



FRST 272 – Forest Road Planning and Design

Term: **Spring**
Lecture TBA
/Lab:
Instructor: TBA

CALENDAR DESCRIPTION

Forestry 272 is a study of forest road construction, planning, and scheduling. Topics include: road construction practices, environmental constraints, culvert design, costing roads. (2:0:2)

SCOPE AND CREDIT

This is a 4 hour per week 2 credit course designed for second year Forest Resource Technology students. You must have successfully completed FRST 271 to enroll in Forestry 272.

COURSE FORMAT

The typical week will be one hour of lecture time and three hours lab time. Labs are usually outdoors so students must come prepared for fieldwork.

COURSE COMMUNICATIONS

All information regarding the course will be distributed through the course “D2L” site <http://learn.viu.ca>. Students will need to visit the D2L site at least weekly for course notices and assignments. If your email has changed since registration, make sure that it is up to date on D2L.

TEXTS

Forest Road Engineering Manual, Province of BC

(http://www.for.gov.bc.ca/hth/engineering/documents/publications_guidebooks/manuals_standards/Eng-Manual.pdf)

LOW-VOLUME ROADS ENGINEERING

Best Management Practices Field Guide

by Gordon Keller & James Sherar

USDA Forest Service/USAID

(<http://www.blm.gov/bmp/field%20guide.htm>)

US Department of Army Field Manuals:

Building Roads and Airfields:

(<http://www.globalsecurity.org/military/library/policy/army/fm/5-430-00-1/index.html>)

Earthmoving Operations:

(<http://www.globalsecurity.org/military/library/policy/army/fm/5-434/>)

Soils Engineering:

(<http://www.globalsecurity.org/military/library/policy/army/fm/5-410/index.html>)

Other References (optional):

Kiser, J. 2010. Surveying for Forestry and the Natural Resources, J. Bell & Assoc., 276 p. (purchased in FRST 111)

Some links to .pdf files will be attached to lecture notes or located in the D2L folders for the appropriate topic.

EQUIPMENT AND SUPPLIES

- Six-ring notebook with Duksbak or Rite in the Rain Metric Field paper
- 2H Pencil
- Graph paper
- Compass with adjustable declination
- Douglas protractor
- Post Scale
- Biodegradable flagging tape
- personal first aid kit

FIELD SAFETY, PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING

Caulk boots
High visibility hard hat
High visibility Cruiser's vest
Safety whistle
Rain gear and gloves

Students inadequately dressed or equipped may be dismissed from field lab sessions.

If you finish a field assignment early and want to leave the area you must notify the instructor. This policy will ensure that no injured person is left in the woods and that searches are not carried out for students that have gone home.

LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

1. Assess the potential hazards of working in the forest; demonstrate safe work procedures for carrying out tasks, and use appropriate personal protective equipment requirements and describe emergency procedures.
2. Define and use technical terms applicable to forest road design in conversation with peers and in technical reports.
3. Calculate volumes of earth from road plans and profiles, and borrow pits.
4. Calculate culvert sizes using various water flow prediction methods.
5. Describe the process of road construction including the use and limitations of various types of construction equipment, and blasting principles, techniques, and design.
6. Describe the principles of erosion and sediment control for forest roads and stream crossings.
7. Using the Earthwork Volumes and productivity curves for construction equipment estimate the construction costs for a forest road.
8. Using the MOF Appraisal Manual, estimate the appraisal allowance for a forest road.
9. Describe the Acts and Regulation governing forest road construction in B.C.
10. Use math skills appropriate to the field of forestry, including: algebraic equations, calculations, geometry, precision, proportions and statistics.
11. Use technology appropriate to the field of forestry.
12. Think creatively and flexibly to solve problems.

In addition specific Forestry Program objectives will be covered.

EVALUATION (sample)

Lab projects	45%
Exams	45%
Instructor Assessment	10%

Grade Scale:

(%)	Letter	Grade Point
90-100	A+	4.33
85-89	A	4.00
80-84	A-	3.67
76-79	B+	3.33
72-75	B	3.00
68-71	B-	2.67
64-67	C+	2.33
60-63	C	2.00
55-59	C-	1.67
50-54	D	1.00
0-49	F	0.00

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: <https://www2.viu.ca/forestry/Current-Students/VIU-Policies/index.asp>

All assignments and lab reports, unless otherwise stated, are due at the start of the following lab period. A penalty of 10% per day applies to late assignments and no marks will be awarded for assignments if marked work has already been returned to the rest of the class. Work that is substantially below standard with respect to grammar or spelling will be returned unmarked for rewriting; late penalties will still apply.

TENTATIVE SCHEDULE (sample)

Week	Lecture	Lab
1	Course Introduction, Estimating Volumes of Earth	Estimating Volumes of Earth, Woodlot Borrow Pit
2	Eng. properties of soils	Cut and Fill Slope Angles Road Cross Sections
3	Materials and Side Slopes, Mass Haul	Materials and Side Slopes, Mass Haul
4	Construction Equipment Tractors	Construction Equipment Tractors – lab on cost estimates
5	Construction Equipment Excavators	Construction Equipment Excavators – lab on cost estimates
6	Construction Equipment Drilling & Blasting	Construction Equipment Drilling & Blasting
7	Midterm Exam	Midterm Exam
8	Study Days	Study Days
9	Log Haul Cost Estimation	Log Haul Cost Estimation
10	IDF Curves/ Manning's Equation	IDF Curves/ Manning's Equation
11	Large Culvert Design – Field Flynfall Creek	Large Culvert Design – Field Flynfall Creek
12	Stumpage/ Road Appraisal	Stumpage/ Road Appraisal
13	Stumpage/ Road Appraisal	Stumpage/ Road Appraisal Field
14	Review	Midterm Exam