SFA Forestry Curriculum Revision Research Brief

Arthur Temple College of Forestry & Agriculture

Forestry Curriculum Revision Committee – Research Subcommittee

Steve Bullard, Dean Coble, Theresa Coble, Ray Darville, Laurie Rogers, Pat Stephen Williams

Alumni & Current/Potential Employers Survey – Quantitative Analysis

April 2013

Figure 1. Curriculum Focus Areas (n=6) for Society-ready, Society-engaged Foresters and Natural Resource Professionals
The Arthur Temple College of Forestry and Agriculture plans to revise its undergraduate curriculum for the Bachelor of Science in Forestry degree program. To that end, a six-member research team conducted a comprehensive review of the literature, identifying the competencies that society-ready, society-engaged foresters and natural resource professionals will need in the 21st century. In essence, a competency represents the knowledge, skills, abilities and behaviors that are required to complete a key aspect of a job. The College developed and distributed via paper and electronic format a survey instrument to assess alumni, current employer, and prospective employer perspectives regarding which competencies are essential to functioning as a “full-performance professional” in this field. This information will inform faculty discussions during the curriculum revision process.

We sent out 1728 surveys paper surveys, and 1551 email surveys, obtaining 227 paper surveys and 573 electronic surveys. Altogether, 800 surveys were returned for a 24.4% response rate. Sampling error is estimated to be 3% at a 95% confidence interval.

We conducted a Cronbach’s alpha analysis to examine the “internal consistency” of each of the six curriculum focus areas or competency domains. Results showed that Cronbach’s alpha scores for each competency domain varied from 0.87 to 0.93 on a scale from 0 to 1, indicating that the domains have VERY GOOD to EXCELLENT internal consistency.

**Borich Analysis**

A Borich analysis is a type of importance-performance analysis in which researchers compute mean weighted discrepancy scores (MWDS) to assess how big the gap is between importance and performance. A negative value occurs when importance is rated higher than performance. Conversely, a positive value is obtained when performance is rated higher than importance.

We averaged the MWDS by domain and found that all domain scores were negative. That is, overall there is a gap between importance and performance for each of the six domains. In a Borich analysis, the bigger the negative score, the greater the gap between importance and performance.

**Biggest Gap**

I. Leading & Managing People ( -3.2)

II. Managing Self ( -2.5)

III. Communicating & Collaborating ( -2.4)

IV. Engaging in Transformative Learning & Leadership ( -2.1)

V. Applying Reasoning & Critical Thinking ( -1.7)

**Smallest Gap**

VI. Managing Forest Resources ( -0.7)
Importance-Performance Analysis (IPA)

In an IPA, item mean scores are calculated in two dimensions: *importance* and *performance*. In this survey, to assess the importance of each competency, we asked respondents: “How important is it that foresters demonstrate competence in this skill set?” Similarly, to assess SFA’s performance we asked, “How successful is SFA in producing foresters who have the knowledge, skills, abilities and behaviors that make up this competency?” Importance is plotted on the y-axis, performance is plotted on the x-axis (Figures 2-8).

![Graph of Importance-Performance Analysis](Image)

**Figure 2.** ATCOFA Forestry Curriculum Revision Overall Importance-Performance Graph (*48 Competencies*)
**Figure 3.** ATCOFA Forestry Curriculum Revision Importance-Performance Graph, Managing Forest Resources (16 items)

**Key:**
1. Understand the ecological functioning of natural systems.
2. Practice forestry as an interdisciplinary profession.
3. Manage forest wildlife populations.
4. Understand soil and water properties and processes.
5. Apply analytical skills to measure and predict.
6. Manage forest resources at the stand, forest and landscape levels.
7. Restore forest health and productivity.
8. Know how to identify tree, non-tree and wildlife species.
9. Sustainably manage working forest systems.
10. Be able to develop management plans.
11. Use forest management practices to achieve wildlife management goals.
12. Use geospatial technologies.
13. Manage forests for human use and enjoyment.
14. Manage business enterprises related to forest products and services.
15. Understand the challenges that arise at the interface of natural and social systems.
16. Provide consumable forest products for society.
Figure 4. ATCOFA Forestry Curriculum Revision Importance-Performance Graph, Applying Reasoning & Critical Thinking (6 items)

Key:
17. Apply principles and concepts to the real world.
18. Analyze, prioritize and solve problems.
19. Form valid conclusions.
20. Use math and statistics for analysis and problem solving.
21. Understand how historical events and ideas influence environmental experiences, beliefs, and values today.
22. Address relevant moral and ethical questions.
Figure 5. ATCOFA Forestry Curriculum Revision Importance-Performance Graph, Managing Self (6 items)

Key:
23. Manage one’s schedule and workload efficiently.
25. Maintain physical, mental and spiritual health.
26. Be able to work effectively on multiple projects.
27. Conduct oneself in a professional manner.
28. Act with the interests of the larger community in mind.
**Figure 6.** ATCOFA Forestry Curriculum Revision Importance-Performance Graph, Communicating and Collaborating (9 items)

*Key:*

29. Understand audiences.
30. Use oral communication effectively.
31. Use written communication effectively.
32. Use electronic media effectively.
33. Be able to speak two or more languages.
34. Be an effective listener.
35. Be able to explain what environmentally responsible forest management is.
36. Engage audiences regarding complex and/or controversial science topics.
37. Work well in teams.
Figure 7. ATCOFA Forestry Curriculum Revision Importance-Performance Graph, Leading and Managing People (5 items)

Key:
38. Allocate people and resources to accomplish tasks.
39. Build effective teams.
40. Be decisive when necessary.
41. Engage effectively in conflict management.
42. Establish positive supervisory relationships.
Figure 8. ATCOFA Forestry Curriculum Revision Importance-Performance Graph, Engaging in Transformative Learning and Leadership (6 items)

Key:
43. Create new and worthwhile ideas.
44. Apply innovative approaches.
45. Implement incremental and radical change.
46. Be globally aware and responsive.
47. Reflect critically on past experiences.
48. Inspire others by being a role model.