

# 25 / 25

## Engineering a Blueprint for Success

White Paper for School of Engineering Growth

Faculty of Applied Science

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DOCUMENT

An attainable goal 25 by 25 (2500 students by 2025)

British Columbia's tech sector accounts for more than 105-thousand jobs, with another 50-thousand tech-related jobs in other sectors. That equates to nearly 5-percent of the province's workforce, more than mining, oil and gas and forestry combined. Employment forecasts envision a shortfall of 30-thousand jobs in BC by 2021 if growth in the tech sectors continues on its current path. The Provincial government is increasing investment into the tech sector by up to \$100-million by 2020 and increasing the talent pool by 1-thousand graduates per year by 2022.

*IN 2015, THE TECH SECTOR:*

*Reached over 100,000 jobs for the first time (101,7801) at 9,905 companies.*

*Had wages 75 per cent higher than the B.C. industrial average, with average weekly earnings of \$1,590.*

*Had the fifth consecutive year of growth in employment.*

*Employed around 4.9 per cent of British Columbia's workforce - more than the mining, oil and gas, and forestry sectors combined.*

*Generated approximately seven per cent of the province's GDP.*

<https://bctechstrategy.gov.bc.ca>

Similarly, a Labour Market Survey in 2016 estimated over 30-thousand engineering, geoscientist and technologist job openings in BC over a ten year span. According to the same survey, a significant amount of that work will be in Northern and South Eastern regions of the province.

*2017 Digging Deeper: Understanding the Engineer, Geoscientist, Technologist, and Technician Labour Market in the Asia Pacific Gateway Study findings:*

*For Engineers: 15,600 job openings to be filled, 47% created by Expansion, 53% by Attrition.*

*For Technologists and Technicians: 14,770 job openings, 61% by Expansion, 39% by Attrition 1 in 5 Engineers working in 2015 will retire by 2024, on average 800-850 will leave per year.*

*1 in 4 Technologists and Technicians working in 2015 will retire by 2024, on average over 900 a year.*

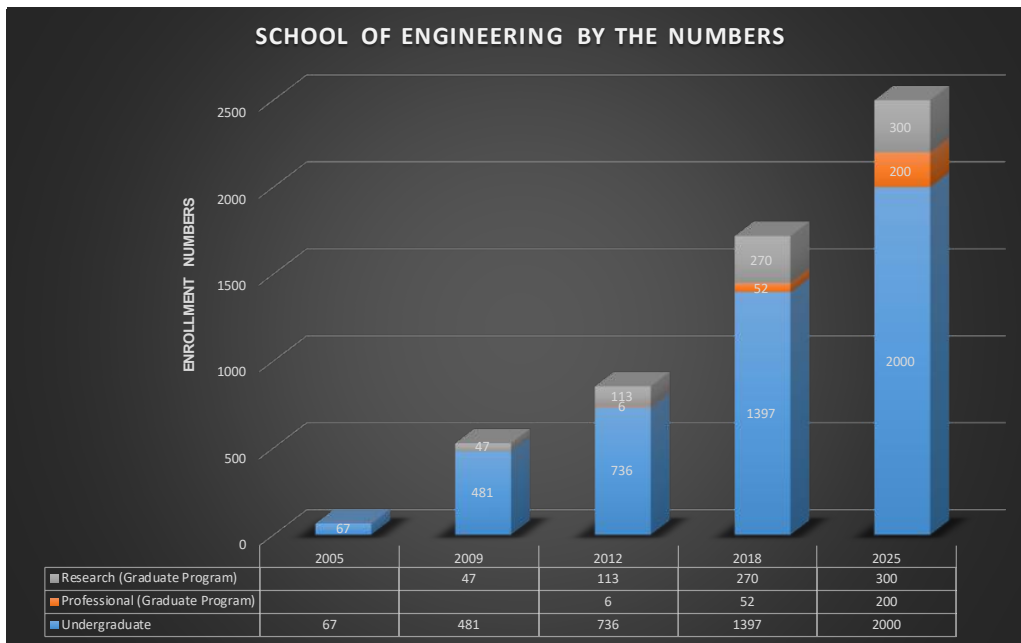
*New Supply was dependent on Immigration (32%) and New Entrants (57%) in all of the regions*

<https://www.egbc.ca/Careers/Engineering-and-Geoscience-Labour-Market-Study>

For over a decade, the School of Engineering on the Okanagan campus has experienced sustained growth. From modest beginnings in 2005, the School has strived to earn a spot amongst the most recognized engineering programs in Canada. As a result, it has shown consistent growth in academic and research initiatives exponentially since the outset. In the past five years alone, enrolment has doubled and SOE researchers are consistently publishing in top tier journals. Forecasts indicate that on its current trajectory, the School will grow above 2000 students combined between undergraduate and graduate levels by 2020.

The goal of 25 by 25 is not just aspirational. It takes into account the exponential growth the School has experienced since inception. Through continued domestic enrollment growth, internationalization and expansion in program offerings, the goal of 25 by 25 is attainable. The challenge that lies ahead is how we provide the resources to ensure we maintain and improve upon the experience our students, faculty, staff and alumni have come to expect.

Anecdotal and quantitative data shows the continued appeal of professional programs in British Columbia, Canada and across the globe. The recent fast-tracking of the manufacturing program and its subsequent funding demonstrates that our leaders and stakeholders are cognizant of our successes and our potential.



The projected student numbers by 2025 will consist of two-thousand undergraduate students and five-hundred graduate students. Of the 500 graduate students, 300 will be in the research stream (MAsc and PhD) and 200 professional stream (MEng). The projected number of undergraduates will encompass 1500 domestic students and 500 international students.

By staying true to our vision to provide exceptional education opportunities to our students and developing impactful innovations for our partners and stakeholders across the regional and beyond, the School of Engineering continues to flourish. In order to keep pace with competing and leading universities around the world, we must stay ahead of the curve by investing in our students, our faculty and our facilities.

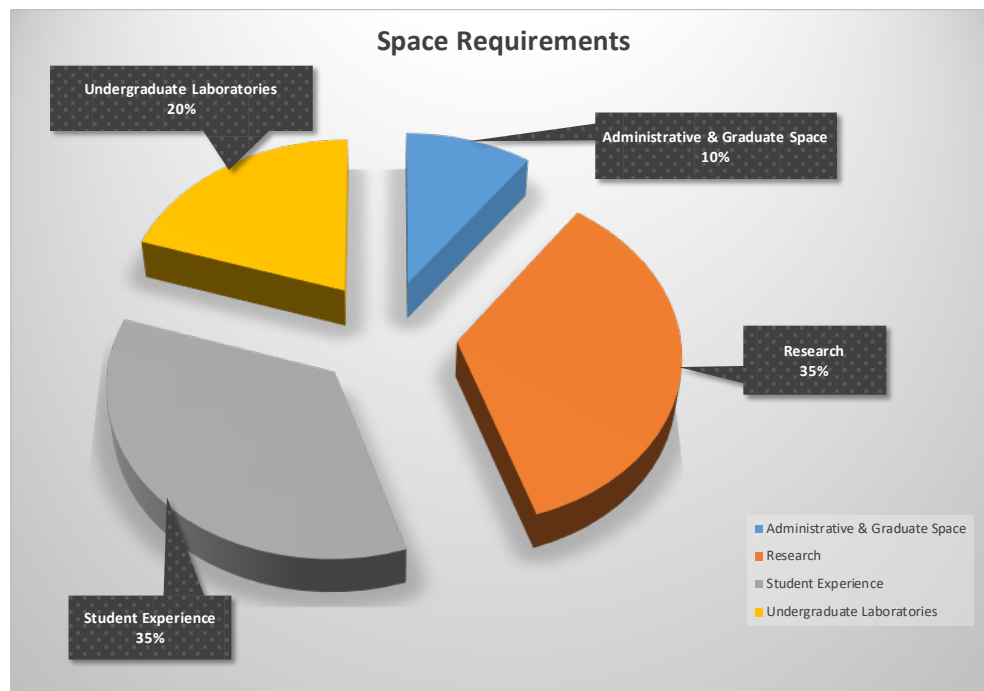
Despite world-class facilities for pedagogical dissemination and research, the School of Engineering is beginning to burst at its seams. Tough choices are on the horizon in how we accommodate larger cohorts, improve student experience and increase research initiatives within the current landscape.

Our current space allotment allows for 18,000 sq. ft. of research space with an additional 7,500 sq. ft. recently acquired through the recent acquisition of a building on Innovation Drive (adjacent to campus). This allocation is still not meeting the School's needs especially in the area of undergraduate labs and research space.

In order to accommodate our increasing enrollment, the School of Engineering requires an additional forty to fifty-thousand square feet of space to address student experience including clubs and industry collaboration spaces (~15,000 sq. ft.), undergraduate labs (~10,000 sq.ft.), research labs (~15,000), graduate student and administrative space (~5,000 sq.ft.).

Faculty numbers will increase from the current level of 58 to between 85 and 90 to ensure the student-faculty ratios remains at 23:1. Hiring will be done with an eye on meeting the needs of our new and expanding programs while strengthening our research clusters. The Okanagan campus has five research clusters including Advanced Materials and Manufacturing, Advanced Systems, Clean Technologies and Environmental Systems, Health Technologies and Urban Infrastructure and Green Construction.

As our faculty grows so will the administrative and support staff needs of the School of Engineering. Creating spaces that accommodate our staff who encourage, support and engage our students and researchers is vital to our future success.



Our diversity of programs can only continue through continued collaboration with our partners with faculties across the Okanagan campus including the Faculty of Creative and Critical Studies (design engineering), the Faculty of Management (entrepreneurship and management science) and the Faculty of Health and Social Development (health technology). With the biomedical program (option) in the latter stages of approval, such a collaboration would be mutually beneficial for our students, researchers and programs.

Partnerships with other Faculty of Applied Science programs across the UBC system may also lead to opportunities that address space and faculty requirements. The Manufacturing program is a great example of such collaboration. The program, which launches next year, is the first cross-campus program with cohorts in Vancouver and the Okanagan. Together, both campuses will hire a total of fifteen faculty to meet the program's teaching requirements.

As we add options, minors and majors including a professional master program, we must not lose sight of opportunities that empower our students, researchers, collaborators and donors. Laddering through certification, diploma and degrees and a streamlined MEng program will enable students to achieve their goals in a more flexible structure.

Support from leadership, students, faculty, alumni, community, donors and industry partners is essential to our continued success during the next stage of our evolution. We need to ensure the plan becomes a capital priority.

Our response to the exponential and sustained growth to date has positioned us well, but we can't take our eye off the ball. Instead we must move forward with renewed focus and drive to maintain and surpass our goals into the future.

Join us in building a bigger and better School of Engineering that will continue to provide exceptional education opportunities to our students and make impactful innovations for our partners and stakeholders across the Okanagan and around the world.

For more information about the current offerings at the School of Engineering, visit <https://engineering.ok.ubc.ca>