Forest Operations

Degree Requirements (High School Grads)

The Forest Operations Major is divided into two main specialization options:

- Harvest Planning and Engineering – See below
- Commerce (Minor in Commerce) – See pages 5, 6 and 7

Harvest Planning and Engineering (HP&E)

The Harvest Planning and Engineering Specialization offers courses in geotechnical engineering, forest road design and location, planning of forest operations at the stand and landscape levels, engineering and economic analysis of logging systems, and forest transportation systems. Graduates of this specialization have the unique skills that are needed to analyze, plan, and implement a wide range of silviculture, logging, and transportation systems which are key elements in forest management. Some graduates of this specialization choose to take additional courses in mathematics and applied science to obtain eligibility for registration as a professional engineer (P.Eng.) in addition to registration as a professional forester (R.P.F.) (*see list of courses for P.Eng on Page 4*). Physics 12 would be helpful for students considering this specialization.

First Year - HP&E

Required Courses	Credits	Done	Notes
APBI 200 Introduction to Soil Science	3	☐	
Select one of the following English courses: FRST 150[1] Scholarly Writing and Argumentation in Forestry LFS 150 Scholarly Writing and Argumentation in Land and Food Systems WRDS 150B Writing and Research in the Disciplines ENGL 110 Approaches to Literature or ENGL 111 Approaches to Non-fictional Prose	3	☐	
BIOL 111[3] Introduction to Modern Biology and 121 Genetics, Evolution and Ecology	6	☐	
ECON 101 Principles of Microeconomics or FRST 101[2] Principles of Microeconomics for Forestry and Land and Food Systems	3	☐	
MATH 100[4] Differential Calculus with Applications	3	☐	
FRST 100 Sustainable Forests or FRST 110[2] Land One: First-year Integrative Seminar	3	☐	
FRST 231 Introduction to Biometrics	3	☐	
FRST 232 Computer Applications in Forestry	3	☐	
Electives[5]	6	☐	
Total Credits	33	☐	

[1] FRST 150 is recommended

[2] Only Land One students are eligible to take FRST 101 and FRST 110.

[3] Students with Biology 11 or 12 are exempt from BIOL 111. Substitute PHYS 100 if needed (exempt with PHYS 12) or CHEM 111 (exempt with CHEM 12). If none of these courses are needed, an elective may be substituted. Students with no high school biology are strongly recommended to take BIOL 111 in Term 1 and BIOL 121 in Term 2.

[4] Students may take MATH 180 (4 credits) or MATH 110 (6 credits) instead of MATH 100 (3 credits), but the credit difference cannot be applied towards program elective requirements. Students planning to obtain a P.Eng. after graduating require MATH 100, 101 and PHYS 170.

[5] Students planning to obtain P.Eng. after graduating require MATH100, 101 and PHYS 170. Students without PHYS12 should use 3 credits of electives to take PHYS 100. Students who plan to take WOOD 276 should take one of MATH 101and one of PHYS 131, 117, or 170 for electives.

Second Year - HP&E

Required Courses	Credits	Done	Notes
FRST 200 Forest Plant Biology I	3	☐	
FRST 201 Forest Ecology	3	☐	
FRST 210 Forest Plant Biology II	3	☐	
FRST 211 Forest Classification and Silvics	3	☐	
FRST 239 Tree and Stand Level Measurements	3	☐	
FOPR 264 Introduction to Forest Operations	4	☐	
FOPR 388 Analytical Methods in Forest Hydrology	3	☐	
CONS 200 Foundations of Conservation or 370 Aboriginal Forestry	3	☐	
Electives	6	☐	
Total Credits	31	☐	

FRST 350 or FRST 351[6,7] Field School immediately preceding third year

Third Year - HP&E

Required Courses	Credits	Done	Notes
FRST 305 Silviculture	3	☐	
FRST 307 Biotic Disturbances	3	☐	
FRST 318 Forest and Conservation Economics	3	☐	
FRST 320 Abiotic Disturbances: Fire and Climate	3	☐	
FRST 339 Forest Level Measurement and Productivity	3	☐	
FRST 350 or FRST 351[6,7] Field School	2	☐	
FRST 395 Forest Wildlife Ecology and Management	3	☐	
FRST 452 Coastal Field School	2	☐	

FOPR 362 Harvesting Systems & Forest Access	3	☐	
CIVL 210 Soil Mechanics I[8]	4	☐	
WOOD 276 Mechanics of Wood Products[8]	3	☐	
Restricted Elective[9]	3	☐	
Total Credits	35	☐	

[6] Credit will be given for only one of FRST 350 or FRST 351.

[7] Students will be assigned to the most appropriate course based on their levels of forestry and field experience as determined by the course instructors.

[8] WOOD 276 is the pre-requisite for CIVL 210 for FOPR students. Once you are registered in WOOD 276 for Term 1, email Forestry Student Services to ask them to register you in CIVL 210 for Term 2. Please make sure you have space in your schedule for all parts of CIVL 210.

[9] Restricted electives are at the discretion of your Program Director. See your Program Director for a current list of accepted courses.

FRST 452 Coastal Field School	immediately following third year

Fourth Year - HP&E

Required Courses	Credits	Done	Notes
CONS 340[10] Introduction to Geographic Information Systems for Forestry and Conservation	3	☐	
FRST 415 Sustainable Forest Policy	3	☐	
FRST 422 Mathematical Modelling in Forest Resource Analysis	3	☐	
FRST 423 Forest Management Planning	6	☐	
FRST 497 Communications and Professionalism	3	☐	
WOOD 365 Wood Industry Business Management	3	☐	Former WOOD 465
WOOD 492 Modeling for Decision Support	3	☐	
FOPR 464 Operational Planning and Management	4	☐	
Restricted Elective[9]	3	☐	
Total Credits	31	☐	

[9] Restricted electives are at the discretion of your Program Director. See your Program Director for a current list of accepted courses.

[10] CONS 340 may be replaced with another approved GIS or remote sensing course.

Note: Some elective or specialization courses may carry credits in addition to the above table.

HP&E – RFP & P.ENG. PATHWAY

For students hoping to apply for a P.Eng in addition to their RFP, below is a list of the additional courses that will fulfill those requirements. Please note that in a few cases, these are not the only options for courses that will cover these requirements, but are ones that students have followed in the past. If you have transfer credits that you think might apply or would like to know what other courses are available, contact either the program director or Forestry Student Services.

Please make sure to check the list below to see if the courses have any pre-requisites that you will need to complete first.

Additional courses - HP&E

Required Courses	Credits	Done	Notes
MATH 101 Integral Calculus with Applications	3	☐	Typically taken as a First Year Electives
PHYS 170 Mechanics I	3	☐	Typically taken as a First Year Electives
MATH 221 (MATH 152) Matrix Algebra	3	☐	
MATH 200 (MATH 253) Calculus III	3	☐	
MATH 215 (MATH 255) Elementary Differential Equations I	3	☐	
EOSC 210 Earth Science for Engineers	3	☐	
CIVL 215[11] Fluid Mechanics I or CHEM 154 Chemistry for Engineers	3	☐	
MATH 316 (MATH 257) Elementary Differential Equations II Or APSC 278 Engineering Materials Or CHEM 123[12] Thermodynamics, Kinetics and Organic Chemistry Or both WOOD 292 Two-Dimensional and Solid Computer Aided Graphics and DES 110 Measured Architectural Drawing	3/3/5	☐	
WOOD 282 Wood Physics and Mechanics	3	☐	
WOOD 440 Engineering Economics	3	☐	

[11] Students need to contact Forestry Student Services to be registered in CIVL 215.

[12] CHEM 123 requires CHEM 111 or CHEM 121 as a pre-requisite. CHEM 154 is not a pre-requisite for CHEM 123.

Minor in Commerce

Students who desire a stronger foundation in business may consider the Minor in Commerce. Upon successful completion of this minor program, the notation "Minor in Commerce" will be placed on the student's transcript.

Enrolment in this program is limited. Please see the program director. To be considered, the student must be eligible for at least third-year standing in the Forest Operations Major with a cumulative average of at least 68% in the previous two years. Completion of ECON 101 (or ECON 310) and ECON 102 (or ECON 311) is required. Meeting the stated minimum requirement does not guarantee admission into the Minor.

Students may require an additional term to complete the Minor in Commerce. The Commerce Minor is intended to be completed over two years.

First Year - Commerce

Required Courses	Credits	Done	Notes
APBI 200 Introduction to Soil Science	3	☐	
ENGL 110, 111, WRDS 150B or FRST 150[1]	3	☐	
BIOL 111 Introduction to Modern Biology and 121[3] Genetics, Evolution and Ecology	6	☐	
ECON 101 Principles of Microeconomics or FRST 101[2] Principles of Microeconomics for Forestry and Land and Food Systems	3	☐	
ECON 102 Principles of Macroeconomics	3	☐	
MATH 100[4] Differential Calculus with Applications	3	☐	
FRST 100 Sustainable Forests or FRST 110[2] Land One: First-year Integrative Seminar	3	☐	
FRST 231 Introduction to Biometrics	3	☐	
FRST 232 Computer Applications in Forestry	3	☐	
Elective[5]	3	☐	
Total Credits	33	☐	

[1] FRST 150 is recommended.

[2] Only Land One students are eligible to take FRST 101 and FRST 110.

[3] Students with Biology 11 or 12 are exempt from BIOL 111. Substitute PHYS 100 if needed (exempt with PHYS 12) or CHEM 111 (exempt with CHEM 12). If none of these courses are needed, an elective may be substituted. Students with no high school biology are strongly recommended to take BIOL 111 in Term 1 and BIOL 121 in Term 2.

[4] Students may take MATH 180 (4 credits) or MATH 110 (6 credits) instead of MATH 100 (3 credits), but the credit difference cannot be applied towards program elective requirements.

[5] Students without PHYS12 should use 3 credits of electives to take PHYS 100.

Second Year - Commerce

Required Courses	Credits	Done	Notes
FRST 200 Foundations of Conservation	3	☐	
FRST 201 Forest Ecology	3	☐	
FRST 210 Forest Plant Biology II	3	☐	
FRST 211 Forest Classification and Silvics	3	☐	
FRST 239 Tree and Stand Level Measurements	3	☐	
FRST 318 Forest and Conservation Economics	3	☐	
FOPR 264 Introduction to Forest Operations	4	☐	
FOPR 388 Analytical Methods in Forest Hydrology	3	☐	
CONS 200 Foundations of Conservation or 370 Aboriginal Forestry	3	☐	
Elective	3	☐	
Total Credits	31	☐	
FRST 350 or FRST 351[6,7] Field School immediately preceding third year			

Third Year - Commerce

Required Courses	Credits	Done	Notes
FRST 305 Silviculture	3	☐	
FRST 307 Biotic Disturbances	3	☐	
FRST 320 Abiotic Disturbances: Fire and Climate	3	☐	
FRST 339 Forest Level Measurement and Productivity	3	☐	
FRST 350 or FRST 351[6,7] Field School	2	☐	
FRST 395 Forest Wildlife Ecology and Management	3	☐	
FRST 452 Coastal Field School	2	☐	
FOPR 362 Harvesting Systems & Forest Access	3	☐	
COMR 457 Fundamentals of Financial Accounting	3	☐	
COMR 329 Principles of Organizational Behaviour	3	☐	
COMR 465 Marketing Management	3	☐	
COMR 398 Introduction to Business Processes and Operations or 458 Fundamentals of Managerial Accounting	3	☐	
Total Credits	34	☐	

[6] Credit will be given for only one of FRST 350 or FRST 351.
[7] Students will be assigned to the most appropriate course based on their levels of forestry and field experience as determined by the course instructors.

FRST 452 Coastal Field School immediately following third year

Fourth Year - Commerce

Required Courses	Credits	Done	Notes
FOPR 464 Operational Planning and Management	4	☐	
FRST 415 Sustainable Forest Policy	3	☐	
FRST 422 Mathematical Modelling in Forest Resource Analysis	3	☐	
FRST 423 Forest Management Planning	6	☐	
FRST 497 Communications and Professionalism	3	☐	
COMR 473 Business Finance	3	☐	
COMR 493 Strategic Management in Business	3	☐	
WOOD 365 Wood Industry Business Management	3	☐	Former WOOD 465
WOOD 492 Modeling for Decision Support	3	☐	
Total Credits	31	☐	

Note: Some elective or specialization courses may carry credits in addition to the above table.

Co-op Option:

The co-operative education (co-op) option within Forest Operations is a highly competitive program which increases your chances of working in your chosen field. As a co-op student you gain up to 20 months of paid, relevant and invaluable work experience.

Co-op students will extend their degree by one year, completing eight academic terms and five work terms over a five-year period. Below is the standard Forest Operations program map for those in co-op:

*The Field Schools are one week in duration. They are scheduled immediately before or after regular classes.

	Term 1 **Sept - Dec**	**Term 2** **Jan - Apr**	**Summer** **May - Aug**	
Year 1	Basic Sciences, Economics, English, Math, Soil Science, Introduction to Forestry, Biometrics, & Computer Applications			
Year 2	Forest Plant Biology & Ecology Forest Measurements, Hydrology, and Operations Conservation Theory		**Co-op 1** (Junior)	Fall Interior Field School*
Year 3	Silviculture, Entomology, Pathology, Fire, Wildlife/Fish Mechanics of Wood	**Co-op 2** (Intermediate)	**Co-op 3** (intermediate)	
Year 4	**Co-op 4** (Intermediate)	Forest Economics Operations Planning & Management Forest Measurement Soil Mechanics, Forest Engineering	Spring Coastal Field School*	**Co-op 5** (Senior)
Year 5	Forest Policy Forest Machinery & Engineering Business of Forest Operation Wood Properties & Manufacturing Mathematical Modeling	Sustainable Integrated Forest Management Business Management Graduating Essay		

Good to know:

- Undergraduate students must apply to co-op in September of their second year
- You should acquire a driver's license if you do not already have one
- Work in British Columbia, across Canada and around the world
- Be supported by our Co-op Coordinators every step of the way

To learn more about the Co-op Program and how you can apply, contact the Forest Operations Co-op Coordinator: **Nazlyn Pirani, Dean's Office - FSC 2615, 604-827-5196, nazlyn.pirani@ubc.ca**

How to successfully complete first year:

1. You must follow your program closely – take the appropriate classes outlined for your degree. The most up-to-date program requirements are always listed on the UBC Calendar at www.students.ubc.ca/calendar (click on 'Faculties, Colleges, and Schools' and then on 'Forestry').

2. You must pass at least 60% of the total number of credits attempted in both Terms 1 and 2 (summer classes are not included).

3. You must also obtain an average grade of at least 60% in both Terms 1 and 2, including any failed courses (summer classes are not included). If your average for Terms 1 and 2 is at least 55%, but less than 60%, you will be placed on academic probation and will be sent a letter outlining additional steps you must take in order to remain in your program. If you do not meet the criteria noted above, you will be asked to leave UBC for at least one year. Following this probationary period, you may re-apply to UBC but you must complete at least 12 credits at a college during your time away.

Professional Designations

Courses toward Registration as a BC Professional Forester and Professional Engineer

Students who wish to work towards membership in the **Associations of BC Forest Professionals** (ABCFP) or the **Engineers and Geoscientists BC** (EGBC) are advised to contact Forestry Student Services. The information is also available on their respective websites. There are also information sessions held throughout the academic year in the Faculty of Forestry – stay tuned for this schedule. Alternatively, you can speak to your program director.

Contacts:

Dr. Dominik Roeser
Program Director
604-822-3559
Dominik.roeser@ubc.ca
FSC 2036

Forestry Student Services
Advising Office
604-822-1834
forestry.undergrad@.ubc.ca
FSC 2609

Nazlyn Pirani
Co-op Coordinator
604-827-5196
Nazlyn.pirani@ubc.ca
FSC 2615

The UBC Calendar is always the most up-to-date resource for degree requirements, http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,203,0,0.