

September 2010

SKILLED, QUALIFIED & SUSTAINABLE

A REFERENCE GUIDE TO
GREEN EDUCATION & TRAINING
IN BRITISH COLUMBIA



GLOBE
FOUNDATION



The GLOBE Foundation of Canada is a Vancouver-based, not-for-profit organization dedicated to finding practical business-oriented solutions to the world's environmental problems. Formed in 1993, we've helped companies and individuals realize the value of economically viable environmental business opportunities through our conferences and events, research and consulting, project management, communications and awards program.

We're a leader in championing green initiatives and leveraging sustainable ventures into mutually rewarding opportunities for enterprise and the environment. From urban sustainability to climate change, we're helping change the world by degrees.

For more information on the GLOBE Foundation, please visit our website at:

www.globe.ca

For more information,
please contact:

GLOBE Foundation
World Trade Centre
578 – 999 Canada Place
Vancouver, BC
Canada V6C 3E1
Tel : (604) 695 5001
Fax : (604) 695 5019
Email : info@globe.ca



This report has been funded in part through the Canada-British Columbia Labour Market Agreement.

// Purpose of this Guide

Education, training, and capacity building are essential components in developing a more diverse, resilient, and sustainable economy here in British Columbia. Preparing the provincial labour force for the transition to lower-carbon operations and best practices will require a multi-tiered approach—targeting both new work force entrants, those seeking mid-career access to a greener economy, and those at the mid- or senior-stages of their careers whose decision-making can advance or hinder the shift to a greener economy.

One area where this province shows demonstrated strength is in its existing and evolving academic and skills training institutions. Responsibility for the development, coordination, and delivery of education and training solutions will largely be handled by the province's post-secondary universities, colleges, technical institutes, and tertiary sector educators, as well as relevant unions, sector councils, associations, and supporting organizations.

This guide has been designed as a resource for students, education/career counsellors, members of the current work force looking to advance in their careers, and anyone else interested in learning more about existing green education and training opportunities offered throughout British Columbia.

The guide is based on the GLOBE Foundation's September 2010 report entitled **British Columbia's Green Economy: Securing the Workforce of Tomorrow**, with funding generously provided by the Canada-British Columbia Labour Market Agreement, an agreement between the Province of BC and the Government of Canada.

For additional information and resources on BC's green economy and labour market, please visit:

www.globe.ca

THIS GUIDE HAS BEEN
DESIGNED AS A RESOURCE
FOR STUDENTS, EDUCATION/
CAREER COUNSELLORS,
MEMBERS OF THE CURRENT
WORK FORCE LOOKING
TO ADVANCE IN THEIR
CAREERS, AND ANYONE ELSE
INTERESTED IN LEARNING
MORE ABOUT EXISTING
GREEN EDUCATION AND
TRAINING OPPORTUNITIES
OFFERED THROUGHOUT
BRITISH COLUMBIA.





//Contents

Purpose of this Guide	// 1
Why Green Education & Training?	// 5
Green Education & Training in BC	// 9
Public Universities	12
Public Colleges & Technical Institutes	14
Centres of Excellence	17
Private Universities, Colleges & Career Training Institutions	19
Industry-based Training	21
Specialized Training Programs	27
In Summary	// 31
Green Education/Training Resources	// 32
Spotlight: Unique Green Programs in BC	// 37
Clean & Alternative Energy	38
Energy Management & Efficiency	38
Green Building & Sustainable Design	39
Environmental Protection & Resource Management	41
Green Knowledge & Support	47
Eco-tourism	48



1 // Why Green Education & Training?

British Columbia's Economy is in Transition

British Columbia's economy is changing. It is on its way to becoming greener and more sustainable. There are many factors driving this transition, including significant new investments in renewable energy assets, a mandated "carbon neutral" public sector, a progressive tax on carbon, and communities large and small looking to become more sustainable through initiatives to increase food security and energy efficiency within homes and buildings, transportation systems, and industrial processes.

While BC's natural resource-based industries—the traditional pillars of the province's economy—will continue to play a large role in its future, the old ways of doing business in these areas are no longer sufficient for generating the jobs and the wealth that have sustained this province's economic growth and high standard of living over the last few decades. The imperative for transitioning toward a more sustainable, greener economy is demanding that BC make better use of its natural endowments, not only to create the green products and services the world needs, but also to exploit the low-carbon opportunities available throughout all regions and in all sectors of the province.

British Columbia's green economy—mainly comprised of small- and medium-sized enterprises (SMEs)—is driven by an entrepreneurial spirit and a skilled, knowledge-based workforce focused on developing value-added products and offering sustainable services.

In the last few years, the province's public and private sectors have greatly increased their investments in renewable energy, clean technology, and green infrastructure. In the process, they are generating thousands of new jobs for BC residents. With this investment comes an increased demand for a labour force with the technical skills and knowledge needed to retool key industries in order to adapt to a more carbon and resource constrained world.

According to a recent report published by the Environmental Careers Organization (ECO) Canada, the national sector council dedicated to environmental careers, environmental skills are quickly becoming more important across the workforce and within every industry¹. The demand for expertise in renewable energy, energy and resource efficiency, green building design and construction, environmental protection, and carbon management is expected to increase significantly over the next decade.

The province's post-secondary educational institutions and other training bodies have been busy modifying their programs to usher in the new practices and skill sets that are required for building a more sustainable world. Career opportunities for students graduating from the province's "green" trades, business, engineering, technology, and environment-related programs have never been better.

1. ECO Canada (2010). Profile of Canadian Environmental Employment – Labour Market Research Study.

BELOW IS A LIST OF A FEW OF THE MANY EXISTING AND EMERGING WELL-PAID GREEN CAREER OPPORTUNITIES IN BRITISH COLUMBIA:

// Hydrogen Fuel Cell Engineer

Designs, constructs, and maintains hydrogen fuel cell equipment and components

// Solar Hot Water Manufacturing Technician

Manufactures solar hot water heaters, parts and equipment

// Wind Farm Electrical Systems Designer

Design underground and overhead wind farm collector systems and prepare and develop site specifications

// Bioenergy Feedstock Production Labourer

Responsible for gathering wood products and wastes for the production of bioenergy

// Hybrid/Electric Vehicle Mechanic

Repairs hybrid and electric vehicles, powertrains and controls

// Power Electronics Assembler/Tester

Builds and assesses solid-state electronics used for the conversion and manipulation of electric power

// Smart Grid Engineer

Addresses complex problems in the electric power delivery infrastructure related to grid modernization

// Instrumentation and Controls Technician

Responsible for installing and maintaining instruments and controls to monitor power distribution

// Commercial/Industrial Energy Manager

Provides advice to clients on how to reduce energy consumption and increase efficiencies

// Green Real Estate Brokers

Oversees transactions for renting, selling, buying green properties and can arrange loans for prospective buyers

// Green Home Renovator

Specializes in home improvements, construction and repair with expertise in green building standards.

// Landscape Technician

Actively involved in the processes of landscape development, construction, horticulture, maintenance, and associated technologies

// Urban Planner

Develops short- and long-term comprehensive plans and programs for sustainable development, growth, revitalization and utilization of land and physical facilities of cities and metropolitan areas to maximize quality of life for the community and its residents

// Ecological Restoration Planner

Collaborates with biology professionals and field technicians with the implementation of restoration projects

// Horticulturalist

Specializes in the science of plant cultivation, with expertise in the production, and breeding, as well as plant biochemistry and plant physiology

// Renewable Energy Consultant

Assesses industry trends and related implications, monitors product developments and preferences, examines emerging technologies and advises clients on practical solutions

// Waste Reduction Consultant

Specializes in strategy development to reduce, reuse and recycle waste and streamline operations

// GHG Emissions Verifier

Conducts data audits of reported GHG emissions inventories

// Carbon Emissions Trading Specialist

An accountant who specializes in using a market-based approach to promote emission reductions within industries and the global marketplace

// Clean Technology Venture Capital Investment Analyst

Identifies and evaluates investment opportunities and provides guidance regarding investment decisions

For more information on green jobs, see GLOBE's "Reference Guide to Green Jobs in BC", available at www.globeadvisors.ca

Green Career Opportunities are Growing

British Columbia's economic future under a low-carbon regime is particularly promising. Based on a wide range of sources, the green elements of BC's economy are growing faster than the province's economy as a whole and are expected to continue to do so over the next decade. A recent survey of BC-based green companies conducted by the GLOBE Foundation found that 95 percent feel that there are likely to be "moderate to significant opportunities for their industry sector over the next decade".

In 2008, there were more than 117,000 direct full-time equivalent (FTE) green jobs in BC—equal to approximately 5.1 percent of the provincial labour force. Research suggests that the number of direct green jobs in BC could nearly double over the next ten years as new jobs emerge and traditional occupations adopt greater degrees of sustainability into their everyday activities.

While the growing green career opportunities span the full spectrum of occupations, at present, the vast majority can be found within six key sectors that supply the bulk of the green products and services in BC to other areas of the economy to help lower greenhouse gas (GHG) emissions and to reduce human-related impacts on the environment. (see sidebar)

Trades, transport, equipment operators, and related occupations were responsible for more than one-quarter (27 percent) of the direct green jobs in BC in 2008. Occupations in business, finance, and administration, as well as in natural and applied sciences, also ranked high in importance, making up approximately 17 percent and 15 percent of all direct green jobs, respectively.

Opportunities in BC's renewable energy and clean technology sectors are predicted to increase substantially. Sustainable Development Technology Canada (SDTC) projects that Canada's clean technology industries will grow at a cumulative annual growth rate (CAGR) of 117 percent from 2010 to 2012—driven by growth in the areas of power generation, energy efficiency, energy infrastructure, and more sustainable industrial processes—with BC having Canada's largest clean technology cluster, compared with national gross domestic product (GDP).

The world is also heading toward more universal environmental reporting practices and recognized standards and, along with this, will come the need for more training and people who understand the accountability side of carbon and resource management. There is also an enormous need for more educators to increase public understanding and acceptance of environmental initiatives in BC.

A variety of new jobs in BC are already emerging as the economy transitions toward a greener future. These include tidal power electrical engineers, solar thermal technicians, wood pellet machine operators, sustainable energy managers, green real estate brokers, waste reduction consultants, GHG emissions verifiers, carbon trading market analysts, and hydrogen fuel cell researchers, to name a few (see facing page for a sample of green jobs in BC).

THE SIX KEY GREEN SECTORS ARE:

- 1. Clean & Alternative Energy** (including renewable energy, bioenergy, and fuel cells);
- 2. Energy Management & Efficiency** (including energy storage, transmission infrastructure and "smart grid", energy efficient lighting and heating, ventilating, and air conditioning (HVAC), and public transportation);
- 3. Green Building** (including green construction, infrastructure development, community design, and real estate);
- 4. Environmental Protection** (including elements of agriculture and silviculture, remediation, pollution control, and environmental consulting/engineering);
- 5. Carbon Finance & Investment** (including carbon management, offset markets, and venture capital); and
- 6. Green Knowledge & Support** (including research and development (R&D), advanced education and training, law, information and communications technology (ICT), non-governmental organizations (NGOs), and the public sector).



Green Jobs Require Education & Training

While many of the existing and emerging green jobs in BC are well-paid, they require specific skills, experience, and relatively high-levels of education. Approximately 62 percent of BC's green labour force has some level of post-secondary education or trades training (see Figure 1).

Of those with a post-secondary education, 40 percent have obtained a level of Bachelor's degree or higher. In terms of the post-secondary field of study, approximately one-third (34 percent) of BC's green work force have an educational background in architecture, engineering, or related technology. Business, management, and public administration are also important with 16 percent of BC's green labour market having educational backgrounds in these areas.

British Columbia's green labour force is generally older than the province's labour force as a whole, with 44 percent being between the ages of 45 and 64 at the time of the last Census in 2006. By comparison, only 35 percent of BC's total labour force was between the ages of 45 and 64. This fact supports the reality that attrition will open the door for many new green workers over the next decade. It will also require productivity levels to increase substantially in order to maintain BC's high living standards—to do so, education, innovation, and skill-development will be essential.

With severe fluctuations in commodity prices and climate conditions in recent years—for example, BC's forestry sector is still reeling from the devastating effects of the mountain pine beetle epidemic—traditional industry sectors have been looking for ways to increase competitiveness by becoming more efficient and sustainable. Workers in many industries are looking to retool and retrain mid-career in order to stay up-to-date with new practices—such as carbon accounting—and advances in technology—including biomass gasification, hybrid electric vehicles, and “smarter” energy transmission infrastructure as examples.

People are motivated to make a difference in their lifetimes—many being driven by an intrinsic need to help create a better world for future generations. Others are looking to develop rewarding, well-paid careers in exciting and constantly-evolving green industries. Whatever the scenario, education and training for green occupations are essential components for driving real change in a lower-carbon world and opportunities to apply these skills in well-paid jobs are projected to increase substantially over the next decade and beyond.

The following sections go into more detail on green education and training opportunities available throughout BC, and list some of the unique programs offered at the province's various post-secondary institutions.

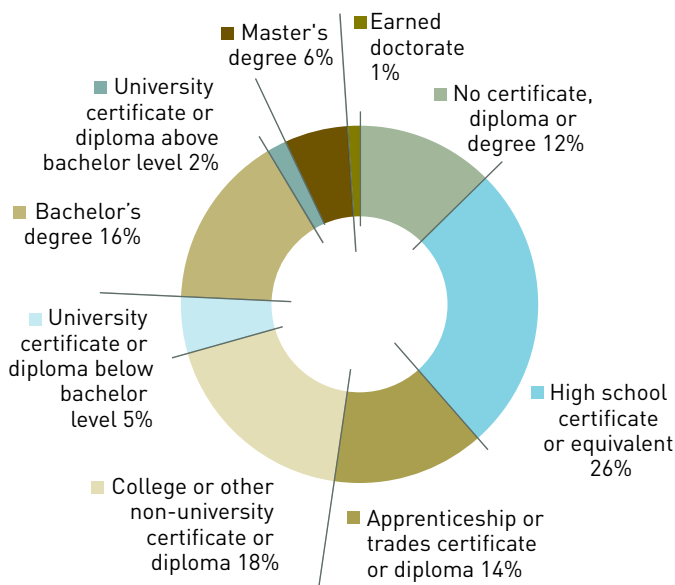


Figure 1: BC's green labour force by highest education level achieved.

Source: GLOBE Foundation (based on Statistics Canada 2006 Census)

2//Green Education & Training in BC

British Columbia has 25 public post-secondary institutions, dozens of private universities and colleges, and a number of industry training organizations, skills councils, and associations that have a role to play in the education and training of BC's green labour force.

Enrolment in environment-related programs is increasing in both colleges and universities compared to all programs. However, the actual number of students entering environmental programs at BC's public post-secondary institutions is small relative to other program areas. According to a recently-released study by ECO Canada, approximately 10.5 percent of all university enrolments and only 2.3 percent of college enrolments in BC were in environment-related programs in 2004/2005. The percentage of students who end up graduating from environment-related programs in BC is slightly higher than enrolment at 11.6 percent for universities and 5.2 percent for colleges.²

In 2008, approximately 23,450 students obtained a post-secondary education certificate at some level of programming identified as important for making a difference in BC's green economy (see Figure 2). Of course, whether these graduates actually enter green careers is at their discretion.

2. ECO Canada (2010). Post-Secondary Graduation Research: Enrolment and Graduation Rates from Environment-Related College and University Programs

CIP CODE	ACADEMIC AND OCCUPATION-SPECIFIC PROGRAMS[1]	2008
1	Agriculture, Agriculture Operations and Related Sciences	744
3	Natural Resources and Conservation	705
4	Architecture and Related Services	118
11	Computer and Information Sciences and Support Services	401
13	Education	2,770
14	Engineering	1,225
15	Engineering Technologies/Technicians	1,372
22	Legal Professions and Studies	326
23	English Language and Literature/Letters	20
26	Biological and Biomedical Sciences	1,512
27	Mathematics and Statistics	287
30	Multidisciplinary/Interdisciplinary Studies	42
31	Parks, Recreation, Leisure and Fitness Studies	149
40	Physical Sciences	612
41	Science Technologies/Technicians	78
44	Public Administration and Social Service Professions	132
45	Social Sciences	1,894
46	Construction Trades	3,163
47	Mechanic and Repair Technologies/Technicians	1,843
48	Precision Production	1,907
49	Transportation and Materials Moving	119
50	Visual and Performing Arts	264
52	Business, Management, Marketing and Related Support Services	3,766
Total for All Programs		23,449

Figure 2: Post-secondary certifications awarded in 2008 that are relevant to BC's green economy (by CIP code classification). The table includes the following credential types: Doctorate, Masters, Post-Degree Diploma, Post-Degree Certificate, Bachelors, Associate Degree, Advanced Diploma, Diploma, Certificate, Short Certificate, and Apprenticeship.

Source: Ministry of Advanced Education and Labour Market Development, Central Data Warehouse, October 2009 Submission; BC Headset, Table: Credentials Awarded; BC Stats, Apprenticeship Student Outcomes Survey, Student Outcomes Reporting System.

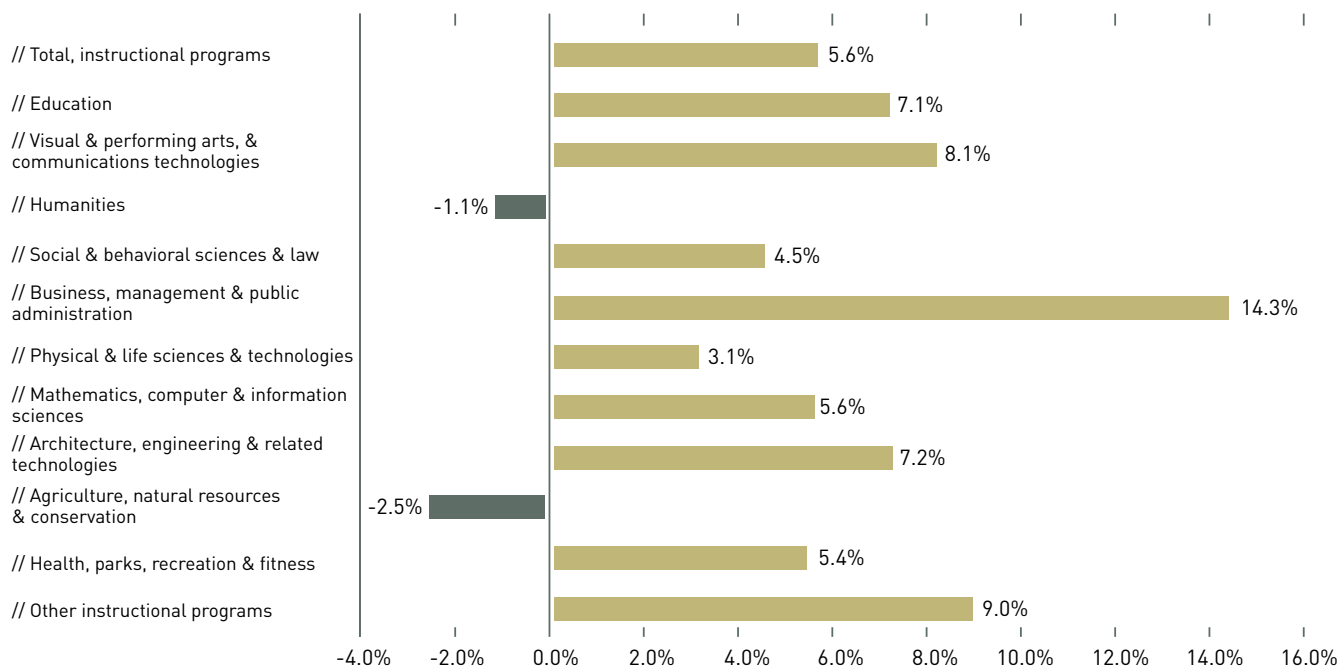


Figure 3: Growth rates for university degrees, diplomas, and certificates granted by program level in BC, 1992 to 2007.

Source: Statistics Canada, CANSIM Table 477-0014

From 1992 to 2007, the number of BC public post-secondary certifications grew at various rates, as illustrated in Figure 3. Highest growth rates were found in programs related to business, management, and public administration; architecture, engineering, and related technologies; and education. Growth in the number of certifications for programs related to physical and life sciences and technologies was relatively low and was actually negative for certifications related to agriculture, natural resources, and conservation. This supports ECO Canada's study that suggests traditional programs are declining (e.g. wildlife biology) while new emerging programs are experiencing tremendous growth (e.g. land use and planning).




The low number of graduates with science backgrounds is of particular concern, however, as a labour pool made up of workers with fewer science degrees has been identified as one of the reasons that Canada's overall productivity levels have stagnated in recent years—along with the fact that Canadian businesses are less technology-intensive and do far less R&D than other developed nations around the world.

This is important because productivity growth is a precursor to higher employment and ultimately, a better standard of living.

Despite the low certification numbers and even negative trends in certain important programming areas, demand remains high for qualified and experienced workers throughout BC's environment-related sectors. As such BC's public post-secondary institutions offer a variety of programs specifically designed for those interested in following green career paths (see Figure 4).

In addition, the private sector—in partnership with tertiary educators, unions, industry training organizations, and relevant associations and skills councils—takes responsibility for ensuring that industry knowledge and training remains current and effective.

The following sub-sections provide a more detailed examination of the various post-secondary institutions and organizations involved in delivering green education and training throughout the province.

Public Institutions	Green Sectors					
						
UNIVERSITIES						
Capilano University			•		•	•
Emily Carr University of Art & Design			•			
Kwantlen Polytechnic University		•	•	•	•	
Royal Roads University			•	•	•	•
Simon Fraser University		•	•	•	•	
Thompson River University	•	•	•	•	•	•
University of British Columbia	•	•	•	•	•	•
University of the Fraser Valley		•	•	•	•	•
University of Northern British Columbia	•		•	•	•	•
University of Victoria	•	•	•	•	•	
Vancouver Island University	•	•	•	•	•	•
COLLEGES / TECHNICAL INSTITUTES						
British Columbia Institute of Technology	•	•	•	•	•	•
Camosun College	•	•	•	•	•	•
College of New Caledonia	•	•	•	•	•	•
College of the Rockies		•	•	•	•	•
Douglas College			•	•	•	•
Langara College			•	•	•	
Nicola Valley Institute of Technology			•	•	•	
North Island College	•	•	•			•
Northern Lights College	•	•	•	•		
Northwest Community College	•	•	•	•		•
Okanagan College	•	•	•	•	•	
Selkirk College	•	•	•	•		
Vancouver Community College	•	•	•			



Clean & Alternative Energy



Energy Management & Efficiency



Green Building & Sustainable Design



Environmental Protection
& Resources Management



Green Knowledge & Support



Eco-tourism

Figure 4: Variations in green program offerings at BC's public post-secondary institutions.



Public Universities

British Columbia's 11 public universities offer in-depth theoretical and practical education that collectively covers almost every discipline important to greening the economy in the province.

Traditional programs in environmental protection are evolving to encompass new issues related to natural systems restoration, environmental planning, toxicology, and water treatment.

The **University of Northern BC (UNBC)** in Prince George has adopted strong sustainability initiatives campus-wide, and recently opened training facilities for renewable energy studies and a biomass research facility which will provide most of the energy needed to heat the institution. Branding itself as "Canada's Green University", the university also offers a range of courses and programs in Biological and Earth Sciences, Environmental Planning, and Environmental Engineering.

Royal Roads University (RRU) offers Bachelor's and Master's Degrees in Environmental Management, with courses in ecological economics and environmental reporting, as well as a Master's in Environmental Education and Communication. RRU has also partnered with ECO Canada to create the Canadian Centre for Environmental Education (CCEE), which offers a distance-learning, post-graduate Certificate and Master's in Environmental Practice.

The **University of Victoria (UVIC)** has both a Certificate and a Diploma in Restoration of Natural Systems, and a range of Degrees in Earth and Ocean Sciences and Environmental Studies. **Simon Fraser University (SFU)** has a Master's Degree in Resource and Environmental Management, as well as Environmental Toxicology. **Thompson Rivers University (TRU)** in Kamloops has a Master's Degree program in Environmental Science, as well as a Certificate and Diploma in Water Treatment Technology that focus on processes, from mechanical systems to water chemistry, in-line with BC-specific legislation. **Capilano University** has a two-year Associate Arts Degree in Global Stewardship. The **University of the Fraser Valley (UFV)** offers a Certificate and Diploma in Horticulture Crop Production and Protection, as well as a new Bachelor of Business Administration in Agriculture Management. **Kwantlen Polytechnic University** has a Diploma in Environmental Protection and has developed a training program that provides practical knowledge, farm skills, apprenticeship, and land leasing opportunities for new farmers through their new farm school in Richmond.

In addition, public institutions are now developing programs in emerging areas of the green economy. The **University of British Columbia (UBC)** offers more than 25 undergraduate, graduate, and professional programs that allow students to orient their degrees toward sustainability. One example is UBC's new Master's Degree in Engineering for Clean Energy which is the first of its kind in Canada and one of only a handful of similar programs offered worldwide. This professional degree program was developed in partnership with BC Hydro Power Smart, which is providing expertise on energy conservation technologies and is actively involved with curriculum development.

Vancouver Island University (VIU) in Nanaimo offers a Certificate program in Renewable Energy Technology, with the ultimate goal of supplying skilled workers to deploy renewable energy technologies—including solar, wind, geo-exchange, biomass, and micro-hydro. VIU also has a Diploma for Technicians in Green Building and Renewable Energy. In addition, TRU offers an apprenticeship certification for Domestic/Residential Geothermal Technicians.

In the realm of green building and urban planning, SFU has a Centre for Sustainable Community Development that offers an undergraduate certificate and post-baccalaureate diploma (both also available through distance education), graduate support, and a non-credit professional program. **Emily Carr University of Art and Design** has certificate and degree programs in Industrial and 3D Design, as well as specific courses on Sustainability and Green Design and Design for Social Change.

In the area of law, UBC offers a Specialization in Environmental and Natural Resource Law as part of its Bachelor's of Law program. In addition, UVIC is often ranked as Canada's top law school by Canadian Lawyer Magazine, and the school's reputation is particularly strong in the area of environmental law.

Graduate students also play a vital but sometimes overlooked role in BC's knowledge-based economy. Within universities, they are the engine of the research process, generating innovative ideas and technologies while advancing knowledge.

In 2007, the province committed to increasing support for graduate students with a four-year strategy that included adding 2,500 new graduate spaces. The funding for these new spaces was used to expand the government's priority areas of life sciences, technology, clean technology, and natural resources.

UVIC engineering students have a range of options surrounding Sustainable Energy Systems Design and Electronics, with graduate research areas including alternate energy technologies and systems, computer networks and distributed systems, ocean engineering and ocean energy, and electronics and energy. In addition, the Pacific Institute for Climate Solutions (PICS), a centre of excellence which is hosted by UVIC in partnership with UBC, SFU, and UNBC, has graduate students who are dedicated to research on climate change and related issues.

UBC's Sauder School of Business has a Centre for Sustainability and Social Innovation (ISIS) where MBA students can take on research projects related to carbon management and sustainability, as well as an Institute for Resources, Environment, and Sustainability (IRES) that includes a major interdisciplinary graduate education program with 80 Doctoral and 40 Master's students. In addition, UBC recently agreed to provide grants for 10 graduate students to work on long-term goals contained in the Vancouver 2020 Greenest City Action Team report. These initiatives, along with a proactive agenda to increase campus sustainability, are helping UBC reach its goals of becoming the "most sustainable campus on earth" and a world centre for green research.

Public Colleges & Technical Institutes

British Columbia's 11 public colleges and two of its technical institutes offer a wide variety of credentials from certificates to degrees. The focus of these schools is to provide students with applied, hands-on education which is employer-driven and often technology-based. A growing number of these institutions are preparing students for entry into careers in the low-carbon economy with programs that span an array of disciplines from renewable energy, to environmental resource management, to green building design and construction.

Skilled trades training—including carpentry, plumbing, pipefitting, welding, automotive, and electrical—is mostly handled by BC's colleges and technical institutes, in partnership with industry. Many of these traditional trades are being adjusted to include new green technologies and practices such as hybrid/electric vehicle engine repair and the design, installation, and maintenance of district energy, geo-exchange, renewable energy, and smart power grid systems.

The concept of transforming **British Columbia Institute of Technology's (BCIT)** campuses into living laboratories of sustainability was formerly adopted by the institute in 2007 and was subsequently adopted by UBC in 2009. In 2010, BCIT expanded the scope and role of its Sustainability Committee and the work to transform BCIT's campuses into living laboratories continues.

Currently, BCIT's School of Construction and the Environment offers a Diploma program in Sustainable Resource Management which provides students with the academic and the field and safety training needed to work in technical jobs with resource management firms, environmental consultancies, and government agencies. BCIT's Sustainable Energy Management Certificate program, developed in partnership with BC Hydro and funding support from the Natural Resources Canada – Office of Energy Efficiency, is designed to support employment opportunities in the emerging field of sustainable energy management, with a focus on energy demands of commercial and institutional buildings. The school offers unique professional courses in Brownfield Redevelopment and Green Roofs and Living Walls. In addition, BCIT includes a course on GHG accounting and reporting in its Bachelor of Technology in Environmental Engineering program and is planning to include related courses in its future sustainable business management curricula.

Northern Lights College (NLC) —with campuses in Dawson Creek, Chetwynd, Fort Nelson, Fort St. John, and Tumbler Ridge—is promoted as BC's "Energy College" and offers a number of programs. The new 10-month Certification for Wind Turbine Technicians was developed using international standards with six Canadian schools and the BZEE Education Centre for Renewable Energies in Europe. NLC is also responsible for all Solar Thermal Installer training in the province, with more than 130 students having completed the classroom portion of this program since it began in 2008. The course also prepares certified plumbers to write the Canadian Solar Industries Association (CanSIA) Solar Thermal Certification exam in order to receive industry certification. The new Geoexchange Technician Diploma program offered at NLC will be taught through the school's Workforce Training Department that is working with the Canadian GeoExchange Coalition (CGC) to develop and deliver the curriculum. In addition, NLC's Land Reclamation Diploma program prepares students to restore disturbed land resulting from industrial development and activity. Being delivered in Fort St. John, students often find work in the oil and gas sector, with additional opportunities in mining, forestry, and independent environmental consulting.

In addition to offering important trades training, many other colleges have developed uniquely green programs, including:

// **Camosun College** in Victoria has a Diploma in Environmental Technology, as well as a Diploma in Electronics and Computer Engineering Technology with a specific focus on Renewable Energy;

// the **College of New Caledonia**—with campuses in Prince George, Burns Lake, Vanderhoof, Quesnel, Fort St. James, Velmount, and Mackenzie—offers apprenticeship programs for Power Engineering and a course in hybrid vehicle technology;

// the **College of the Rockies**—with campuses in Cranbrook, Creston, Fernie, Golden, Kimberley, and Invermere—has developed a Certificate in Environmental Studies, a Certificate in Natural Building, an Associate of Science degree in Environmental Sciences, and will be offering a Bachelor of Business Administration in Sustainable Business Practices starting in 2010/2011;

// **Douglas College**—with campuses in New Westminster and Coquitlam—has a Certificate in Environmental Systems, a Residential Landscape Technician Diploma, and an Associate of Arts Degree in Environmental Studies;

// **Langara College** in Vancouver has Diplomas and Associate Degrees in Environmental Studies and a Diploma in Applied and Urban and Rural Planning;

// **Nicola Valley Institute of Technology**—with campuses in Merritt and Vancouver—offers Certificate and Diploma programs for Natural Resource Technicians;

// **Northwest Community College**—with a total of 10 campuses located throughout BC's Northwest region—has a program in Applied Coastal Ecology, a Certificate in Applied Earth and Environmental Studies, an Associate of Arts/Science Degree in Sustainable Communities, as well as a Timber Frame Craftsman Certificate;

// **Okanagan College**—with campuses located in Kelowna, Penticton, Vernon, and Salmon Arm—has Diplomas in Electronic Engineering Technology, Environmental Studies and Water Quality/Environmental Engineering Technology, a Certificate in Landscape Horticulture, and an apprenticeship for Domestic/Residential Certified Geothermal Technicians;

// **Selkirk College**—with campuses in Castlegar, Nelson, Grand Forks, and Trail—has a Diploma program in Integrated Environmental Planning and a Certificate in Renewable Energy (currently on hold).



CENTRE OF EXCELLENCE	POST-SECONDARY INSTITUTION(S)	FACILITY FOCUS	Opening Date
Building Science Centre of Excellence	BC Institute of Technology	Building design, advanced materials, and building envelope research	2005
Centre for Architectural Ecology	BC Institute of Technology	Green roofs and living wall systems	2003
Centre for Coastal Studies	Simon Fraser University	Canada's coastal ecosystems, including marine conservation, sustainable coastal communities, and resource management.	2000
Centre of Interactive Research on Sustainability	University of BC	Sustainable building materials and design, cognitive/ behavioural responses to visualization/ simulation for sustainability	2011
Centre for Energy Systems Applications	BC Institute of Technology	Renewable energy technologies (geo-exchange, solar PV, and high-efficiency lighting) in an integrated systems approach.	2007
Centre for Livelihoods and Ecology	Royal Roads University	Natural products and services for rural communities.	2002
Centre for Sustainability and Social Innovation	University of BC	Carbon management, sustainable transportation, clean energy/technology, food systems, First Nations	2009
Centre for Sustainable Community Development	Simon Fraser University	Focused on creating employment, reducing poverty, restoring the health of the natural environment, stabilize local economies, and increasing community control.	1989
Energy House	Northern Lights College	Wind turbines, solar PV, solar thermal, biomass, geo-exchange	2011
Institute for Integrated Energy Systems	University of Victoria	Renewable energy systems, hydrogen fuel cell technology, carbon management	1989
Institute for Resources, Environment and Sustainability	University of BC	Sustainable resource management and ecology	2005
Northern Forest Products and Bioenergy Innovation Centre	University of Northern BC	All aspects of bioenergy from technology, to policy, to health	2010
Pacific Institute for Climate Solutions	University of Victoria, University of BC, Simon Fraser University, and University of Northern BC	Low-carbon economy, climate change, sustainable communities, resilient ecosystems	2008
Sustainable Building Technologies and Renewable Energy Conservation	Okanagan College	Geothermal, energy metering/monitoring, green building, and building envelope construction.	2011

Figure 5: BC's various Centres of Excellence dedicated to green education, training, and research (COE titles are hyper-linked)..

Centres of Excellence

Universities and colleges have long been known for research and innovation, but the emergence of green Centres of Excellence across the province has signalled the start of a new era. These facilities bring together experts from the public, private, and academic sectors to work on applied research, development, and commercialization of new technologies through a collaborative approach. By April 2011, BC will have more than a dozen green Centres of Excellence in operation (see Figure 5).

These new buildings have been designed to function as interactive, living laboratories for students, businesses, as well as the general public because it has been recognized that general education, awareness, and field testing of green and clean technologies is a critical part of the societal movement towards a greener economy. From research on climate change, to bioenergy, to renewable energy technologies, to green building, these facilities work to solve some of the world's greatest environmental challenges.

FROM RESEARCH ON
CLIMATE CHANGE, TO
BIOENERGY, TO RENEWABLE
ENERGY TECHNOLOGIES, TO
GREEN BUILDING, THESE
FACILITIES WORK TO SOLVE
SOME OF THE WORLD'S
GREATEST ENVIRONMENTAL
CHALLENGES.



Source: www.okanagan.bc.ca





Private Universities, Colleges & Career Training Institutions

Two private universities in BC offer programs that are important for a greener economy. Since opening its doors in Squamish in September 2007, **Quest University** has amalgamated some of the best historical practices in education with unique and contemporary innovations. Quest teaches its courses on the innovative “block plan” with courses in environmental/ecological economics, policy, and sustainable resource management. **Trinity Western University** is based out of Langley and offers courses in resource and environmental management, environmental thought, and environmental physiology.

Non-degree granting post-secondary training institutions in BC also play an important role in offering educational programs to students in urban centres and rural communities around the province. The Ministry of Advanced Education and Labour Market Development provided regulatory authority for non-degree granting institutions in 2004 to the **Private Career Training Institutions Agency (PCTIA)**—a list of these institutions can be found on the PCTIA’s website. This agency is governed by a board made up of seven industry elected representatives and three government appointed public interest representatives and provides highly dynamic and diverse training programs across all sectors, with a growing number of organizations involved in sustainable education and training.

A couple examples of the registered institutions and programs include:

// Linnaea Farm – Ecological Gardening Programme

As food security and energy costs rise, there has been an increased interest in small-scale urban and rural community agriculture. Linnaea Farm offers an 8-month program which combines classroom learning with hands-on experience in permaculture, biodynamics, and a variety of other components related to small-scale intensive organic agriculture.

// Sprott-Shaw Community College – Electrical Apprenticeship Training

Sprott-Shaw offers Level 1 and 2 Electrical Apprenticeship training, which is sanctioned by the Industry Training Authority. Students can complete the first two levels at the community college, and then pursue their full apprenticeship at a regional college or university.



Industry-based Training

Industry Training Authority & Organizations

The transition to a greener economy is requiring workers in organizations and industries of all sizes to adopt new skills and practices. A 2009 report by the US Department of Labor highlighted that as market demands evolve in favour of greener practices, it is in fact the Registered Apprenticeship stakeholders and the organizations they support that are consistently first-to-market in training both existing and new workers³.

Apprenticeship training involves learning a skilled trade on the job, combining classroom training (15 percent) with work-based experience (85 percent). Most apprenticeships take four years.

Apprenticeship programs in BC are regulated and funded in part by the Industry Training Authority (ITA), a BC Crown corporation established in 2004. Figure 6 highlights the growth in apprenticeship training in the province since 2003, with 6,500 Certificates of Qualification forecast to be issued in 2009/2010.

Many industry experts have identified that skilled trades are almost certain to see the biggest gains in terms of new employment opportunities as new green initiatives in sustainable energy and construction get underway across North America. This has created a strong demand for modern training programs with sufficient capacity to help fill low-carbon employment opportunities.

3. US Department of Labor (June 2009), "The Greening of Registered Apprenticeship: An Environmental Scan of the Impact of Green Jobs on Registered Apprenticeship and Implications for Workforce Development"

In an effort to create an industry-driven training system, the ITA delegated the responsibility for the development and implementation of training programs to seven independent Industry Training Organizations (ITOs). The ITOs were established by industry and are not-for-profit legal entities accountable to and partially funded by the ITA.

Automotive Training Standards Organization (ATSO)

The automotive industry has seen a strong shift to more fuel-efficient and low-carbon vehicles in recent years. Automotive technicians, collision repair technicians, and transmission service technicians are just a few of the labour groups who need to become increasingly familiar with the growing market of alternative fuel vehicles. Some of the technological advancements include hybrid engines (gas/electric), electric cars, and fuel cell vehicles—although much of the training for newer hybrid and electric vehicles is done through the original manufacturers due to intellectual property and warranty issues. In addition, apprentices are now working with new technologies and products in their training, such as low-VOC paints. In 2009/10, 3,432 apprentices were registered across 19 apprenticeship programs managed by ATSO.

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10 Forecast	2010/11 Target	2011/12 Target	2012/13 Target
Total Registered Training Participants ¹	14,676	20,050	33,389	38,018	43,922	44,076	43,000	39,500	40,000	41,000
Certificate of Qualification Issued ²	2,329	2,378	2,899	3,551	5,246	6,038	6,500	7,000	7,500	8,000

Note 1: Total Registered Training Participants includes those registered in an apprenticeship program, a Foundation (pre-apprenticeship) program or a high school youth program, except for 2003/04 and 2004/05 which only includes registered apprentices and high school youth.

Note 2: Certificates of Qualification (C of Q) Issued includes certificates issued to those that have completed an apprenticeship program or who have successfully challenged the C of Q exam. It does not include Foundation (pre-apprenticeship) program completions.

Figure 6: Apprenticeship training numbers in British Columbia, 2003 to 2012.

Source: Industry Training Authority Revised Service Plan 2009/10-2011/12

Transportation Career Development Association of BC (TransCDA)

The TransCDA oversees transportation apprenticeship training across four sectors including road, rail, marine, and aerospace. With the introduction of lower-carbon crossover fuels such as natural gas in the trucking industry, TransCDA is developing a “unit construct model” for their curriculums which will make it seamless to accommodate green technological advancements into the training of new and existing apprentices. This module system will also make it easier to “up-skill” existing trades people for jobs in the emerging green economy.

Resource Training Organization (RTO)

The RTO represents a group of employers in the mining and smelting, oil and gas, pulp and paper, solid wood, and heavy shipbuilding and repair sectors. While most of these industries may not be traditionally thought of as part of the green economy, changing environmental governance is encouraging the adoption of resource-efficient and lower-carbon technologies. There is tremendous opportunity for these industrial processes to become more energy-efficient and energy self-sufficient.

Recently, a project was announced by BC Hydro outlining plans to upgrade a pulp mill in Castlegar to undergo a \$40 million retrofit, allowing the plant to produce bioenergy from wood products. The emergence of retrofit projects like this will continue to drive demand for the RTO apprenticeship programs which include industrial electricians, machinists, steamfitters/pipefitters, and welders. The plumbing apprenticeship programs throughout the province had 42 percent more graduates in 2008 when compared with 2006, while welding saw a 50 percent increase in apprenticeship graduates.

The RTO is currently developing a Wind Turbine Technician apprenticeship program in cooperation with Northern Lights College to address the surge in demand for green energy alternatives in the province, with plans for the first student intake in 2011/2012. The growing wind energy industry in BC has several hundred wind turbines set to be commissioned in the next five to ten years and will require one trained technician for every eight to ten turbines installed.

Residential Construction Industry Training Organization (RCITO)

While many of the ITOs and their college partners responsible for curriculum delivery have been incorporating sound environmental practices into their programs, the RCITO has been at the forefront of the green building revolution, pushing innovation and supporting low-carbon building practices. With the recent addition of the Building Envelope Technician program delivered through BCIT and the Certified Geothermal Technician program run by BCIT, TRU, and Okanagan College, RCITO is focused on positioning the residential construction industry in BC to be a national leader in sustainability. The residential construction industry has also been involved with energy efficiency

retrofits to existing homes throughout the province which have been promoted through provincial incentive programs such as LiveSmart BC.

Construction Industry Training Organization (CITO)

CITO provides industry leadership-in-training for 30 trade programs throughout the construction industry and delivers the training through 14 public colleges and universities, as well as a number of private institutions. In 2009/10 there were 21,837 apprentices registered in a CITO managed apprenticeship program. CITO aims to have “the right number of workers, with the right knowledge and skills, developed to the right standards, and available at the right time”. The green building and renewable energy sectors have created a strong demand for workers in several programs overseen by CITO, most notably plumbers, roofers, and electricians. These trades’ people are gaining many opportunities to learn about the new applications for existing and innovative technologies in the low-carbon marketplace.

Propel

Propel is the Industry Training Organization for BC’s Tourism, Hospitality, and Food Services Sector. Established in 2007, Propel’s mandate is to engage industry in the development of effective training programs which includes defining training needs, setting training and occupational standards, measuring training results, and interfacing with public, private, and K-12 training providers. While Propel oversees several apprenticeship programs, they are also involved in various industry initiatives which have recognized the natural environment as a critical component to a sustainable future for the tourism and hospitality industries in BC. Some of these initiatives include developing and promoting practices that source food from local and organic farmers, that focus on improving energy and resource efficiency in hotel management, and that support eco-tourism and reduced ecological and carbon footprints.

Horticulture Education BC (HEBC)

HEBC is the ITO that serves the ornamental horticulture industry in BC. HEBC aims to put into effect the best practices gleaned from other jurisdictions which have proven that putting industry in a leadership role results in expansion in trainee numbers and an increase in the general skill level within the workforce. As sustainable community planning and environmental protection continue to be incorporated into the urban and rural landscapes in BC, there will be growth opportunities in many areas including horticulture research, landscape design, landscape architecture, and parks planning. Horticulture also has an important role to play in the growing green roof and green building sectors. HEBC has also shown interest in developing an Organic Agriculture apprenticeship program to address the expanding sustainable food marketplace throughout the province.



Associations and Supporting Organizations

While the ITA is responsible for funding and overseeing programs which have standardized national or provincial curriculums, many other industry-based organizations, associations, and professional societies have developed their own certification and/or accreditation programs for their members or others in the same professional areas, either independently or in cooperation with apprenticeship and other post-secondary institutions. These can include standards that are recognized by governmental agencies or academic institutions.

Below is a list of a few key organizations involved in green-specific training and program development.

// The **Canadian Solar Industries Association (CanSIA)**, has developed a Solar Hot Water System Installer Certification—currently being offered as a two-day course run by Northern Lights College in various locations throughout the province.

// The **BC Ground Water Association** has developed its Groundwater Drilling and Pump Technician Certification in-line with the Canadian Ground Water Association. This certification provides the essential training for geothermal installers.

// **GeoExchange BC**, in coordination with the **Canadian GeoExchange Coalition (CGC)** and BCIT, offers three training programs for those interested in pursuing a career in the geothermal industry. Upon completion of the general installer course, students will receive the Installers Training Certificate, which is the pre-requisite to apply for CGC accreditation for industry professionals. For industry professionals looking to become more specialized in renewable technologies, GeoExchange BC also offers Residential or Commercial System Design courses.

// The **Thermal Environmental Comfort Association (TECA)** offers several training programs to British Columbia's residential heating, ventilating, and cooling industry. Their Forced Air Guidelines course was developed with support from the BC Ministry of Energy, Mines and Petroleum Resources and trains workers to increase the energy efficiency of buildings. Curriculum includes looking at room-by-room heat loss and heat gain analysis for systems with A/C coils and heat pumps; equipment selection for furnaces, A/C coils, and heat pumps; and duct sizing and layout to selected equipment capacity for standard and low-pressure systems.

// One of the best-recognized designations in the green construction industry has been developed by the **Canadian Green Building Council**—in particular, the Leadership in Energy and Environmental Design (LEED) Accredited Professional (AP). A variety of continuing education specialties are offered for LEED-APs through the Green Building Certification Institute, with additional training and experience being gained in the areas of water management, innovation, and energy.

// **Brighter Green** offers a variety of certifications including their Sustainable Building Advisor Program. This nine-month certificate training course is designed for working professionals in various industries including architecture, environmental consulting, and engineering. The program covers topics in sustainable building design, sourcing green materials, and understanding indoor environmental quality and health.

// **Canadian Home Builders' Association of British Columbia** created the Built Green BC Program to support energy efficiency retrofitting technologies. The Built Green certification process is open to all members of participating Home Builders' Associations (HBAs) including builders, renovators, product suppliers or manufacturers, service providers, community developers, and municipalities. The certification provides consumers with the assurance that the member has a thorough understanding of environmental issues in the construction industry. The training program covers four main aspects of home building including: energy efficiency, indoor air quality, resource use (including waste management), and overall environmental impact.

// The **Building and Managers Association (BOMA)**, in partnership with BC Hydro and Terasen Gas and funded by the BC Ministry of Energy, Mines, and Petroleum Resources, has developed an e-Energy Training program for building operators. The online program consists of 11 modules designed to build an understanding in basic energy principles, identify energy reduction opportunities, and develop strategies on influencing stakeholders to adopt energy savings behaviour.

// The **BC Construction Association (BCCA)** has developed trades employment programs to address the forecasted skilled trade shortages within the province and has focused their efforts on training people in demographics that are underrepresented in the construction industry and Green Building sector. The Skilled Trades Employment Program (STEP), funded in part by the Province of BC and the Government of Canada, acts to connect trades trainees to employers through a Trade Employment Specialist. ISTEP is designed for recent immigrants and has worked with the Construction Sector Council to develop a Foreign Credential Recognition program to assist newcomers to BC in entering the workforce using their prior training. The ASTEP initiative was created to facilitate the recruitment of Aboriginals into the construction industry. Through innovative partnerships with Tribal Councils and Elder and Aboriginal governance groups, ASTEP acts to build awareness of career paths and sustainable employment opportunities for the Aboriginal community. The BCAA has also partnered with the ITA to guide, mentor, and build retention of female workers in the construction industry through their STEP for Women program.

// The **Light House Sustainable Building Centre** in Vancouver offers a variety of professional education courses in the green building sector, including a two-day Green Construction Training program designed for site superintendents, supervisors, site safety officers, and managers to gain the skills and knowledge needed to coordinate, supervise, and train crews on site. Additional courses include Life Cycle Analysis for Buildings, a Green Building Documentation and Coordination Training program, a Sustainable Building Advisor program, and energy modeling courses using EE4 training and RETScreen.

// The **BC Water and Waste Association (BCWWA)** has developed courses in wastewater treatment and biosolids management. The BCWWA seminar on wastewater treatment and biosolids is designed for working professionals involved in municipal engineering services, resource managers, or other similar occupations. Participants learn the basics of GHG emissions accounting for municipal wastewater treatment and biosolids management, along with the type and quantity of GHG emissions typically found in such settings.

// The **World Wide Opportunities on Organic Farms (WWOOF)** is an informal training initiative that has become a well known opportunity for people looking to gain experience in sustainable organic agriculture processes in British Columbia. While not exclusive to BC, this volunteer-based program fills an important role in supporting first-hand experience in organic farming. Community level and small-scale agriculture is a growing industry, and already plays an important role in local economies.

// The **Environmental Law Centre Society** collaborates with UVIC's Faculty of Law to operate the Environmental Law Clinic (ELC). The ELC is nationally recognized for inspiring, mentoring, and training Canada's next generation of environmental lawyers with a hands-on academic program in public interest environmental law.

// **Climate Smart** offers a program that includes three four-hour training sessions for businesses looking to become more GHG savvy. The results-oriented training sessions are run by experts experienced in advising small- and medium-sized enterprises on the best practices of managing and reducing GHG emissions and prepare business owners and staff to 1) calculate accurate GHG emissions inventories, 2) identify your best opportunities to reduce emissions and costs, 3) evaluate carbon offsets, and 4) communicate your environmental commitment in a compelling way.

In addition to the organizations listed above, many others provide education to the public through their outreach initiatives and offer member-based training and continuing professional development programs such as seminars, forums, and workshops that are designed to address the immediate needs of industry. Some of these other organizations include the Applied Science Technologists and Technicians of BC, the Association of Professional Engineers and Geoscientists of BC (APEGBC), the Architectural Institute of BC, the Association of BC Forest Professionals, the Association of Biologists of BC, the BC Society of Landscape Architects, Consulting Engineers of BC, and the Contaminated Sites Approved Professionals Society (see page 33 for a more comprehensive list of the various associations and supporting organizations).





Sector Councils

Sector councils are industry-led partnership organizations that address skills development issues and implement solutions in key sectors of the economy. The councils play an important role in the green economy working as a uniting element to engage unions, employers, workers, educators, professional associations, and government in a strategic alliance that is focused on implementing solutions to the specific skills and human resource needs that will enable their sectors to thrive. While most sector councils have a national umbrella, they still play an important role in BC's education and training.

The **Environmental Careers Organization (ECO) Canada** serves as the sector council for environmental careers. Based in Calgary, the organization has seven professional training designations recently merged under their Environmental Professional (EP) certification. Approximately 245 BC members have been certified since 2001. The EP certification includes training in the areas of environmental auditing, sustainable forest management, and GHG quantification and verification that is designed to meet national and international standards. ECO Canada also offers their Certificate in Environmental Practice, administered through the Canadian Centre for Environmental Education (CCEE) and Royal Roads University.

Specialized Training Programs

Corporate Training Programs

British Columbia's three major utility providers (BC Hydro, Fortis BC, and Terasen Gas) have all developed their own in-house skills development programs to ensure the availability of highly-trained workers. This enables the companies to train individuals in urban and rural locations, which may not otherwise be serviced by post-secondary institutions. It also gives trainees time to become familiar with company specific policies and systems.

BC Hydro's Power Smart program sponsors training for Energy Managers through BCIT (for commercial programs), as well as through UBC's Engineering Master's Degree in Clean Energy, and provides training, coaching, and consulting support for Energy Management.

In 2008, BC had 2,597 graduates in the engineering and engineering-related technician fields and in an effort to attract and retain these highly sought after workers, the utility companies, along with other organizations including Metro Vancouver, formalized their Engineer-in-Training (EIT) program. The EIT program, in cooperation with APEGBC, assigns a Professional Engineer (P. Eng) to each EIT for the entire training period of up to four years. The sponsor ensures that the EIT is assigned work which will enable the EIT to acquire his or her P.Eng status, similar to a formalized mentorship program.

REnEW Program

An interesting program announced by Terasen Gas in February 2010 is the Residential Energy and Efficiency Works (REnEW) training program, designed to provide at-risk people in BC with training and teach them essential trade skills in the growing area of energy efficiency retrofits and green building. REnEW is funded by Terasen Gas, FortisBC, and BC Hydro. It was developed with the John Howard Society, BC Hydro, the Southern Interior Construction Association, and ACCESS BladeRunners. The program targets individuals who are overcoming employment barriers because of life challenges such as mental health issues, a history of substance abuse, poverty, or homelessness and provides them with education and training resulting in desirable skill sets that help address labour shortages in the green economy.

MITACS Programs

Since 1999, the Mathematics of Information Technology and Complex Systems (MITACS) organization has played a leadership role in linking businesses, government, and not-for-profits with six BC universities to develop cutting-edge tools to support the growth of this province's knowledge-based economy. Its programs focus on developing and attracting a new generation of researchers and entrepreneurs through skills training and entrepreneur workshops, technical training events, graduate and post-doctoral internships, and outreach activities.



Figure 7: Students from India who participated in MITACS's Globalink Program in 2009.

In 2007, the Ministry of Advanced Education announced \$10 million for a major expansion of the MITACS internship program. This funding helped launch **Accelerate Program**—BC's graduate research internship program. So far, more than 1,300 internships have been offered in BC.

One successful example of this program is a UVIC engineering graduate student who undertook a four month internship with SyncWave Energy. The student worked to further develop the company's prototype wave power generator, which will produce clean energy for isolated coastal communities and off-shore installations.

Another unique initiative is MITACS's **Globalink Program**, designed to provide top third and fourth year science and technology students from around the world with the opportunity to travel to BC and become involved in advanced research and development projects (see Figure 7). In 2009, successful students from India enjoyed their experiences so much, that many plan to return to BC for their graduate studies, sparking the interest of other like-minded students back in India to consider BC for their future education.



Youth Programs

As the demand for skilled workers in green jobs and traditional apprenticeships continues to grow, the Ministry of Education (MOE) and the ITA have designed several programs to promote trades programs to youth in order to bolster the availability of certified skilled labourers. The ITA has developed several programs to build the awareness of opportunities in trades amongst high school students and youth, as highlighted below. It will be important to ensure that sustainability and green practices are incorporated into these programs to instil its importance to youth seeking to enter careers in trades.

Youth Exploring Skills to Industry Training Program (YES-2-IT)

This program is intended to give students in grades 6 to 9 opportunities to experience work in skilled trades and to work with trades people in their communities. In addition, classroom learning can be used to support hands-on experiences. The ITA and the MOE have partnered to provide resources and funding to schools, industry associations, and other community organizations that have been successful in submitting program proposals.

Secondary School Apprenticeship (SSA)

This career development program provides students with the opportunity to begin an apprenticeship while still in high school and earn high school credits in parallel. The program is intended to provide a smooth transition from school to work and provide a quicker route to completing an apprenticeship. SSA students can complete up to 480 hours of work experience that counts toward their apprenticeship and course credits. The program is a partnership between the ITA and the MOE and is coordinated through high school career departments.

Ace-It Program

This partnership between school districts and post-secondary institutions enables high school students to gain necessary credits to complete their high school diploma through trades training, which also counts towards the start of apprenticeship programs. These classes are often taught at colleges and also involve local employers who emphasize the new skill sets which are desirable to the industry.

First Nations Programs

In 2007, the Ministry of Advanced Education and Labour Market Development (ALMD) announced the province's Aboriginal Post-Secondary Education Strategy with the goal of closing the higher-learning education gap so that Aboriginal and non-Aboriginal people can participate equally in the social and economic fabric of the province. There are a variety of programs throughout the province that target youth and unemployed people of Aboriginal descent.

ECO Canada, through their **Building Environmental Aboriginal Human Resources (BEAHR)** project, offers community-based environmental training programs for Aboriginal learners that are culturally-relevant and skills-based. Programs are designed to provide introductory skills to those who want to work in the environmental field and are delivered by approved licensed trainers from both public and private organizations. The programs use both traditional and scientific knowledge, along with formal and informal methods of learning. Programs available include:

// **Environmental Monitor Training Program** (research and/or regulatory specialization);

// **Local Environmental Coordinator;**

// **Environmental Site Assessment Assistant;**

// **Contaminated Sites Remediation Coordinator;**

// **Land Use Planning Coordinator; and**

// **Solid Waste Coordinator.**

Since the first training program was delivered in 2006, more than 120 Aboriginal students have successfully completed a training program in BC. ECO Canada continues to expand its course offerings to effectively address the demand for Aboriginal workers and also has an Aboriginal environmental careers website as part of BEAHR.

The **Aboriginal Community Career Employment Services Society (ACCESS) Trades Program**

works closely with the ITA to increase training and apprenticeship opportunities in urban Aboriginal communities. To help build these opportunities ACCESS has established partnerships with government, training institutes, employers, trades organizations, and community groups to provide students with industry certified training and connections to employers. Some of the construction programs offered include carpentry, steel fabrication, and plumbing.

The Métis Skills and Employment Centre based in Abbotsford aims to improve the employment potential, earning capacity, and self-sufficiency of Métis people in BC. Much of their focus is on promoting entrance into trades and apprenticeship programs for First Nations people, as there is a high demand for Aboriginal workers and skilled labourers in the green building and construction industry. The Métis Skills and Employment Centre also runs various other youth programs to help build skilled, job-ready workers.

Much of the green job education and training within First Nations' communities happens on-site, as some members have difficulties leaving to attend educational facilities that are often long distances from home. As an example, the T'Sou-ke First Nation, near Sooke (on Southern Vancouver Island), have installed 37 solar hot water systems and are now powering 30 buildings using solar energy (see Figure 8). The community has trained many of its residents in solar power installation—with the assistance of First Power, Home Energy Solutions, Day4 Energy, and Taylor Munro Energy Systems—so that they would be able to take on such projects



Figure 8: The T'Sou-ke First Nation on Vancouver Island has trained community residents in solar power installation.

Source: www.tsoukenation.ca



3//In Summary

There is a wide variety of existing and new learning opportunities available to people interested in following “green” career paths in British Columbia. With the green elements of BC’s economy growing faster than the economy as a whole, there is increasing demand for skilled and experienced workers needed to fill the relevant positions in all industries.

The bulk of green jobs in BC are not new occupations but are, for the most part, developing from existing occupations that are being retooled to help reduce the impact of humans on the environment, to promote sustainability, and to encourage the efficient use of energy and resources. An example would be an Automotive Technician whose skills are shifting to include more work with hybrid and electric vehicles.

British Columbia’s public and private post-secondary institutions, industry training bodies, and various supporting organizations and associations have been adapting to market demands and adjusting their green programming accordingly. Many have been ahead of the curve in delivering curriculum that addresses emerging needs for workforce development in BC, such as renewable energy systems, green building technologies, and carbon accounting. One example is UBC’s new Master of Engineering in Clean Energy—the first of its kind in Canada and one of only a handful worldwide. In addition, much of the industry training occurs within the private sector from companies who train employees for specific jobs.

It should be noted, however, that a green career can be carved out by virtually anyone through a wide variety of education and training experiences and it is ultimately up to the individual to choose to follow such a direction. While many programs and courses in areas such as business and marketing, physics and math, or trades are not specifically focused on sustainability or the environment, students can decide to turn these learning experiences into valuable and rewarding green career opportunities. They can do so by taking on apprenticeships, co-operative education experiences, practicums, and/or research projects with companies that operate in the clean and alternative energy, energy management and efficiency, green building, environmental protection, or carbon finance and investment sectors. Individuals may also use their education and training to become “sustainability champions” within firms and/or industries to infuse green practices into the daily operations of their employers.

As was revealed through the GLOBE Foundation’s research on BC’s green economy and supported by ECO Canada’s latest labour market study, environmental skills are quickly becoming more important across the workforce and within every industry. Individuals with the skills, knowledge, and experience to support environmental sustainability initiatives will not only have an advantage over the rest of the workforce as BC transitions to a greener economy, but will also be in a position to make a positive contribution to society as a whole.

TO FIND OUT MORE ON
BC’S GREEN ECONOMY AND
EMERGING WORK FORCE
OPPORTUNITIES, VISIT
WWW.GLOBE.CA

4//Green Education/Training Resources

BC Public Universities:

Capilano University
Emily Carr University of Art & Design
Kwantlen Polytechnic University
Royal Roads University
Simon Fraser University
Thompson Rivers University
University of BC
University of the Fraser Valley
University of Northern BC
University of Victoria
Vancouver Island University

BC Public Colleges & Technical Institutes:

BC Institute of Technology
Camosun College
College of New Caledonia
College of the Rockies
Douglas College
Langara College
Nicola Valley Institute of Technology
North Island College
Northern Lights College
Northwest Community College
Okanagan College
Selkirk College
Vancouver Community College

Private Universities & Career Training Institutions:

Linnaea Farm
Quest University
Private Career Training Institutions Agency
Sprott-Shaw Community College
Trinity Western University

Industry Training Authority/Organizations:

Automotive Training Standards Organization
Construction Industry Training Organization
Horticulture Education BC
Industry Training Authority
Propel – Tourism, Hospitality, Foodservices Training
Residential Construction Industry Training Organization
Resource Training Organization
Transportation Career Development Association

Sector Councils:

Aboriginal Human Resources Development Council of Canada
BioTalent Canada
Canadian Agricultural Human Resource Council
Canadian Apprenticeships Forum
Canadian Automotive Repair and Service Council
Canadian Council of Technicians and Technologists
Canadian Supply Chain Sector Council
Canadian Tourism Human Resource Council
Canadian Trucking Human Resources Council
Construction Sector Council
Council for Automotive Human Resources
Electricity Sector Council
Environmental Careers Organization (ECO) Canada
Forest Products Sector Council
Human Resource Council for the Voluntary/Non-Profit Sector
Information and Communications Technology Council
Installation, Maintenance and Repair Sector Council
Mining Industry Human Resource Council
Motor Carrier Passenger Council of Canada
National Seafood Sector Council
Wood Manufacturing Council

Associations & Supporting Organizations:

Applied Science Technologists and Technicians of BC
Architectural Institute of BC
Association of BC Forest Professionals
Association of BC Land Surveyors
Association of Canadian Community Colleges
Association of Professional Biologists of BC
Association of Professional Engineers and Geoscientists of BC
BC Community Forest Association
BC Construction Association
BC Environment Industry Association
BC Ground Water Association
BC Institute of Agrologists
BC Society of Laboratory Science
BC Society of Landscape Architects
BC Sustainable Energy Association
BC Technology Industry Association
BC Water and Waste Association
Building Owners and Managers Association of BC
Canada Green Building Council
Canadian Bioenergy Association
Canadian GeoExchange Coalition
Canadian Geothermal Energy Association
Canadian Home Builders Association of BC
Canadian Hydrogen and Fuel Cell Association
Canadian Hydropower Association
Canadian Solar Industries Association
Canadian Renewable Fuels Association
Canadian Wind Energy Association
Cascadia Region Green Building Council
Climate Smart
Community Energy Association
Consulting Engineers of BC
Contaminated Sites Approved Professionals Society

Council of Forest Industries
Forest Products Association of Canada
Fraser Basin Council
GeoExchange BC
Kootenay Association for Science and Technology
Kootenay Rockies Innovation Council
LifeSciences BC
Light House Sustainable Building Centre
Mining Association of BC
National Brownfield Association
North Columbia Environmental Society
Northern Bioenergy Partnership
Ocean Renewable Energy Group
Okanagan Environment Industry Alliance
Okanagan Science and Technology Council
Peace Energy Cooperative
Recycling Council of BC
SolarBC
Thermal Environmental Comfort Association
Vancouver Renewable Energy Cooperative
Victoria Advanced Technology Council (VIATec)
Water Supply Association of BC
Wood Pellet Association of Canada

Specialized Training Programs:

Solar Hot Water System Installer Certification (CanSIA)
Groundwater Drilling and Pump Technician Certification (BCGWA)
Geoexchange Installers Training Certificate (CGC)
e-Energy Training Program (BOMA)
Forced Air Guidelines Certificate (TECA)
LEED Accredited Professional (AP) Certification (CaGBC)
Sustainable Building Advisor Program (Brighter Green)
Built Green Builder Training (CHBA-BC)

Skilled Trades Employment Program (BCCA)
Immigrant STEP Program (BCCA)
Aboriginal STEP Program (BCCA)
Green Construction Training Program (Light House)
World Wide Opportunities on Organic Farms Program
Environmental Professional Certification (ECO) Canada
REnEW Program (Terasen Gas)
Accelerate Program (MITACS)
Globalink Program (MITACS)
YES-2-IT Program (ITA)
Secondary School Apprenticeship Program (ITA)
Ace-It Program (ITA)
Aboriginal Environmental Training Programs (BEAHR)

Other Education/Training Resources:

Achieve BC
Aboriginal Community Career Employment Services
Society (ACCESS)
BC Education Planner
Building Environmental Aboriginal Human Resources
(BEAHR)
Canada's Job Bank - Service Canada
Career Planning and Labour Market Information
Clean Energy Classrooms
Human Resources and Skills Development Canada
Industry Training and Apprenticeships in BC
Labour Market Information (Service Canada)
Métis Skills and Employment Centre
National Research Council
TradesTrainingBC
What's Key – Opportunities, Careers, Education
Work BC
Working in Canada







SIMON FRASER UNIVERSITY CAMPUS

5//Spotlight: Unique Green Programs in BC

The following pages highlight some of the uniquely green-focused education and training programs available at BC's various public post-secondary institutions.

It should be noted that the variety and availability of green education and training programs in BC is constantly evolving to meet market demand and the programs presented in this guide represent by no means a comprehensive list of the options available to students interested in following a green career path. Many other programs and courses in areas such as biology, chemistry, physics, mathematics, education, research, public policy, information and communications technology (ICT), supply chain management, business/management, marketing/sales, and trades training often contain curriculum elements that are important and relevant to advancing a greener, more sustainable economy but are not specifically green-focused at this time.

To download a more complete list of over 700 public post-secondary education and training programs currently available in BC that are relevant to the green economy, visit the Green Economy section of the GLOBE Foundation's website at www.globe.ca.

The programs on the following pages are classified by sector and are listed alphabetically by institution. Program titles are hyper-linked to their specific program website.

TO DOWNLOAD A MORE COMPLETE LIST OF OVER 700 PUBLIC POST-SECONDARY EDUCATION AND TRAINING PROGRAMS CURRENTLY AVAILABLE IN BC THAT ARE RELEVANT TO THE GREEN ECONOMY, VISIT THE GREEN ECONOMY SECTION OF THE GLOBE FOUNDATION'S WEBSITE AT **WWW.GLOBE.CA**

Clean & Alternative Energy

Sustainable Energy Management

The Sustainable Energy Management Associate Certificate (SEMAC) program is a partnership between BC Hydro and BCIT, with funding support from the Natural Resources Canada - Office of Energy Efficiency. The program is designed to support employment opportunities in an emerging field of sustainable energy management, with focus on energy demands of commercial and institutional buildings.

Institution: BC Institute of Technology

Duration / Co-op: 9 months (part-time) / No

Qualification: Associate Certificate

Electronics or Computer Engineering Technology - Renewable Energy

Graduates are qualified to work for a broad spectrum of opportunities in the electronics industry including research and development, design, production, maintenance, sales, and service of electronics systems.

Institution: Camosun College

Duration / Co-op: 2 years / Yes

Qualification: Diploma of Technology

Wind Turbine Maintenance Technician

This program prepares students to enter the growing career field of Wind Turbine Maintenance. Upon completion of the program, students are prepared to enter the field as wind turbine technicians, or to progress to higher levels of certification within the industry.

Institution: Northern Lights College

Duration / Co-op: 10 months / NA

Qualification: Certificate in Wind Turbine Maintenance

Master of Engineering in Clean Energy

UBC's Faculty of Applied Science and the Clean Energy Research Centre has launched an innovative new master's degree in Clean Energy Engineering—the first of its kind in Canada and one of only a handful worldwide. The program has a special focus on energy conservation, social change concepts, efficient use of electricity and methods for comparing and evaluating alternative energy scenarios will be areas of focus. In addition, attention will be devoted to sustainable energy sources such as biomass, solar, wind and small-scale hydro.

Institution: University of BC

Duration / Co-op: 16 months / Yes

Qualification: Master of Engineering

Master of Engineering – Mechanical Engineering

UVIC graduate students can individually and collaboratively investigate a vast array of disciplinary and interdisciplinary research areas at the cutting edge of science and engineering, including alternate energy technologies and systems, electronics and energy, and ocean engineering and ocean energy.

Institution: University of Victoria

Duration / Co-op: 16 months / Available

Qualification: Master of Engineering

Renewable Energy Technology

Graduates of this program will have an understanding of the implications of our use of non-renewable energy and options for the production and use of renewable energy. The program is delivered fully online.

Institution: Vancouver Island University

Duration / Co-op: Up to 3 years part-time / No

Qualification: Certificate

Energy Management & Efficiency

Power and Process Engineering

Graduates are qualified to operate, maintain, and manage industrial power and process plants. These plants are associated with various industries such as pulp and paper, chemical manufacturing, electrical generation, institutional mechanical systems, and others. The program uses the latest technologies in education to combine theory and practical lessons in a work-like environment.

Institution: BC Institute of Technology

Duration / Co-op: 38 weeks / No

Qualification: Diploma of Technical Studies

Hybrid Systems

This continuing education course is designed for automotive technicians looking to upgrade their skills to service hybrid vehicle technology. Students receive the latest training on evolving automotive applications including an online learning assessment.

Institution: College of New Caledonia

Duration / Co-op: 16 hours / NA

Qualification: Continuing Education Course

Industrial Automation Technician

Industrial Automation technicians design, install, and maintain electronics equipment used in modern industrial processes. Courses include instrumentation and process control, power electronics, industrial control, and fluid power. Students will accumulate 1,400 hours of practical training in lab.

Institution: North Island College

Duration / Co-op: 9 months / No

Qualification: Diploma

Solar Thermal Installer

The Solar Thermal Installer course prepares participants to install solar thermal systems in residential or commercial settings and consists of two-days of classroom theory to in conjunction with the fall safety course in order to obtain CanSIA certification. The course also prepares certified plumbers to write the exam and receive industry certification.

Institution: Northern Lights College

Duration / Co-op: 36 hours / NA

Qualification: Course

Electronic Engineering Technology

This two year diploma program provides the theoretical and practical knowledge required to understand the design and operation of analog and digital electronic systems. Graduates may also apply to bridge into the Engineering degree program offered at the University of Victoria. Graduates work in telecommunications, microcontroller applications, system control, design, prototyping and production of electronic systems, as well as in the installation and maintenance of electronic systems.

Institution: Okanagan College

Duration / Co-op: 2 years / No

Qualification: Diploma

Domestic/Residential Certified Geothermal Technician

In a growing industry where “green” legislation is increasing, the demand for trained technicians in geothermal technology is growing. Graduating technicians from this program will be qualified to perform construction related tasks in the residential market dealing with the design, installation, and servicing of ground source or geothermal heating and air conditioning systems. (This program is also offered at Okanagan College.)

Institution: Thompson Rivers University

Duration / Co-op: 2 years / No

Qualification: Apprenticeship

Green Building & Sustainable Design

Brownfield Redevelopment

BCIT’s School of Construction and the Environment and the UBC’s Continuing Studies have launched a series of 5 courses in Brownfield Redevelopment that are in support of the BC Brownfield Renewal Strategy. The purpose of the program is to provide current and prospective practitioners in the brownfield redevelopment industry with the relevant knowledge and skills within an interdisciplinary framework.

Institution: BC Institute of Technology

Duration / Co-op: 5 months / No

Qualification: Certificate of Completion

Green Roofs and Living Walls

BCIT has developed a number of courses that support the advancement of the green roof industry in western Canada through leading edge curriculum programming developed by the Centre for Architectural Ecology in the School of Construction and the Environment. The courses qualify for professional Learning Units from the Architectural Institute of British Columbia (AIBC), the British Columbia Society of Landscape Architects (BCSLA), and the Planning Institute of British Columbia (PIBC).

Institution: BC Institute of Technology

Duration / Co-op: 1 day -14 weeks / NA

Qualification: Professional Development Courses

Natural Building

The Natural Building program provides 7 weeks of practical, hands-on training where students learn how to create buildings and living spaces that are attractive, natural, and sustainable.

Institution: College of the Rockies

Duration / Co-op: 7 weeks / No

Qualification: Certificate

Building Environmental Systems

This program provides training for economic competitiveness, effective building operations, energy efficiency, and environmental sustainability within the green building sector. The completely modularized training focuses on the building as a system in which heating, refrigeration, air handling, electricity, controls, and water treatment are interwoven and connected.

Institution: Douglas College

Duration / Co-op: 600 hours (part-time) / No

Qualification: Certificate

Sustainability and Green Design

This continuing education course examines the requirement of Industrial Design to address the current environmental crisis. Common disposable products will be examined and, through the lens of sustainable strategies, more appropriate designs discussed. Finally, a prototype solution will be developed, during which local production and material supply capacity will be explored, with an eye towards micro industry and entrepreneurship.

Institution: Emily Carr University of Art and Design

Duration / Co-op: 24 hours / NA

Qualification: Continuing Education Course

Applied Urban and Rural Planning

This program provides practical, skills-based training in urban planning. Graduates are qualified to contribute to planning for livable communities and a more sustainable environment and may work in planning offices or go on to complete a degree at university.

Institution: Langara College

Duration / Co-op: 2 years / Yes

Qualification: Diploma

Timber Frame Craftsman

This 512 hour course provides the basics of timber frame construction including practical training in power tool safety and usage, joinery decisions, timber choice and orientation layout methods, building to plan and sketching details, working at height, rigging and raising, and estimating the cost of structures.

Institution: Northwest Community College

Duration / Co-op: 13 weeks / No

Qualification: Certificate

Landscape Horticulture

This program provides the core skills required for employment in this growing industry, as well as upgrading for those currently involved with the various phases of landscape horticulture. Persons with responsibilities for administering landscape construction or maintenance contracts will also find the program beneficial. The Landscape Horticulture Certificate program also provides a solid foundation for individuals interested in pursuing advanced studies in specialized horticulture disciplines such as turf grass maintenance, landscape design, and nursery propagation.

Institution: Okanagan College

Duration / Co-op: 120 hours / No

Qualification: Certificate

Sustainable Community Development

This program, starting in January 2011, responds to the growing need for leaders in our communities who excel at understanding and leading sustainable development. The interdisciplinary graduate program builds a foundation of best practices for sustainability and community engagement. The program focuses on developing leadership skills to integrate the economic, social, and environmental capacities of developing sustainable communities.

Institution: Royal Roads University

Duration / Co-op: 6 months (online) / No

Qualification: Graduate Certificate

Sustainable Community Development (SCD)

This program teaches alternate economics, community planning, ecological sustainability, and socially responsible economic activity. The 19-credit SCD Certificate program offers a wide range of theoretical and practicable approaches to alternate economic strategies and to ecologically sustainable communities, both rural and urban. The Post-Baccalaureate Diploma is a program designed for those who already have undergraduate degrees or the equivalent. It is not a master's degree, but it is more advanced than a Bachelor's degree.

Institution: Simon Fraser University

Duration / Co-op: Variable / No

Qualification: Certificate and Post-Baccalaureate Diploma

Architectural and Engineering Technology

This program emphasizes the design processes in building, civil, and mechanical technologies, involving design projects for building structures, subdivisions, municipal services, and electrical, plumbing, lighting and HVAC systems.

Institution: Thompson Rivers University

Duration / Co-op: 3 years / Yes

Qualification: Diploma

Environmental Design

It is expected that students graduating from this program will lead to a professional role in the planning and shaping of the natural and more sustainable built environment. The program begins with a two-year foundation in a general liberal education, and, in the third and fourth years, the program focuses on themes emphasizing analysis and representation, history and theory, technology and practice, all anchored by a Core Studio Design curriculum.

Institution: University of BC

Duration / Co-op: 4 years / No

Qualification: Bachelor of Environmental Design

Green Value and Real Estate

This course explores how contemporary environmental issues impact real estate decision-making. It describes architectural design and building construction practices that contribute to a building's "green-ness", international standards for rating green buildings, the business case for green building investments, and whether or not green features add to real estate's market value.

Institution: University of BC

Duration / Co-op: 2 classes / NA

Qualification: Professional Development Courses

Wood Products Processing

This award-winning program is a fusion of science, engineering and business. Students gain a comprehensive understanding of wood science, business and advanced manufacturing operations. They also develop essential transferable skills such as problem solving, communication, leadership and teamwork. Students can choose to complement their science degree with a Minor in Commerce.

Institution: University of BC

Duration / Co-op: 4-5 years / Yes

Qualification: Bachelor of Science

Green Building and Renewable Energy Technician

This program addresses energy efficiency and renewable energy applications in buildings. The program is an education option for people working in, or intending to work in the field of green building design, construction, and operation. An underlying theme of the program is environmental, social, and financial sustainability in buildings as exemplified by the LEED program.

Institution: Vancouver Island University

Duration / Co-op: 2 years/No

Qualification: Diploma

Sustainable Landscape Management

This program provides students with an understanding of landscape design basics, construction and maintenance principles and practices. In addition, the program includes skills training in business practices. The program encompasses landscape maintenance, turf grass management, introduction to landscape design, landscape construction, soils, irrigation systems, pest management and weed control, plant identification, estimating and business practices, with sustainable horticultural practices integrated throughout the program.

Institution: Vancouver Island University

Duration / Co-op: 5 months / No

Qualification: Certificate

Environmental Protection & Resource Management

Ecological Restoration

This program provides graduates with a strong foundation in the methods available to restore a broad range of ecosystems that have been impacted by human influences in BC, across Canada, and in other parts of the world. Ecological Restoration graduates will not only bring skills and expertise to current employers but will also be leaders and innovators in their field.

Institution: BC Institute of Technology

Duration / Co-op: 1.5 years / No

Qualification: Bachelor of Technology

Environmental Engineering Technology

The Environmental Engineering Technology program is intended to provide the additional skills and knowledge that engineering and science graduates require to successfully work on environmental assignments such as contaminated sites, water treatment facilities, sustainability management, contaminant hydrogeology, integrated solid waste management, environmental impact assessment, air quality, climate change, resource management, and green energy technology projects.

Institution: BC Institute of Technology

Duration / Co-op: 1.5 years / No

Qualification: Bachelor of Technology

Sustainable Resource Management

This program provides graduates with the academic, field, and safety training needed to work in technical jobs for sustainable resource management industries, environmental consultants, government agencies and local government. Two options are available: Forest Management and Environmental and Community Planning.

Institution: BC Institute of Technology

Duration / Co-op: 2 years / No

Qualification: Diploma of Technology

Renewable Resources – Fish, Wildlife and Recreation

This program is geared towards those that have a keen interest in the outdoors as well as the environment. The program entails all aspects of fisheries and wildlife management while also covering BC's park systems and the outdoor recreation sector in depth. A significant amount of time is spent in the field where students gain hands on training.

Institution: BC Institute of Technology

Duration / Co-op: 2 years / No

Qualification: Diploma of Technology

Environmental Technology

This science-based program provides graduates with academic expertise combined with hands-on laboratory and field skills to prepare them for immediate work. Environmental Technologists work within assessment teams, collecting, collating, and presenting information on air, water, and soil, that will help decision-makers understand how their decisions will affect the Earth and its inhabitants.

Institution: Camosun College

Duration / Co-op: 32 months / Yes

Qualification: Diploma of Technology

Environmental Sciences

Generally, students who earn an associate degree in Environmental Sciences may choose to pursue an academic career path while others may use it to enter a more specific environmental technology program. Students may also be able to take a directed studies course in Biology and become involved in an ongoing research project in Ecology.

Institution: College of the Rockies

Duration / Co-op: 2 years / No

Qualification: Associate of Science Degree

Environmental Science

Students complete courses in a variety of science disciplines including Biology, Geology, and Chemistry but also take courses in the Arts, Humanities, Social Sciences, and Business. Students in this program may explore subjects as diverse as Environmental Geology, Urban Ecology, Environmental Ethics, and Marine Biology. All students in the program take core courses in Environmental Science that are taught with an interdisciplinary approach and can then be used for university transfer.

Institution: Douglas College

Duration / Co-op: 2 years / Yes

Qualification: Associate of Arts/Science Degree

Horticulture Technology

In response to an increased demand for horticulture products and services, and in response to increasing consumer interest in their environment and sustainability, the horticulture industry is both growing and changing. The diploma program combines theory and practices and students are encouraged to use the facilities to gain competence in a range of horticultural skills and can choose to specialize in greenhouse and nursery production or landscape design and installation.

Institution: Kwantlen Polytechnic University

Duration / Co-op: 2 years / No

Qualification: Diploma

Environmental Protection Technology

This program prepares graduates for technical work in the environmental field. Courses and two paid co-op work terms give the student practical knowledge and experience in environmental protection technology, impact assessment, waste minimization and management, air and water pollution monitoring and control, and contaminated site investigations. The program also provides the student with a foundation in Biology, Ecology, Toxicology and Environmental Legislation.

Institution: Kwantlen Polytechnic University

Duration / Co-op: 2 years / Yes

Qualification: Diploma

Environmental Studies

This interdisciplinary program offers students the opportunity to obtain a solid grasp of the physical principles governing the form and function of the earth and the social aspects affecting the nature of human impact on the environment. Program participants will also gain critical thinking skills, analytical ability, a deeper understanding of environmental issues, and a sense of local and global awareness, preparing them to address complex environmental issues. A one-week field school is conducted at the end of the second year.

Institution: Langara College

Duration / Co-op: 2 years / Yes

Qualification: Diploma & Associate of Arts/Science Degrees

Ecology

Many of the planet's most pressing issues, from climate change to human population growth to biodiversity loss, are primarily ecological issues. The program covers courses in biology, chemistry, mathematics, and physics with a focus on ecosystems, population ecology, and biodiversity and sets up graduates for university or college transfer.

Institution: Langara College

Duration / Co-op: 2 years / Yes

Qualification: Associate of Science Degree

Land Reclamation

This program qualifies students to work with disturbed lands and teaches them the theory and techniques for soil stabilization, remediation, re-vegetation, and restoration of ecosystem processes.

Institution: Northern Lights College

Duration / Co-op: 2 years / No

Qualification: Diploma

Applied Coastal Ecology

This program delivers the applied biological and ecological skills needed to work in coastal ecosystems around the world. Courses vary from foundational biological, geological, and oceanography courses, to a range of applied courses in the fields of rainforest ecology, fish and wildlife management, and habitat restoration, hatchery rearing of wild salmon, management of ground fish and shellfish stocks, computer database management, mapping, and much more.

Institution: Northwest Community College

Duration / Co-op: 1 & 2 years / No

Qualification: Certificate & Diploma

Earth and Environmental Studies

The key objective of this program is to provide students with both the academic and applied skills that are relevant for a wide array of entry level employment in the natural resource industry, mining and mineral exploration industry, and the environmental industry. The needs of rural, First Nation, and adult students have been incorporated into the curriculum of the Certificate.

Institution: Northwest Community College

Duration / Co-op: 1 years / No

Qualification: Certificate

Environmental Studies

This program offers students the opportunity to obtain both an understanding of the physical principles governing the environment and the social and cultural aspects that influence human behaviour towards the environment, interaction with, and impact on the environment. The interdisciplinary model will equip students with the critical and analytical skills to think through the many complex factors that influence our understanding of the environment. Students can choose between two options: environmental arts and environmental management.

Institution: Okanagan College

Duration / Co-op: 2 years / No

Qualification: Diploma

Water Quality and Environmental Engineering

This program provides training in the design, use, and maintenance of water systems and wastewater and waste disposal facilities, and environmental monitoring. The analysis, distribution, and treatment of water and wastewater as required by municipalities, water-use industries and environmental monitoring agencies are an integral part of the program.

Institution: Okanagan College

Duration / Co-op: 2 years / Yes

Qualification: Diploma

Environment and Management

These interdisciplinary programs are designed to enhance strategic decision making in the environmental field. The programs emphasize teamwork and focus on technical, policy, and system and sustainability issues to prepare students to become environmental professionals who are effective leaders and managers. The programs are offered through a combination of campus residencies and distance-based online courses.

Institution: Royal Roads University

Duration / Co-op: 2 years / No

Qualification: Master of Arts/Science Degree

Environmental Practice

These distance-based program offer flexible, relevant, high-quality professional education that allow students to specialize in their chosen sector, with courses designed to develop knowledge and skills identified by employers across the environmental industry.

Institution: Royal Roads University

Duration / Co-op: Variable (online) / No

Qualification: Certificate & Master's Degree

Environmental Science

This intensive program complements students' knowledge in environmental science with courses in environmental management, economics, law, community relations, communications skills, and sustainable development to gain the problem solving skills necessary to assume leadership positions in business and government.

Institution: Royal Roads University

Duration / Co-op: 1 year / No

Qualification: Bachelor of Science

Integrated Environmental Planning

This program has four core disciplines: applied ecology and microbiology; environmental chemistry and hydrology; geographic information systems (GIS), and land use and environmental planning. Students undertake a community planning project complete with scoping, public consultation, and presentation to community members and planning authorities.

Institution: Selkirk College

Duration / Co-op: 2 years / Yes

Qualification: Diploma

Recreation, Fish and Wildlife

This program provides relevant learning experiences for individuals seeking careers in parks, forest recreation, fish and wildlife management, or conservation. The emphasis of the program is in the growing field of recreation and tourism, and fish and wildlife management in the working forest and in protected areas.

Institution: Selkirk College

Duration / Co-op: 2 years / No

Qualification: Diploma

Environmental Science

This program provides a broad education with specialization in one of six areas of emphasis: Biology, Chemistry, Environmetrics, Physical Geography, Pollutant Transport, and Quantitative Techniques for Resource Management.

Institution: Simon Fraser University

Duration / Co-op: 4 years / Yes

Qualification: Bachelor's Degree

Environmental Toxicology

Environmental Toxicology is a new and rapidly developing field concerned with the harmful effects of chemical, physical, and biological agents on living organisms, including fish, plants, animals and humans. This program is a professional degree which provides graduates with training in basic and applied sciences with work skills.

Institution: Simon Fraser University

Duration / Co-op: 2 years / Yes

Qualification: Master's Degree

Resource Management

The aim of this program is to increase familiarity and competence in understanding the dynamics of natural resources, the strategies and techniques of natural resource and environmental planning and management, and the biological, physical, social, economic, and institutional implications of resource decisions – primarily on subject matter such as fisheries, economics, or forestry. Students also become familiar with creative and critical thinking, as well as various quantitative methods of analysis and decision making tools.

Institution: Simon Fraser University

Duration / Co-op: 2 years / Yes

Qualification: Master's Degree

Environmental Chemistry

The field of chemistry plays a central role in today's society and this program prepares students for a wide range of career options in the environmental sector. Specialized courses in aqueous and atmospheric environmental chemistry are covered.

Institution: Thompson Rivers University

Duration / Co-op: 4-5 years / Yes

Qualification: Bachelor's Degree

Environmental Science

This thesis-based degree program has three areas of specialization: 1) Ecology and Evolution; 2) Physical Sciences; and 3) Policy and Management. The program is designed to fill local, regional, provincial, national, and international needs for environmental professionals and produces graduates who are innovative and have multi-disciplinary skills and broad knowledge in the field of environmental science. It is structured to be unique, flexible, and relevant.

Institution: Thompson Rivers University

Duration / Co-op: 2 years / No

Qualification: Master of Science

Natural Resource Science

This program addresses the demand from industry and government for professionals who are natural resource generalists. By understanding the scientific, economic, and social basis of natural resource issues, graduates of the program are able to effectively interface between diverse interest groups, all having a stake in how our terrestrial and aquatic ecosystems are managed.

Institution: Thompson Rivers University

Duration / Co-op: 4 years / Yes

Qualification: Bachelor's Degree

Water and Wastewater Utilities

This Certificate is an entry level training and education program in the operation and maintenance of water and wastewater treatment, distribution, and collection systems. Students can choose to specialize in water or wastewater utilities. The program gives students the required knowledge and skills to prepare them for the Level 1 EOCP Certification.

Institution: Thompson Rivers University

Duration / Co-op: 1-1.5 years / No

Qualification: Certificate

Agricultural Economics

The Food and Resource Economics (FRE) Group offers this thesis degree program, providing students with rigorous training in applied economics and quantitative methods. The program emphasizes applied resource economics and food market analysis. Research topics have included carbon sequestration, environmental regulation in forest practices, and GHG mitigation.

Institution: University of BC

Duration / Co-op: 18-20 months / No

Qualification: Master's Degree

Forest Resource Management

Students learn how to integrate the use of a wide variety of natural resources including range, recreation, timber, water and wildlife. They study the basic sciences upon which forest resources management is based, and, through a choice of electives, emphasize biological, economic, social, or quantitative aspects. An International Specialization is also possible to focus on forest management in another part of the world. Upon graduation students from this program can apply to become Registered Professional Foresters.

Institution: University of BC

Duration / Co-op: 4-5 years / Yes

Qualification: Bachelor's Degree

Global Resource Systems

As part of this program students study science in the context of a region of the world, gaining an understanding of agricultural and natural resource systems from an international and interdisciplinary perspective. The curriculum involves a "double major", where students customize their degree by selecting both a resource area and a region of the world to focus their studies. Students complete their first year in Land and Food Systems, Arts, or Sciences and then begin the GRS program at the beginning of second or third year. In third and fourth years, students choose a resource specialization and a region.

Institution: University of BC

Duration / Co-op: 4 years / No

Qualification: Bachelor's Degree

Resource Management and Environmental Studies

The Institute for Resources, Environment and Sustainability (IRES) provides these interdisciplinary study programs designed to foster sustainable futures through integrated research and learning concerning the linkages among human and natural systems and to support decision making for local to global scales. The program focuses on the integration of the biophysical (ecological), socio-economic, and political realities of resource management within the context of a sustainable, healthy environment.

Institution: University of BC

Duration / Co-op: Variable / No

Qualification: Master's Degree & PhD

Sustainable Forest Management

This course-based Master in Sustainable Forest Management program provides students with a background in ecology, physical geography, environmental sciences or forestry, opportunities for advanced scholarship and professional growth in natural resource management principles and practice. The first class is set to start in August 2011.

Institution: University of BC

Duration / Co-op: 9 months / No

Qualification: Master's Degree

Watershed Management

This program provides professionals with the conceptual and technical skills to formulate responses to water resource issues. The program familiarizes practicing professionals with the interdisciplinary nature inherent in watershed management, while also providing a more detailed understanding of particular aspects. It will increase participants' understanding of the ways in which knowledge from a number of disciplinary areas must be linked, and the collaboration required to resolve the escalating number of water resource conflicts.

Institution: University of BC

Duration / Co-op: 1 year / No

Qualification: Certificate

Environmental Engineering

The program is a joint degree between the UBC and UNBC that capitalizes on the strength of UNBC in Environmental Science and the strength of UBC in Engineering. The program prepares graduates for a wide range of employment opportunities where the technical expertise and problem-solving skills of engineers are needed in conjunction with a strong awareness and understanding of environmental issues and problems.

Institution: University of Northern BC

Duration / Co-op: 4.5 years / Yes

Qualification: Bachelor of Applied Science Degree

Environmental Planning

The degree program provides a broad education in environmental planning with a specific focus on understanding the relationship between people and the environment and on reducing the environmental impact of human activities. Specific majors are available in northern and rural community planning, first nations planning, and natural resource planning. Graduates will be equipped to play a vital role in decision-making processes concerning the future of human settlements, resource management, environmental protection, human health and well-being, economic development, and many other areas.

Institution: University of Northern BC

Duration / Co-op: 4 years / Yes

Qualification: Bachelor of Planning

Natural Resources and Environmental Studies (NRES)

The NRES graduate program is primarily concerned with "People and The Environment" and houses four degrees: PhD NRES, MA NRES, MSc NRES, and the MNRES (Master of Natural Resources and Environmental Studies). The MA NRES (with streams in Geography, Environmental Studies, and Tourism) and MSc NRES (with streams in Biology, Environmental Science, Forestry, Geography, and Recreational Resource Management) encourage students to acquire disciplinary expertise in an interdisciplinary context.

Institution: University of Northern BC

Duration / Co-op: Variable / No

Qualification: Master's Degree & PhD

Horticulture Crop Production and Protection

Program options include a comprehensive one-year certificate and a two-year Agriculture Technology diploma in Horticulture Crop Production and Protection. Both programs emphasize the principles and practices of horticultural crop production, protection, and maintenance.

Institution: University of the Fraser Valley

Duration / Co-op: 1 & 2 years / No

Qualification: Certificate & Diploma

Integrated Pest Management Essentials

Integrated pest management plays a key role in today's agriculture. This certificate is comprised 5 three-credit courses and is designed to help producers and agri-service personnel to identify and assess pests in the field and prepare students for entry-level pest scout positions.

Institution: University of the Fraser Valley

Duration / Co-op: 1 year / No

Qualification: Certificate

Environmental Studies

The School of Environmental Studies offers an interdisciplinary program, with courses that examine systemic aspects of environmental issues and explore solutions that cut across the boundaries of traditional disciplines by recognizing that many aspects of local, national, and international environmental problems are inextricably connected to dominant cultural values, and attendant political, social, economic, and educational institutions. The intellectual strength of the School is supported by three distinctive, interdisciplinary research specialties: ethnoecology, ecological restoration, and political ecology.

Institution: University of Victoria

Duration / Co-op: Variable / Yes

Qualification: Bachelor's Degree

Native Species and Natural Processes

This non-credit certificate has been designed for professionals working in the field of landscape architecture, landscape design and management, forestry, agrology, biology, ecological restoration, and environmental practice. This new certificate builds on the successful Restoration of Natural Systems program to provide more advanced training for working professionals.

Institution: University of Victoria

Duration / Co-op: 144 hours / NA

Qualification: Post-baccalaureate Certificate

Restoration of Natural Systems (RNS)

The award-winning RNS program has distinguished itself with its interdisciplinary, holistic approach and strong commitment to a comprehensive treatment of ecological restoration that includes social and economic issues as well as the environment and encourages dynamic solutions to restoring ecosystems. It offers a Diploma and a Certificate in ecological restoration, both at the 3rd and 4th year university level. Students in the Diploma option may apply their course credits towards a degree in Environmental Studies.

Institution: University of Victoria

Duration / Co-op: 1 & 1.5 years / No

Qualification: Certificate & Diploma

Horticulture Technician

The curriculum of this program has been designed to provide students with a thorough understanding of horticultural principles and practices. The program covers a broad spectrum of horticultural practices including plant propagation techniques, greenhouse floriculture production, nursery crop production, landscape design, landscape construction, and plant identification. Throughout the program, special emphasis will be placed on many aspects of sustainable horticultural practices, including integrated pest management and environmentally responsible greenhouse, nursery and landscape practices.

Institution: Vancouver Island University

Duration / Co-op: 1 years / No

Qualification: Certificate

Natural Resource Protection

This program is designed to prepare students for careers related to the protection and management of Canada's fisheries, wildlife, and parks resources and builds on the two-year Resource Management Officer Technology (RMOT) diploma program. The program has been designed to provide an advanced credential for other career opportunities in the natural resource conservation and protection field.

Institution: Vancouver Island University

Duration / Co-op: 4 years / No

Qualification: Bachelor's Degree

Sustainable Greenhouse Management

This program provides students with the skills and knowledge needed to be successful in entry-level or intermediate-level positions in the greenhouse industry. Specifically, students will gain skills and knowledge in the management of greenhouse operations, with a focus on sustainable horticulture practices.

Institution: Vancouver Island University

Duration / Co-op: 3 months / No

Qualification: Certificate

Green Knowledge & Support

Global Stewardship

This program has been designed to introduce students to both the context of making a change in your world, locally and internationally, and the skills needed to make a positive impact within organizations. Courses focus on international issues and management training from arts, science, and business divisions. Additional seminars are delivered by leaders in the NGO, social enterprise and voluntary sectors, introducing students to the hands-on skills and behind-the-scenes realities of working to effectively to make a difference in our local and global community.

Institution: Capilano University

Duration / Co-op: 2 years

Qualification: Associate of Arts Degree

Global Studies

This program is designed to help students from a wide variety of academic backgrounds to apply their learning to international, global and intercultural situations in a variety of specialities including sustainable tourism and environmental sustainability. The program will be delivered in a primarily self-directed format utilizing course mentors, distance/online delivery, practicum/ internship experience, and portfolio development.

Institution: College of the Rockies

Duration / Co-op: Variable / No

Qualification: Graduate Certificate

Sustainable Communities (Specialization)

This specialization program allows students to focus on environmental sociology and sustainable communities while still receiving the benefits of an Associate Degree. This program has been designed to facilitate maximum transferability to a full degree program or to conclude after two years at the college.

Institution: Northwest Community College

Duration / Co-op: 2 years / No

Qualification: Associate of Arts Degree

Development and Sustainability

This program is focused on socio-economic, ecological, and technological changes that affect the quality of life of individuals and groups in different environments all over the world. The obstacles to a sustainable social and ecological transformation are large and the issues transcend the boundaries of conventional academic disciplines such as: anthropology; business; communication; ecology; economics; education; geography; history; humanities; law; political science; psychology; resource and environmental management; sociology; and, women's studies.

Institution: Simon Fraser University

Duration / Co-op: Variable / No

Qualification: Graduate Certificate

Environmental Education

The minor and Post-baccalaureate diploma programs develop teachers' skills in the design and operation of environmental and outdoor education programs from kindergarten through Grade 12. Through selected course work, environmental issues are explored using a multidisciplinary approach and historical and contemporary issues in human-environment interaction as related to diverse curricula.

Institution: Simon Fraser University

Duration / Co-op: Variable / No

Qualification: Post-baccalaureate Diploma & Minor

Environmental Education & Communication

These interdisciplinary programs focus on developing competencies and skills in educators and communicators who present environmental information to audiences. The programs build theoretical and practical knowledge and skills as well as strengthen the student's understanding of environmental studies and sustainability, learning theory, environmental education, educational program development, philosophical and cultural analysis, journalism, and communications.

Institution: Royal Roads University

Duration / Co-op: 5 months, 1 year, & 2 years / No

Qualification: Graduate Diploma, Certificate & Master of Arts

Environmental Economics and Sustainable Development

The Minor in Environmental Economics and Sustainable Development provides students with knowledge on current issues in environmental economics, development economics, and natural resource management. The program will equip students with the knowledge to deal with contemporary environmental issues, to be able to conduct benefit-cost analysis for project evaluation, to estimate the benefits of environmental preservation, to analyze issues of conservation and resource management in the forestry sector, to examine Canadian and world environmental regulations and policies, to examine land usage in Canada and around the world, to recommend sustainable development paths for small communities, as well as to understand the economics of global climate change. (This program is currently pending approval).

Institution: Thompson Rivers University

Duration / Co-op: 4 years / Yes

Qualification: Minor in combination with a Bachelor of Business Administration, Arts, Tourism Management, or Science

Decision Making for Climate Change

As climate change becomes an increasingly important issue, knowledgeable individuals are needed to understand its impact and make educated decisions on how to adapt to and minimize such change. In this four-course, online certificate program, students explore the causes of global warming; government policies and the economics of climate change; strategic planning to respond to and minimize climate change; and the financial, environmental and business aspects of mitigation efforts.

Institution: University of BC

Duration / Co-op: Variable / No

Qualification: Certificate

Environmental and Natural Resource Law (Specialization)

Offered through UBC's Centre for Global Environmental and Natural Resource Law, students may earn their specialization in this area by undertaking a course of study that thoroughly prepares them for a demanding practice in environmental or natural resource law in a global environment.

Institution: University of BC

Duration / Co-op: 4 years / No

Qualification: Bachelor of Law

Sustainability and Business

This MBA program specialization through the Sauder School of Business is designed to help future business leaders meet the scrutiny by governments, consumers, and shareholders with respect to corporate ethics and their environmental impact, as well as to meet the growing demand for business leadership in non-profit and non-governmental organizations. The program offers students a business education in the realms of sustainable development and corporate social responsibility.

Institution: University of BC

Duration / Co-op: 1.5 years / No

Qualification: Master's of Business Administration

Traditional Environmental Knowledge

This multidisciplinary program allows individuals to pursue their interests in traditional environmental knowledge through a concentrated program of courses on First Nations and environmental subjects. This program ladders well into a major in First Nations Studies, Anthropology, Biology, History, Education, English, Environmental Studies, Forestry, Geography, Nursing and Community Health, Political Science, Psychology, Social Work and Women's Studies as well as leading into majors in Physics and Chemistry.

Institution: University of Northern BC

Duration / Co-op: 1.5 years / No

Qualification: Certificate

Eco-Tourism

Northern Outdoor Recreation and Eco-tourism

This program is designed to provide students with the skills to work in the outdoor recreation industry as professional guides and includes courses in environmental stewardship and entrepreneurship in eco-tourism

Institution: College of New Caledonia

Duration / Co-op: 9 months / No

Qualification: Certificate

Coastal Eco-Adventure Tourism

This innovative program is designed to expose students to the realities of the field and addresses the professional standards, safety, risk management, and legal and ethical issues that impact this sector. Students are well prepared with the interpersonal, organizational, customer service, and technical field skills necessary to secure employment in this field and will learn from experts in the field committed to the promotion of environmental stewardship, respect for biodiversity, and sustainability and ecological integrity.

Institution: Northwest Community College

Duration / Co-op: 2 years / No

Qualification: Certificate

Sustainable Tourism

This program fosters a regional, domestic and international appreciation for, and comprehensive grounding in current issues, research, and case studies. The program offers advanced knowledge and expertise in the areas of sustainable tourism management, stewardship in a global economy, and in the management of protected areas and assets. Successful graduates will be eligible to apply for advanced standing in the MA in Tourism Management.

Institution: Royal Roads University

Duration / Co-op: 7 months (online) / No

Qualification: Graduate Certificate

Nature-Based Tourism Management

Tourism has become the largest industry and employer in the world. One of the most important and fastest growing sectors in tourism is nature-based tourism, which comprises attractions, activities and experiences involving interaction with natural and cultural resources (e.g., ecotourism). This program is designed for students whose interests lie in nature-based tourism, tourism marketing, or indigenous and cultural tourism.

Institution: University of Northern BC

Duration / Co-op: 4 years / Yes

Qualification: Bachelor of Arts

www.globe.ca

For more information,
please contact:

GLOBE Foundation
World Trade Centre
578 – 999 Canada Place
Vancouver, BC
Canada V6C 3E1
Tel : (604) 695 5001
Fax : (604) 695 5019
Email : info@globe.ca

