



VANCOUVER ISLAND  
UNIVERSITY

## Forest Resources Technology Program

### FRST 162 Fire Management Course Outline

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Term: **Spring**  
Instructor: TBA

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#### CALENDAR DESCRIPTION

**FRST 162 (2) Fire Management:** Overview of Canadian Forest Fire Weather Index; fire weather; fuels, topography and their influence on fire behaviour; fire management, detection and suppression; use of hand tools, fire pumps, heavy equipment, and aircraft; fire command organization; and fire use for slash and hazard abatement, forest, range, silviculture, and wildfire management projects. Credit will only be granted for FRST 162. (1.5:0:2.5)

*Prerequisite: Admission to program.*

#### SCOPE AND CREDIT

This course receives two credits for the Forest Resources Technology program and is also accredited by the Association of BC Forest Professionals (ABC FP) as a “core course” for their Pupil or F.I.T. programs. The BC Ministry of Forests recognizes this course as meeting or exceeding their training standard S-100 Basic Fire Suppression & Safety course for Emergency Fire Fighters. The Forest Resources Technology program is accredited by the Canadian Technology Accreditation Board.

#### COURSE FORMAT

This course is designed for students in the first year of the Forest Resources Technology program. The term will consist of 1 1/2 hours lecture and 2 1/2 hours laboratory weekly. Most labs are indoors but may include several field labs.

## LEARNING OUTCOMES

On successful completion of this course, a student will be able to;

1. Describe basic fire chemistry related to forest fuels.
2. Demonstrate an understanding of fuel, topography, and weather as they relate to wildfire and prescribed fire behaviour.
3. Describe fire control legislation, regulations and policy in British Columbia.
4. Define and describe meteorological conditions and phenomenon important in fire management.
5. Calculate and apply components of the Canadian Forest Fire Danger Rating Systems: Fire Weather Index System and Fire Behaviour Prediction System.
6. Demonstrate and explain the appropriate choice and safe use of equipment used in fire management.
7. Develop fire control strategies and fire attack plans.
8. Plan, direct and construct fire control lines including crew organization, supervision and safety on small wildfires and prescribed burns.
9. Describe and identify situations, conditions and circumstances dangerous to the safety of fire fighters and prepare safety briefings for fire control crews.
10. Specify and describe appropriate heavy equipment and aircraft for fire suppression and control.
11. Explain burning prescriptions, fire and fuel management plans and fire hazard assessments.
12. Describe fire detection systems, techniques and procedures employed in BC for wildfire detection.
13. Describe the role of wildfire and prescribed fire in the environment and fire use in ecosystem and wildlife management
14. Identify fire hazards, risks and define the unique management issues related to the wildland/urban interface
15. Describe wildfire and fire management strategies specifically applicable to the wildland/urban interface.
16. Describe the Essentials of Project Management
17. Participate in a wildfire simulation exercise

## REQUIRED TEXTS

- <sup>1</sup> *Fire Suppression Training Workbooks*; BC Ministry of Forests; Victoria, BC  
*S-100 Basic Fire Suppression & Safety*

## FIELD EQUIPMENT & SAFETY

Many of the labs in this course will be spent in field exercises (outdoors). Students are required to provide and wear sturdy boots when engaged in field activities in accordance with WCB Regulations and College Policy. Students will be required to wear hard hats, caulked boots and hi-visibility vests as directed by the instructor. Students failing to comply with these rules will not be permitted to participate in outdoor lab exercises.

**Outdoor labs will only be cancelled due to extreme weather that compromises safety or the learning objectives (e.g. excessive wind or snowfall). Students should therefore be equipped with proper field gear and clothing for all types of weather.**

## References & Additional Resource Books:

- **Tables for the Canadian Forest Fire Danger Rating Systems: Fire Weather Index and Fire Behaviour Prediction System**, Canadian Forestry Service, Ottawa; (Forestry Department loan to students as required)
- Dunster, J. and Katherine Dunster, 1996, ***Dictionary of Natural Resource Management***, UBC Press
- ***BC Forest & Range Practices Act, Wild Fire Act & Fire Prevention and Suppression Regulation*** (can be downloaded from the internet and/or provided by instructor as required) <<http://www.for.gov.bc.ca/tasb/legsregs/wildfire/wildfireact/wildfire.htm>>
- Merrill, D.F., M.E. Alexander. Ed; Fourth Edition, 1987; ***Glossary of Forest Fire Management Terms***; National Research Council of Canada; Ottawa;
- ***S-213 Use of Bulldozers***
- ***S-232 Portable Pumps & Water Delivery Systems***
- ***S-270 Helicopter Use & Safety***
- ***S-340 Fundamentals of Prescribed Fire***
- Walstead, J. D., Radosevich, S. R., Sandberg, D. V., 1990; ***Natural and Prescribed Fire in Pacific Northwest Forests***; Oregon State University Press, Corvallis, Oregon.
- Edmonds, Robert L., J.K. Agee and R.I. Gara, 2000; ***Forest Health and Protection***, Waveland Press Inc., 1<sup>st</sup> ed. note: this text is also a required text for FRST 351 and FRST 352 in year 2.
- Pyne, Andrews and Laven. 1996. ***Introduction to Wildland Fire*** 2<sup>nd</sup> ed. Wiley & Sons, New York, USA.
- Agee James K.; 1993; ***Fire Ecology of Pacific Northwest Forests***; Island Press., Washington, D.C.
- Brown, Arthur A., Kenneth P. Davis; 1973; ***Forest Fire: Control and Use***. - 2d ed. ; McGraw-Hill,
- Chandler Craig., et al.; 1983; ***Fire in Forestry***; Wiley
- Eiber, Thomas G.; 1985, ***Forest Fire Management in Canada***; Lakehead University, Thunder Bay
- Gaylor, Harry, P.; 1974; ***Wildfires – Prevention and Control***; Robert J. Brady Co.; Bowie, Maryland
- Schroeder, Mark, J., Charles C. Buck; 1970; ***Fire Weather***; USDA – Forest Service; Washington, D.C.
- ***Weather Ways – 3<sup>rd</sup> edition***; 1974; Meteorological Branch, Dept. of Transport; Ottawa, Ont.
- Kimmins J.P., 1997, ***Forest Ecology***, Prentice-Hall, Inc. New Jersey.
- Canadian Forest Service. ***Fire Behavior Prediction Workbook***
- Carmody, C. (ed). 1992. ***Development and Structure of the Canadian Forest Fire Behaviour Prediction System***. Information Report ST-X-3. Forestry Canada. Ottawa.
- Environmental Training Centre. 1997. ***Principles of Fire Behavior***. UBC Press. University of British Columbia. Vancouver, B.C.
- Environmental Training Centre. 1997. ***Canadian Forest Fire Behaviour Prediction System***. UBC Press. University of British Columbia. Vancouver, B.C.
- Hirsch, K.G. 1996. ***Canadian Forest Fire Behaviour Prediction System: user's guide***. Canadian Forest Service. UBC Press. University of British Columbia. Vancouver, B.C. Ministry of Forests
- Van Wagner, C.E. 1987. ***Development and Structure of the Canadian Forest Fire Weather Index System***. Forestry Technical Report 35. Canadian Forestry Service. Ottawa.

## EVALUATION (Sample)

### Grade Breakout (subject to change):

Lab Assignments	15%
Midterms (2) & Quizzes	40%
Final Exam & Final Project	40%
Instructor Assessment	5%

### Grade Conversion:

A+	>90%
A	85-89%
A-	80-84%
B+	76-79%
B	72-75%
B-	68-71%
C+	64-67%
C	60-63%
C-	55-59%
D	50-54%
F	<50%

Any missed exams or quizzes will receive a grade of zero.

## ACADEMIC POLICIES

For information on exam policies, missing tests, assignment format standards, late assignments, instructor assessment and academic misconduct (e.g., plagiarism), please refer to the VIU Forestry Department website:

Refer to <http://www.viu.ca/forestry/Current-Students/VIU-Policies/Academic.asp> for details.

## COURSE SCHEDULE - Sample

Wk #	Course Topics	Guest Speakers (Tentative)
1	-Introduction to Fire Management, Statistics, MFL-NRop Wildfire Management Organization -Fire Chemistry & the Elements of the "Fire Triangle" -Burn samples and outdoor burn (weather/time permitting)	
2	-Weather Instruments -Fire Weather & the Fire Weather Index -Fire recruitment video	
3	-Canadian Forest Fire Danger Rating System (CFFDRS) -Fire Behaviour, Fire Behaviour Prediction System, Fuel Types -Fire Behaviour – Weather, Fuels & Topography and Red book	
4	<b>-Final Project -Fire Management Planning Components.</b> <b>-Introduction of Final Project – Phases 1 &amp; 2</b> <b>-Sechelt Fire Fatality Case study</b>	Lecture/Lab, <b>Brian McIntosh</b> , Sup't Fuels Management
5	-MFL -NROP Forest & Range Practices Act, Wildfire Act, Regulations, Policy & Application -Wildland -Urban Interface, -ICS 100 – Introduction to the Incident Command System, Use of Radios and other communications options,	Lecture - <b>Doug Walker</b> , Senior Protection Officer, Coastal Fire Centre
6	<b>-First Mid-term</b> <b>-Galiano Island Interface Fire Case study</b>	Lab - <b>Tim Ewart</b> , Deputy Fire Centre Manager – Coastal Fire Centre
7	-Personal Safety and Fire Management -Fire Size Up & Reporting, -Suppression and Mop-up Methods,	

8	<b>Reading/Study Week</b>	
9	-Fire Fighting Hand tools, Heavy Equipment and Aircraft Use & Use of Fire -Retardants/Suppressants -Fuels Management, Hazard Assessment, Mechanical and Prescribed Burning Abatement Methods and Smoke Management	
10	--Ignition methods, Burning Plans <b>-Second Mid-term</b> <b>-Final Project-Phase 1 submission due</b>	
11	<b>-Phase 1 discussion and discussion on Final Assignment Phase 2</b> -"Fire Smart" and Community Wildfire Protection	
12	-Pumps & Water Delivery Systems <b>-Field exercise with fire pumps and hand tools</b>	
13	<b>Course review</b>	
14	-Field visit to Wildfire Management Branch, Coastal Fire Centre & Mid-Island Zone Office	Lab, <b>Debbie Hawkes and Rob Templeman</b> WMB– Coastal F/C
14	<b>Preparation for Simulation exercise + review of ICS etc</b>	
15	Wildfire Simulation exercise – 3 hours + Last Day of Classes <b>Phase 2 of Project Due</b>	
	<b>Final Exam.                    3 hours: to be scheduled</b>	