many subject areas. This has further limited the numbers of field trips, or other professional exchange opportunities that can occur. These conditions will improve with faculty renewal and further discussions about technical support.

Infrastructure resources, most notably the learning spaces available to students, are in great need of renovation. This renovation has been identified as a priority for the Frost Campus.

**SUMMARY OF RECOMMENDATIONS**

**Program Review Panel Meeting Date**: Monday, September 21, 2009

**Program Review Panel Participants**: Doug Dolby, Brian Gerry, Lawrie Gulston, Linda Skilton, Anne Powell, Pauline Smiley (Mike Lord provided comments prior to the meeting)

**Summary Recommendations:**

The panel proposed that the following recommendations move forward for consideration:

1. Develop an extended co-op work term that would take place between semesters 2 and 3 of the program (co-op start date summer 2012).
2. Re-sequence the mathematics courses within the program such that the third semester Mathematics course (MATH 38) will occur in semester one in place of MATH63 (Applied Mathematics for Natural Resource Sciences) and will include more spread sheet utilization.
3. Increase industry training in the class room with industry personnel and equipment
4. Tighten up, and enhance the continuity of the water focus in the program, improve course notes, establish new industry links.
5. Change field activity locations to reduce field trip costs and increase time in activities vs. travel.
6. Re-catalogue geological materials.
7. Increase lab time in the Rocks and Minerals course.
8. Increase applied field work experiences by scheduling all students with only core geology courses one day in the week for field trips.
9. Encourage student participation in the Claim Staking short course, mineral occurrence seminar and other similar activities.
10. Increase the capacity and confidence of students to communicate effectively.
11. Acquire slope stability software; enter onto capital list.
12. Investigate current uses of satellite imagery.
13. Continue to develop student projects.

**3.0 Forest Technician Program (FT)**

**PROGRAM STRENGTHS**

Strengths identified as a result of the review.

One of the biggest strengths the program are the faculty/staff and the inherent interest they have in seeing the students succeed. The program attracts students from a large geographic area in Ontario, the Maritimes and B.C.

The Forest Technician program is one of 10 programs in the School of Environmental and Natural Resources in which students can seamlessly move from one program to another and complete a dual diploma over the course of a three-year period.

The FT program introduced an International Exchange program in 2008 which has been very successful in enhancing the experience of the students and the staff.

Word of mouth is our selling point; Fleming graduates sell Fleming. Fleming College has the largest Forestry Program in Canada.

**PROGRAM CHALLENGES**

May include implications associated with any of the following: Enrolment, Human Resource issues, Marketing, Budget, etc.

It is a challenge to maintain sufficient qualified faculty in the mix as people retire.

Meeting the needs of the economic downturn and not jumping on every band wagon is also a challenge, i.e. global warming is important to know about, but where do our students fit into this on the ground, and how do we address these emerging issues within curriculum? The program needs to look at climate change as well; this is where people will be looking for help with their forests (e.g. insects and disease implications, invasive species, overall forest health). As well, the students should be knowledgeable about bio-energy and non-timber values/uses of the forest (e.g. Canada Yew, etc.).

Our classical Forestry students (northern Boreal Forest) are being mixed with Urban Forestry and the two are starting to blend.

The program needs to ensure that technology and equipment are up to date and that hands-on skills and training are emphasized within the program. Some new equipment is also needed.

The College needs to tailor the Forestry Program in a way that more First Nations people would see the value in it (e.g. by including an emphasis on non-timber values and forest products). There needs to be some First Nations perspective infused in the curriculum.

Continued emphasis needs to be placed on the international placement opportunity, as well as the expansion of field opportunities for students (i.e. via a co-op or internship placement, and/or through field days for all program students).

**SUMMARY OF RECOMMENDATIONS**

**Program Review Panel Meeting Date**: Thursday, September 24, 2009

**Program Review Panel Participants**: Barb Elliot, Gerald Guenkel, Lawrie Gulston, Helen Knibb, Linda Skilton, Debbie Yarnell, Steve Munro (by phone), (Rob Baker provided comments prior to the meeting)

**Summary Recommendations**:

The following summarize the recommendations approved by the Program review panel:

1. Support succession planning for program faculty and staff to ensure both a transition period between new and seasoned staff, and the provision of appropriate professional development for all faculty and staff as needs arise.
2. Maintain replace and/or purchase technology and equipment to meet emerging education and training needs for program graduates (e.g. enhance program collections, replace aging equipment, and purchase appropriate software and computer technology as required).
3. Provide enhanced placement opportunities for students based on a model that best meets the needs of the program and students (e.g. 2-week field placement, internships, weekly field days, etc.).
4. Evaluate core program curriculum and revise to ensure relevance for students (Geomatics on Surveying, Air Photo and Silviculture courses, etc.).
5. Continue to work towards an Urban Forestry degree partnership with a recognized university in Ontario.
6. Maintain viable international placement opportunities for students.
7. Explore program options that meet the needs of aboriginal students and communities.
8. Revitalize the Program Advisory Committee by soliciting new membership and diversity of membership (including women) in order to enhance the profile of the program across Canada.
9. Work closely with the Alumni Office to enhance alumni involvement in the program (e.g. guest lecturers, field placement opportunities, etc.).