

## Agenda

### Forestry & Sustainable Resources Management

Articulation 2019

June 4<sup>th</sup> & 5<sup>th</sup>, 2019

Host: Selkirk College, Castlegar

FOR THOSE WANTING TO JOIN THE MEETING BY COMPUTER:

<https://bluejeans.com/700635551>

FOR THOSE WANTING TO CALL IN: +1.866.226.4650, Meeting ID: 700 635 551, Enter the meeting ID followed by #

Date/Time	Item	Who
<b>June 3</b> 7 pm	Meet and Greet. An informal get together will take place at the Lion's Head Pub <a href="http://www.lionsheadpub.ca/">http://www.lionsheadpub.ca/</a>	Host committee
<b>June 4</b>		
8:00	Gathering at MIR Centre for Peace (upstairs) Please see map: <a href="http://selkirk.ca/sites/default/files/About%20Us/Campus%20Locations/Castlegar%20Campus%20MAP%202015.pdf">http://selkirk.ca/sites/default/files/About%20Us/Campus%20Locations/Castlegar%20Campus%20MAP%202015.pdf</a>	
8:30	Welcome to Selkirk and to Indigenous and Settler history & Introductions Finalize Agenda (including social agenda, lunch, and dinner) & Approve Minutes of Previous Meeting	Rhys Andrews (VP Education) Carol Andrews (host) and Roy Rea (chair)
9:00	School Reports	
10:30	Coffee	
11:00	ABCFP Report	Casey Macaulay
	General Discussion on CTAB (follow up from last year's meeting)	Committee members
	School Reports	
12:00	Lunch at The Castlegar Golf Club (19 <sup>th</sup> Hole) * 15 passenger van available to transport everyone	
1:30	CIF Report	Alex Drummond
	Ministry of Advanced Education Report Back up call-in: Toll-Free: +1 (888) 952-9304, Conference ID: 1345139	Susan Burns Call in
	UBC School Report and discussion on Forest Operation transfer students	Dominik Roeser Call in
	BCCAT Report	Anna Tikina
	Work on integrating the matrix materials from The Jasper Accord	Rick Chester
	Generative discussion: Future of Forestry and Forestry Curriculum. What should we be thinking about in terms of future foresters and their skills and training?	
4:30	Adjournment for the day	
6:00 pm	Dinner at the Trail Beer Refinery (a tour of the brewery as well) <a href="https://trailbeerrefinery.ca/">https://trailbeerrefinery.ca/</a>	

	* 15 passenger van available to transport everyone	
<b>June 6</b>		
8:30	Unfinished business from previous day	
	School Reports	
	Committee Business Elect chair, Host 2020	
12:00	Lunch – no host lunch (Cafeteria has some options)	
1:00	Applied Research and Innovation Center tour for interested parties	Host committee

## MINUTES

### Introductions and welcome

Committee member name	Institution Name	email
Andrea Erwin	CNC	erwina1@cnc.bc.ca
Brendan Wilson	Selkirk	bwilson@selkirk.ca
Carol Andrews	Selkirk	candrews@selkirk.ca
Pete Schroder	Selkirk	pschroder@selkirk.ca
Helene Marcoux	BCIT	hmarcoux@bcit.ca
Jim Wilkinson	VIU	jim.wilkinson@viu.ca
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Rick Chester	BCIT	rchester@bcit.ca
Steve Finn	BCIT	sfinn@bcit.ca
Tom Wilms	NVIT	twillms@nvit.bc.ca
Ellen Simmons	NVIT	esimmons@nvit.bc.ca
Roy Rea	UNBC	Roy.Rea@unbc.ca
John Karakatsoulis	TRU	jkarakatsoulis@tru.ca
<b>REGRETS</b>		
Alex Drummond	U of A	Alex.Drummond@ales.ualberta.ca
Dominik Roeser	UBC	<a href="mailto:dominik.roeser@ubc.ca">dominik.roeser@ubc.ca</a>
Chiara Longhi	UBC	Chiara.Longhi@ubc.ca
<b>GUESTS</b>		
Casey Macaulay	ABCFP	cmacaulay@abcfp.ca
Che Cejalvo	ABCFP	CCejalvo@abcfp.ca
Anna Tikina	BCCAT	atikina@bccat.ca
Jason Kerluck	North Island College	JASON.KERLUCK@sd72.bc.ca
Coleen Marlow	North Island College	
Susan Burns	Min. of Advanced Ed.	Susan.Burns@gov.bc.ca

Recorder: June 4: Pete Schroder      June 5: Carol Andrews

### 1. Meeting Called to order: 8:30 am

### 2. Introductions:

Roy Rea: BCCAT explanation: function so students can move between institutions with as seamless an articulation as possible.

Carol: Brief introduction to the Kootenays with pictures and story of place. Indigenous and settler historic overview of College region. Brief description of Selkirk College history and meeting place: the MIR Centre for Peace.

### 3. Approval of Agenda and any Additiona items:

Additions.... North Island College interested in more information and will joining us via “bluejeans”  
Move to finalize agenda    Moved: ... Casey M. / second John K. >>>>> Carried

### 4. Approve minutes from last meeting .....    Move    Carol    /    Brendan >>>>>Carried

## 5. Business Arising from Previous Minutes:

Action items: Follow up on letters to ABCFP: plus other letter items. Move letter forward re accreditation | Ed was making a moodle site created but still to be populated | Rick Matrix |

## 6. Re-election of Chair: Roy Rea

## 7. ITEM: School reports

### Selkirk College

- Report submitted (see attached)
- Highlights: ppt
  - Programs / Applied research / Research grants LiDAR, veg , computing / Climate Adaptation Grant- making connections to community etc.
  - Enrollment overview / Common first year / Flexibility
  - Forest technology ... no changes planned that would affect articulation
  - Strategic direction // emphasis connecting to community / job ready grads / work experience days / Nakusp community forest / City of Castlegar Fuel management / Local woodlot licencee / restoration project with IEP GIS and / Skattebo education / Indigenous connections in Merrit / Future of our profession / iPads mandatory from this year forward / Professionalism Interviews / Coast Trip / CIF / The future: Experiential learning / community connections.
  - end

**Short discussion** on Alternate Pronouns Man / Women // Other ??/ .....

### BCIT

- Report Submitted (see attached)
- Highlights:
  - 50000 student 18000 full time / polytechnic institute all credentials / FNAM in school of construction and environment /
  - 2 diploma Fish Wildlife and FNAM / Pseudo common first year / ecological restoration degree and masters joint to SFU /
  - Enrollment steady at 34 accept to a health waitlist close to applicants at 81 in February / graduated 30 students typically there is some attrition / section expansion is generally a no at dean level / rooms and logistics /
  - new associate dean from FP innovations pro engineer very detail oriented new manager / new positions .. pool can be shallow in lower mainland wages vs costs / Dean keen on inter disciplinary /
  - First years went to Mission TFL good facility on interpretive .... 3 day field camp... interpretive signs ..... Indigenous youth interaction, very good reviews. /
  - no curriculum changes
  - Couple of hires / CTAB new accreditation page submitted. New accred. big project. / Site visit still to come / 5 seats for international students / No recruiting needed / Placement of grads still strong
  - Budget .... BCIT has a surplus / capital request got it / operating budget is increased / more field trips / student mental health issues ... significant increase were obvious /
  - Provincial international directive / Indigenous students seats? No / First come first qualified / nice that enrollment is done by Christmas. / High school students .... Conditional acceptance on midterm marks

**Discussion :** Anxiety and depression mental health / Larger issues across disciplines / much more to it.... Openness to talk about it / Ecological grief / Media coverage related to Climate Change / Student stress related to working while they are in school. Self medication / The modern students have more going on / Accessibility for students who fail a single course scheduling barriers / early alert programs /

### **North Island College (Jason/Colleen)**

- Pursuing forest education / 4 month course / added it to become a 2 year diploma Coastal forest worker training certificate. Collection of certs / resource roads / Highschool program in Campbell River integrate Felling training
- Work towards 2 year diploma program cert = 1<sup>st</sup> semester / sept 2020 / collaborations with VIU / confident they will produce a great program .... Pursuing professional accreditation.
- Campbell river campus many other programs / Courtney 4 year Nursing , trades and tech , UAS, other courses like aquaculture / biology ..... many new course to be built .... /
- Pilot for first nations in modules by Michel Vallee 2 to 5 days modules / tech and data management etc. New contracted instructors. Huu Ay aht First nations were the catalyst. High school level forestry courses.
- Few teachers with forestry backgrounds. Much support from community / created it himself / from his background . half day blocks ..... try to align with highschool program. / 5 months 250 of contact hours / shows as Forestry or environmental science / will have to add curriculum outcomes / Capacity for the diploma 25 to 30 students / students would come from first nations groups north island students and waitlisted students from other schools.

### **Discussion:**

Steve ..... where has the upfront funding come from, as it is in direct competition to existing programs a bit Choked that money was given and no consultation ...

Colleen: there is a need that is not being served in the north island and they see this as a need they can fill.

### **ABCFP**

Media Re: What is a Forest Professional poster explanation?

(Need to get Casey's presentation)

CTAB vs TAC could ABCFP do their own accreditations. Provinces would like a common national standard.. to account for mobility

Provincial professional associations would like to have a national standards .. based on Rick's Matrix work. ABCFP would like ownership of the standards or have influence over them.

CFAB would be the owner of the standards ..... how and when it would work. Funding equation. Diploma's pay Universities are paid through Pro fee's. Do you need accreditation in the world we live in we do. Public Interest: need third party to oversee it.

### **Questions:**

Brendan >>> why more accred if the province has the machine to accred courses where does the third party fall /? Dissatisfaction with CTAB led to questioning of other options like TAC

Half the provinces don't regulate their technologist which is the problem.

By doing it we would see eastern colleges buy in ..... CFAB is being pushed to take over the tech accred own the standards and b done with CTAB or TAC.... It is at the idea phase.

Rick's matrix is an effort to get the all schools to do standardized reporting and then have ABCFP do the accreditation.

This is in flux ..... at this point CFAB management is changing and CTAB / TAC is uncertain.

Foundational education doesn't have all the pieces that ABCFP wants for registration.

Registration Module process ... feedback from sponsors and enrollee's still being going through and a new Learner Monitoring systems. Sponsors need more support.

### **Ministry of Advanced Education Report- Susan Burns**

Priorities are access and affordability

1,000 additional spaces in a variety tech-related programs (both new and expanded)

Tuition free ABE programing

Indigenous education and training

Work-integrated learning details to come

Year-end one-time funding for forestry-related programming provided to a range of institutions - announcements to come in the fall

Last year, as announced in June 2018, \$1 million was provided to a total of 6 institutions, including North Island College (\$328,000), UBC (\$300,000), VIU (\$200,000), and BCIT, CNC and Selkirk College (\$75,000 each)

How do you get on the list to be considered for a project? Very small amount of discretionary funding, as most of the Ministry's funding to post-secondary institutions is committed on April 1. President and Vice President Level make submission throughout the year. Institutions are also encouraged to work together (e.g., via Deans and Directors groups, etc.).

Will there be another round of Aboriginal community-based project funding? Indigenous education continues to be a priority for the Ministry. Another call for proposals may be coming this fall.

Ministry is interested in hearing more about challenges and successes across the program areas, including forestry and sustainable resource management.

Institutions need to figure out transfer from certificates to diploma and degree ... not typically a Ministry a function

## **UBC (Dominik.....Forest Operations Program and Chiara)**

Growing in numbers 1140 students all programs .... 260 degrees confirmed .... Growing enrollment, conservation program is the biggest, wood products biggest for international ed.

Course credit adjustments or making it easier for professors,

Forest operations transfer students Dominique

>> Based on the need by industry of engineering .... Should be broader operations and cover a lot more and it is undersold in what contributions could be made. And how to recruit more tech grads. / Safety and core competencies / they are 1 year into this / EGBC course equivalent list .... Can add a semester then qualify as an engineer in training.

Funding for experiential learning in the field with a community forest for 2-3 weeks.

Communication and interaction with colleges / visit colleges / to show opportunities.

How many students graduate from Forest Ops 7 this year 15 last year.

Some go south after third year ..... for work and then come back.

They would diploma into third year, but they need a bridging year it was a bit different.

BC transfer guide, VIU to UBC is the only one shown ... BC transfer guide is the vehicle to get this information out to students.

Action Items Connect with other Tech schools, to try and make a connection for transfer to the Forest Ops group

Selkirk offered the opportunity to them

## **BCCAT - Anna Tikina**

Peter Marshal is still listed as the committee connection (SLP) ..... so Dominik was asked to step into this role.

Explanation of what BCCAT does, and resources on BCCAT.ca website, how to articulate, events etc. BCCAT awards and festivities – JAM November 1 in Vancouver.

Noted Rick Chester and Norm Shaw who got awards

June or July call for a proposal for Contemporary Issues in Student Mobility look at the website for research proposals. Example: indigenous student persistence and success as students attempt to navigate post secondary. \$18,000 is the maximum for a proposal. Deadline is end of September

Review website for more information related to BCCAT operations and programs, and technology updates (see spring 2019 update, attached)

BCCAT website will be updated to allow easier access to publications and documents.

## **8. ITEM: ABCFP (continued) Registration Process**

Roadmap to registration 16 module in six areas based on the content from what was expected for the past exams, etc. Take a minimum of 2 years to complete with sign offs required by the sponsor.

Challenges, Proliferation of natural resource programs degree possibilities  
Accreditation

Dominique UBC forest ops is talking with ABCFP re modules for continuing education and gap filling and laddering .... Forest Ops ..... example we have very few Operations students and yet many people are employed in doing this work.

What competencies are the ABCFP looking for in terms of modules ?

Interest in developing the modules and then a one stop site where all the offering can be found.

Is there a list of topics in forest operations that are missed available?

School relationships, etc. in the association ABCFP is in the middle between education and employers that is how Casey sees it ....

#### **9. ITEM: Rick Chester : MATRIX**

History of the matrix, using it to guide the articulation between

## **Minutes, June 5, 2019**

Meeting called to order: 8:05am

School Reports:

#### **10. ITEM School Reports continued:**

**NVIT:**

- Report submitted (see attached)
- Highlights:
  - Re-accredited through CTAB . triannual review
  - New capstone project course
  - Community deliveries: administration done by CE for service agreements, proposals
  - Department supplies the instruction and instructors
  - Upgrading often comes before the certification starts (math, English etc)
  - Instructors own intellectual material: NVIT provide syllabus, course outlines, but now the course content.
- Integrate field trip to coast (Malcolm Knapp) with NVIT or BCIT

MOTION: That programs make list of travel plans to share with other institutions to integrate learning opportunities, networking. Numbers, location, time frame and objectives of field trips to be offered. Tabled.

**VIU:**

- Report submitted (see attached)
- Highlights:
  - Increased applicants (space is an issue)



- 1<sup>st</sup> year students: many dropped courses which has caused space issues
- Dropped special session courses and included learning objectives in other courses
- Struggling with aboriginal content in courses
- Exploring connections with Spain (student exchange)

**TRU:**

- Report Submitted (see attached)
- Highlights:
  - Programs are very integrated (NRS)
  - BNRS grads can apply to become RPF via the non-accredited route with additional extra courses.
  - 1/3 of grads move onto RPF
  - More students but is creating issues around capacity (lab resources and co op options...which may delay graduation)
  - Idea of cohort is not the reality anymore. Students applying with credited courses.
  - New initiative: Canada Research Chair in Fire Ecology and Management

**NAIT:**

- Report submitted (see attached)
- Highlights:
  - Need a 2.0 GPA in order to graduate
  - Do a 5 week camp starting in August that involves several courses as well as team building etc
  - Technology (class set of Widows products)
  - High enrolment: Forestry seen as “green career” and people leaving oil and gas, wildland firefighters etc, are enrolling.

**11. MATRIX REPORT: con’t Rick Chester**

- Matrix: idea is to create a way to integrate program and ABCFP competencies (a detailed list) to help us see similarities, transfer options, and track competencies for both ABCFP and accreditation.
- Matrix would also allow schools to give feedback to revisions to competencies.
- The matrix will help students who do first year at one institution who want to transfer to another institution for their second year.
- Casey suggests the use of ABCFP modules to be used within class room curriculum to assist student to : get engaged with ABCFP and if registered, could be used as a credit towards RFT designation.
- Ellen: First Nations competencies need upgrading and BC focused
- Discussion on the ways the Committee can be engaged in continuous upgrading of competencies. Suggestion that we would review these competencies regularly (brought forward by ABCFP)
- Rich offered proposed motions (last page of ppt). ACTION: SEND OUT THESE PORPOSED MOTIONS
- Discussion on the efficacy of doing the matrix: time between reviews, time required to review etc.
- National: Canadian Forest Technology Standards Board: to deal with CORE competencies across the provinces. Meeting in Edmonton in the near future.
- Potential “ownership” of accreditation and competencies.

- Idea to have dedicated focus on competencies: relevancy, future needs of students wanting to pursue forestry but in “non traditional” forestry careers.
- Creating generalists, but focus on specialties>>>>> either through institution priorities (eg, Indigenous, Community connections, Urban Forestry) or regional focused employer needs.

## 12. ITEM: Generative Discussions:

- John K. : Diploma programs have less flexibility than degree programs. Technology programs need to be more nimble in changing curriculum. (connected to competencies)
- Andrea E.: has flexibility in her individual programs.
- Casey: still looking at what employers need, and slowly becoming more diverse.
  - Need to communicate trends, land use into the future
  - Not yet hearing that standard are not relevant
- Helene: more streams are offered in last semester (about ½ of semester is devoted to a specific topic).
  - Universities are creating new programs.
- Roy: Curriculum is good: the employer is not managing forests sustainably, and students are put into uncomfortable situations.
  - Policy level changes needed.
- Casey: manufacturing dictating what we do on landscape: We are becoming less product focused.
  - Ethical dilemma for some NRP wanting to join profession
- Steve: Forest operations: low enrolment but not a new trend....
  - USE MATRIX IN ADVISORY COMMITTEES so they can engage with making changes to programs.
- Tom: important for us to teach transferable skills, institutional core out comes (global perspectives, sustainability)

## MOTIONS:

Rick Chester ppt. Slide 19

1. Each program will complete a Program Course Matrix Worksheet: Content Keywords and Phrases each year and include it as part of the Program School Report and distribute to each program and the ABCFP.
2. Time will allocated at 2020 FRSR Committee meeting to allow for a review and discussion of ABCFP RFT and RPF competencies.

Moved: Steve F. Seconded Andrea E. >>>>>>Carried

## Motion:

To invite at least two guests to the Merritt meetings to offer insight into forestry training for the future:

Moved by Carol A. Seconded by Casey M.>>>>>>Carried

Next meeting: hosted by BCIT

Possible date: Tuesday, Wednesday JUNE 2,3

Please check with Peter Marshal to see if he would be available for next year (or another person to take his place).

Field trip would coincide with competencies or areas of interest.

School reports not presented (CNC, UNBC) due to time constraints will be attached to minutes (see attached)

Meeting adjourned at 11:30 Am

BCCAT Contact: Ruth Erskine, Committee Coordinator Tel: 604-412-7791 Email: [rerskine@bccat.ca](mailto:rerskine@bccat.ca)

## Appendix (Reports)

## SELKIRK COLLEGE

### Annual Report to the Forestry and Sustainable Resources Management Articulation Committee, June 4, 5, 2019

#### Institutional Snapshot: School of Environment and Geomatics

Our School is located on the Castlegar campus of Selkirk College, which is situated on 88 hectares of mostly forested land at the confluence of the Columbia and Kootenay Rivers. The School also is responsible for management of the Skattebo Educational Forest (275 ha), and Woodlot 400 (600 ha). These properties are frequently used by School programs for a variety of course lab work and applied research projects.

The School of Environment and Geomatics (SEG) is home to three nationally accredited programs: Forestry Technology, Recreation Fish & Wildlife Technology, and Integrated Environmental Planning Technology. The School also delivers an Advanced Diploma (ADGIS) and a Bachelor Degree (BGIS) in Geographic Information Systems, and now an online Geomatics Certificate.

Additionally, SEG is home to the Selkirk Geospatial Research Centre (SGRC). Founded through an Institutional Canada Foundation for Innovation (CFI) grant, the SGRC is a leading-edge research centre specializing in geospatial technologies aimed at solving critical issues pertaining to environmental and socio-economic problems. Both faculty and students carry out the research in this facility.

Selkirk College's Forestry Innovations Research and Workforce Development Program involves industry-driven projects in the areas of unmanned aerial systems (UAS), light distance and ranging (LiDAR), visualization, and advanced computing (cloud services, geospatial data analytics, process models). Projects are funded through a [\\$2 million research grant](#) from the Natural Sciences and Engineering Research Council of Canada's [College and Community Innovation Program](#).

SEG strives to provide the most comprehensive and flexible mix of environmental science training in Canada. Students complete a common first year curriculum that leads to all three technical diploma specializations in second year. Following this, students have a choice of pursuing advanced training in GIS.

#### Enrollment info

Currently, all of our programs are full, with waitlists (Table 1). We will accept 30 up to a maximum of 33 students in second year Forestry, Recreation, Fish and Wildlife, and 25 in Integrated Environmental Planning.

Table 1: Application trends in SEG.

Program	Fall 2016	Fall 2017	Fall 2018	Fall 2019
<b>ADGIS</b>	19	15	16	10
Accepted	17	14	15	10
Conditionally accepted	2	1	1	0
<b>BGIS</b>	2	2	8	6
Accepted	2	2	4	6
Conditionally accepted			4	0
<b>FOR</b>	<b>36</b>	<b>45</b>	<b>45</b>	<b>39</b>
Accepted	18	23	16	24
Conditionally accepted	10	6	14	9
Waitlist - Accepted	8	15	15	6
<b>IEP</b>	19	26	20	13
Accepted	13	17	14	6
Conditionally accepted	4	5	6	9
Waitlist - Accepted	2	4		0
<b>RFW</b>	33	31	39	47
Accepted	18	21	16	24
Conditionally accepted	8	7	9	9
Waitlist - Accepted	7	3	14	13
<b>Grand Total</b>	<b>109</b>	<b>119</b>	<b>128</b>	<b>115</b>

## School News and Activities

All first year students will be required to begin classes this September, with an Ipad to use in class and field.

All second year Forestry students will be collecting digital field data with Ipad in most of their field based courses and Applied Research.

Our Advisory members continue to recommend increasing exposure to GIS techniques and products from LiDAR data and HD imagery from UAV flights. Students have introductory classes on generating and using layers from local LiDAR data and UAV flights.

Forestry Students had a field trip to NVIT in Merritt where we met with students, staff, and elders and enjoyed a day on the grasslands and a wonder pit cook, and stick game. Integrated Environmental Planning students will be able to join Forestry and Rec/Fish/Wildlife students next January, in taking the ENVR 250 course: Indigenous Peoples of Canada and Environmental Management.

Forestry students had many opportunities to experience “real world” work situations this past year including:

- Work experience days (Students spent the working with foresters from government, industry, consultants, and NGO’s.
- Data collection and prescription writing for the Nakusp Community Forest.
- Working with local Woodlot owners.
- Collaborating with the City of Castlegar around fuel mitigation and FireSmart
- Working with local club on innovative restoration project

Forestry field school this year again focused on fuel management, and the wildland urban interface. The program worked with the City of Castlegar to educate residents (FireSmart) and create a fuel management prescription within the municipal boundaries. Students then treated the area (about 2 hectares) and the city will use this to promote education and awareness around future fuel management work.

We also teamed with the Integrated Environmental Planning students and staff to carry out a unique restoration projects for a local group wanting to re-establish reptile habitat in an area between Castlegar and Trail.

## Senior Leadership and Faculty

Brendan Wilson continues as the Chair of SEG, former Forestry instructor, Rhys Andrews, RPF, is now Vice President, Education and Tiffany Snauwaert is the Dean for the School of Business, School of Environment and Geomatics, and Community Education and Workplace Training.

A new instructor and former forestry student at Selkirk, Mandy Flanagan, was hired in December to teach part of the Silviculture II course, while Carol Andrews had workload release to act as the Forestry program co-ordinator.

One of our instructors, Jesper Nielsen RPF, has recently been named the 2018-2019 Selkirk College Standing Committee on Professional Excellence Award Winner.

## Students and Employment Opportunities

Four of our graduating Forestry Technology students were successful applicants for the FTELP positions in Mackenzie.

Faculty hope that opportunities like the FTELP program are offered by more employees in the future. All graduating students had successfully found employment before the school year was completed. Most Forestry students completing First Year were finding forestry related work this summer.

The focus on experiential learning and knowledge during the two years at Selkirk, is perhaps allowing students to move into paid work positions, more seamlessly.

In the future we hope to build on this by introducing more collaborative, community based, integrated, and project based learning in our Forestry Technology program.

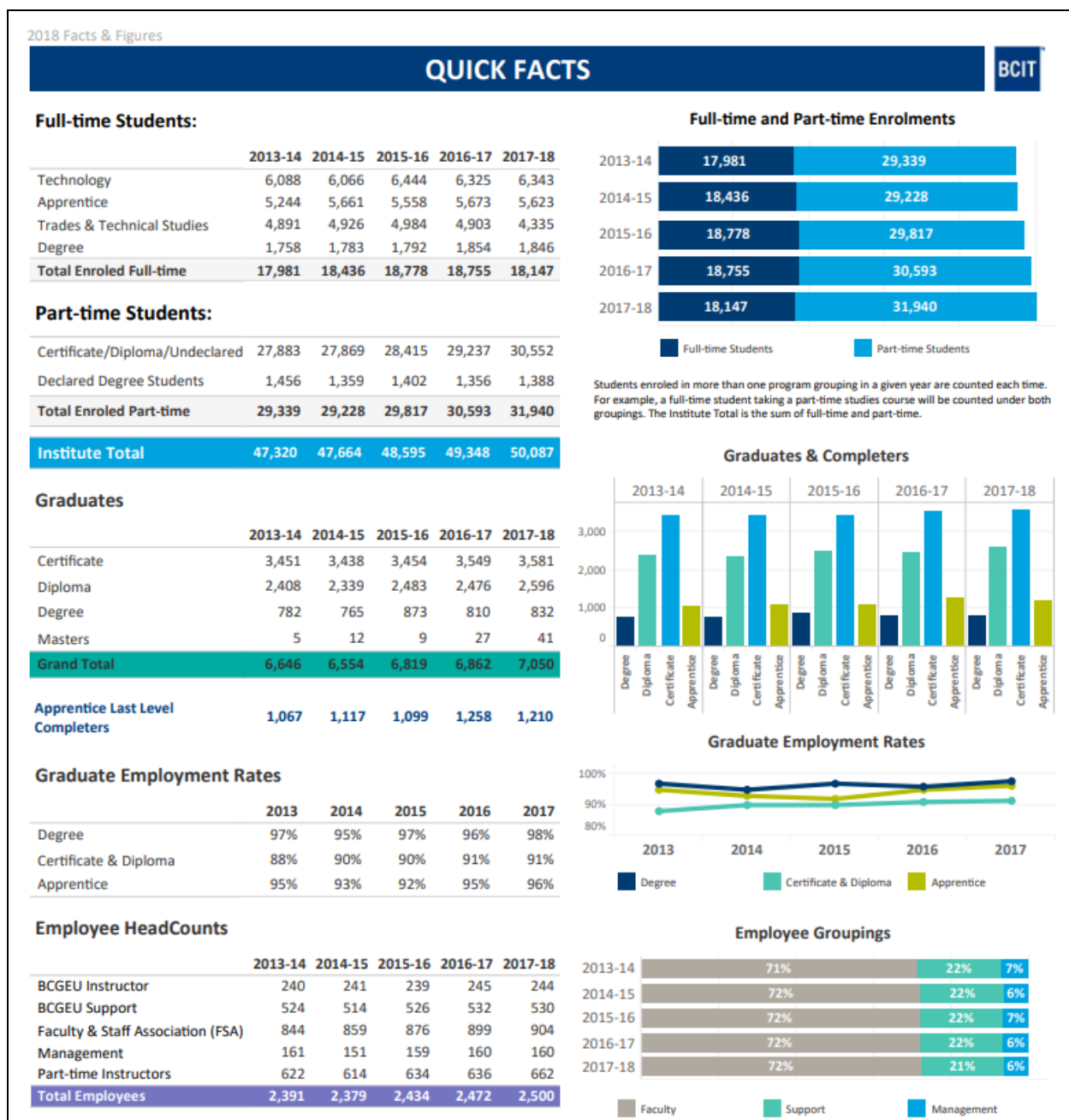


## BCIT June 2019

### Forest and Natural Areas Management (FNAM) Program

#### Annual Report to the Forestry and Sustainable Resources Management Articulation Committee

1. Introductory Overview
  - 1.1. Institutional Snapshot



## 1.2. Program offerings overview

The Forest and Natural Areas Management (FNAM) program is housed within the School of Construction and the Environment (SOCE). We are one program within the Renewable Resources Department. This department consists of the following programs:

- Ecological Restoration (Master of Science) (joint with SFU)
- Ecological Restoration (Bachelor of Science)
- Fish, Wildlife and Recreation (Diploma)
- Forest and Natural Areas Management (Diploma)
- Renewable Resources part-time studies courses

## 2. Enrollment/Graduation Summary Table for 2018/19 Academic Year

### Technical Programs 2018/19

<b>Institution: BCIT</b>					
		Academic Year			
<b>Program Name:</b>		<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20 projected</b>
RFT registerable	<b>Capacity 1<sup>st</sup> year</b>	34	34	<b>34</b>	<b>34</b>
	<b>Capacity 2<sup>nd</sup> year</b>	34	34	<b>34</b>	<b>34</b>
	<b>Applicants (as of this report date)</b>	88	90 Full and closed as of March 15th	<b>92</b> Full and closed as of April 18th	<b>81</b> Full and closed as of Feb 22nd
	<i>1<sup>st</sup> year enrollments</i>				
	<b>full time</b>	34	34	<b>35</b>	<b>34</b>
	<b>part time</b>	0	0	<b>0</b>	<b>1</b>
	<i>2nd year enrollments</i>				
	<b>full time</b>	26	30	<b>29</b>	<b>30</b>
	<b>part time</b>	0	1	<b>1</b>	<b>1</b>
	<b>Graduates</b>	26	30	<b>30</b>	<b>31</b>

## 3. Program Activities

### 3.1. Program Highlights

- 3.1.1. A new Associate Dean was hired to fill a vacancy in the management ranks. Steven Kuan PhD PEng FEC, has many years of experience in research, consulting and teaching at the post-secondary level. He came to BCIT from FP Innovations where he was a research manager in Advanced Building Systems.
- 3.1.2. First year students from the FNAM and FWR program participated in a 3 day field camp, held at Sajak Ranch, within the Mission Interpretative Forest.

3.2. Significant Curricular Changes – No changes anticipated.

3.3. Faculty Changes

3.3.1. Jonathan Smyth, longtime Assistant Instructor, was promoted to an Instructor. Jonathan is responsible for the Forest Engineering courses, Vegetation Management course and Introduction to Fish and Wildlife course. Julia Alards-Tomalin was hired as a permanent Assistant Instructor to backfill.

4. Accreditation

4.1. Our CTAB “new accreditation” package was submitted at the end of May. Site Visit TBD.

5. International Education/Exchanges

5.1. As in past years, the FNAME program has 5 dedicated seats for international students. This current application cycle, our international applicant numbers are slightly reduced with only 3 international accepts out of 7 applications. Seats have been backfilled by domestic students.

6. Students

6.1. Recruiting

6.1.1. Other than the institute BigInfo sessions, we have not done any recruiting sessions for a few years, as the demand for the program exceeds our capacity.

6.2. Student Placement

6.2.1. As in past years, recruitment has been very strong. The major companies, consultants and government are asking to come in earlier and earlier to promote and recruit.



expanding pathways  
for BC students

# SPRING UPDATE 2019



Mr. Jim Hamilton, BCCAT Council Co-Chair, and Elder Margaret George chat with Hon. Melanie Mark at the JAM

## ARTICULATION NEWS

### New Downtown Venue for the 2018 Joint Annual Meeting (JAM)!

Last year's JAM was held at the Pinnacle Harbourfront Hotel in Vancouver and was the best attended ever, with over 160 attendees. The keynote speaker was Dr. Joel Heng-Hartse from SFU whose subject was *"Beyond ESL. Support for Both Multilingual and International Students in BC Higher Education."* We were also delighted to welcome Hon. Melanie Mark, Minister of Advanced Education, Skills and Training. Details of presentations can be found on the BCCAT website at [bccat.ca/articulation/jam](http://bccat.ca/articulation/jam)

### 2018 BCCAT Transfer Awards

The 2018 BCCAT Transfer Awards were presented at the JAM to the following deserving recipients:

- **Dezene Huber** for the Transfer & Articulation Community Leadership Award;
- **Adrian Lipsett** also for the Transfer & Articulation Leadership Award;
- **Rick Chester and Norm Shaw** (Joint Award) for the Leadership category.

Further details can be found on the Awards section of the website at:

[bccat.ca/system/awards](http://bccat.ca/system/awards)

## HOLD THE DATE!

### Celebrations Planned for JAM 2019

In celebration of BCCAT's 30th anniversary, special events will be scheduled for this year's JAM, which will be held at the Pinnacle Harbourfront Hotel in Vancouver on Friday, November 1, 2019. Watch for various announcements and information on the BCCAT website over the summer months!



BCCAT's Mike Winseman and Rob Fleming, with President of Douglas College, Kathy Denton, look on during presentations at the 2018 JAM

### New BCCAT Appointment

In October of 2018, Mike Winseman was appointed to the new role of Director, Transfer & Technology, following Meg Stainsby's return to Douglas College. Mike will oversee all transfer-relat-

ed issues and report to the BCCAT Transfer and Articulation Committee.

### Technology Update

Ground-breaking work is currently under way with UBC on piloting the capacity of BCCAT's new version of the Transfer Credit System (TCS) to house agreements established with institutions outside of the BC Transfer System and the province. This data will then be available to other institutions.

### Secondary to Post-Secondary Transitions

BCCAT staff attended the BC Graduation Program Forum held last fall which was hosted by the Ministry of Education, the BC Registrars Association (BCRA) and the Senior Academic Administrators Forum (SAAF). The forum was well attended by representatives from post-secondary institutions and school districts.

### 2019 Articulation Season

Those committees that have generated Flexible Pre-Majors (FPMs) have been asked to review FPM functionality within the post-secondary system and to make recommendations on the future of FPMs.

Articulation Committees are also being asked to review the currency of their courses/programs on the BC Transfer Guide and to ensure that their ICPs have the most current information.



Royal Roads University



## TRANSFER INNOVATIONS (TI) PROJECTS

### **Tourism/Hospitality Common Core:**

This project aligns core learning outcomes with the current requirements of industry and employers. The project is complete and will be posted on the [BC-CAT Tourism webpage](#).

### **Modern Languages Learning Outcomes:**

A survey is currently being conducted in five target languages to identify core competencies in each. The project is due for completion in December, 2019.

**ABE Steering Committee Learning Outcomes:** this project compares and re-aligns learning outcomes with those of the K-12 new curriculum.

**ABE Adult Literacy Fundamentals Learning Outcomes:** this project builds on the work done by the ABE Steering Committee to further streamline specific objectives and skills to guide ALF teaching.

**Note:** BCCAT will be reviewing the transfer innovations funding program over the next year and providing recommendations to Council in 2020. In the meantime, TI funding will be on hiatus. Currently funded transfer innovations projects and proposals under way will be unaffected.

## NEW PUBLICATIONS



**International Credit Practices:** The report, conducted by Joanne Duklas, examines the policies and practices of processing international credit transfer requests in post-secondary institutions, primarily in BC, and provides recommendations for

collaboration and sharing of best practices. The full report is available [HERE](#) and a 4-page executive summary [HERE](#).

### **Issues and Challenges in Interdisciplinary Course and Program Transfer In BC**

This report discusses interdisciplinarity and overviews trends in such courses and programs in BC. The report can be accessed [HERE](#).

### **Understanding AP Grading in BC:**

This report on practices of grading AP courses in BC and the post-secondary performance of students who participated in APs, can be found [HERE](#). A 4-page executive summary is also available [HERE](#).

## ONGOING PROJECTS OF INTEREST

**Survey of Mobile Students:** With the assistance of BC Stats, we are surveying 30,000 students who have changed institutions to better understand their motivations and key considerations when moving, and their experience with credit transfer. Participating institutions will receive reports on students moving to and from their campuses. The survey is planned for early 2019.

**Transfer Student Profile and Performance:** This research will build on BC-CAT's long history of documenting the successful transition of transfer students along some of the province's key learning pathways. The project is ongoing.

**Credits to Graduation:** Six BC post-secondary institutions have provided data on transfer students and direct-entry secondary students who graduated with a bachelor's degree in 2015/16. The goal of the study is to compare the total number of credits obtained by direct entry and transfer students on their way to a bachelor's degree. The project is scheduled for completion by Fall 2019.

**English Language Proficiency:** This project examines BC post-secondary institutions' English-language proficiency standards for admission, other than BC Grade 12 or its equivalent.

Fiona McQuarrie, BCCAT Special Projects Co-ordinator, is examining standards for institutional admission and for admission to academic undergraduate courses, in addition to conducting an extensive literature review.

### **The Indigenous Educational Pathways:**

This project, led by Stephanie McKeown from UBC, and carried out through the BCCAT initiative on Contemporary Issues on Student Mobility, has been carried out in two stages. [The first phase](#) analyzed existing practices and post-secondary educators' perspectives.

The second phase of the project is currently under way and focusses on indigenous persistence from the student perspective. Focus groups are under way and the report is expected to be complete by the fall of 2019.



*UBC Researcher, Stephanie McKeown, Chief Institutional Research Officer, talks about the Indigenous Education Pathways Project at the JAM, 2018.*

## WEBSITES

**BCCAT Website:** BCCAT's communications team is in the process of improving the functionality and visual elements of the site. Work is expected to be complete by the fall of 2019.

**BC Transfer Guide Website:** The Guide is undergoing an operational review this year, with contractor Plaid Consulting carrying out surveys and focus groups with various types of users to provide feedback and recommendations for improvements to the site. Recommended changes and functionality is expected to be implemented in the coming year.

## Nicola Valley Institute of Technology

### Environmental Resources Technology Program (ENRT)

#### Forestry and Sustainable Resource Management Articulation Committee Meeting (June 4 and 5th, 2019)

### Program Overview

The ENRT program continues to offer an Environmental Resources Technology **Certificate** following student's successful completion of Year 1 (54 credits) of the Program, and an Environmental Resources Technology **Diploma** following successful completion of Year 2 (57 credits) of the program. The structure of the diploma program is designed to meet the core skills required of Forest Technologists but has been integrated to include essential skills in biological sciences, policy and planning, and Indigenous Knowledge. The program is nationally accredited through the Canadian Technology Accreditation Board (Renewable Resources with Forestry specialization), as well as with the College of Applied Biology (Registered Biology Technologist category). The faculty of the ENRT program work hard to provide quality education from perspectives that are relevant to Indigenous students.

### Environmental Resources Technology Certificate and Diploma Programs

#### Certificate Completion Plan

<u>Year 1 Fall</u>		Credits
<b>STSC 101</b>	Strategies for Success <sup>1</sup>	3
<b>ENRT 110</b>	Introduction to Natural Resources	3
<b>ENRT 141</b>	Aboriginal People and the Land	5
<b>ENRT 150</b>	Silvics and Dendrology	5
<b>ENRT 155</b>	Soil Science	5
<b>ENRT 160</b>	Field Surveys I	5
<b>Math 140</b>	Technical Mathematics	3
Total Credits		26
<u>Year 1 Spring</u>		
<b>COMM 140</b>	Technical Writing	3
<b>COMP 140</b>	Geographic Information Systems	5
<b>ENRT 145</b>	Fire Ecology	5
<b>ENRT 165</b>	Field Surveys II	5
<b>ENRT 170</b>	Principles of Ecology	5
<b>SCIE 140</b>	Ethnoscience	5
Total Credits		28
		54

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<sup>1</sup> STSC 101 is optional for most students and is not a core ENRT course.

## Diploma Competition Plan

<u>Year 2 Fall</u>		Credits
<b>COMM 145</b>	Public Relations and Communications	3
<b>ENRT 250</b>	Silviculture	5
<b>ENRT 255</b>	Timber Development I	5
<b>ENRT 260</b>	Forest Surveys	5
<b>ENRT 270</b>	Fisheries Ecology	5
<b>ENRT 271</b>	Grasslands Ecology	5
Total Credits		28
<u>Year 2 Spring</u>		
<b>ENRT 240</b>	Environmental Planning	5
<b>ENRT 245</b>	Watershed Hydrology	3
<b>ENRT 257</b>	Timber Development II	5
<b>ENRT 265</b>	Environmental Assessment Survey	3
<b>ENRT 272</b>	Forest Health	5
<b>ENRT 273</b>	Wildlife Ecology	5
<b>ENRT 298</b>	Capstone Course	3
Total Credits		29
		57
		111

## Enrolment

Enrolment in the ENRT program has increased substantially in the last several years. Campus enrolment is strong and there are increasing numbers of requests for delivery of ENRT courses in communities. In the 2018/2019 academic year, our program was being offered off-campus in Burns Lake, Kitimat, Penticton, and at the Prince George Nechako Aboriginal Employment and Training Association (PGNAETA). These community deliveries are rewarding experiences for our students and faculty but can be challenging to run, as far our Instructor resources and time.

<b>Enrolment by YEAR</b>								
<b>2018/2019</b>			<b>2017/2018</b>			<b>Five Years Ago</b>		
<b>1<sup>st</sup> year</b>	<b>2<sup>nd</sup> year</b>	<b>TOTAL</b>	<b>1<sup>st</sup> year</b>	<b>2<sup>nd</sup> year</b>	<b>TOTAL</b>	<b>1<sup>st</sup> year</b>	<b>2<sup>nd</sup> year</b>	<b>TOTAL</b>
66	14	80	52	18	70	17	6	23

## **Program Activities**

The 2018/2019 academic year has seen some changes introduced to the ENRT program. Most notably, we have hired a new full-time faculty member – Ellen Simmons, M.Sc., has joined our team. Ellen was formerly the Head Teacher at Penticton Indian Band, has an education background in Forest Sciences, and has strong relationships in Syilx Territory. Welcome, Ellen!

As far as curriculum changes, based on feedback during our national accreditation review, we have introduced a new Capstone Project course (ENRT 298). Formerly, our capstone projects were completed as part of our Environmental Assessment Surveys course (ENRT 265). This new course will allow our students more time to focus on producing solid, technologist-level reports.

## **Program Highlights**

Some ENRT highlights from this year include the following;

- Third annual joint grasslands field trip with Selkirk College;
- *Silvics and Dendrology* field trip to Hope, BC and Manning Park;
- 2<sup>nd</sup> Year student volunteers at the ABCFP AGM in Kamloops;
- Spring field trip to UBC's Malcolm Knapp Research Forest, UBC Museum of Anthropology, wetlands tour, and Community Forest tour in Hope, BC (Sto:lo Territory) with Matt Wealick, RPF.
- 3<sup>rd</sup> annual Indigenous Fire Keepers symposium hosted by NVIT, including a prescribed/cultural burn of the NVIT campus grounds; and
- Opening of NVIT's newest building, the Centre of Excellence in Sustainability

## **Current Faculty and Staff**

Dr. Aruna Gore, PhD – Program Dean

Ellen Simmons, M.Sc., PhD (candidate) – Full-time Ongoing Faculty

Tom Willms, PhD (candidate), R.P.Bio., P.Ag. – Department Head/Full-time Ongoing Faculty

Darrell Eustache, B.N.R.Sc. – Full-time Ongoing Faculty

Chris Lepsoe, R.F.T. – Non-Regular Faculty

Kent Watson, M.Sc. – Non-Regular Faculty

Shawn Larson, B.N.R.Sc., M.Ed. – Non-Regular Faculty

Tracy Thomas, B.N.R.Sc., P.Ag. – Non-Regular Faculty

Don Parno, R.P.F. – Non-Regular Faculty

Richard Chavez, M.F., R.P.F. – Non-Regular Faculty

Harry Spahan, R.F.T. – Non-Regular Faculty

Jennifer Morrison, P.Ag. - Non-Regular Faculty

## **Accreditation**

The ENRT Program received national accreditation through the Canadian Technology Accreditation Board (CTAB) in 2018 for a one-year term with some follow-up items for a second site visit in 2019. The site visit was performed in April, 2019 and we have received the draft accreditation review report back



from CTAB's Coordinator, Gordon Griffith, recommending that the program remain accredited, with triennial review. The draft report has now been submitted to the Board for endorsement.

## **Student Employment**

ENRT graduates continue to have high job placement. All first and second-year campus students had summer employment secured prior to the end of the spring semester. NVIT receives regular requests from employers looking for qualified First Nations technologists.

## **Closure**

This report was intended to provide a general update regarding NVIT's ENRT program. If you have any questions, please feel free to contact me directly at (250) 378-3328 or by email at [twillms@nvit.bc.ca](mailto:twillms@nvit.bc.ca) . Any feedback regarding our program is always appreciated!

Sincerely,

Tom Willms

ENRT Instructor - Department Head



## 2019 Annual Report to the Forestry and Sustainable Resources Management Articulation Committee

### 1. Introductory Overview

#### 1.1. Institutional Snapshot

VIU has more than 18,000 students and offers a diverse selection of applied trades, technical diplomas and degree programs. The main campus is located in Nanaimo, with satellite campuses in Duncan, Parksville and Powell River.

#### 1.2. Program offerings overview

- 2-year Forest Resources Technology diploma program
- 1 year bridging program to allow entry into 3<sup>rd</sup> year Forestry at UBC

### 2. Enrollment/Graduation Summary Table for 2018/19 Academic Year

#### Technical Programs 2013/4

<b>Institution:</b>			
		Academic Year	
<b>Program Name:</b>		<b>2018/19</b>	<b>2019/20 proj.</b>
RFT registerable	<b>Capacity 1<sup>st</sup> year</b>	28	<b>28</b>
	<b>Capacity 2<sup>nd</sup> year</b>	26	<b>26</b>
	<b>Applicants (as of this report date)</b>	80	<b>85</b>
	<i>1<sup>st</sup> year enrollments</i>		
	<b>full time</b>	27	<b>28</b>
	<b>part time</b>	1	<b>0</b>
	<i>2nd year enrollments</i>		
	<b>full time</b>	18	<b>28</b>
	<b>part time</b>	6	
	<b>Graduates</b>	18	<b>26</b>

#### Program Activities

##### 2.1. Program Highlights

No changes to the programme

## 2.2. Significant Curricular Changes

- No significant changes this year.

## 2.3. Faculty Changes

- Retirements: Michel Vallee-December 2018, Jim Wilkinson-June 2019
- Temporary Replacements Spring 2019
  - Charlotte Norris- Soils
  - Jessica Duncan – Fire
  - Dave Weaver - Policy

## 3. Accreditation

Currently accredited with CTAB & ABCFP. Currently renewing CTAB accreditation ☺

## 4. International Education/Exchanges

- 1 student on 9 week work op in Spain, Andres visited for 1 week.
- 3 students University of Highlands and the Islands Scotland (Fall 2018)
- 2 students University of Highlands and the Islands Scotland (Fall 2018)

## 5. Students

### 5.1. Recruiting

Enrollments are strong – we have 28 students registered with 52 on a waitlist (we stopped accepting applications at this point).

### 5.2. Student Placement

To our knowledge, nearly all students got either summer or full time employment in the forestry sector.



KAMLOOPS, BC



## Forestry & Sustainable Resource Management Articulation Committee Meeting, Selkirk College, Castlegar, BC. June 4 & 5, 2019

Department of Natural Resource Sciences & M.Sc. Report by Dr. John Karakatsoulis & Dr. Tom Pypker

Department of Natural Resource Sciences  
(<http://www.tru.ca/science/programs/nrs.html>)

### General Overview

The main degree offered by the department is the Bachelor of Natural Resource Science (BNRS), which can be taken with Co-Op and Honours options. Below is a list of our courses as they appear in each year and semester of the program. Descriptions of each course can be found on our website, or you can contact Program Advisor John Karakatsoulis ([jkarakatsoulis@tru.ca](mailto:jkarakatsoulis@tru.ca)) if you require full course outlines.

Students graduating with the BNRS degree meet the educational requirements to become a Natural Resource Professional from the Association of BC Forest Professionals, a Registered Professional Biologist from the College of Applied Biology, and a Professional Agrologist, from the Association of BC Professional Agrologists. In addition, BNRS grads can apply to become a professional forester (via the non-accredited route) with the addition of extra courses.

The department also offers a two-year forestry transfer program, and is an active participant in the Masters of Science in Environmental Sciences program (described later in this report).

The department is very active in research, with faculty holding NSERC and other peer-reviewed grants, supervising graduate students at TRU and other universities and publishing peer-reviewed journal articles. We have a strong commitment to undergraduate student research, supervising student research projects and hiring many students during the year to work as research assistants on various projects.

### Changes and updates

Total enrolment in BNRS courses have stayed steady over the last few years (Fig. 1). The numbers represent students in the NRS program, as well as students in biology and geography taking NRS courses as electives. Our capacity to take in more students is limited based on lab resources. The number of students accepted to the BNRS program as of June 1, 2019 was 57 (**question as to whether to limit enrolment to 50**). This year we will graduate 35 students (Fig. 2), slightly more than our program profile of 32.

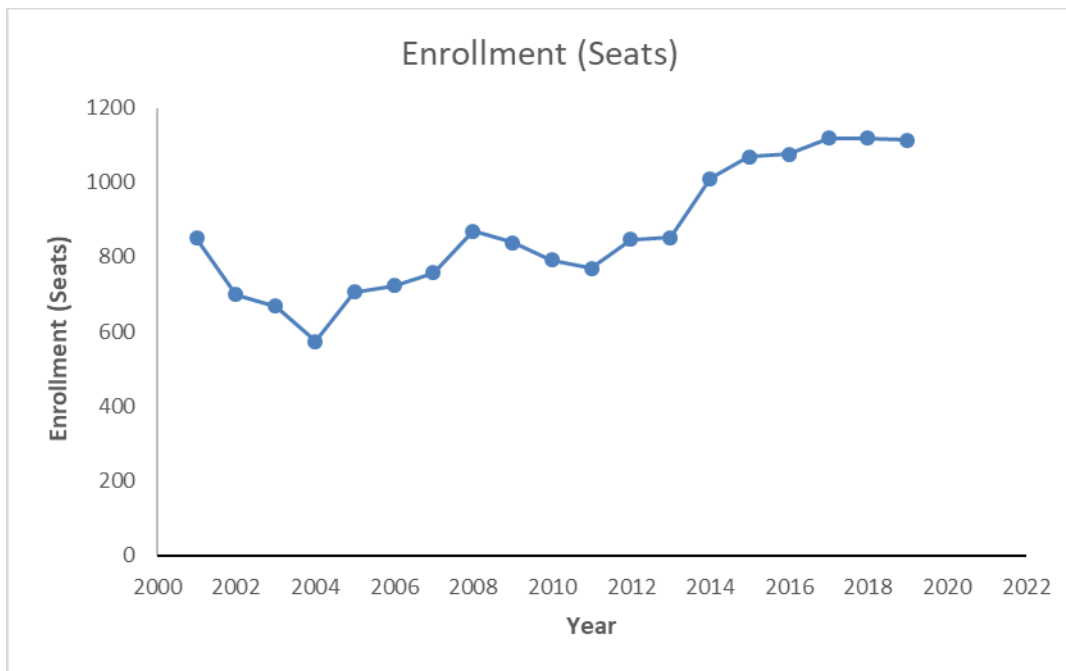


Figure 1. The total number of students enrolled in NRS classes from 2001 through 2018/19. This number includes both NRS program students and students in other programs.

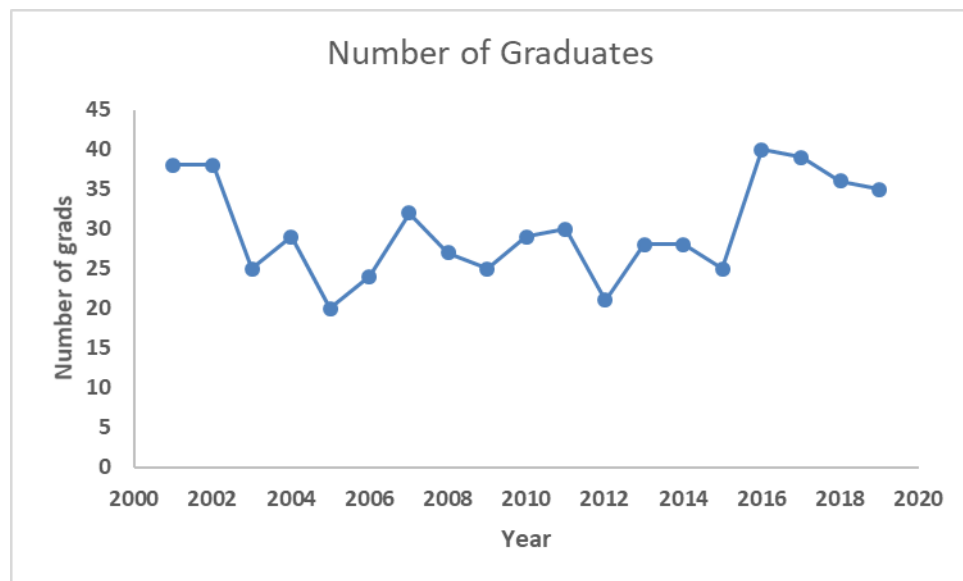


Figure 2. The total number of students graduating from the NRS program from 2001 through 2019.

## New Initiatives

The Dept. Of Natural Resource Science is in the process of advertising for a new Canada Research Chair (Tier II) in Fire Ecology & Management.

## Thompson Rivers University

### Course Requirements for the Bachelor of Natural Resource Science Degree (2019-2020)

**First Year - Semester 1 Fall**

BIOL 1110 Principles of Biology 1  
 ENGL 1100 Intro to University Writing  
 MATH 1150 or 1140 Calculus 1  
 NRSC 1110 The Science & Man. of N.R.  
 NRSC 1120 Dendrology 1

15 Credits

**Second Year - Semester 3 Fall**

BIOL 3000 Biometrics  
 CHEM 1500 Chemical Bonding & Organic  
 NRSC 2000 Introduction to Soils  
 NRSC 2200 Forest Ecology and Silvics 2  
 ANTH 2140 or 3270 or 3280 or 4040

15 Credits

**Third Year - Semester 5 Fall**

NRSC 3200 Silviculture  
 NRSC 3260 Limnology  
 NRSC 4020 Entomology  
 NRSC 4030 Pathology  
 NRSC 4130 Fire Ecology & Management

15 Credits

**Fourth Year - Semester 7 Fall**

NRSC 4100 Fisheries Management  
 NRSC 4140 N.R. Policy & Planning  
 NRSC 3210 Range Management  
 NRSC 4040 Wildlife Management 1  
 \*\*\* ECON 3730 or Elective

15 Credits

**First Year - Semester 2 Winter**

BIOL 1210 Principles of Biology 2  
 CMNS 2300 Writing for Science & Tech.  
 NRSC 1220 Dendrology 2  
 NRSC 2100 Forest Ecology and Silvics 1  
 \*\*ENGL 1110 Critical Reading and Writing  
 \*Or elective (i.e. AGSC 2200)

15 Credits

**Second Year - Semester 4 Winter**

CHEM 1510 Fundamentals of Chemistry  
 ECON 1900 Microeconomics  
 NRSC 2110 Forest Mensuration  
 NRSC 3000 Diversity & Ecology of the Vertebrates  
 NRSC 3170 Ichthyology

15 Credits

**Third Year - Semester 6 Winter**

GEOG 2750 Geographic Information Systems  
 BIOL 3030 Population Biology  
 \*\*\*ECON 3710 or ECON 3410 or 3740  
 NRSC 3110 Grassland Ecology  
 Elective

15 Credits

**Fourth Year - Semester 8 Winter**

NRSC 4050 Wildlife Management 2  
 NRSC 4110 Watershed Management  
 NRSC 4210 Conflict Resolution in N.R.  
 NRSC 4230 Graduating Essay  
 Elective

15 Credits

Minimum credits required to graduate: 120

**\*Recommended Electives**

AGSC 2200 Food Systems at a Local Level and Beyond  
 NRSC 1500 Introduction to Climate Change Science  
 NRSC 4240 Research Design  
 NRSC 4250 Tropical Field Studies  
 NRSC 4300 Ecosystem Reclamation

\*\*Students receiving a grade of B or better in ENGL 1100 can replace ENGL 1110 with an elective.

\*\*\*Note: Students will take one of ECON 3710 (Economics of the Environment), 3730 (Forestry Economics), 3410 (Economics of Climate Change) or 3740 (Land Use Economics)

**Faculty**

**Broad, Peggy**, B.Sc.F. (Forest Ecology, Dendrology, Grassland Ecology)

**Gardner, Wendy**, B.Sc., M.Sc., Ph.D. (Range Ecology, Range Management, Fire Ecology, Ecosystem Reclamation)

**Heise, Brian**, B.Sc., M.Sc., Ph.D. (Limnology, Ichthyology, Fisheries Management, Ecosystem Reclamation)

**Karakatsoulis, John**, (Chair & Program Advisor), B.Sc., Ph.D. (Forest Ecology, Silvics, Silviculture, Conflict Resolution)

**Larsen, Karl**, B.Sc., M.Sc., Ph.D. (Wildlife Ecology, Wildlife Management, Belize field school)

**Pypker, Tom**, B.Sc., M.Sc., Ph.D. (Watershed Management, Climate change, Soils)

**Sorensen, Jacque**, B.N.R.S., M.Sc. (Limnology, Ichthyology, Fisheries Management)

**Watson, Sheri**, B.Sc., M.Sc. (Wildlife Ecology, Wildlife Management)

**NSERC Industrial Chair in Restoration & Reclamation**

**Fraser, Lauchlan**, B.Sc., M.Sc., Ph.D.

**BC Regional Innovation Chair**

**Church, John**, B.Sc., M.Sc., Ph.D. (Food Systems)

**Program Assistant**

**Bennett, Sherry**

**Part Time Faculty**

**Barnett, Andrea**, BA, MA (MPP) (Public Policy)

**McMurphy, Theresa**, M.Sc. (Forest Pathology)

**Blenner-Hassett, Trevor**, PhD (Forest Mensuration)

## Master of Science degree

The Master of Science Program in Environmental Science has graduated between 3-17 students each year since 2010 (Fig. 3). There are currently 50 students in the program. Students from a wide range of undergraduate programs are admitted into the program, including natural resources, biology, forestry, geography, business, economics, mathematics and computing science. Admission into the program is dependent on the student having a strong undergraduate track record, and the availability of a faculty member to supervise and/or fund the thesis research. Students take a small number of courses (normally < 5) and focus primarily on their thesis research. Thesis research projects range from pure field studies to detailed data analysis and studies on the human dimension of the environment. A large proportion of students in the program conduct their research with the support of outside agencies, including government offices, non-government organizations, and industrial partners.

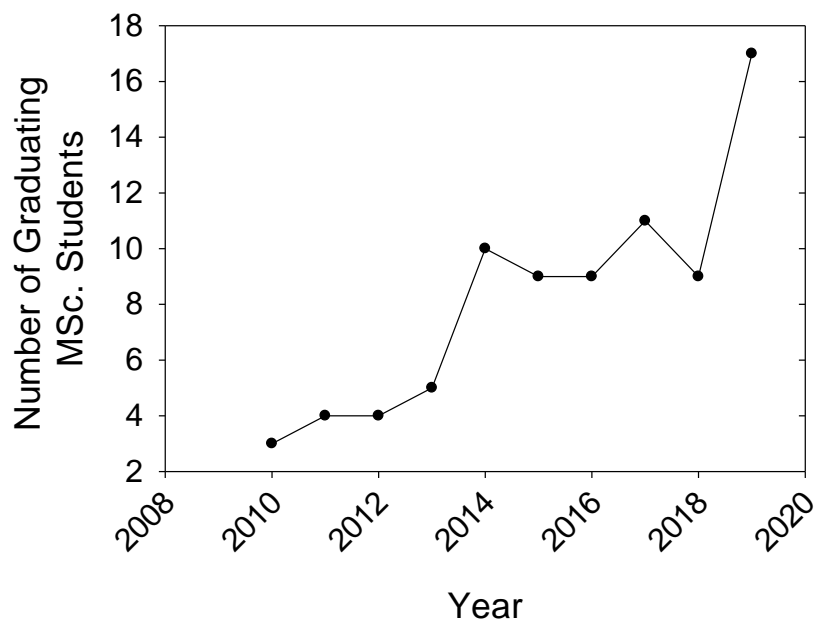


Figure 3. The total number of students graduating from the MSc program in Environmental Science from 2010 through 2019.





May 2019

## ADVISORY COMMITTEE Forest Technology Program Summary Report 2018/19

The following report will summarize the most noteworthy events that occurred over the past academic year within the Forest Technology program.

### **Student Registration and Enrollment**

In August of 2018 the FOT program welcomed **48** new registered first year students and **43** returning second year students for the 2018/19 academic term. In comparison, the August 2017 intake was 51 first year students and 42 second year students for the 2017/18 academic term.

By the end of April, **40** second year students had met the requirements for graduation, **43** students are eligible to enter the program's second year, and **2** students will be on a modified pathway to graduation.

### **Program Quota and Recruitment**

The program entrance quota remained at **50** with a graduation quota of **40** for 2018/2019.

For the 2018/19 fall intake, **231** applications were received. For comparison, 287 applications were received for 2017/18. In discussion with the Office of the Registrar, NAIT was helping direct applicants to another similar program if the program they were interested in had a waitlist.

Program pre-requisites for the 2018/19 fall intake remained unchanged and are currently as follows: Math 30-1 or 2 (Pure or Applied), English 30-1 or 2, two of; Physics 20/30, Chemistry 20/30, Biology 20/30 or Science 30. Standard First Aid and CPR (2 days) is also a non-academic requirement.

Based on continued application pressures for the program, the Registrar's Office has recommended a competitive average of 60% and one science for the 2020/21 Fall intake. Should the program not fill under competitive entrance requirements, waitlisted applicants who meet the program's current pre-requisites would be admitted to the program to fill remaining spots.



Student recruitment and promotional activities continue to be a high priority for the program. Marko van Streun and John Caldwell were the leads for the program this past year.

Any recruitment efforts or promotional support that can be offered by you or your organization would be greatly appreciated and helpful towards the overall goal of providing future employees to the forest industry.

NAIT will begin accepting applications for the 2020-2021 Fall intake on October 1<sup>st</sup>.

### **Curriculum**

As part of NAIT's Curriculum Review and Renewal process, the program is currently developing an updated curriculum and new courses to align with NAIT's Credit Framework procedure. It is anticipated the program will deliver 18 credits per semester for a total of 72 credits and 23 courses starting in 2019/20. This compares with 91.5 credits and 28 courses under the program's current curriculum. Despite the reduced credits, no changes to student instructional hours are anticipated.

Students in the 2018/19 intake will be governed by NAIT's Academic Standing procedure and are required to maintain a term weighted GPA of 2.0 to remain in "Good Standing". Students falling below this threshold will be placed on "Academic Warning" and required to develop a learning plan with the program's Student Advisor (Mark Dewey) to help ensure their academic success. Should a student fail to improve to "Good Standing" future semesters, there is a risk of being withdrawn from the program due to academic difficulties.

### **Employment**

During the summer of 2018, 82% of first year students found employment while 98% of second year students at least found summer employment with four individuals finding permanent positions. In comparison, 2017 saw 87% of first year students finding summer positions while 95% of second year students at least found summer employment.

The eighth annual FOT Industry Job Fair day was conducted in the fall of 2018 was well attended with representation from a number of industry sectors.



## **Equipment and Resources**

Over the past year the program was able to make a number of purchases to support students and improve efficiencies within the program. A CAT535 grapple skidder was purchased with the intention of reducing or eliminating the use of line skidders during the winter harvesting lab. Four grapple skidders were used by students last year including a demo model donated by Finning.

Six new Softcopy (3D) workstations were purchased for use during the program's inventory course. With the addition the program is now able to allocated one machine per student during scheduled lab times.

Finally, the program also purchased 20 ruggedized Windows based field tablets to run various GPS and forest engineering software packages in the field. This should reduce program costs for students who were previously required to purchased their own Android device.

## **Staffing**

There have been a number of changes to program staffing over the past year.

Both Keith Hutton and Alan Pollock are officially retiring as of June 30<sup>th</sup> and have been on phased in retirement. In addition, the program will be welcoming back Trisha Needham in June following a year of maternity leave. To help deliver program curriculum, Marko van Streun was again promoted to a temporary instructor position while Christine Mahlmann joined the program as a sessional instructor until the end of April 2019.

Kevin Martens joined the program as an Ed Lab Technologist in August 2019 and Thor Knapp and Avrum Wright returned as sessional employees to assist with the Kidney Lake Field School, curriculum delivery and Hinton Harvesting Lab.

In October 2019, the program received the sad news that Pam Babb had unexpectedly passed away in her sleep. After more than 10 years with the Forest Technology program Pam is and will continue to be missed.

Within the School of Applied Sciences and Technology, David Zdebiak remains the Associate Dean of Academics and Trevor April remains the Department Head for the Forest Technology program.

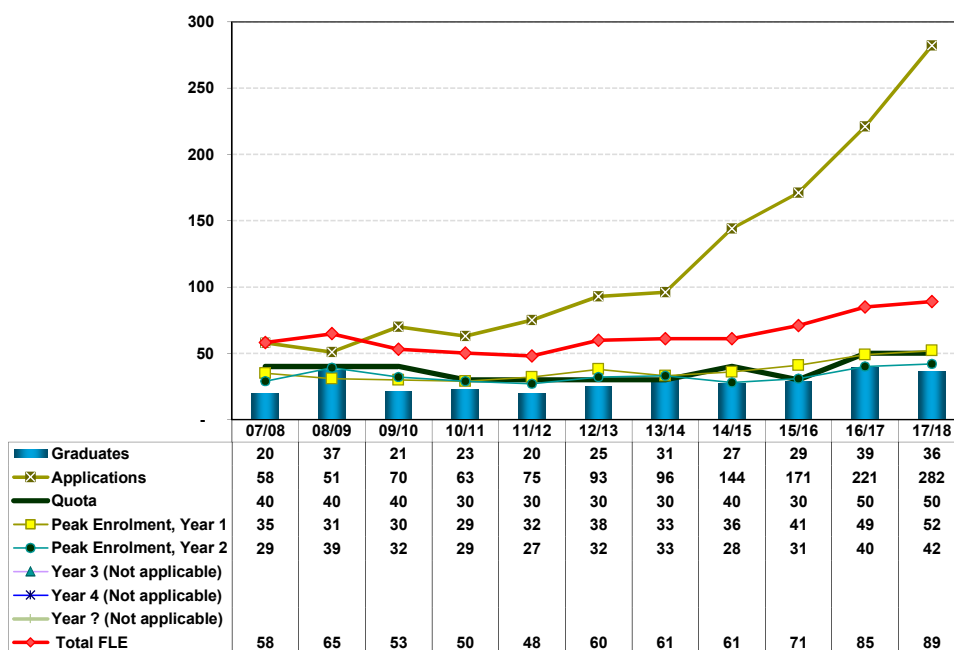


## Student Flow

Qualified applicants are those who have been verified as having the prerequisites to enter a program. Overall, the applicant-to-quota ratio for NAIT is approximately 2.1 to 1.

Peak enrolment is a headcount of all students who were registered in a program during the academic year. The FLE or Full Load Equivalent is a calculated measure based on the actual instructional load of a student compared to what would constitute a full load for that program for the year.

Note that NAIT's academic structure changed in 2013/14 where all Continuing Education credit instruction was moved to the Degree, Diploma, Certificate Programming (DDCP) academic career.

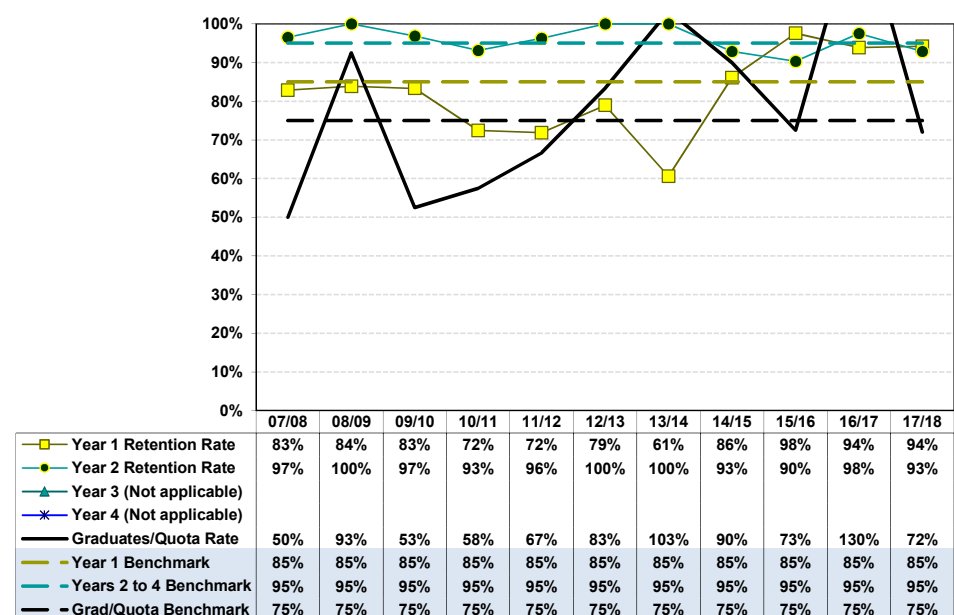


Year ? = Enrolment cannot be tied to a specific year

## Student Retention

The student retention rate is the peak enrolment minus the number of withdrawals expressed as a percentage. There are two benchmarks for student retention: 85% for students in their first year of studies and 95% for students attending in each subsequent year.

The graduate-to-quota ratio approximates the completion rate by comparing the number of program graduates to the enrolment target that was established for the program in the graduate's first year of study.



Forest Technology is a 2-year diploma program that provides technologists with skills that allow them to plan and carry out resource management activities without compromising environmental sustainability.

The graduate-to-quota rate uses the current year quota for certificate programs, the previous year's quota for diploma programs, the quota from three years ago for applied degree programs, and the quota from four years ago for degree programs.

Due to recent changes to NAIT's Academic Model enabling flexible pathways, the compilation of student retention and completion figures are being reviewed. For example, stop-outs (students who don't return to complete the program) are now included in the program withdrawal counts.

## Labour Market Synopsis

### Alberta Perspective

Excerpted from alis (Alberta Learning Information Service) *OccInfo* website  
<http://alis.alberta.ca/>



Occupational outlook is currently unavailable. Job openings are a result of employment turnover and newly created positions.

Forest technologists are employed by the following types of organizations: companies that produce forest products (such as lumber, pulp and paper, plywood, panelboard); consulting companies; educational institutions; government departments and agencies; power companies; and oil and mining companies. Some forest technologists are self-employed private consultants.

Work experience in the forestry field is a definite advantage for forest technology graduates seeking entry level positions such as log scaler, timber cruiser or supervisor of a tree-planting crew. Outdoor experience (such as camping, bush travel, use of all-terrain or four-wheel-drive vehicles) is a definite asset. The Alberta Junior Forest Rangers program, operated by Land and Forest Services, Alberta Environment and Sustainable Resource Development, provides work related forestry experience for senior high school students.

Competition for permanent positions is keen. Post-secondary program graduates usually start their careers in seasonal positions and obtain permanent positions after gaining two to four years of experience. Most positions are in northern Alberta.

Experienced forest technologists may develop forestry plans or assist foresters in developing plans, supervise other forestry workers and technologists who acquire the data for plans, or actually do the field work required to implement plans. Or, they may move into related areas such as provincial parks, survey crews, reclamation crews or the oil and gas industry.

Forest technologists are part of the larger 2011 National Occupational Classification 2223: Forestry Technologists and Technicians. In Alberta, 90% of people employed in this classification work in the following industries: Public Administration; Manufacturing; Forestry and Logging with Support Activities; and Professional, Scientific and Technical Services.

According to the 2015 Alberta Wage and Salary Survey, Albertans in this occupational group earned on average from \$26.38 to \$35.42 an hour. The overall average was \$31.69 an hour or \$59,167 per year. Recent graduates from the Forest Technology program at NAIT had a median salary of \$49,000.

NAIT program summaries are compiled by staff in NAIT's office of Institutional Research. All data presented is under constant review and is subject to change. Please direct any questions or concerns to:

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## **Annual Report to the Forestry and Sustainable Resources Management Articulation Committee**

### **Introductory Overview**

#### **1.1. Institutional Snapshot**

CNC continues to offer Natural Resources and Forest Technology (NRFT) through the Prince George campus. It is a two-year technology diploma program that carries national accreditation as a forest resource technology. The program is recognized by both of the Association of BC Forest Professionals and the College of Applied Biology.

The College has been developing its research initiatives through the College wide research Office of Applied Research and Innovation. This initiative is intimately connected to the NRFT program and is providing opportunities to expose students and faculty to applied research projects and employment opportunities. The NRFT program recently developed a new funding model through the CNC Research Forest Society to sustain our research as the NSERC grant we have been working under expired spring 2019.

#### **1.2. Program offerings overview**

The Natural Resources and Forest Technology program is built on a core of forest based courses with a focus on harvesting/engineering, forest measurements, forest protection, silviculture and GIS. The program is intended to provide graduates with the skills required for work in various forest land-based natural resources sectors primarily for the forest sector but also with potential to support natural resource aspects of oil and gas exploration and mine exploration/development/operations.

Student employment is excellent with virtually 100 % placement in natural resources and mostly forest sector jobs. There are jobs still open if we had more students.

## Enrollment

The student intake for NRFT continues to be capped at 22 students in each year. Intake into first year continues to be strong with a waitlist of 9 qualified applicants and an additional 22 applicants with outstanding requirements. We expect 19 full time and 1 part time students returning to second year, with numerous additional students needing select courses they were unsuccessful in.

Current enrollment/Graduation Summary Table 1 with projections to next year.

**Table 1. CNC Technical Programs Applications and Enrollment.**

<b>Institution: CNC</b>			
		Academic Year	
<b>Program Name: NRFT</b>		<b>2018/19</b>	<b>2019/20 proj.</b>
RFT requirements	<b>Capacity 1<sup>st</sup> year</b>	<b>22</b>	<b>22</b>
	<b>Capacity 2<sup>nd</sup> year</b>	<b>22</b>	<b>22</b>
	<b>Applicants</b>	<b>69</b>	<b>58</b>
	<i>1<sup>st</sup> year enrollments</i>		
	<b>full time</b>	<b>22</b>	<b>22</b>
	<b>part time</b>	<b>1</b>	<b>1</b>
	<i>2<sup>nd</sup> year enrollments</i>		
	<b>full time</b>	<b>13</b>	<b>19</b>
	<b>part time</b>	<b>2</b>	<b>1+</b>
	<b>Graduates</b>	<b>7</b>	<b>20</b>

The application trend for the NRFT program continues to be strong with many students left on a wait list. At this point it is not clear if those on the wait list reapply or try a different institution. There is some consideration being given to a selection process.

## Program Activities

### 3.1. Program Highlights

Research activities are providing exciting developments at CNC. Faculty are directly involved with or leading projects with the community. This is building interesting connections with the natural resource sector and providing new opportunities for curriculum enhancement, real world research projects for students, student and graduate employment opportunities, and a higher profile for the NRFT program in the community.

### 3.2. Significant Curricular Changes

There have been no significant changes to the NRFT curriculum.

### 3.3. Faculty

This past year the program was delivered by 6 full time faculty and 1 full time laboratory tech support position. Not all faculty are teaching full time in the NRFT program as they have release for research projects. Several courses including English, Math and Aboriginal Studies were delivered as service courses by other departments.

## Continuing Initiatives

### 4.1. Research

Students and faculty worked on a number of research projects through the school year starting with data collection in the fall, analysis and report preparation through the winter term. The preparation of the report is done in concert with the English department through two courses, ENGL 229 and ENGL 252.

Students worked in groups to collect data but reports focused on different aspects of data sets. A faculty member worked with each student as an advisor on their projects. A sample of projects undertaken follows:

- Review of the effects of soil compaction mitigation treatments on tree growth.
- Use of bioengineering restoration techniques to facilitate natural successional processes to restore a functioning riparian zone by planting live willow and cottonwood staking of the river banks, live gravel bar staking, and installation of large woody debris features.
- Evaluation of the effect of adjacent vegetation on the efficacy of funnel traps to capture spruce beetles.
- The effect of weather variables, elevation, slope and aspect on the spread of comandra and stalactiform blister rusts.
- Silviculture projects including efficacy of aspen girdling treatments by season, the efficacy of naturally occurring fungus to control cut aspen resprouting, the impact of glyphosate on non-target blueberry plants and an updated evaluation on an industry established western larch migration trial.

### 4.2. Tablets and technology

Implementation of student use of iPad tablets has been suspended. NRFT has recently acquired 13 rugged tablet data collectors and timber cruising software for student use in the program. We have also co-purchased a drone with the Applied Research & Innovation office.



## Accreditation

The program underwent a full accreditation paper review process with CTAB in 2018 and has been accredited for 2 years. A site visit did not uncover any findings. The process identified our course outlines for improvement in regards to consistency between outlines, and the need for improved learning outcomes.

## International Education/Exchanges

The Natural Resource Field School and Cultural Exchange course was delivered again this year with a trip to Ecuador. Four students from our program, 1 recent graduate, and 1 biology student were able to participate with funding support from the Research Forest Society of \$3000/student and an additional bursary of \$1000/student from CNC. The experience continues to be excellent and ties in with a number of ecological studies and land policy studies in the NRFT program.

## Students

### 7.1. Recruiting

The NRFT program continues to be very involved with the Council of Forest Industries (COFI) under the banner of their forest education program. Not only have there been opportunities to recruit new students but it has been a conduit for connecting with the forest sector and local communities. In addition, we present to the local Rotary service club's "Adventures in Forestry" program as part of our recruiting efforts. Enrollment in our program is currently high but looming issues of a softwood lumber trade, a significant reduction in AAC, and mill closures that will follow are all risk to continued enrollment.

After a successful visit last year, NRFT has collaborated with the Outland Youth Employment Program again this year to host 20 new and 10 returning Indigenous high school students from the north to CNC with a focus on science based post-secondary education. The program runs the first week of August. NRFT plans to take the students out to the field for a day of navigation and plant ID challenges, soils and landforms, forest measurements and a campfire lunch.

## 7.2. Student Placement

Student employment has had another stellar year. Employment is all but guaranteed for students and graduates in the current market. Most students are employed in the forest sector as accessing non-forestry opportunities continues to be challenging. Competition for non-forestry jobs is high, with a large number of very qualified applicants applying for those few positions. Graduates and students seeking employment in the forest sector are being hired with little competition. Both BCTS and FLNRORD are attracting students to positions especially in more remote locations.

We continue to work with the Wildfire Services Branch and have had success in placing students with them. We continue to have a number of fire fighters attending our program as a route to obtaining an RFT credential. This helps with their goal of enhancing their opportunities for full time employment with the Wildfire Services Branch.

**REPORT TO THE FORESTRY AND SUSTAINABLE RESOURCES MANAGEMENT  
ARTICULATION COMMITTEE**

**2018/19**

**UNIVERSITY OF NORTHERN BRITISH COLUMBIA  
BSC NATURAL RESOURCE MANAGEMENT – FOREST ECOLOGY AND  
MANAGEMENT, WILDLIFE AND FISHERIES (MAJORS)**

Adapted by: Roy V. Rea, UNBC (reav@unbc.ca)

1. Introductory Overview

*1.1. Institutional Snapshot*

The University of Northern British Columbia (UNBC) is a “primarily undergraduate university” with a diverse set of undergraduate degrees that range from the health sciences to natural resources management. The university offers a number of graduate degrees (MEd, MScN, MSW, MBA, MA, MSc, MNRES (Master of Natural Resources in Environmental Studies), PhD NRES, PhD Psychology, PhD Health Sciences). In September 2018, there was a total of 3,436 students in academic programs (“Fall Headcount”: Undergraduate Programs = 82%, Graduate Programs = 18%). These programs and courses were supported by approximately 189 full-time tenured and tenure-track and regular term faculty.

*1.2. Program offerings overview*

As of September of 2018, the Ecosystem Science and Management (ESM) Program offered stand-alone BSc degrees in Forest Ecology and Management and in Wildlife and Fisheries (enrollments included below). Beginning in September 2019 the program will also offer a BSc degree in Conservation Science and Practice with majors in Wildland Conservation and Recreation or Landscape Conservation and Management. The degrees are supported primarily by courses administered by the ESM program, but other programs from across UNBC’s two colleges offer core curriculum for the degrees/majors. Students completing the Forest Ecology and Management degree can seek admission as Registered Professional Forester with the ABCFP. The Wildlife and Fisheries degree (as well as Biology) is accredited as meeting the College of Applied Biology’s education requirement for enrollment as a Registered Professional Biologist in BC. The Wildlife and Fisheries BSc meets the requirements of the ABCFP’s Natural Resource Professional designation. There are a number of options for students pursuing graduate studies in natural resources management. This includes the MSc Natural Resources and Environmental Studies (NRES; focal areas include Biology and Forestry). The Master of Natural Resources and Environmental Studies (MNRES) and PhD in NRES provide students with a more interdisciplinary perspective. These degrees are housed in the NRES Graduate Program.

2. Enrollment/Graduation Summary Tables for 2018/2019 Year

**Institution:** University of Northern British Columbia

**Program Name:** BSc Forest Ecology and Management

**Capacity:** none

**Accreditation:** Registered Professional Forester; may meet the education requirements of the College of Applied Biology if student chooses appropriate Minor and electives.

**Table 1.** Headcount of Students in Forestry for the last 6 academic years.

	Academic Year					
	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Enrollment	43	41	51	71	96	113
Graduates	10	12	9	8	9	12

*Note:* Autumn headcount; does not include 1<sup>st</sup> year students or transfer students with <30 credit hours

**Program Name:** BSc Wildlife and Fisheries

**Capacity:** none

**Accreditation:** Registered Professional Biologist and Natural Resource Professional.

**Table 2.** Headcount of Students in Wildlife and Fisheries for the last 6 academic years.

	Academic Year					
	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Enrollment	67	61	76	89	98	116
Graduates	13	8	13	13	9	27

*Note:* Autumn headcount; does not include 1<sup>st</sup> year students or transfer students with <30 credit hours

### 3. Institutional Activities

#### 3.1. Significant Curricular Changes

##### *Forest Ecology and Management*

In 2008, the UNBC senate approved significant revisions to the UNBC Forestry major (that was in the BSc Natural Resources Management), including renaming the major to Forest Ecology and Management. The revised major (B.Sc. in fall of 2018) was structured so that it meets the core competencies, as defined by the CFAB, as well as providing students with a choice of a minimum of one of 13 approved minors. Each minor was designed or selected so that it complemented the core and met the disciplinary needs of professionals choosing to specialize in a particular area of forestry. Currently, minors in Natural Resources Planning and Operations as well as Environmental Science, and Biology and Conservation are most often chosen by students pursuing the Major in Forest Ecology and Management (Table 3). The large number of enrollments in the Planning and Operations minor represents the easiest transition (i.e., fewest

credits) for students that had partially completed the degree requirements of the former Forestry major.

**Table 3.** Declared minors for the major in Forest Ecology and Management (BSc Natural Resources Management) for 2018-2019.

PROGRAM	MINR_CODE	MINOR	2018/19
ESM Forestry	(blank)		60
	BICO	Biology and Conservation	12
	EASC	Earth Sciences	1
	ENST	Environmental Studies	1
	EVSC	Environmental Science	10
	FORE	Forest Recreation	1
	GBUS	General Business	6
	GEC	Global Environmental Change	1
	GIS	Geographic Information Systems	9
	IEK	Indigenous Ecological Knowledge	3
	NRPO	Nat Res Planning & Operations	13
	ORTM	Outdoor Rec & Tourism Mgmt	1
	SOEN	Soils & the Environment	1

The Forestry Curriculum Committee administers a comprehensive exit survey to students graduating from the Major. Survey data allow us to monitor the new course offerings, general acceptance of the Major by students, as well as issues of course scheduling and overlap. Students have consistently requested additional exposure and/or course work in operational forestry. Although the degree is compliant with the standards set by the Canadian Forestry Accreditation Board, some members of the UNBC Forestry Advisory Committee have also suggested that students would benefit from additional exposure to the practice (not just theory) of active forest management. Canfor has recently partnered with UNBC to offer a 4th year course in forest operations. The course is coordinated by a faculty member at UNBC (Kathy Lewis), but mostly taught by Canfor employees. Students are required to participate in field trips to working forest locations in the region as well as local mills.

**Table 4.** Course requirements and example progression (2017-2018) for students pursuing a BSc degree in Forest Ecology and Management.

<b>First Year</b>	
<u>Fall</u>	<u>Winter</u>
Introductory Biology I (BIOL 103-3) Introductory Biology II Lab (BIOL 123-1) General Chemistry I (CHEM 100-3) General Chemistry Lab I (CHEM 120-1) Field Skills (NREM 100-3) Calculus for Nonmajors (MATH 152-3)	Introductory Biology II (BIOL 104-3) Introductory Biology II Lab (BIOL 124-1) General Chemistry II (CHEM 101-3) General Chemistry Lab II (CHEM 121-1) Introduction to Natural Resources Management and Conservation (NREM 101-3) Communications in Natural Resources and Environmental Studies (NRES 100-3) Microeconomics (ECON 100-3)
Elective Credits: 3 <b>Total Credits: 17</b>	Elective Credits: 0 <b>Total Credits: 17</b>
<b>Second Year</b>	
<u>Fall</u>	<u>Winter</u>
Ecology (BIOL 201-3) Forest Plant Systems (FSTY 201-3) Introduction to Soil Science (FSTY 205-3) Terrestrial Ecological Classification (FSTY 207-1) Geomorphology (GEOG 210-3) Resource Inventories and Measures (NREM 203-3) Elective Credits: 3 <b>Total Credits: 19</b>	Weather and Climate (ENSC 201-3) Forest Biology and Silvics (FSTY 209-4) Basic Statistics (MATH 240-3) Cartography and Geomatics (GEOG 205-3) or Geographic Information Systems (GEOG 300-3)  Elective Credits: 3 <b>Total Credits: 15</b>
<b>Third Year</b>	
<u>Fall</u>	<u>Winter/Summer</u>
Silviculture (FSTY 305-4) Disturbance Ecology/Forest Health (FSTY 307-3) Forest Disturbance Agents (FSTY 317-1) First Nations Approaches to Natural Resource Management (NREM 303-3)	Forest Economics (FSTY 310-3) or Society, Policy, and Administration (NREM 306-3) Field Applications in Resource Management (NREM 333-3; Summer) Natural Resources, Environmental Issues and Public Engagement (ENVS 326-3)
Elective Credits: 4 <b>Total Credits: 15</b>	Elective Credits: 6 <b>Total Credits: 15</b>
<b>Fourth Year</b>	
<u>Fall</u>	<u>Winter</u>
Forest Practices and Management (FSTY 408-3) Professional Writing (NRES 421-1)	Natural Resources Planning (NREM 400-4) Forest Ecosystem Modelling (FSTY 405-3) Environmental and Professional Ethics (NREM 411-3) Undergraduate Report (NRES 422-2) or Undergraduate Thesis (NRES 430-6)
Elective Credits: 12 <b>Total Credits: 16</b>	Elective Credits: 6 <b>Total Credits: 18</b>

Note: completion of the degree requires that students complete 1 of 13 identified complementary Minors: Biology and Conservation; Earth Sciences; Environmental Planning; Environmental Science; Environmental Studies; Forest Recreation; General

Business; Geographic Information Systems; Global Environmental Change; Natural Resources Planning and Operations; Social Dimensions of Natural Resources Management; Indigenous Ecological Knowledge; Soils and the Environment.

### *Wildlife and Fisheries*

In September 2018, the Wildlife and Fisheries Program became its own degree (BSc Wildlife and Fisheries); there is no longer a Natural Resources Management degree with a wildlife and fisheries major offered at UNBC. The curriculum committee for the Wildlife and Fisheries degree has not implemented any changes in course content over the past year. Exit surveys suggest that the degree is well received by the majority of students. By its nature, the degree is very prescriptive, covering terrestrial and aquatic aspects, biology and management. Consequently, one area of concern by faculty and students continues to be the difficulty in transferring from college programs into this degree. The diploma programs often lack introductory biology, chemistry, physics, and math courses that articulate to the required first-year courses at UNBC. Transfer students then are limited in their progression through the degree by a lack of prerequisites for upper-level courses as well as overlaps in course scheduling when attempting to complete upper-level and lower-level courses during the same year. Complementing course learning, many students enrolled in the Wildlife and Fisheries degree are active participants in the UNBC Fish and Wildlife Student Chapter of The Wildlife Society. This includes Chapter-led field visits to UNBC Research Forests and to fish and wildlife facilities, such as local bird-banding operations, fish hatcheries, and wildlife rehabilitation centres, as well as attendance at conferences.

**Table 5.** Course requirements and example progression (2017-2018) for students pursuing a degree in Wildlife and Fisheries (BSc).

FIRST YEAR COURSES		
<b>FALL</b> BIOL 103-3/123-1 CHEM 100-3/120-1 NREM 100-3 PHYS 115-4 or PHYS 100-4	<b>WINTER</b> BIOL 104-3/124-1 CHEM 101-3/121-1 NREM 101-3 NRES 100-3 or ENGL 170-3 MATH 152-3 (F or W)	
<b>15 credit hours</b>	<b>17 credit hours</b>	<b>TOTAL 32 credit hours</b>
SECOND YEAR COURSES		
<b>FALL</b> <b>SELECT 2 OF</b> BIOL 204-3 or GEOG 210-3 BIOL 201-3 FSTY 205-3 NREM 204-3 FSTY 207-1 FSTY 201-3 or BIOL 301-3 <sup>1</sup>	<b>WINTER</b> or BIOL 202-3 or NREM 210-4 CHEM 220-3 BIOL 210-3 STAT 240 -3 (F or W) Elective-3	
<b>16 credit hours</b>	<b>15-16 credit hours</b>	<b>TOTAL 31-32 credit hours</b>
THIRD YEAR COURSES		
<b>FALL</b> BIOL 307-3 BIOL 308-3 NREM 303-3 (F) or NREM 306-3 (W) GEOG 300-3 Elective-3	<b>WINTER</b> BIOL 302-3 BIOL 315-3 ENPL 305-3 or NREM 411-3 or ENVS 326-3 BIOL 325-3 Elective -3	
<b>15 credit hours</b>	<b>15 credit hours</b>	<b>TOTAL 30 credit hours</b>
FOURTH YEAR COURSES		
<b>FALL</b> BIOL 402-3 or BIOL 404-3 BIOL 406-3 BIOL 410-3 BIOL 412-3 Elective-3	<b>WINTER</b> BIOL 411-3 BIOL 413-3 BIOL 414-3 NREM 400-4 or NREM 410-3 or NREM 333-3 Elective-3	
<b>15 credit hours</b>	<b>15-16 credit hours</b>	<b>TOTAL 30-31 credit hours</b>

<sup>1</sup> Students electing to take Biol 301 in place of FSTY 201 should take an elective in Fall of second year.



#### 4. Program Activity Highlights

There are changes in the faculty complement in the Ecosystem Science and Management Program that will have some bearing on the majors in Forest Ecology and Management and Wildlife and Fisheries. In 2014, the FRBC/Slocan Chair of Mixedwood Ecology was filled by Dr. Ché Elkin. Dr. Elkin's research is focused on how climate and landscape disturbances interact to influence forest dynamics, landscape connectivity, and the spatial distribution of forest ecosystem services. Dr. Staffan Lindgren, forest entomologist, retired in late 2015. That position has been filled recently (Eduardo Martins, Waterloo) with a tenure track position in Fish Ecology and Management. Dr. Oscar Garcia, FRBC/West Fraser Growth and Yield Chair in Forestry, retired in April 2014. That position was filled in November 2015 by Dr. Oscar Venter. Dr. Venter's research integrates the disciplines of conservation biology, forestry, economics and landscape design to understand the trade-offs and synergies among economic production, ecosystem services and conservation in forested ecosystems. He has a strong interest in forest management and conservation issues in the tropics, especially South East Asia, and BC-focused research is currently an emerging area of research for his group. Dr. Jane Young, plant biologist retired in the summer of 2017. Lisa Wood has been hired to fill that position. Dr. Wood is a Registered Professional Forester in BC. Her research interests include forest and plant ecology, climate change and silviculture. Her current areas of research include the impacts of climate dynamics on forest resilience and wood quality in plantation trees, and the disturbance effects and persistence of chemical herbicides in plants growing in operational forest areas. Lisa currently teaches plant biology and ethnobotany at UNBC and has a keen interest in the connection between people and plants.

#### 5. Accreditation

In April 2015, the CFAB site team visited UNBC and reviewed the Forest Ecology and Management major for accreditation. Key recommendations included reducing the number of minors available to students and increasing the academic content focused on forest economics and fire ecology. Also, the site team recommended that UNBC appropriately manage the hiring of new faculty; succession planning was noted as a potential challenge for the program in its efforts to maintain qualified and invested instructors for the courses required by the major. As a result of a very positive review, the CFAB granted the major a full 6 year accreditation. The Wildlife and Fisheries Major (and BSc in Biology) was reviewed by the College of Applied Biology in 2013 and was accredited as meeting the education requirements of the College.

## 6. ESM Travel Grants

The ESM Program supported the following Travel Awards in 2018:

UNBC Forestry Club	CARM Michigan (2 students)	\$3,000.00
Devine Wilson	BC Woodlot Association's AGM	\$300.00
Amanda Baxter	North American Congress for Conservation Biology	\$500.00
Ilsa Griebel	American Ornithology Meeting	\$500.00
Kristen Hirsh-Pearson	North American Congress for Conservation Biology	\$500.00
Jeannine Randall	International Ornithological Congress	\$300.00
Hannah Sungaila	13 <sup>th</sup> International Congress on the Biology of Fish	\$300.00

## 7. Facility Changes

The Aleza Lake Research Forest completed construction of their long planned Field Education Centre (celebratory opening was on May 16, 2016). The Centre is located in the ALRF approximately 60 km northeast of Prince George. This is a 1,200 square-foot interpretive building of log and timber construction, designed to host field courses, meetings, retreats, training, and community events (<https://www.aleza.ca/>)

## 8. Student Recruiting/Community Outreach

Various faculty support local natural resources management outreach efforts and requests from youth organizations and schools. For example, elementary, preschool and youth groups (e.g., Sparks and Brownies Girl Guides of Canada) often request visits to UNBC to visit labs and explore the natural sciences. These visits not only increase youths' interests in science and the environment, they also increase the University's exposure to teachers and parents. ESM often displays their exhibition booth at various student information sessions (e.g., the ESM sponsored "Learn more about your Major"), career and sustainability fairs (e.g., UNBC Green Day), industry conferences (e.g., Natural Resource Forum), and annual the meetings of professional associations (e.g., CIF Demo Event in Vancouver).

## 9. Student Placement

There are no statistics reporting employment of UNBC graduates. However, the majority of the students in the Forest Ecology and Management Degree are easily finding summer positions and full-time work upon graduation. The job market was also very healthy for students pursuing the Wildlife and Fisheries Degree.