

Selkirk College
School of Environment and Geomatics (ENVR)

Forestry Technology Diploma (FOR)

ENVR 1 Fall

ENVR 150 Hydrology I

MATH 160 Technical Math

ENVR 160 Surveying and Field Measurements

ENVR 162 Applied Botany and Ecosystem Classification

ENVR 164 Applied Geology and Geomorphology

ENVR 190 Computer Applications I

TWC 150 Introduction to Technical Communications I

ENVR 1 Winter

MATH 190 Resource Statistics

ENVR 154 Applied Mapping and Remote Sensing

ENVR 161 Global Positioning Systems and Navigation

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ENVR First-Year Courses

ENVR 1 Fall

ENVR 150 Hydrology I

This course is an introductory study of water in our environment. Learners will cover the natural processes which affect the hydrologic cycle, practical applications in collection and analyses of field and laboratory data, and use of standard techniques and equipment common in the environmental industry.

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MATH 160 Technical Math

This is an applied math course, focusing on the technical math skills required in Renewable Resources work. Topics include: computation, 2-D and 3-D trigonometry, conversion factors, derived and empirical formulas, exponentials and logarithms, and map scales.

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ENVR 160 Surveying and Field Measurements

This course covers the practical use of common survey instruments and techniques used by environmental management technicians. Students will cover the use and maintenance of basic surveying instruments and equipment; measurement of distance, direction, and elevation; and obtaining and recording topographic and planimetric data. Students will cover measurement and the sampling methods used to assess, classify, and evaluate vegetation of forest and range land, wildlife populations, streams, and air and water quality. Emphasis is placed on proper techniques for field plot implementation, collection methods for various types of data, and the proper use of measurement equipment.

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ENVR 162 Applied Botany and Ecosystem Classification

This course is an introduction to the basics of Botany and Forest Ecology. Topics include the identification of approximately 100 native plants that occur in the West Kootenay. Ecosystem description is covered, following the Biogeoclimatic Ecosystem Classification system. Lectures cover topics in basic cell biology, photosynthesis, respiration, transpiration, translocation, ecosystem classification and the distribution of various ecosystems in British Columbia. Approximately 70% of labs occur in the field.

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ENVR 164 Applied Geology and Geomorphology

The course will cover the identification of common rocks and minerals, landforms and soils of British Columbia. Learners will be introduced to the study of physical geology and geomorphology in relation to management of the forest environment and landscape. Learners will gain skills and knowledge in rock and mineral identification, description of the physical and chemical qualities of soils, and identification and classification of landforms and terrain. Skills will also be developed with respect to interpretation of geology, landforms and soils for environmental management.

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ENVR 190 Computer Applications I

This course builds upon the basic computer concepts required in the computer competency prerequisite, offering training in advanced computer applications and techniques specific to the environmental technology programs. Emphasis will be placed on the use of word processing, spreadsheets, database applications, web design, and presentation software. Common software use includes Microsoft Office and Open Office.

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TWC 150 Introduction to Technical Communications I

A review of basic English skills is undertaken in this course. Also included is an introduction to general principles in written technical communication and its application to environmental technology. Classroom sessions focus on developing writing skills, academic research and documentation, the organization and interpretation of data, oral presentation skills, and job search techniques.

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ENVR 1 Winter

MATH 190 Resource Statistics

This course covers standard statistical tests and techniques as well as the application of these statistical measures in renewable resources management. Students will learn how to summarize data (both numerically and graphically), basic probability, the use of several discrete and continuous distributions (including the normal distribution) to calculate probabilities, and how to infer information about a population by performing confidence interval and hypothesis testing.

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ENVR 154 Applied Mapping and Remote Sensing

This course emphasizes the practical applications of maps and air photos in resource management. Students become familiar with types of maps and air photos, indexing systems, using maps and air photos in the field, map reading and measuring techniques, photo interpretation and measuring techniques, obtaining data for mapping, stratification of air photos, and remote sensing techniques. This course will also cover web-based remote sensing technologies and applications in environmental management.

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ENVR 161 Global Positioning Systems and Navigation **(New Course)**

This course will cover the theory and application of Global Positioning Systems in environmental management. Students will cover techniques to mark locations and navigate using handheld GPS. In addition, techniques will cover uploading and downloading waypoint files and tracks to various software packages and displaying the results in digital and paper map applications. The use of handheld GPS units to collect fixed-area survey data will be covered. As well, students will learn techniques for safe field navigation in remote field settings using map, compass and GPS equipment.

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ENVR 158 Introduction to GIS

This course will provide training in Computer Drafting, Geographic Information Systems (GIS) and Global Positioning Systems (GPS) relevant to the environmental technology field. Emphasis will be placed on developing hands-on expertise with drafting and GIS Software such as ArcGIS and Softree. GPS data collected in the field will be integrated into mapping exercises for analysis and display.

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ENVR 170 Fish and Wildlife Ecology

This course will cover identification and ecology of vertebrate animals, habitat requirements, and habitat disturbance implications. Learners will gain experience in applying guidelines and management strategies to minimize impact of other resource uses on fish and wildlife habitat and species.

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TWC 151 Introduction to Technical Communications II

This course is an introduction to general principles in written technical communication and oral presentation techniques. Lectures focus upon business correspondence, the informal and formal report, technical style, and graphic illustration. Students practice delivery techniques for oral presentations of technical data in the environmental technology fields. Collaborative activities and teamwork skills are practiced and encouraged.

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ENVR 163 Terrestrial Ecology and Biology

This course builds upon the concepts from ENVR 162 with further studies of local forest ecosystems. Students will identify key forest structural components and study the role that disturbance (such as fire), environmental gradient, and competition play in defining a species' niche. Participants will also examine the role of primary and secondary growth, nutrient uptake, reproduction, and survival mechanisms for plants. Winter plant identification, ecosystem form and function, and plant adaptations to timberline will also be examined. A practical field-based assignment will form a major portion of the term assessment.

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FOR Spring

FOR 278 Forestry Field School

This course is made up of ten days of practical field work at the end of the Winter semester. Major projects are planting, silvicultural measurements, juvenile spacing, and field mapping and engineering. This course is scheduled for two weeks (seventy hours) after final exams in late April.

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FOR Fall

FOR 250 Silviculture I

This course prepares the students for immediate employment as a forest technician in British Columbia through instruction in silvicultural theory, the application of silvicultural treatments, and the use of sampling to monitor silviculture activities. Ecological, operational, economic, and legislative considerations will be presented. The emphasis of this course is on the silvics of southern interior tree species, silviculture surveys, reforestation (through both natural and artificial regeneration), site preparation, field assessment and preparation of logical and feasible reforestation prescriptions. Field and office case studies are used throughout.

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FOR 260 Applied Hydrology and Engineering

This course covers applied hydrology; total chance access planning; slope stability and environmental impacts; route corridor reconnaissance; road location, standards, survey, design and construction; bridges and drainage structures; legislation; permits and costing.

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FOR 265 Forest Measurements

A study of the policies and procedures used for timber cruising, log scaling and waste assessment in British Columbia. Using timber valuation as a focal point, emphasis is placed on field data collection techniques, sampling methods, statistics and data compilation. The roles of the Ministry of Forests and the forest industry are also explored.

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FOR 271 Applied Ecology and Range Management

This course provides enhanced and new skills related to the successful management of forest ecosystems. The course emphasis is on applied ecological principles, data collection and analysis, and the applied use of relevant legislation and guidebooks. Subject matter includes ecosystem classification, range management, stand and landscape-level ecology, plant autecology, soils, riparian management areas, watershed management, biodiversity, and prescription design. All subject areas are covered in the classroom or the field.

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FOR 274 Forest Health

This course consists of an extensive field examination of a wide range of prominent forest health agents and conditions. Topics include the field recognition, biology, ecological role and forest management implications of various forest insects, fungi and abiotic agents. Other topics include the recognition and management of invasive weed species, assessment of forest health agents in conjunction with silviculture surveys and harvesting prescriptions, management of root diseases, and assessment of bark beetle occurrences.

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FOR 280 Applied Research Project (New Course)

This course is a guided independent study of an environmental management topic suitable to the field of study. Learners are required to prepare a project proposal and data collection schedule in consultation with a faculty advisor. Research techniques using library and online resources are required as well as accurate data collection and synthesis. This course culminates with submission of a technical report to current industry standards and presentation of the research results at the annual spring conference.

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FOR Winter

FOR 200 Field Trip Study

In the spring of the fourth semester, second-year students will participate in a field trip to study away from the Castlegar Campus. The field trip provides an opportunity for students to see, first-hand, current management practices, ecosystems and resource management issues in other regions of the province. Students will be actively involved in trip planning and will be presented with opportunities to develop

communication skills, job-finding skills and professionalism. This course is available only to students registered in the second year of the Forestry program.

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FOR 251 Silviculture II

This course is a continuation of FOR 250. Treatments studied include seed and cone collection; stand tending (juvenile spacing, commercial thinning, pruning, brushing and weeding, and fertilization); selection of appropriate silviculture systems; and development of silviculture and stand management prescriptions. All topics are studied in the classroom and in the field.

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FOR 253 Forest Policy and Resource Management

This course serves as an introduction to the prominent legislation which directs forest management practices and forest tenures in British Columbia. Topics include: current issues, administration and ownership, access to legislation, introduction to forest tenures, review of main legislation, decision making and financial analysis, resource sustainability, and allowable annual cut determination. As well, this course explores the Acts and Regulations affecting forest management in BC, the rights to harvest timber, the tenure system, appraisals and value of timber, elements of the Forest and Range Practice Act, private land management, and resource management ethics.

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FOR 261 Forest Harvesting

An in-depth examination of total chance harvest planning; harvest systems including ground, cable and aerial; layout considerations; log transport; and the environmental impacts of harvesting operations.

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FOR 275 Forest Pest Management

This winter-semester course expands on materials presented in FOR 274. Emphasis is placed on the ecological role and management strategies for selected insect defoliators, bark beetles, wood boring insects, stem and foliage diseases, dwarf mistletoes, stem decays and exotic species. The class also examines the assessment of danger trees, agents found in forest nurseries, cone and seed damage and natural population regulation mechanisms.

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ENVR 250 Aboriginal Peoples and Environmental Management (New Course)

This course introduces students to the Aboriginal peoples of Canada and their role in resource management. Topics will include Aboriginal cultures, languages and governance, history since contact and the Indian Act, Aboriginal rights and associated landmark court cases, BC treaty process and interim agreements, the Heritage Conservation Act, and working effectively with Aboriginal peoples. In addition, from a Traditional Ecological Knowledge perspective, learners will engage in team-lead projects involving ecosystem-based management, sustainable management, and environmental management systems. This course involves a team-based model of learning and active participation in scenarios and round table discussions.

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ENVR 290 Computer Applications

This course introduces computer applications most commonly used in the resource management industry. Instruction includes digital mapping with RoadENG and ArcGIS, incorporating local and provincial data. Topics such as traverse reduction, map assembly and display, as well as data transfer are covered. GIS file management, basic data translation, and data analysis are covered through hands-on exercises as students manipulate and display data using these software tools.

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