

Professional Development Courses in Forest Engineering

28nd – 31st August 2017, School of Forestry, University of Canterbury

These four consecutive 1-day courses are designed to provide up-to-date information in a structured learning environment for practicing foresters, i.e. those actively engaged in the forest industry. Participants may sign up for one, two, three, or all four courses.

Courses (more detail on each course below):

1. Mon: An Introduction to LiDAR analysis in ArcGIS
2. Tue: Designing culvert stream crossings and reduced-impact roads
3. Wed: Cable Logging and Harvest Planning – including CHPS
4. Thu: Working on Steep Slopes with Cable-Assist

If you wish to register for all four days, please contact Kris Brown (kristopher.brown@canterbury.ac.nz) and a registration form will be sent to you directly. Otherwise, workshop attendees wishing to attend one, two, or three workshop days can register here: <https://www.eventbrite.co.nz/e/professional-development-courses-in-forest-engineering-tickets-33441135336>.

Each course starts at 8:30am start and finishes approx. 4pm. The cost is \$330 (incl. GST) per person per day or \$1150 (incl. GST) for all four. Cost includes all teaching materials, use of SOF facilities, as well as morning tea and lunch. Course number is capped at 30 for each day.

Note: Accommodation is the participants own responsibility, but the Academy Motel (03 351 9347) is conveniently located on Creyke Road across from the University.

An Introduction to LiDAR analysis in ArcGIS

Mon 28th Aug– Instructor: Dr. Justin Morgenroth

This course provides an introduction to working with LiDAR data in ArcGIS. A very brief theoretical lecture about LiDAR data will be followed by hands-on activities in the computer lab. Participants will learn how to manage, visualise, and undertake basic LiDAR data analysis. We will create common surfaces like digital terrain models and canopy height models and learn how these LiDAR-derived surfaces can help improve forest management practices. This includes preparing an area for the road design the next day. No prior experience using ArcGIS or LiDAR data is necessary, and each participant will be able to work individually on a desktop computer in the School of Forestry's computer lab.



Designing culvert stream crossings and reduced-impact roads

Tue 29th Aug – Instructor: Dr. Kris Brown

This course focuses on building forest roads with improved environmental performance. Stream crossing design will cover Best Management Practices (BMPs) and culvert sizing will be taught based on an example streamflow rate for a design storm. Participants will gain a better understanding of where and why BMPs fail (e.g., unacceptable erosion rates and/or concentrated overland flow to the stream). The benefit of road layout planning will be demonstrated using case studies as well as with RoadEng using LiDAR data.



Cable Logging & Harvest Planning (CHPS)

Wed 30th Aug: Instructor: Dr. Hunter Harrill and AProf Rien Visser



This course provides an overview of factors that make cable logging effective, starting with the basics of calculating deflection and tension. Selecting appropriate rigging configuration for different harvesting scenarios will be discussed and a model yarder used for demonstration. Selecting wire rope options for fatigue and abrasion resistance characteristics, as well as measuring and monitoring wire rope wear is covered. Planning using the CHPS cable logging planning tool in the GIS environment will be taught and considerable time made available for each participant to develop their own harvest plan.

Working on Steep Slopes with Cable-Assist

Thu 31st Aug: Instructor: AProf Rien Visser and Dr. Hunter Harrill



This course provides an overview of machine development for operating safely and effectively on steep slope. It will establish methods for determining operating limits with regard to slope and soil strength, as well as review technical details for operating cable-assist machinery. Current ACOP guidelines as they relate to steep slope harvesting will be reviewed. Concepts around developing cable-assist specific harvest plans will be discussed and practiced.