FINAL ASSESSMENT REPORT ON THE 2012-2013 PROGRAM REVIEW

Under UOIT's Quality Assurance Framework, all degree programs are subject to a comprehensive review every eight years to ensure that they continue to meet provincial quality assurance requirements and to support their ongoing rigour and coherence. Program reviews involve several stages, including:

1. A comprehensive and analytical self-study brief developed by members of the program under review

2. A site visit by academic experts who are external to and arm's length from the program who prepare a report and recommendations on ways that it may be improved based on a review of the program's self-study and supporting material, and a two day site visit involving discussions with faculty, staff and students and a tour of the facilities

3. Development of a plan for improvement by the program and proposed timelines for implementation.

On the completion of the program, the self-study brief together with the reviewers' report and the assessment team's response are reviewed by the appropriate standing committee of Academic Council, and are subsequently reported to Academic Council, the Board of Governors and the Quality Council.

In 2012-13, program reviews were conducted for the following degree programs:

- Bachelor of Engineering in Automotive Engineering

- Bachelor of Science in Computing Science

This is the first program review for these programs and the internal assessment teams are to be commended for undertaking this assignment in addition to an already challenging workload and within very tight deadlines. The following pages provide a summary of the outcomes and action plans resulting from the reviews, identifying the strengths of the programs as well as the opportunities for program improvement and enhancement. A report from each program outlining the progress that has been made implementing the recommendations will also be put forward in eighteen months' time.

I. BACHELOR OF ENGINEERING IN AUTOMOTIVE ENGINEERING

Dean: Dr. Tarlochan Sidhu

External Reviewer: Dr. Chun-Yi Su, Concordia University

Internal Reviewer: Dr. Francois Desjardin, UOIT

Site Visit: May 8-9, 2013

The two external reviewers, following the receipt of the self- study document prepared by the Faculty visited the campus on May 8-9, 2013. The two reviewers were chosen for their knowledge in the subject area as well as their curriculum expertise. During the visit the two reviewers met with Senior Administration, faculty, staff, and students, the chief and associate librarian and academic advisors. They also had an extensive tour of the labs and facilities offered to students and faculty on the campus.

The reviewers felt the program had a strong mechanical engineering foundation and included important aspects of manufacturing and electrical engineering. The program is unique in Canada, with access to one of North America's major auto manufacturers. In the last accreditation visit, the Automotive Engineering program was granted a six year accreditation by the Canadian Engineering Accreditation Board (CEAB). They further noted that the faculty of the program is strong, with many active researchers.

The external reviewers commented that the program closely adhered to UOIT's mission statement and that the programs learning outcomes are "written in a clear manner that is consistent with current educational taxonomies." They were encouraged to see the program's learning demonstrate competencies at every level from simple memorizations to high level analysis, evaluations and problem solving. The reviewers suggested revisions to one learning outcome on life-long learning to allow for clear indicators of student attainment. The Faculty is working on a five step action plan to more effectively assess all program outcomes including life-long learning.

Admission requirements are appropriate to the program and the reviewers were supportive of the work currently being done on a bridging program to reach Ontario college students. They believe adding such students would greatly benefit the program and raise the bar for high school students.

Overall, the reviewers felt that the Automotive Engineering curriculum very adequately provided undergraduates with opportunities to develop "all the necessary knowledge and skills required for engineering in the automotive sector." The reviewers were impressed to find the program is being offered with the most advanced technological resources available, particularly in terms of the industry standard software and workshops (such as the Integrated Manufacturing Centre) and opportunities for students to work as research assistants and learn from active researchers in the field. They encouraged further opportunities for students to access the labs and workshops in the Automotive Center for Excellence (ACE), "a world class collaborative effort" involving the institution, the community and industry. The Faculty is working to secure increased student involvement with ACE.

The reviewers did touch on one aspect of the curriculum that the Faculty may wish to examine and evaluate in the future. They felt there was too strong an emphasis on design courses and the program would benefit from the exploration of more hands on, technology based modes of delivery. To this end,

the Faculty is in the process of creating a program advisory board. This will enable faculty members to directly link course topics with a direct application in an industrial framework.

The reviewers were pleased to discover that the library services available to students were quite extensive both in the physical facilities as well as online offerings and as such remain quite current and responsive to the needs of both faculty and students. They recommend that student awareness of this resource could be raised and faculty are currently introducing measures to accomplish this goal.

A timeline of proposed actions to address the suggestions in the external reviewers report is included below.

Table 1: Timeline for addressing the recommendations of the external reviewers

Deadline	**Proposed Action**
April 2014	**Awareness Session on 5-step action plan in Automotive Engineering Program (Step 1, 2)** The Department Chair will coordinate with the stream leaders to organize an awareness session for faculty members in Automotive Engineering program.
May 2014	**Program Advisory Board** A program advisory program, with industry representation, will be formed and in place and the first meeting would have been held. **Data on Student Learning Collected and Analyzed (Step 3, 4)** Course instructors in Automotive Engineering complete their course dossiers with results of assessment of 12 graduate attributes included.
July 2014	**Bridging Program Consultation** Gather feedback from the faculty and staff members regarding the bridging program. **Regular two-year course curriculum review cycle (Step 5)** A two-year regular course curriculum review cycle is proposed to be conducted per alternative (randomly selected) streams. The curriculum committee will carry out a comprehensive review of the AE program curriculum based on the data collected in the past two years. If curriculum delivery deficiency is found with a course, an emergency course curriculum review cycle will be processed, otherwise only minor or no changes will be made
September 2014	**Awareness Session about online resources for new students.** **Technical Session about online resources for capstone students.**
June 2015	**Formal three-year program curriculum review cycle** The formal reviews serve to evaluate the success of the implemented curricular changes within the last three years of the offering of the program and thereby provide formative feedback to the department. The idea is to align courses and make the necessary changes in order to have an improved curriculum starting Fall 2015 just in time for the next CEAB accreditation visit.
July 2015	**Bridging Program** Formal introduction of Bridging program

August 2015	**Implementation Strategies** Once the results of the comprehensive review of the AE program curriculum have been approved at the Faculty Council and CPRC & Academic Council, an implementation strategy will be presented just in time for the new AE curriculum to be offered in Fall 2015.

I. BACHELOR OF SCIENCE IN COMPUTING SCIENCE

Dean: Dr. Greg Crawford

External Reviewers: Dr. Ken Barker, University of Calgary

Dr. Wayne Enright, University of Toronto

Site Visit: November 21-22, 2013

The two external reviewers, following the receipt of the self- study document prepared by the Faculty visited the campus on Nov 21-22, 2013. The two reviewers were chosen for their knowledge in the subject area as well as their administrative expertise. During the visit the two reviewers met with Senior Administration, faculty, staff, and students, the chief and associate librarian and academic advisors. They also had an extensive tour of the labs and facilities offered to students and faculty on the campus.

The reviewers felt the program closely adhered to the Universities' primary mandate to "provide pragmatic degrees aimed at preparing students to meet the immediate needs of employers primarily in the region around the University." In keeping with this mandate, they noted that program faculty are very active researchers and extend their interests to the students by choosing topics for projects and undergraduate theses relevant to the Durham Region. They further noted the impressive undergraduate thesis topics being undertaken by the computing science students.

The reviewers also commented on the current Faculty of Science curriculum and admission requirements. They noted that the admission requirements are aligned with the current program requirements. With regards to the curriculum, they noted both the challenge and opportunity that a common first year in all Science courses at UOIT provides. They felt this was empowering in that all students will have a substantial amount of science across several disciplines, which will provide for both multi-disciplinary opportunities and a solid breadth. However, they believe that, by having to limit the provision of computer science courses to one half-year course in first year, it was a true challenge to engage and retain computer science oriented students who may come to university with varied degrees of experience in computer science. To address these concerns, faculty members are in the process of putting together a curriculum change proposal which differentiates the Computing Science students to provide them a more balanced selection of courses. Discussions on this topic are expected to take place at the Faculty Council meetings in the fall of 2014.

Another concern of the reviewers centred on the number of sessional instructors teaching Computing Science courses. To address this, the Computing Science program has recently hired an additional core research faculty member which has reduced the need for sessional teaching from 6 courses in 2013-2014 to 3 courses in 2014-2015. Further, a potential opportunity to hire an additional core research faculty member, with a specialization in Parallel Computing, is planned to help meet some of the expected additional teaching needs associated with the above mentioned curricular changes as well as to address an identified area for potential growth (Informatics) that aligns well with the UOIT Strategic Research Plan and the 2014 Strategic Mandate Agreement. In response to a recommendation made around elective course offerings in the program, the Faculty will examine incorporating Engineering and Business courses as Computing Science electives.

The reviewers remarked on the relatively small class size (target enrolments of 60-70 students in each year) as a strength of the program. Noting that, it allowed all faculty to be involved in first and second year teaching and for the building of strong and meaningful student-faculty relationships. They felt it

created a student cohort that is comfortable interacting with faculty members and who are encouraged to seek advice and guidance in planning their programs. They did feel that students would benefit from more co-op and Undergraduate Student Research Awards (USRA) opportunities. To address the reviewers' recommendations, the Computing Science faculty plan to implement a mentor program. First year students will be assigned a mentor who is a core faculty member. The goal will be to not only enhance teacher-student relationships, but through the use of such planned interactions as CS social events, open office hours and one-to –one meetings, faculty will continually disseminate information and encourage students to participate in various career development programs, particularly co-op and USRA. The faculty members plan to enrich the in-class experience with discussions of co-op and research opportunities.

Among support staff concerns, the reviewers noted that the academic advisors are burdened with administrative tasks. They believe some of these tasks, such as scheduling, can be moved to other administrative support staff so they could spend more time with students. There is a campus-wide initiative currently underway to assess the effectiveness of the advising model in all of the Faculties. In the short-term, the addition of a new faculty member and the newly proposed mentoring program should help to alleviate some of the pressure on academic advisors. The university-wide assessment will help the computing science program understand what changes will be made across the institution and what changes might be made in the Faculty of Science specifically.

The reviewers toured the Library facilities and were pleased to find then both quite extensive and current in regards to the computing science offerings. They commented on the wide range of both book and on-line resources and stated this was a strong resource for students in the program, particularly for such a young university. They were also impressed by the small, bookable "breakout" rooms. The reviewers' recommended that it would be beneficial to see such rooms located closer to the area where the computing science program is delivered, as they are essential to sound computing science pedagogy. To this end, while space is an institution wide challenge the Faculty plans to work with the CISP (Campus Infrastructure and Space Planning) Committee to explore potential solutions to the need for "breakout" spaces within close proximity to the computing science classrooms.

A timeline of proposed actions to address the suggestions in the external reviewers report is included below.

Action Plan

Table 1 presents a time-line of the actions we plan to take to address the recommendations from the external report.

Table 1: Timeline for addressing the recommendations of the external reviewers

Proposed Action	Timeline	Person/Area Responsible
Course change for first year CS curriculum	Fall 2015	Program director, relevant CS faculty members and Science Curriculum Committee

New course development for CS, software engineering and gaming students	Fall 2015	CS faculty members
Incorporate Engineering and FBIT courses as CS electives	Fall 2015	Program director
Space issue and break-out space for students	Fall 2014	Program director, dean and CISP committee
Visiting local high schools	Winter 2015	CS faculty members
Faculty mentorship program	Fall 2014	CS faculty members
Study the feasibility of raising the admission standard.	Winter 2015	Program director