



## **FINAL ASSESSMENT REPORT ON THE 2012-13 PROGRAM REVIEWS**

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 the members of the program under review
2. A site visit by academic experts who are external to and at 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 its outcomes 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 Allied Health Sciences
- Bachelor of Engineering in Electrical Engineering
- Bachelor of Engineering in Software Engineering

In addition to these programs the Bachelor of Science in Computing Science, MSc and PhD in Computer Science and Bachelor of Engineering in Automotive Engineering are also currently completing reviews. The report on these reviews will be completed in April 2014.

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 timelines. 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 in implementing the recommendations will also be put forward in eighteen months' time.

Included in this report is also the 18 month follow-up report on the following program reviews:

- Bachelor of Education

- Bachelor of Science in Applied and Industrial Mathematics
- Bachelor of Science in Forensic Science

Looking forward to 2013-14, the following programs will be subject to review under the Quality Assurance Framework:

- Bachelor of Information Technology
- Bachelor of Engineering in Energy Systems Engineering
- Bachelor of Health Science
- Bachelor of Science in Physics and Bachelor of Science (General)

## **I. BACHELOR OF ALLIED HEALTH SCIENCES**

**Dean: Ellen Vogel**

**External Reviewers: Elizabeth Childs, UOIT  
Rick Vanderlee, Nipissing University**

**Site Visit: May 21-22, 2013**

The two external reviewers, following receipt of the self study document prepared by the Faculty visited the campus on May 21-22, 2013. The two reviewers were chosen for their extensive knowledge in online program delivery and professional studies. As this is an online program, in addition to meeting with the faculty and staff of the program the reviewers also spent a considerable amount of time meeting with staff of the Teaching and Learning Centre to gather information on the supports available for online learning at the university.

Overall, the reviewers found the program to be of good quality with much potential for growth for the Faculty of Health Sciences and UOIT. They remarked that the program remains highly relevant for specific Allied Health Care diploma graduates and that the expansion to all regulated health care professions should be highly considered. The program operates in a niche market that is currently underserved and there is an opportunity to capitalize on its market positioning. The reviewers also commented that the program seems to be an excellent fit with the vision, mission and objectives of UOIT and the Faculty of Health Sciences. The program was originally designed to seamlessly ease traditional barriers between University and College and to enhance educational pathways for qualified students who are (potentially) working fulltime and desire more flexible learning options. In their review they concluded that program continues to do this well.

The reviewers also provided some areas that the Faculty may want to revisit to make further enhancements to the program. They suggested that some time should be taken to refresh, align and connect the program learning outcomes and assessment measures as a result of the minor program modifications that took effect in 2013. The reviewers also commented on the need to develop more online broad based electives for the program and that this was one area that students commented on as needing improvement. They indicated that further elective online courses would also have benefits for students in other programs across the university as well. They also noted that the curriculum could benefit, in its evolution over the next few years, from the development of more skills based competencies as well as having a clear, consistent, articulated program teaching philosophy and pedagogy. These could be developed in tangent with the suggested changes to the curriculum and would further strengthen the program.

Another issue raised by the reviewers was the marketing of the program. With the strong connection to the mission and mandate of the university the reviewers highlighted the potential to be a 'marquee' program for the University and the Faculty of Health Sciences. They recommended that the program develop more active information and recruitment efforts. In their interviews with students they noticed that student may not know or have enough information on how a BAHSc is advantageous to their career. The program does highlight that the degree will prepare them to "fill leadership and teaching positions in the evolving health care system" but students often want to know what jobs would be available to them post-graduation.

The Faculty has reviewed the report prepared by the external reviewers and have prepared a timeline of proposed actions to address the suggestions provided in the report. The timeline and actions are included below:

<b>Action Required</b>	<b>Timeline</b>
Dean will establish a Working Group to elucidate “cross-walk” re: the BAHSc program and course learning outcomes, including assignments and assessment rubrics. This work will ensure that program outcomes are aligned with the program outcomes associated with the BHSc program.	Initiated in January 2014, the Working Group will submit a final report in June 2014.
Dean and FHS Planning & Budget Office (PBO) to work with the Office of the Associate Provost Academic, Registrar’s Office, and others, on the design, implementation and evaluation of an interactive web-based recruitment strategy to increase enrolment in the BAHSc program.	Effective immediately, the Registrar’s Office will take the lead on this initiative, understanding that MTCU funding must be spent in the 2012-13 fiscal year.
Dean and PBO will develop a business case, based on projected increases in BAHSc student enrolments, for review and approval by the SLT.	Effective immediately, as part of the 2014-15 budget planning process, the Dean and BPO will consult SLT re: required resources (faculty, staff, capital resources, etc.) to meet projected increases in BAHSc student enrolment.
Dean to establish an External Advisory Board for the BAHSc program including representatives from the various Allied Health Professions and program graduates. PBO to include estimated Advisory Board costs, using MLS and Nursing programs as examples, in drafting 2014-15 budget documents.	Dean will draft Terms of Reference for the Advisory Board with the goal to approach suitable candidates in January 2014. Ideally, the inaugural meeting of the Advisory Board would take place in June 2014. Budget approval will be requested through 2014-15 approval process.
Teaching faculty associated with the BAHSc program will explore applying for a 2014-15 UOIT-TIF grant with emphasis on supporting students’ abilities to learn effectively in the online environment.	Teaching faculty members to follow-up with the Director of the Teaching & Learning Centre over the Fall term to familiarize themselves with the 2014-15 TIF process, timelines, etc.
Dean and the Associate Dean Undergraduate will set-up a meeting with the UOIT Librarian and pertinent staff to review UPR recommendations and determine next steps.	The exploratory meeting will be scheduled in Fall 2013, before the end of the

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## II. BACHELOR OF ENGINEERING IN ELECTRICAL ENGINEERING

**Dean: Tarlochan Sidhu**

**External Reviewers: Farid N. Najm, University of Toronto  
Sri Krishnan, Ryerson University**

**Site Visit: April 8-9, 2013**

The two external reviewers, following receipt of the self study document prepared by the Faculty visited the campus on April 8-9, 2013. The two reviewers were chosen for their extensive knowledge in the subject area as well as their administrative expertise, with both holding senior administrative roles within Departments of Electrical and Computer Engineering in Canada. During the site visit the two reviewers met with Senior Administration, faculty, staff, students, the chief and associate librarian, academic advisors as well as the internship and coop coordinator. They also had an extensive tour of the labs and facilities offered to students and faculty on the campus.

The Electrical Engineering (EE) program was developed in close consultation with industry representatives and faculty members from other universities. The program is young but innovative and provides a sound basis in fundamentals, a broad exposure to core engineering concepts, and the opportunity to develop skills which reflect current industry standards.

The program was first offered in September 2005. Since September 2005, there have been two Canadian Engineering Accreditation Board (CEAB) visits, the last one was in early 2012, through which CEAB granted UOIT a six year accreditation for the EE program. The external reviewers noted this exceptional achievement given the youth of the program. They also noted the significant efforts of the Department and Faculty in strengthening the design components of the curriculum and that indeed “the curriculum does reflect the current state of the discipline.”

In addition, the external reviewers commented on the strength of the faculty in the program. It was apparent to them that “faculty members are successful in attracting funds from prominent external agencies and have built good research profiles in a short span of time.” They further noted that the planned recruitment of a Tier 2 CRC will add further strength and research capacity to the Department. The reviewers were also impressed by the strong technical support team available to support the program, complementing the Faculty on having this strength and encouraging them to safeguard and retain this resource going forward. In their interviews with students they found that the students in the program were generally happy with the program. One area the students noted for improvement was in the cohesiveness between the curriculum and lab delivery.

In their review they noted that the first year enrolment has increased from 51 students in 2005-2006 to 131 students in 2012-2013. The reviewers acknowledged that this was an impressive achievement in the short span of time. They further noted that the admission requirements for UOIT Electrical Engineering students are similar to other electrical engineering programs in Ontario. The average entrance marks of students are increasing in recent years and the program provides opportunities for experiential learning experiences through co-op and internships. They noted however that one area of concern is the high attrition rate of students. They felt that the proactive steps that the Faculty has taken to address this through the introduction of a common first year in engineering, more tenure-track faculty and improved student advising would have a positive effect on retention.

In their comments on the curriculum for the program they felt that the common first year had a number of positive attributes and that it should further help with the student experience and retention. They made particular note of the research expertise of the department in the areas of communications, control, signal processing and power systems, which is reflected in the focus of the curriculum for the program. They encouraged the department in the future to possibly add expertise in the field of electronics to further strengthen the program. Providing all students with a laptop with essential software packages and tools is a unique aspect of UOIT, which is favourable. Covering environmental science course for engineering students is a notable and good addition to the curriculum, however principles of computer programming could be strengthened in the curriculum. They noted that the Department and Faculty have made significant efforts in strengthening the design components of the curriculum. Some of the initiatives include the introduction of design engineering course in first year, and the revision of the capstone design course. It was encouraged that design aspects are continuously reviewed and integrated in the curriculum especially in third year and fourth year courses.

The Faculty has begun the process to comprehensively review the curriculum for the program to examine the curriculum as a whole to address the suggestions made by the external reviewers as well as some of the issues previously identified by faculty in the program. The completion of this review and timelines are included in the chart below. The reviewers also recommended starting a computer engineering program to further strengthen the offerings of the department. The Faculty will examine the possibility of including an option within the current program as part of the comprehensive review, however they do not feel that a new program in this area is warranted or advisable at this time.

In addition to the points raised above, the reviewers also heard comments from students on issues pertaining to academic misconduct. As a proactive measure the Faculty will work with the Teaching and Learning Centre to organize an awareness day on academic misconduct.

There were some resource issues raised as part of the review. These included suggestions with respect to the provision of administrative support for the program. The reviewers encourage the university to have all engineering programs under one faculty to provide better resources for all Engineering programs at UOIT.

All such requests will be considered as part of the budget requests within the broader budget planning process at UOIT.

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

<b>Proposed Action</b>	<b>Timeline</b>
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<p><b>Awareness Session on Academic Misconduct</b> The Department Chair will coordinate with the Teaching &amp; Learning Centre to organize an awareness session on academic misconduct for students, faculty and student advisors.</p>	Fall 2013
<p><b>Program Advisory Board</b> A program advisory program, with industry representation, will be formed and in place and the first meeting would have been held.</p>	December 2013
<p><b>Outreach Report</b> An outreach program with visits and activities for schools will be developed, and a report on the first year of operation will be delivered and presented.</p>	July 2014
<p><b>Results of New Model for Lab Instructors and TAs</b> Gather student feedback and evaluate the effectiveness of the new model for lab instructors for lab delivery. The effective use of TA resources will be reviewed and results reports.</p>	May 2014
<p><b>Results of Comprehensive Review of the EE Program Curriculum</b> The curriculum committee will carry out a comprehensive review of the EE program curriculum. 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. Note however that minor changes will be implemented between now and then.</p>	September 2014
<p><b>Program Options</b> The Department will study the possibility of creating program options</p>	September 2014
<p><b>Implementation Strategies</b> Once the results of the comprehensive review of the EE program curriculum have been approved at the Faculty Council and CPRC &amp; Academic Council (in October 2014), an implementation strategy will be presented just in time for the new EE curriculum to be offered in Fall 2015.</p>	March 2015

### III. BACHELOR OF ENGINEERING IN SOFTWARE ENGINEERING

**Dean: Tarlochan Sidhu**

**External Reviewers: Timothy Lethbridge, University of Ottawa  
Patrick Hung, UOIT**

**Site Visit: April 18-19, 2013**

The two external reviewers, following receipt of the self study document prepared by the Faculty visited the campus on April 18-19, 2013. The two reviewers were chosen for their extensive knowledge in the

subject area. During the site visit the two reviewers met with Senior Administration, faculty, staff, students, the chief and associate librarian, academic advisors as well as the internship and coop coordinator. They also had an extensive tour of the labs and facilities offered to students and faculty on the campus.

The program was developed in close consultation with industry representatives and faculty from other universities. The program provides a sound basis in fundamentals, a broad exposure to core engineering concepts, and the opportunity to develop skills which reflect current industry standards. The program first began accepting students in September 2005. In the last accreditation visit, the Software Engineering program was granted a 6 year accreditation by the Canadian Engineering Accreditation Board (CEAB).

The external reviewers commented that overall the program is comparatively strong with other programs offered in Canada, with a strong group of experienced and knowledgeable faculty members, and employers and students who are satisfied. They also indicated that the program aligns well with the mission of UOIT, and this is achieved in particular through the interactions with industry found in the co-op program, international activities and the industrial interaction with faculty members which is further reflected in their teaching. The reviewers also noted that the entering averages of students is comparable with other engineering programs and based on enrolment numbers the program seems 'attractive, growing and sustainable.' They also felt that the retention in the program was comparable to other engineering programs.

The reviewers undertook an extensive review of the program learning outcomes and how they mapped with current program offerings. While they felt that the outcomes were being achieved through the current program content they noted that the learning outcomes could be further clarified and refined. They offered a number of suggestions for areas to focus on, which the Faculty will examine as part of the actions to address out of the review. Other areas the reviewers indicated that could be worked on included greater depth in software engineering and computer science topics in the first year and an introduction to programming. They also made a number of suggestions to reorganizing the course structure. The Faculty has committed to a full review of the program in 2014, for implementation in 2015. They will focus on the suggestions made by the reviewers for organizing the program as well as taking a look at the program learning outcomes.

In their review of the program, the external reviewers highlighted three areas of particular strength. They were impressed by the calibre of the faculty members in the program, noting that they were "respected by students, very hard-working and good at teaching." Secondly they highlighted the teaching innovation offered in the program and provided a number of examples where this innovation can be found in the program. Thirdly, they noted the strength of the industry experience offered to students. Noting in particular the strength of the cooperative education program and the calibre of the internships offered at important companies in the field.

The biggest concern raised by the external reviewers was that due to the common first year offered to students in engineering, the students in this program who are keen to develop software skills do not have the deep introduction to programming offered in the first year found in comparable engineering programs. While they acknowledged the benefits of the common year for retention in engineering, they felt that in the case of the Software Engineering program in particular that this poses a problem due to the specialized nature of the program within the engineering discipline. They noted that while the



computing sequence in first year will serve other engineers well, it will frustrate those who come to UOIT to follow the software engineering program.

Overall, the reviewers were also satisfied with the resources available to the program. They found the technical staff to be knowledgeable and strong and the library extremely well provisioned and equipped. They noted in particular that the laptop program will help students to achieve a high level of success. They recommended that students in this program be provided with dual-boot machines to further enhance this asset. The Faculty will be reviewing the feasibility of this in the implementation plan for improvement. In addition they noted that the labs were extremely up to date and equipped for innovative learning approaches. They expressed some concern about the allocation of TAs in the program and also that the number of departmental staff seemed to be low. The Faculty has a plan in place to further examine the allocation of teaching assistants and make improvements to this process. Other resource issues will be considered as part of the budget requests within the broader budget planning process at UOIT. The reviewers suggested that the University as a whole should ask itself why, given the resource constraints, there is a separate Faculty of Energy Systems and Nuclear Science, when it could be combined with the Faculty of Engineering and Applied Science to achieve greater productivity.

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

<b>Proposed Action</b>	<b>Timeline</b>
<b>Awareness Session on Linux</b> The Department will organize an awareness session on Linux for new SE students.	October 2013
<b>Capstone Handbook</b> The revised Capstone Handbook will be ready to use in Fall 2013. It is anticipated that it will provide a better student/advisor/coordinator experience.	September 2013
<b>Results of New Model for Lab Instructors and TAs</b> Gather student feedback and evaluate the effectiveness of the new model for lab instructors for lab delivery and TA allocations.	May 2014
<b>Results of Comprehensive Review of the SE Program Curriculum</b> The curriculum committee will carry out a comprehensive review of the SE program curriculum. 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. Note however that minor changes will be implemented between now and then.	September 2014
<b>Implementation Strategies</b> Once the results of the comprehensive review of the SE program curriculum have been approved at the Faculty Council and CPRC & Academic Council (in October 2014), an implementation strategy will be presented just in time for the new SE curriculum to be offered in Fall 2015.	March 2015

## **18 Month Follow-Up Reports**

As a component of our Quality Assurance processes and our program review policy, all programs that undergo a review must be followed up on 18 months after the completion of the review to gather information on the progress that has been made in implementing the agreed upon plans for improvement. These 18 month follow up reports are from the reviews that took place and were reported to Academic Council in 2010-11. The programs have submitted to the Provost Office a comprehensive chart outlining the achievements they have made in the plans for improvement following the program reviews. A summary of these achievements is provided below.

### **I. BACHELOR OF EDUCATION**

The program review for the Bachelor of Education encompassed the Intermediate/Senior (I/S) Consecutive program, the Intermediate/Senior (I/S) Concurrent program and the Primary/Junior (P/J) Consecutive program. This review was completed in 2010-11. The Faculty made significant progress in implementing the plan of action from the program review.

The Faculty has continued to enhance their leadership in providing a pedagogically sound technology driven curriculum for students. A number of workshops pertaining to technology use were held within the Faculty. Further, program development was enhanced by instituting a number of faculty workshops as well as through the use of podcasts. These technological innovations have also extended into the use of technology for practicum supervisions to enhance the practicum experience for both faculty and students.

Admission strategies were also examined by the Faculty following the review. Enhancements were made to further streamline the application process and an online supplemental application screening was implemented. Further to the recommendations from the review the vision and mission statements of the Faculty were reviewed at the Faculty retreat in May 2013.

The Bachelor of Education program is currently undergoing significant changes to ensure alignment with the requirements set out by the Ministry for a 2 year Bachelor of Education degree. These revisions to the program will be seen by CPRC and Academic Council this year.

### **II. BACHELOR OF SCIENCE IN APPLIED AND INDUSTRIAL MATHEMATICS**

The program review for the Bachelor of Science in Applied and Industrial Mathematics was completed in 2010-11. The Faculty made important changes to the curriculum as a result of the review. The core rationale underlying the changes to the program map is to allow increased

flexibility for students in the choices of their science electives. Prior to the UPR of 2011, the AIM program required that the students complete five specific MATH courses at the 3000 level, PHY 3040U, and six specific MATH courses at the 4000 level. With the revisions implemented, AIM students are now required to complete three specific MATH courses at the 3000 level, PHY 3040U, four specific MATH courses at the 4000 level, and four elective MATH courses at the 3000 or 4000 level. Adding mathematics electives not only adds flexibility for students but also flexibility for the faculty. The students have more freedom to follow a program of study that reflects their interests while maintaining the required level of rigour in the material. One of the new elective courses for the AIM program is MATH 3030U Introduction to Probability Theory. The lack of an advanced course in probability in the former program map was a notable hole for the AIM program. Some material on probability was already included in MATH 3050U Mathematical Modelling and MATH 4060U Industrial Mathematics; however, a new course that systematically helps students to think in a probabilistic way will strengthen the program as a whole.

Another important change is the compression of a large part of the contents of MATH2010U Calculus III and MAT2020U Calculus IV into MATH2015U Calculus III. This is possible because several of the topics from Calculus III are repetitions of topics already covered in Calculus II and also because Linear Algebra is now taught in first year. Also, in most universities, the Calculus sequence is made up of three courses. We realized that the splitting of Calculus into four courses is somewhat artificial and this change leads to a better use of the time slots. It also simplifies the assignment of transfer credits. Because of the opening of a course slot in second year we are able to introduce a proof-based Advanced Linear Algebra course. Linear Algebra (along with Calculus) is one of the cornerstones of any mathematics program and the addition of this second course is a significant strengthening of our program. MATH 2015U Calculus III was taught for the first time in Fall 2012 and MATH 2055U Advanced Linear Algebra and Applications is being taught in Winter 2013. The addition of a second Linear Algebra course will give the students the opportunity to master the basics of proving conjectures in a simplified setting directly addressing an identified weakness in the current program map. This will also better prepare the students for the MATH3020U Real Analysis course which is the course the students find the most difficult.

One other suggestion that came out of the review was to hold student orientations. The Faculty has held two student orientations so far. The first one was in January 2012 and the second one took place in January 2013. Those were fairly well attended with several students from Applied and Industrial Mathematics from all the years showing up. Some students from physics and engineering were also present. For the second orientation, we had the President of UOIT's Math Club talk about the club and his experience as a student and we had a volunteer 4th year Applied and Industrial Mathematics/Concurrent Education student also discuss her experience. Moreover, the President of UOIT's Math Club also helped with the organization and we are planning to have UOIT's math club take over the part of the organization of the orientation.

The Faculty continues to work on the examination of admissions and recruitment strategies for the program as well as formalizing a steering committee to oversee the quality of the teaching in the program.

### **III. BACHELOR OF SCIENCE IN FORENSIC SCIENCE**

The program review for the Bachelor of Science in Forensic Science was completed in 2010-11. Extensive changes have been made to the curriculum as a result of the program review and in preparation for applying for accreditation.

One significant change is the introduction of specializations requiring 18 credit hours in one of four areas: Forensic Biology, Forensic Physics, Forensic Chemistry and Forensic Psychology. The new courses and proposed changes to the program map were approved in November 2012. These specializations are designed to strengthen the program, and place the UOIT Forensic Science program in line with existing accredited forensic science programs at some of the top universities.

In addition, the program has also further strengthened the overall formal assessment in the final year of the degree to help the program to attain accreditation. As a result, FSCI 4430U Directed Studies and FSCI 4460U Mock Crime Scene Practicum are now mandatory courses for students to complete in fourth year. Making these courses mandatory will provide students with additional skills and independence which will elevate all graduates to a level above their peers.