Dear Engineering Co-op partners,

Thank you for supporting Engineering Co-op throughout the 2008/2009 academic year. Your active partnership—whether as an employer, student or faculty member—is vital to the program’s success.

Because of your support, we have been able to provide our students with invaluable industry work experience; our industry partners with enthusiastic students to help meet business objectives; and our faculty with students who appreciate the practical applications of classroom learning as well as industry connections that often lead to future opportunities. According to one faculty member, “I am convinced that the Co-op program is the single most important thing that we do in UBC Engineering.”

Considering this symbiotic relationship, dedicated to enhancing the quality of the educational experience of future engineers and to serving the needs of industry, is it any surprise that UBC Engineering Co-op has been on a trajectory of expansion over the past several years, consistently placing a record number of students in relevant, paid work experiences?

Despite the proven quality of our Engineering Co-op program, we are not insulated from external forces. The recent international economic downturn will have an impact on our program. Unfortunately many industry partners simply do not have the same financial resources to hire students that they had prior to fall 2008.

With the current economic climate in mind, now more than ever, I would like to strongly encourage all industry partners and faculty members to hire Engineering Co-op students. The partnership provides you with a viable solution for cost-effective short and long-term human resources to solve the problems at hand. And if hiring a UBC Engineering Co-op student is not currently possible, please do keep in touch with us. We value your support and input regardless of your ability to hire during a specific term. We will always welcome you as a partner and appreciate the referral you give to others to hire a UBC Engineering Co-op student.

Whether you are a student gaining practical experience, an industry partner providing that practical experience, or a faculty member overseeing the two, you are helping us collectively make a world of difference. Thank you for your continued support of the UBC Engineering Co-op program.

Dr. Tyseer Aboulnasr, O.ONT., FCAE, FEIC, P.Eng.
Dean, Faculty of Applied Science
Professor, Electrical Engineering
I am pleased to present the UBC Engineering Co-operative Education program Year End Report for 2008/2009. Thank you for your continued support of Engineering Co-op. Without you, our partners, our success would not be possible. This has been a year of reflection and renewal as we develop under new leadership and face a dramatically different fiscal climate.

We are delighted to welcome the new Dean of Applied Science, Tyseer Aboulnasr. She comes to UBC from the University of Ottawa where she previously served as the Dean of Engineering. Many recognize her as a familiar face as she served on UBC Applied Science’s review committee in 2002. Dean Aboulnasr brings with her a renewed energy and commitment to the development of the Faculty of Applied Science and it is a pleasure working under her leadership and direction.

Last year, Engineering Co-op achieved a record number of 1,572 placements, connecting students who wanted to gain paid, practical, engineering experience with industry partners who needed help to solve real-life problems. We welcomed 421 students into Engineering Co-op and bid farewell to 255 students who graduated with Co-op standing. The 2009 graduating cohort participated in 1,020 Co-op work terms, totaling over 4,080 months of relevant, technical industry work experience and collectively earned over $11.3 million in salaries. We are proud of the work our students have done and pleased that 98 per cent of our industry partners would hire an Engineering Co-op student again.

To best serve our students and professional partners, over the last year Engineering Co-op has embarked on a comprehensive review of practices and made significant changes to the program administration including the:

- review of the program mandate and goals;
- revision of the program’s terms and conditions for students;
- revision and implementation of new on-line pre-employment modules and student workshop materials;
- implementation of a communication plan incorporating strategies for all aspects of communication to our stakeholders; and
- implementation of new student engagement and employer relation initiatives.

Despite our excellent student and industry approval ratings, our record placement success and our strategic initiatives outlined above, the downturn in world-wide financial markets has had a direct impact on the Engineering Co-op program. We have seen a significant decline in the number of job postings for all undergraduate and graduate engineering disciplines.

In this current economic climate we will be seeking creative ways to streamline processes and improve upon best practices. This may include reducing the number of students served by the program or reducing the number of required Co-op terms for students to graduate with Co-op standing.

Regardless of the changes that may become necessary, we are committed to providing quality work term placements and experiences for students and employers, and are dedicated to providing responsive support to our stakeholders through the job posting, interview and placement processes. The Engineering Co-op team’s overall goal is to ensure the continuance of strong relationships with industry representatives while providing excellent opportunities and support to our participating Co-op students.

If you have any questions, comments or suggestions about Engineering Co-op or this report, please contact me directly at 604-822-6598 or jenny.kagetsu@ubc.ca.

Thank you sincerely for your support.

Jenny Kagetsu
Director, UBC Engineering Co-op Program
Program Overview

The UBC Engineering Co-op program set a record number of Co-op work term placements in 2008/2009. Co-op students from all engineering disciplines secured 1,572 four-month paid, relevant and technical Engineering Co-op positions, a six per cent increase from the previous year. Over two-thirds or 66 per cent of Co-op students were located in the Lower Mainland of B.C., 11 per cent within and 16 per cent within Canadian provinces and territories. The remaining seven per cent worked internationally.

The UBC Engineering Co-op program received a total of 4,026 job postings for the 1,732 available students from across all engineering disciplines for the Summer 2008, Fall 2008 and Winter 2009 work terms. There was a total of 333 international Co-op job posting available, an increase of 15 per cent compared to the previous year.

Employment Opportunities

Co-op students had the opportunity to gain practical, technical engineering experience in various sectors ranging from alternative energy, aviation, construction, consulting, mining, oil and gas, telecommunications to video-gaming. Some of the major projects Engineering Co-op students were involved in locally included Vancouver’s roads and transportation infrastructure project such as the Canada Line which links the growing residential, business, health care, educational and other centers in the region. Another key project was the Vancouver Trade and Convention Centre which will be one of the main 2010 Winter Olympics venues.

In 2008/2009 the private sector remained the largest Co-op employment provider at 85 per cent. Next the public sector accounted for 13 per cent and the non-profit sector provided two per cent of the employment opportunities.
International Focus

Co-op students from all Engineering disciplines explored international work terms and enriched their professional skills development while working and living outside of Canada. In 2008/2009 a total of seven per cent or 100 Co-op work terms were secured in more than 16 countries. A majority of the Co-op opportunities were in Australia, Germany, Japan and the United States of America. Co-op students also ventured abroad to Africa and South East Asia.

Student Salary Averages

In 2008/2009 UBC Engineering Co-op students employed in Canada reported an average monthly salary of $3,110, a six per cent increase from the previous year.

Co-op students jointly earned an impressive total of over $15.5 million dollars in salaries.

The following summary shows domestic salary data for Co-op work terms from all engineering disciplines as provided by 83 per cent of the students.
Chemical & Biological Engineering

The Chemical and Biological Engineering program provided Co-op students with opportunities to work in the oil and gas, fuel cell, professional services, consulting, and pulp and paper sectors. In 2007/2008 Chemical and Biological Engineering Co-op students secured 148 four-month work terms, an increase of 12 per cent compared to the previous year. The oil and gas sector provided the most opportunities whereby 25 per cent of the students worked in this area. Employment in consulting and fuel cells remained strong; there was also an increase in the number of opportunities in the area of professional services.

Chemical and Biological Engineering students gained hands-on work experience and exposure to a variety of industries including the fuel cells, energy, mining and metals refining, pulp and paper sector. Academic research was conducted within several departments at UBC including stem cell research at the Michael Smith Laboratories.

The Environmental Engineering program, an optional program, is a unique initiative run jointly between UBC and the University of Northern British Columbia (UNBC). In 2008/2009, a record 25 Environmental Engineering Co-op students placements were secured in a variety of industries across B.C., Canada and worldwide. Co-op students were engaged in exciting projects with both municipal and provincial government bodies as well as in industry.

Ninety-two per cent of the Chemical and Biological Engineering Co-op students secured work terms within Canada; half of that total remained in the Lower Mainland of B.C. Other students worked abroad in Australia, Japan, Indonesia, Singapore and the United States of America.

Historical Placements

Placements by Industry
Civil Engineering

During 2008/2009 the Civil Engineering Co-op program continued on a strong path with 272 Co-op work terms, reflecting an increase of 10 per cent over the previous year. Co-op students worked on a variety of projects from ranging from design and construction of transportation systems in France, geotechnical work relative to mining in Australia, testing of a new ultraviolet light water filtering system for Metro Vancouver water to updating Vancouver’s roads and transportation infrastructure (which includes major projects such as the Canada Line). The strong Civil engineering sector resulted in a 36 per cent increase in job postings compared to 2007/2008.

Several key consulting companies provided 150 four-month Co-op work term opportunities. Government and municipal offices provided 43 Co-op work terms within various departments including transportation, traffic, utilities, waste management and building permits. The construction industry was the third largest employer and provided opportunities for 37 Co-op work terms.

This year Co-op employers recognized five Civil Engineering Co-op students for their contributions to the company. A third-year Civil Co-op student received a $2,500 scholarship for his outstanding work at SNC-Lavalin. Four Civil Engineering Co-op students received awards from the Canadian Institute of Steel Construction for services rendered during their work terms.

A total of 82 per cent remained in the Lower Mainland of B.C., eight per cent worked within B.C. and six per cent were employed in Alberta. Four per cent of Co-op students gained international experience in Australia, France, Hong Kong, Japan and the United States of America.
In 2008/2009 Computer Engineering Co-op students secured a total of 121 Co-op work terms which increased to 92 per cent compared to 88 per cent from the previous year. One hundred per cent placement was successfully achieved for the fall 2008 and winter 2009 work terms. Computer Engineering Co-op students gained experience from different work environments within the private sector, provincial and federal government, as well as new and emerging companies.

The number of job postings increased significantly by 10 per cent, from 1,824 to 2,013. Computer Engineering Co-op students were vying for jobs in the video-gaming, software, telecommunications, biomedical research and finance fields, to name a few.

Eighty-six per cent of Co-op job terms were located in the Lower Mainland of B.C., two per cent within B.C. and seven per cent within Canada. The remaining five per cent of Co-op students worked abroad in Hong Kong, Japan and the United States of America.

Historical Placements

Placements by Industry

*Prior to 2001/2002, the Electrical and Computer Engineering Programs were combined
The Electrical Engineering Co-op program, one of the largest Engineering Co-op disciplines, saw moderate growth in 2008/2009. Electrical Engineering Co-op students successfully secured 262 four-month Co-op work terms in a cross section of industries ranging from biomedical engineering, power systems, telecommunications, nanotechnology to consulting.

In 2008/2009 Electrical Engineering Co-op students excelled in the classroom and in the workplace. Electrical Engineering Co-op students were notably recognized for their outstanding contributions and received the Electronics Star Award, Sierra Wireless Certificate of Achievement and Zeugma Systems Employee Recognition Award from their respective Co-op employers.

There were a total of 2,130 Co-op job postings which reflected the strong job market, a marked increase of 13 per cent from 1,880 postings the previous year. Students had a range of Co-op job opportunities which included hardware testing, engineering analysis and research and development positions.

Of the 2008/2009 Electrical Engineering Co-op work terms, 86 per cent were in the Lower Mainland of B.C., three per cent within B.C. and eight per cent in other Canadian provinces. Three per cent secured international work terms in Germany, Hong Kong, Japan and the United States of America.
The number of Geological Engineering Co-op work term placements remains strong and is a valued component of the UBC Engineering Co-op program. With 38 students placed in 2008/2009, the total Geological Engineering Co-op work term placements decreased slightly compared to the previous year; however, there is a general upward trend in the number of Co-op work terms overall. In fall 2008 more than 65 per cent of all second-year Geological Engineering students applied to the Co-op program, a marked 53 per cent increase over last year’s intake.

In the past year, Geological Engineering Co-op students had the opportunity to work on large-scale projects in the construction, consulting industry and mining industry. Sixty-three per cent of Geological Co-op students were engaged in major projects across the Lower Mainland of B.C., while 29 per cent were employed within Canada and eight per cent were working internationally.

### Historical Placements

![Bar Chart](chart.png)

### Placements by Industry

- Materials Testing: 32%
- Metals Refining: 8%
- Construction: 5%
- Manufacturing/R&D: 5%
- Government - Federal: 3%
- Consulting - Various: 47%

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*Photo Courtesy of Jonathan Cho*

*Photo Courtesy of Alden Kung*

*Photo Courtesy of Anna Brounstein*
Integrated Engineering

Integrated Engineering is a project focused, design-based, interdisciplinary engineering program, with a strong technical foundation. This broad-based academic program concentrates on materials, solid mechanics, fluid mechanics and systems involving chemical, electro-mechanical and biological components.

The Integrated Engineering Co-op schedule is unique among other Engineering Co-op programs. Integrated Engineering Co-op students follow a 4:16 structure whereby they complete an initial four-month work term and then return to their academic studies for eight months. They complete their final 16 consecutive month work terms between the third and fourth year of their program.

Integrated Engineering Co-op students successfully secured 25 placements in 2008/2009 and worked in a wide variety of industry sectors including alternative energy, consulting and mining.

A total of 81 per cent of Co-op students were employed in the Lower Mainland of B.C. and within the province. Students also combined their work and travel within Alberta and to as far away as Australia.
The Engineering Co-op program continues to be a desirable component of the Materials Engineering undergraduate degree and attracted nearly 60 per cent of all second-year students within the program. In 2008/2009 a total of 68 Materials Engineering Co-op students secured work terms with a variety of employers.

Materials Engineering Co-op students gain experience within a variety of industries including mining, aviation, metals refining, materials testing and consulting. Co-op students worked with a long list of accomplished employers including Alcan Primary Metal Group, Ballard, Barrick Gold, EVRAZ, Metro Testing Ltd. and Teck (formerly Teck Cominco).

Sixty-eight per cent of all Materials Engineering work terms were within the Lower Mainland of B.C. and seven per cent worked throughout various regions in the province. Nineteen per cent worked across Canada while six per cent traveled abroad to Australia, Germany and the United States of America.
In 2008/2009, the Mechanical Engineering program was the largest discipline within the UBC Engineering Co-op program, with over 350 work term placements. The year provided many opportunities in the aerospace, alternative energies, consulting, oil and gas, and mining industries.

Mechanical Engineering Co-op students can specialize in Biomedical, Mechatronics, and Thermofluids options. They can further develop skills in classical machine design and analysis as well as electronic instrumentation, computer control systems, and software engineering. Lastly, students in the Thermofluids option work in the aviation, clean energy, HVAC and processing industries.

Fifty two per cent of Mechanical Engineering Co-op students were employed in western Canada. In addition, 11 per cent of students secured international Co-op work terms. Thirty-seven students gained enriching experience in a variety of countries including Germany, Japan, Mexico, Singapore, Taiwan, the United States of America and Zambia.
In 2008/2009 the Mining Engineering Co-op program continued to enjoy strong numbers of placements with 90 Co-op students securing work terms. The Canadian mining sector brought enhanced variety and opportunity to Co-op students in the past year, providing opportunities across Canada and around the world.

Mining Engineering Co-op students worked predominantly in the metals extraction and refining sectors for renowned companies. They gained hands-on experience with several new smaller companies affording them the opportunity to take on high-level responsibilities for projects around the globe. Co-op students also worked with consulting companies such as BGC Engineering, Golder Associates and SMG Consultants.

While 85 per cent of Mining Engineering Co-op students worked across B.C. and Canada, 15 per cent worked abroad.

### Historical Placements

![Bar chart showing number of placements by academic year from 2002 to 2009.](chart)

### Placements by Industry

- Consulting: 10%
- Materials Handling: 6%
- Oil & Gas: 6%
- Academic Research: 3%
- Materials Testing: 3%
- Other: 3%
- Mining/Metals Refining: 69%
**Master of Engineering**

Commencing its second year, the Master of Engineering program offers engineering graduates the opportunity to enhance their undergraduate degrees. The areas of specialization include Biomedical and Clinical, Chemical and Biological, Civil, Geological, Electrical and Computer, Materials, Mechanical, Mechatronics Design and Mining Engineering.

In 2008/2009 the Master of Engineering Co-op students secured 18 four-month Co-op work terms in the construction, fuel cell, healthcare, oil and gas, mining and telecommunications industries with leading employers.

Close to three-quarters or 72 per cent of the Master of Engineering Co-op students worked in the Lower Mainland of B.C., while 22 per cent were located within B.C. and six per cent in Alberta.
Master of Software Systems

The UBC Engineering Co-op program facilitates a compulsory four-month Co-op work term placement for the Master of Software Systems program, which is administered through UBC’s Institute for Computing, Information and Cognitive Systems.

Master of Software Systems Co-op students have completed an undergraduate degree in science, engineering or social sciences prior to entrance, and they are highly sought after senior-level student employees. A majority of these students bring a multidisciplinary approach and international industry experience to the work environment.

In 2008/2009, all 15 students successfully secured Co-op work terms in software-related positions in areas such as business intelligence, healthcare, oil and gas and telecommunications. They also gained experience ranging from software development, project management to application support analysis. Of the 15 students, 14 were based in the Lower Mainland of B.C. and one was located in Calgary, Alberta.
2008/2009 marked the third anniversary since the inception of the UBC Okanagan Engineering program and second anniversary of the Engineering Co-op program since the inaugural year 2006/2007.

A total of 140 Co-op students successfully obtained work terms in 2008/2009. UBC Okanagan Engineering Co-op students were employed in Civil, Electrical and Mechanical engineering opportunities. The top industries that hired Co-op students were construction and consulting companies. Students also secured positions in hardware development and testing within the information and technology sector.

Over one-third or 36 per cent of UBC Okanagan Engineering Co-op students were located in the Okanagan and Southern Interior, 24 per cent in the Lower Mainland of B.C., 23 per cent in other regions within B.C. Fifteen per cent worked in other Canadian provinces and territories while two per cent explored international Co-op opportunities.
Troy Adebar, a Mechanical Engineering student, has been an active member and promoter of the Engineering Co-op program. He completed a total of five work terms: his first two with the UBC Department of Mechanical Engineering; his third in industry with Kraft Canada; and final two terms in biomedical research with EVASC. Through each Co-op work term, Troy received high praises and accolades from his employers.

Troy successfully integrated his academic program, extracurricular and Co-op engineering experiences with great success. He has also excelled in the Mechatronics option. Troy has received nine scholarships including the Talisman Energy Scholarship in Mechanical Engineering, the Thomas Beeching Scholarship and the UBC Trek Excellence Scholarship to name a few.

He has been an active member of the Engineering Co-op Student Advisory Council (ECSAC) and Tri-Mentoring program.

Peter Lawrence, Electrical and Computer Engineering Professor, was awarded Faculty Member of the Year for his excellent and tireless promotion of the Engineering Co-op program. The ability to consistently recruit a high percentage of students enrolled in the Project Integrated Program (PIP), a design-based learning program, is due to his strong commitment and encouragement. In September 2008, an impressive 82 per cent of PIP students applied to Co-op while 80 per cent applied in 2007.

Professor Lawrence works hard to design student projects around the skills that will be practical and applicable in real world engineering-related work experiences. He also takes great pride in highlighting the pre- and post-graduation benefits to students enrolled in the Co-op program.

Professor Lawrence is also an active member within the professional engineering community and is a member of the Institute of Electrical and Electronics Engineers (IEEE), American Society for Engineering Education (ASEE) and UBC Institute for Computing, Information and Cognitive Systems (ICICS).

SNC-Lavalin, one of the leading engineering and construction groups worldwide, was recognized for its outstanding contributions. Since 2000 SNC-Lavalin has been an active employer hiring Co-op students for domestic and international projects in exotic locales such as France. In 2008 SNC-Lavalin provided relevant employment opportunities for 30 Co-op students: 19 Civil, nine Mechanical, one Electrical and one Environmental. The company provided technical, engineering-related work experiences along with competitive salaries to students of all levels—juniors, intermediates and seniors.

A number of UBC Engineering Co-op students had the honor of being selected and participated in the SNC-Lavalin Award program. The combined scholarship/internship program was created to give students valuable practical experience under the supervision of experienced engineers. Students receive a paid position at a competitive student salary as well as a $2,500 scholarship award upon completion of the work term.

SNC-Lavalin's established Co-op program is well organized and highly sought after amongst our students.
Dear Engineering Co-op partners,

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Dr. Tyseer Aboulnasr, O.ONT., FCAE, FEIC, P.Eng.
Dean, Faculty of Applied Science
Professor, Electrical Engineering

Events

Graduation Reception

The Engineering Co-op Graduating Class of 2009 Reception was held on March 5th at the Vancouver Marriott Pinnacle Hotel. A total of 255 Engineering Co-op graduates from all disciplines successfully graduated with Co-op standing. Students, faculty and industry members celebrated and enjoyed an evening of networking, food and festivities.

Junior Reception

The annual Junior Reception welcomes new Engineering Co-op students from all disciplines into the program. In 2009 a total of 421 Engineering undergraduates, 361 from Vancouver and 60 from Okanagan, as well as 12 Master of Engineering students, were invited to attend the reception.

The third annual UBC Engineering Co-op Junior Reception in the Okanagan campus took place on January 15th and the fourth annual reception in Vancouver was on January 26th. Both events provided an opportunity for Co-op students to celebrate the start of their Engineering Co-op journey and to network with industry representatives.

Sponsorship Program Initiatives

In 2009 the UBC Engineering Co-op program launched new initiatives with the sponsorship program. A comprehensive sponsorship package was designed and marketed to employers to gather support for all five of our major events and provided sponsors with increased visibility and presence among Engineering Co-op students and faculty members.

The sponsored events include:
- Junior Reception (UBC Vancouver)
- Junior Reception (UBC Okanagan)
- Graduation Reception (UBC Vancouver)
- National Co-op Week
- Co-op Photo Contest

An overwhelming $33,000 was raised as a result. Thank you to the following sponsors for their generous contributions and support.

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Peter Kiewit Sons’, Inc.

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Cover image courtesy of Dan Kupp