FRST 555 –Fundamentals of Sustainable Forest Land Management

Summer Term Monday Aug. 20 – Saturday Sept. 1, 2018

Instructors:

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Calendar Description

Sustainable forest management maintains the long-term health of forest ecosystems while providing environmental, economic, and social, benefits for present and future generations. In sustainable forest management the principle objective of this course is to create a common base-level understanding of fundamental forestry concepts within the incoming cohort of professional Masters students. A secondary objective is for the incoming students to bond as a group. The field component will enable students to link theory to practice, learn about contemporary problems in sustainable forest management from local community members and land management professionals, and see examples of stand and forest level planning and plan implementation.

The course will consist of a reading package to be sent to the students prior to the commencement of the course, a one-week on-campus instructional session and a one week immersion field camp. The field camp will take place in Nelson, BC.

Learning Outcomes

1. Students will understand how to diagnose site and stand conditions.

2. Students will begin to understand how site-level objectives and site and stand diagnoses are integrated in silviculture prescriptions.

3. Students will be aware of contemporary forestry issues and how land management professionals work with stakeholders and resource information to develop site and forest level plans.

Recommended textbook Forestry Handbook

Marking

First week quiz	20%
Field Note Book	35%
Crew Challenge	30%
Effort/Participation	15%

FRST 555 –Fundamentals of Sustainable Forest Land Management

Week 1

DATE	Topics and Activities	Instructor/participants
Monday August 20th		
8:30 -10 :00 am	Welcome to the program • Introductions (all) handout name tags(will be kept for alumni event in Nelson) • brief synopsis of the goals of the program • overview of schedule for the year • major assignments and projects • online calendar • Overview of FRST 555 (plan for the week, transportation, clothing, etc) • Marking for 555 • Daily question submission for quiz (first 3 days material, email Kathleen question by 9pm) • Introduce website • Hand out field notebook	Deb DeLong RPF, Lecturer and Coordinator MSFM program
10:00-10:15 am	Break	
10:15-11:00 am	Logistics • Office assignment • Student mailbox location • 2430 room alarm/keys (code 249617) • Website/Class communication (Facebook, Instagram, twitter volunteers?) • Safety binder • Safety field forms (dietary restrictions) • Release of photo form • Tree Frog news service • Drivers? FRST 555 • 2nd week field trip overview -field notebook/iPad, field forms -Crew assignments -Crew challenge	Deb DeLong, Lecturer and Coordinator MSFM program, Kathleen Coupland, MSFM, PhD student (TA)

	-pre-reading for rest of the week and field trip (switch to website from connect) • Sign-out laptops • Student CWL	Carl Johansson, IT manager
11:00-noon	Dean's welcome and SFM Criteria and Indicators	Dr. John Innes, Dean faculty of Forestry
Noon- 3:00 pm	Lunch break LUNCH PROVIDED Intro to FGSA- Social events Continue with laptops as required Campus treasure hunt in teams	 FGSA rep Kathleen
3:00-4:00 pm	Intro to soil genesis and classification	Ashkit Puri and Kiran Padda Grad students, Soil Science
Tuesday August 21st		
8:30- 10:00am am	Tree biology	Dr. Rob Guy, Department Head Forest and Conservation Sciences
10:00- 10:15am	Break	
10:15 -11:00am	Ecosystem classification • Readiness Assurance for BEC • Individual and team quiz Make sure that you have reviewed the Selkirk links in the pre-reading and the power point posted in FRST 555 under Lectures and Supplementary Reading by Monday Aug 21st! 1. http://frst555.forestry.ubc.ca/course-materials/ 2. http://selkirk.ca/discover/bec/zones/indexzones.html 3. http://selkirk.ca/discover/bec/sites/indexsites.html	Deb DeLong
11:00-12:30pm	Biotic disturbances • Insects	Dr. Alan Carroll and Dr. Richard Hamelin

	• Diseases	
12:30-1:00pm	Lunch break (meet at UBC Farm parking lot 1:00pm)	
1:00-2:30 pm	UBC FARM • Site diagnosis with focus on soil pit description	Ashkit Puri and Kiran Padda, Grad students, Soil Science
2:30-4:30 pm	UBC FARM Observational skills building • Natural disturbance, anthropogenic influences, stand dynamics • Links between pattern and process • Stand level decision making	Deb DeLong Kathleen Coupland Dr. Allan Carroll Dr. Richard Hamelin
Wednesday August 22nd		
8:30 – 9:00 am	Travel to Musqueam Village	All and Alison Krahn Aboriginal Initiatives Coordinator
9:00- 11:00 am	Musqueam Village tour http://www.musqueam.bthankc.ca/educational-tours	
11:00-1:00 pm	Lunch break/ to STANLEY PARK (Meet at totem poles)	
1:00 -1:30 pm	Case Study: STANLEY PARK Plan http://vancouver.ca/files/cov/Stanley-Park-Forest-Management-Plan.pdf History of Stanley Park - First Nations - European settlement	Deb DeLong
1:30-2:00pm	Living memories: views on Culturally Modified Trees in BC. CMTs near picnic site just past Prospect Point	Seraphine Munroe, Graduate Student Faculty of Forestry
2:00-4:30 pm	Prospect Point (2006) wind damaged area • 2006 wind storm	Bill Stevens, Forester, Parks Board

	- Parks response to the storm - Public communications plan - Challenges and successes? • Forest Management Plan - Challenges and successes	Bruce Blackwell, BA Blackwell and Assoc.
Thursday August 23rd		
8:30-9:30 am	• The What, Why, and How of managing forest wildlife	Dr. Cole Burton, Wildlife Biologist, Assistant Professor Faculty of Forestry
9:30-10:30 am	Hydrology • Forestry and the fluvial system - How does the forest influence floods, low flows, timing of flows and channel stability in rain and snow regimes? • What do Professional Foresters need to know to ensure they are sustainably managing watersheds? **Required reading go to website** http://frst555.forestry.ubc.ca/course-materials/	Dr. Andres Varhola, Hydrologist, Faculty of Forestry Lecturer
10:30-12:00 am	Individual meetings and logistics at required	
12:00-1:00 pm	lunch break to JERICHO PARK meet at parking lot by 1:00 pm (if you need a ride to Jericho meet in FSC 2430 at 12:30pm)	
1:00-3:00 pm	Case Study: JERICHO BEACH The Urban Forest • City of Vancouver current direction and vision (~30 mins) • Jericho Park and beach restoration Case Study (~30 mins)	Bill Stevens, Forester, Parks Board Judith Cowan, RPF BA Blackwell and Assoc. Nick Page, Biologist, City of Vancouver

	• Public role in restoration (~30 mins) • Questions/Discussion (~30mins)	Frank Heinzelmann or representative, Jericho Stewardship Group All
3:00-3:30 pm 3:30-4:30 pm	Exercise: In your groups take 30 mins and explore the surrounding area. Make observations of what is there (stand comp). Consider the following questions to contribute to a discussion: 1. What ecosystem services is this area providing now? 2. Do you see any potential problems? Is it working? 3. What improvements could be made? Student groups present their thoughts Open Discussion	Student groups All
Friday August 24th		
8:30-9:30 am	Multiple choice quiz (on first 4 days material)	
9:45-4:00 pm, with a 1 hour break for lunch.	Measurements day Meet in the UBC Classroom. For part of the day, we will be outside at the Rhododendron Forest (5 minute walk from our building) – bring warm clothing, rain gear, etc. suitable for being in the woods for about 2 hours. In this workshop, you will learn about and practice: orienteering, measuring trees, measuring plots, and summarizing data for one stand.	Kathleen Coupland, PhD student
Saturday August 25th	Off	

MSFM FRST 555 Fundamentals of Sustainable Forest Management **Week 2 (Field trip)**		
Sunday August 26th		
8:00am	Leave UBC for Nelson	
Along the way	Coast /interior transition • high elevation thru Manning Park • Py eco reserve just outside Princeton • Pl plateaus • grasslands • Up into Interior wet belt	
~6:00 pm	Arrive Dancing Bear Inn, Nelson **Question of the day.** Each morning a different crew will come up with what the question of the day is. Question should be relevant to the day's agenda topics. Each crew will formulate their thoughts on the question and we will discuss it as a group at the end of the day. First Question: What are the big issues of the day (Monday)?	
Monday August 27th		
8:00-8:40 am	Drive to bottom of Redfish (WADF sign)	
8:40-9:00 am	Welcome to the Selkirk Forest District	Tara DeCourcy, RPF District Manager
9:00-9:10am	Introduction of the new Director of the MSFM program	Dr. Suzanne Simard, Professor of Forest Ecology, Director MSFM Program
9:10-9:20 am	Overview of WADF (history)	Deb DeLong, UBC
9:20- 9:45 am	***Drive to ESSF - 11.5 km Redfish Forest Service Road***	
9:45-10:30 am	Overview of ecology in FM	Deb McKillop, Regional research ecologist MFLRNO

	• BEC, ESSF- disturbance agents, how did these stands get here • BEC re-classification • Climate change?	
10:30-12:30 pm	Site Diagnosis exercise (see appendix 1) (5 student crews with one ecologist each) Lunch on the go	Deb McKillop, Regional research ecologist MFLRNO Doug Thorburn RPF, consultant Dr. Suzanne Simard RPF Eva Snyder, MSc student
12:30-1:30pm	Group discussion of site diagnosis	all
1:30-1:45pm	Beware of the sediment sources!	Dr. Peter Jordan, Consulting Geomorphologist
2:00-2:30pm	Mother Tree Research Trial, Designing successful forest renewal practises for our changing climate Overview of research Move down to 2.8 Km Redfish FSR	Dr. Suzanne Simard RPF
	Operating in Community Watersheds Discussion ***Move down to Redfish school near the spawning channel.***	
2:45-3:15 pm	• FRPA requirements • Public (water license holder) issues • Political and legal aspects of working in watersheds	Russ Laroche RPF BC Timber Sales Manager, MFLNRO
3:15-3:30pm	• Hydrogeomorphic investigation of Redfish Creek - An introduction to hydrogeomorphic processes of mountain watersheds - Identifying forest – stream channel inter Required reading: LMH 61	Dr. Peter Jordan, Consulting Geomorphologist
3:30-4:00pm	• Water user perspective • What has the experience been like? • Are the current processes effective?	Jason Leus, Ymir Water Users group
4:00-4:30 pm	Questions and discussion	All
5:00 pm	Arrive back in Nelson	
6:30 pm	Dinner	

After dinner	**Question of the day**. Take care to keep concise notes that will help you to synthesize what you heard today and be able to answer the question of the day and summarize it in your notebook CLEARLY. • Notebook exchange	
Tuesday August 28th		
8:00-9:00 am	Drive to WADF. Lower Kokanee ICHdw	
9:00- 9:30 am	Overview of the ICHdw • Landscape level disturbance processes • Differences as you come downslope	Deb McKillop, Regional research ecologist MFLRNO
9:30-11:00 am	Site Diagnosis exercise (see appendix 1) One Ecologist for each student group	Deb McKillop, Regional research ecologist MFLRNO Doug Thorburn RPF, consultant Dr. Suzanne Simard RPF, Faculty of Forestry Eva Snyder, MSc student
11:00-12:00 am	Group Discussion of site diagnosis	All
12:00-12:30 pm	Lunch	
12:30-3:00 pm	***Landscape level planning Lower Bradley Face Road***	
12:30-12:40pm	• History of prescription development objectives of ecosystem restoration burn	Deb DeLong, RPF, UBC
12:40-1:30 pm	• Fuel mitigation and carbon management • Province's new direction	Julie Castonguay,RPF MFNRO
1:30-2:00pm	• Mountain Caribou. A practitioner's point of view	Leo DeGroot Erin Reid Wildlife Biologist
2:00-2:30pm	• SARA	Paul Rasmussen

	• Mountain Caribou recovery plan overview	Executive Director, Species at Risk Recovery Branch, Cranbrook BC
2:30-3:00 pm	Questions, discussion	All
3:00- 4:30 pm	Stand development exercise (Range of Residual Basal Area in WADF). Followed by group discussion (see Appendix 2)	Deb Delong, RPF UBC
5:30 pm	Arrive back in Nelson	
6:30pm	Dinner	
After dinner	Question of the day discussion. Drawing on what you learned in the last 2 days what kinds of questions/data do you need to ask/collect before developing a forest management plan? In your crews brainstorm your list of questions /information needs before we head out to see some different tenures and how they are actually being managed. Record your questions in your field notebook.	
Wednesday August 29th		
8:00-9:00 am	Drive to Harrop Proctor Community Forest	
9:00-10:30 am	BC Community Forest Association - overview HP Community Forest Video History and evolution Vision, Goals, Objectives • HPCF Forest Management Planning • Values from the forest? Water, NTFPs? Community relationships • How do they participate? • How has it changed over time?	Susan Mulkey, BCCFA Erik Leslie, RPF, HPCF
10:30-11:00 am	Get to exercise sites	
11:00-12:30 pm	Site-level prescription links to forest level objectives exercise (see Appendix 3)	Erik Leslie, RPF, HPCF Deb DeLong,RPF
12:30-1:00 pm	Lunch	
1:00-2:00 pm	Groups present their findings. Group discussion	all

2:30-4:00 pm	Mill tour • Value-added forest products • FSC certification • Communication from the mill to woodlands and back? • How are revenues dispersed to the community? Visit timber frame project near mill if time (See Appendix 3)	Rami Rothkop, Sales and Marketing HPCF Eric Martin, HPCF
4:00-5:30 pm	Drive back to Nelson	
6:00 pm	Dinner	
Thursday August 30th		
7:30-8:00 am	Drive to KALESNIKOFF Lumber Company Ltd. Mill, Thrums BC	
8:00 – 8:15 am	Welcome and Introductions	Tyler Hodgkinson RPF, Woodlands Manager
8:15- 9:30	Overview of Kalesnikoff's operations - Brief history - Types of tenure - Wood profile versus product markets - Woodlands relationship with the mill - FSC certification	Tyler Hodgkinson RPF Woodlands manager Reg Koodrin, Woodlands staff
9:30-10:15 am	Drive to Blewett CP 41-2 and CP 39-1	Rob Giesler, Harvesting Supervisor
10:15-11:30 am	Blewett- view active harvesting - Ground based (Sookro Logging) - Cable (Quest Yarding, Skylead yarder) - Safety considerations - Harvesting plans	
11:30-1:30 pm	Drive to Schroeder Creek CP 38-3 (eat lunch on the way)	
1:30-2:30pm	Schroeder Creek Steep slope harvesting (Hlookoff logging, Washington Yarder)	
2:30-5:00 pm	Drive back to Nelson (stop to see road construction at Summit South Six Mile if time permits, Hlookoff Bulldozing)	
Friday August 31st		
8:00- 9:00 am	Drive to Kalesnikoff mill	

9:00-12:00am	Mill tour and reman (Kootenay Innovative Wood) tour (see Appendix 4)	Ken Kalesnikoff, President and CEO, Kalesnikoff Lumber Co.
12:00-1:00 pm	Drive back to Nelson and Lunch	
1:00-2:30 pm	Time for preparation of Crew Challenge. All guest speakers/ volunteers are welcome to come and listen and ask questions. (See Appendix 5)	One presentation per group
2:30-5:00 pm	Student Team Presentations (20 minute presentations and 10 minutes for questions) TBD	All participants invited
5:00-9:00 pm	Hosted reception for all volunteer speakers and UBC alumni. Rel-ish Restaurant, Nelson BC	All participants invited
Saturday September 1st		
8:00 am	Drive back to Vancouver	

Appendix 1: Stand and site Diagnosis Student Exercise

Objectives

- To observe and describe site and stand characteristics
- To evaluate site quality and conditions which limit tree growth
- To evaluate past stand development and probable future development

Methods

With your crew observe/measure site and stand features and answer the following questions.

- For the Tree Layer describe:
  - Age class structure (even, all, multi-aged)
  - Species, stocking and condition (health, form, live crown ratio) by canopy layer
  - Spatial distribution of stems, gaps, mortality, snags, coarse woody material
  - Damage or pathological indicators, site index, productivity, value
  - Probable stand origin, current successional stage, current stage of stand development, future stand development

- For the Shrub, Herb and Moss Layer describe:
  - Species, percent cover and distribution
  - Probable response to removal of overstory and consequences for regeneration

- For the Site and Microsite describe:
  - General climate in zone (growing season, growing season frost, precipitation, snowpack)
  - Topography of site (aspect, slope, slope position, stability, erosion)
  - Micro-topography of site
  - Forest floor and mineral horizons
  - SMR and SNR
  - Conditions which limit growth (abiotic and biotic)
  - Microsites which provide most favourable conditions for growth
  - Features which limit access for harvesting or silviculture
  - Seasonal constraints on access
  - Wildlife use

Results

Record your observations in your notebook. You will be asked to contribute to a group discussion of the site and stand diagnosis in the field. This exercise is not graded but the quality of your field notes will be considered when your notebook is marked and during notebook exchanges.

Appendix 2: Stand Development Exercise

Objectives

- To observe and describe site and stand characteristics
- To evaluate past stand development and probable future development
- To develop observational skills
- To practise measurement skills

Methods

Student crews will be placed in one of 4 different partial cut treatments. In a 50x50m plot, you will have 45 minutes to use your observational and measurement skills to answer the following questions.

Questions

- What will your stand look like in 100 years?
- What did it look like 50 years ago?
- Do you have any concerns?

  Consider: what was taken out? What was left? Is there regeneration? What species is the regen and how did it get there and how is it doing? What are the current growth rates?

Results

Record your observations in your notebook. You will be asked to contribute to a group discussion.

Appendix 3: Site Level prescription critique

Objectives

- To determine what treatments were completed in a stand
- To practise using maps
- To understand the link between stand level prescriptions and forest level planning
- To think critically about the suitability of silviculture interventions at providing target stand conditions
- To develop observational skills
- To practise measurement skills
- To understand what a prescription is.

Methods

Crews will have 45 minutes to observe and measure a 50x50m site. You will be given maps, information on BEC and site series. We will then get together for a group discussion where you will present your information and conclusions get more information on what the forest level objectives are for your site.

Questions

Crew questions:

- What has been done on the site?
- What evidence do you have of treatments?
- Any evidence of wildlife use?
- Any forest health issues?
- What measurements did you do to help you in your discovery?

Group Discussion:

- What are the forest level objectives?
- What are the target stand conditions? Have they or will they be met?
- Will this prescription meet forest level objectives?
- What if the objectives were changed? What would you have to do differently?

Results

Answer the questions above in your field notebook. Record your observations and any measurements in your notebook. You will be asked to contribute to a group discussion.

Appendix 4: Mill Tour Exercise

Objectives

- To know the phases in production of wood products from raw logs.
- To observe the linkage between log size and quality, and the type and value of wood products manufactured.
- To understand the differences between value vs volume mills.

Methods

During the mill tours, consider the following questions. Mills can be noisy. The tour guides will stop periodically in the quieter areas. These are the best places to ask your questions. Stay with the group and be alert for moving equipment, logs and lumber throughout the tour.

Questions

- How does log size and quality influence the value of products?
- What use is made of the proportion/components of the logs not converted to lumber?
- How could more value be added to the products?
- How can the suppliers of logs contribute to sawmill efficiency?

Results

Answer the questions above in your field notebook.

Appendix 5: Management Challenge

Today's forest managers are faced with many challenges in doing their job well. Forest management issues are usually complex and have ecological, economic, social and cultural aspects. Managers need to be creative to find workable solutions to these issues. By the end of the field camp you will have seen and heard about some regionally significant forest management issues, and these are representative of the kinds of issues that forest managers deal with around the world.

Objectives:

- To understand the nature of forest management issues
- To learn how forest managers respond to complex management challenges
- To reflect and then present your ideas on how a particular issue could be addressed
- To develop your observational skills
- To develop your critical thinking skills
- To develop communication skills

Methods:

Your task as a crew is to identify a significant forest management issue that you observed over the week.

1. Describe the issue and its context, including ecological, economic and social dimensions.
2. Describe how it is currently being addressed or not being addressed.
3. Present a set of recommendations that offer a workable solution
4. Make sure your recommendations are realistic in terms of risk, safety, social license, financial viability etc.

On Friday afternoon you will be given 2.0 hours to prepare your presentation.

During the week be sure to take good notes, take photos and ask lots of questions.

The methods you use to communicate your ideas are up to you. Be creative.

Each crew will have 20 minutes to present their ideas.

There will be 10 minutes for questions after each presentation.

Each crew member must participate in the presentation and question period.

Marking Rubric for Crew Management Challenge Presentations:

Criterion	Exceptional	Very Good	Acceptable	Unacceptable
Content	Team provides an accurate and complete explanation. Clear evidence of critical thinking (application, analysis, synthesis and evaluation) (10 pt.)	For the most part, explanations of concepts and ideas are accurate and complete. Some critical thinking evident (8 pt.)	Explanations of concepts and/or ideas are inaccurate or incomplete. Beginnings of critical thinking (6 pt.)	Poorly developed (4 pt.)
Organization	Team presents information in logical, interesting sequence which audience can follow. (3 pt.)	Team presents information in logical sequence which audience can follow. (2 pt.)	Audience has difficulty following presentation because it jumps around. (1 pt.)	Audience cannot understand presentation because there is no consistent flow of information. (.5 pt.)
Creative expression	Team's methods explain and reinforce presentation in an exceptionally creative way. Exceptionally entertaining (3 pt.)	Team's methods relate to presentation. Entertaining (2 pt.)	Teams methods rarely support ideas. Mildly entertaining (1 pt.)	No relation. Hard to follow. Not entertaining (.5 pt.)
Speaking Skills	Poised, articulate; proper volume; steady rate; good posture and eye contact; enthusiasm; confidence. (4 pt.)	Clear articulation but not as polished. (2 pt.)	Some mumbling; little eye contact; uneven rate; little or no expression. (1 pt.)	Inaudible or too loud; no eye contact; rate too slow/fast; disinterested/monotone (1 pt.)
Length of Presentation	On time (0 pt) 20 minutes			More than 5 minutes over or under time (-2 pt.)
Total Points **20 max**				

Marking Rubric

First week Quiz	**20%**
Field Note Book	**35%**
Crew Challenge	**35%**
Effort/Participation	**10%**

Marking Guide for Field Notebooks

Name of Marker

Name on Notebook

Format		Peer*	TA
Readable	*Writing legible *Notes make sense and are not too cryptic	1 2 3	/4
Structure	*Easy to navigate within the notebook (can you find anything that you want to look for easily?).	1 2 3	/6
	*Easy to understand where you are within the notebook (if you open to any page, can you easily find what the page is about?).		
	*Headings, section breaks, individual speakers, personal notes all easy to identify.		
Content		Peer*	TA
Complete	*Each stop documented.	1 2 3	/10
For Each Stop	**Describes when -** *Dates and times included as part of heading for each stop. *Date at the top of each page.	1 2 3	/5
	Describes where - *Location clearly identified as part of the heading for each stop (including forest name and block number if possible). *Physical characteristics of site clearly and comprehensively listed (if important to the issues).	1 2 3	/5
	Describes who - *Proponent of the principle issues associated with stop identified clearly. *Names and affiliations of other people in attendance listed.	1 2 3	/5
	Describes what - *Topic or purpose of stop clearly identified in heading. *Major issues relating to topic of stop succinctly listed as part of notes.	1 2 3	/10
	Describes why - *Importance of the topic in the general scheme of things outlined (why were they there looking at what they were looking at?).	1 2 3	/10
	Describes how - *How were the issues being dealt with?	1 2 3	/10
Summary Section	*Brief discussion/summary of the most interesting thing you learned each day.	1 2 3	/35
Overall		1 2 3	/10

*1 = Good, 2 = OK, 3 = Needs Work

COMMENTS:

FROM CFAB

1. **Tree and Stand dynamics**

- Describe plant communities
- Explain the relationship between and within plant indicators
- Describe current and past tree and stand conditions and the processes that led to them and articulate possible future conditions

2. **Forest to Landscape: Structure, Function and Dynamics**

- Describe the components, characteristics and processes of forest ecosystems and how they interact
- Describe and apply classification schemes using vegetation, climate and edaphic characteristics
- Explain influences and outcomes of agents of change on forests and landscapes

3. **Forest Management**

- Describe the variety of values and competing interests in a forest
- Explain forest strategic and operational planning principles
- Analyze and apply a range of forest cover manipulation strategies that effectively achieve a given set of objectives while minimizing negative impacts
- Explain the legal and policy framework
- Discuss forest management concepts
- Describe how global trends drive and influence forest management
- Develop a resource planning document that incorporates current economic, environmental and social values into actions that lead to achieving the planning objectives and to future desired conditions and goals.