

Review of Bachelor of Forestry Science degree programme at the School of Forestry, University of Canterbury

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Executive summary

The Bachelor of Forestry Science degree programme (BForSc) of the New Zealand School of Forestry (the School), University of Canterbury was reviewed during 2013 by an expert independent panel. The review accessed numerous sources of information including interviews with students and staff, employer and graduate surveys, meeting minutes, information from forestry schools in North America and the School's self-assessment report.

Overall, the panel found the BForSc programme to be well-designed, well-managed and well-delivered. It conforms to university standards and compares favourably with benchmark forestry schools in North America, there being no other schools offering a degree course in forestry in Australia or New Zealand with which to compare. Students are provided with a sound, broad-based and fulfilling education experience which has the following results:

- a rewarding career path and a very high employment success rate – near 100 per cent recently
- employers are provided with a strong pool of employment candidates
- the New Zealand economy is provided with an important source of professional expertise critical for the prosperity of its important and growing forestry sector.

Despite the importance and high quality of the programme it is vulnerable because of low and cyclical enrolment and, due to resource constraints, its staff complement is at a critical minimum. Programme quality may be severely compromised with any shrinkage in resources.

While strong, the programme can be made more so and several recommendations were made to that end. Key among them are to:

- continue with aggressive and targeted recruitment efforts with the objective to annually recruit 35 students into the programme, expecting 30 to graduate
- review foundation courses to ensure they make valuable contributions to the programme
- include in the core more forest operations, and forest legislation and policy

- increase integration across the programme in specified subject areas
- apply the current approach for strengthening writing skills to other basic skills, including numeracy and oral communication
- increase the use of demonstrable learning outcomes in course design
- continue quality assurance measures and incorporate periodic surveys of employers and graduates using the newly designed survey.

As evidenced by the gains made since the 2009 review, the School has a strong continual improvement ethic. That, combined with action on the panel's recommendations, support from the university and industry, and continued hard work and leadership within the School, will ensure the BForSc programme continues to be one the university can justly be proud to offer.

Background

In April and May 2013, a formal review was conducted of the BForSc degree programme. The review is part of the University of Canterbury's ongoing Academic Quality Assurance programme which has the overarching goal to: 'assure the University of the quality of a programme, by assessing whether the programme meets expected standards (i) at the University of Canterbury, (ii) nationally, and (iii) internationally and to determine ways in which the programme might be improved.'

The review was undertaken by a panel consisting of:

- Dr Thom Erdle (chair), Professor and Assistant Dean, Faculty of Forestry and Environmental Management, University of New Brunswick, Canada
- Mr Dennys Guild, Registered Forestry Consultant, Christchurch
- Dr Don McNickle, Adjunct Professor, College of Business and Economics, University of Canterbury
- Dr Alan Nicholson, Professor, College of Engineering, University of Canterbury.

The first three panel members participated in the previous programme review which was conducted in 2009. Consequently, they were able to readily observe changes that had been made.

Main findings

Overall situation

The review found that:

- the BForSc is a strong, progressive and relevant programme
- the programme is well-designed, well-delivered and well-managed
- there is solid endorsement of programme quality and value from employers and graduates
- the student body has a positive attitude towards the programme
- staff are collegial and, supported by strong leadership, are united about the School of Forestry's direction
- there is a 'continuous improvement' ethic, with many 2009 recommendations acted on.

However the School has:

- low enrolments
- staff levels are at a critical minimum.

Consequently, the panel recommended that the School:

- continues with aggressive recruitment, targeting 35 incoming students per year
- seeks to attract high calibre students with scholarships
- increases the number of continuing staff.

Programme content and effectiveness

As part of the review, recent graduates (2008 to 2012) and their employers were surveyed to gauge the level of satisfaction with programme content and quality and identify improvements. Responses were received from 39 graduates out of the 90 who had graduated during the five years and from 12 employers who collectively employed 65 per cent of the 2008 to 2012 graduates. The survey asked respondents about knowledge areas, technical skills and professional abilities; both the importance of different elements and programme effectiveness in imparting knowledge and developing technical skills and professional abilities. The survey asked respondents to rate on a 1 to 5 scale and rankings were then based on the average score.

1. Knowledge areas

Respondents rated knowledge in the areas of markets, economics, forest management, wood and wood products, geospatial technologies, soil science, forest engineering/operations, silviculture, ecology and biometry. The programme is generally effective, evidenced by the high correlation between importance and competence as shown in Figure 1. However, notable exceptions are that:

- employers consider that competence in markets is low relative to importance

- graduates consider that competence in ecology is high relative to importance
- both employers and graduates consider that competence in forest engineering/operations is low relative to importance.

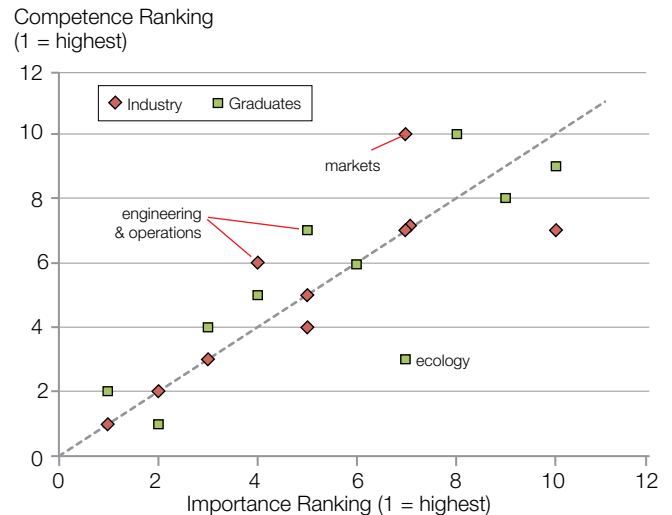


Figure 1: Relative ranking of importance and competence in different knowledge areas

2. Technical skills

Respondents rated technical skills in the areas of financial analysis, site assessment, forest health, silvicultural prescriptions, silvicultural planning and costing, harvest system selection and costing, road layout, harvest planning, valuation, estate modelling, stand modelling, statistics, measurement, GIS, resource imagery and GPS. Again, there is reasonably good agreement between technical skill importance and competence.

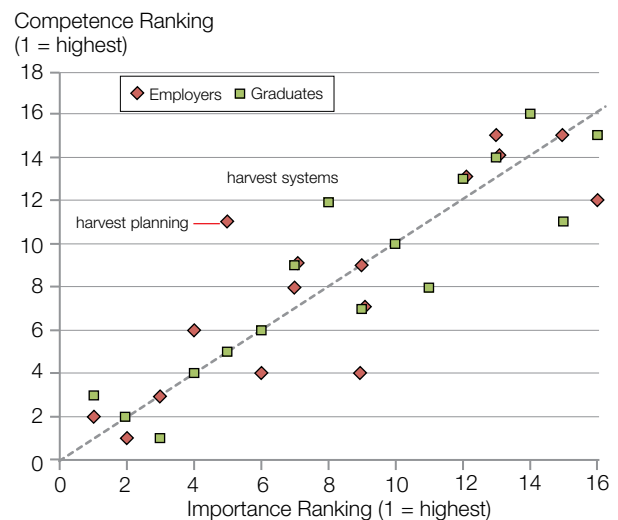


Figure 2: Relative ranking of importance and competence in different technical areas

However, two outliers are noteworthy as shown in Figure 2:

- employers consider that competence in harvest planning/supervision is low relative to importance
- graduates consider that competence in harvest system selection/costing is low relative to importance.

3. Professional abilities

Respondents rated professional skills relating to problem-solving, quantitative data analysis, creative thinking, critical thinking, listening, project management, time management, leadership, written communication and oral communication. When compared to knowledge and technical skills, professional skills showed much less conformance between importance and competence, and much less agreement between graduates and employers, as shown in Figure 3. Of particular interest in this figure is that:

- graduates consider that competence in time management is low relative to importance, while employers think the reverse, and this is possibly a reflection of graduates' recent experience in the Management Case Study course
- employers think that competence in written communication, oral communication and listening is low relative to importance, but again this contrasts with graduates' perceptions.

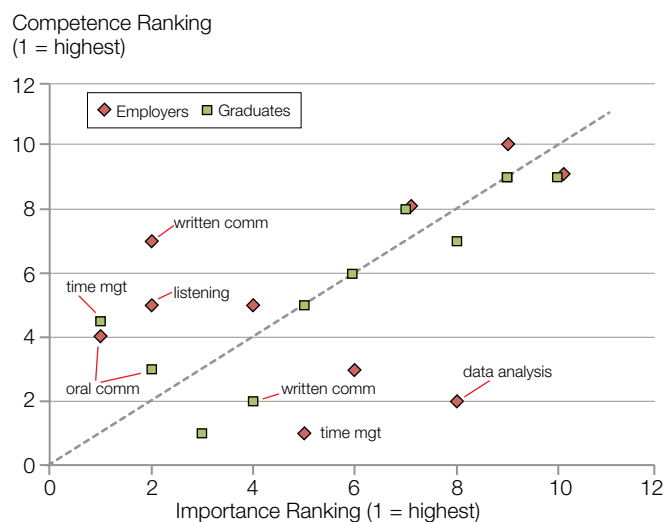


Figure 3: Relative ranking of importance and competence in different professional abilities

4. Value of papers in curriculum

Graduates were asked to identify the most valuable papers in the curriculum. Management Case Study, Forest Management and Forest Economics were deemed most valuable. This sends two important messages. First, these papers appear to have the highest

degree of integration and continuity of material across the curriculum and much of their effectiveness likely derives from that. This underscores the value of well-designed, between-paper integration. Second, in justifying why these courses were deemed most valuable, particularly Management Case Study, students cited their effectiveness in fostering:

- real-life problem-solving
- critical, independent thought and a search for creative solutions, rather than finding 'the answer'
- teamwork, collaboration and time management
- clear and concise written and oral communication.

5. Benchmarking with other universities

The BForSc programme was benchmarked against forestry programmes at the University of British Columbia, University of New Brunswick and Virginia Tech. Overall, the BForSc has a greater focus on silviculture, management, economics and wood products and less on ecology and social sciences. The panel considered these differences logical and appropriate given the difference in forestry contexts.

6. Recommendations on programme curriculum

The panel recommended that the School:

- add more forest engineering/operations to the core
- increase emphasis on problem-solving, critical analysis and teamwork in course delivery
- increase coverage of policy, legislation and 'people/contractor' management, especially the Health and Safety in Employment Act and the Resource Management Act
- extend the current method for teaching written communication as an integrated 'strand' to oral communication and numeracy
- increase integration and linkages in biology/environment courses.

Delivery and learning environment

The panel met with 15 undergraduates, covering all four years of the degree, and they were struck by the very positive attitude of students and the real sense of ownership and pride in the School and the degree programme. Returning members of the panel noticed a great improvement in attitude here, which reflects the School's earnest efforts to address concerns and effect continuous improvement in the programme.

Overall, the specific student comments on courses and the programme were extremely positive. Singled out as making special contribution to the positive learning environment in the School were:

- the small and cohesive student body
- the friendly, approachable and helpful academic staff

- frequent labs and field trips
- FORSOC – the students' forestry society
- New Zealand Institute of Forestry interactions
- the supportive School Coordinator.

Recommendations to maintain and improve the learning environment were:

- improve feedback to students
- continue to implement employer and graduate surveys
- continue to make students matter.

Concluding comments

The BForSc programme at the University of Canterbury's School of Forestry is a unique, high quality one that is important to the New Zealand economy and society. It is well-designed and managed, but it can be made stronger. It is vulnerable and needs ongoing support from the employer community. With that support, the BForSc degree programme can remain one the university can be proud of and promote with confidence.

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