

**NEW MEXICO STATE UNIVERSITY
DEPARTMENT OF SURVEYING ENGINEERING**

The mission of the Surveying Engineering Department at New Mexico State University is to provide men and women with the rigorous, fundamental education needed to enter and succeed in the surveying and surveying-related professions. In order to ensure that we are accomplishing our mission, the Surveying Engineering Department has administered a series of questionnaires aimed at determining if our goals are being met.

In spring of 1999, a telephone interview was conducted with thirty-five alumni of the Surveying program. Each graduate was asked to describe their current employment responsibilities and to evaluate how well prepared they were to perform those responsibilities. In the fall of the same year, comparable questions were asked of surveying employers. A combination of telephone interviews and e-mail questionnaires was used to determine what surveying professionals expected of a graduate of a four year surveying program and what knowledge, skills and abilities they felt men and women entering the profession needed to have. A short form questionnaire was administered to current surveying department students during the fall. Eleven responses were received and provided information regarding students satisfaction levels with facilities, policies, course work, and faculty.

Thirty-three of the graduates polled were working at the time that the interviews were conducted. One graduate appears to have no plans to work while the second has since been employed in a surveying position. Three of the graduates are working as engineers rather than surveyors while others are working as a product manager, a materials science technician, a college professor and a superintendent. It appears as if Surveying Engineering graduates are indeed able to enter the workforce in surveying and surveying-related positions.

Nine graduates of the NMSU Surveying program were licensed land surveyors in New Mexico at the time of the interviews. Graduates are also licensed in New York (1), Texas (2), Arizona (2), and Colorado (1). One is registered as an Engineer and another has passed the Fundamentals of Engineering exam. Twenty-seven of the graduates interviewed have passed the Fundamental of Surveying exam. Using licensure as a measure of success in surveying, NMSU graduates are succeeding in the profession. Several graduates have not taken licensing exams and, undoubtedly, some have no plans to take them in the future. The ability to pass comprehensive exams of this nature is a reflection on a graduates understanding of the scientific, mathematical, and engineering principals involved in surveying as well as their ability to recognize, analyze and solve surveying problems. It is a goal of the Surveying Engineering program that graduates will have acquire these skills and so pass rates for these exams will continue to be monitored as an indicator of success.

Most graduates appear to be working in boundary or construction surveying, either collecting field data or, more often, working with field data in the office. It appears that a majority of the graduates have frequent client contacts and often participate in company business decisions. However, graduates rarely write reports or papers or get involved in ethical problem solution. One possible interpretation could be that most graduates are still early in their careers and that these activities will increase as their careers advance. There is also very little activity involved with remotely sensed data. Although not absolutely correlated, the ability of a graduate to maintain employment performing surveying related tasks, implies that said graduate has the knowledge, skills, and abilities required to perform the work well.

Graduates were asked to define how often they perform certain tasks. Employer were asked how often they would expect a graduate of a four year surveying program to perform the same tasks. (see *TABLE 1*) Although Alumni response values are slightly lower on average than Employer values, the responses are comparable and it appears that graduates have the skills necessary to succeed in surveying and surveying-related professions. Specifically, graduates routinely collect, analyze, interpret, and apply survey data and graduates frequently utilize verbal and written skills in the performance of their jobs.

Many aspects of success in surveying and the surveying-related professions are based on general skills which are learned and developed over time. Professionalism and the ability to communicate effectively are among these skills. Alumni and employers were each asked how important they felt certain topics are in achieving success. Alumni were also asked how well they felt their education at NMSU had prepared them in these areas. (See *TABLE 2*) Overall, alumni agree with employers about the importance of each of these areas to the success of an individual in the surveying profession. Graduates understand the importance of these areas but do not feel that they are very well prepared to excel in them (see *TABLE 3*). The responses gathered in this survey indicate that the Surveying Engineering Program may need to help its student develop their skills in oral communication and interpersonal skills. Presentation requirements will be added to several core classes. Group projects and discussions will be incorporated into Surveying classes. These curriculum changes will offer students more opportunities to practice these skills during their education. Future interviews will be conducted and closely monitors to insure that students are of acquiring the verbal and written skills necessary to contribute productively to society.

TABLE 1

Type of work performed by Alumni / Type of work Employers would expect a graduate of a four year surveying program to perform.

How often	Routinely - 1 2 3 4 5 - Never	Alumni	Employers
...collect survey data in the field?		3	2
... perform or work with construction or other stakeout surveying?		3	3
... perform photogrammetry or work with photogrammetric data?		3.5	3.5
... perform remote sensing or work with remote sensing data?		4	4
... perform or work with land boundary surveys?		2	1.5
...perform or work with land subdivision designs?		3	3
...perform or work with geodetic and/or high-precision surveys?		3	2.5
...prepare or work with GIS/LIS data?		3	2
... have client contacts or interaction?		2	2.5
... participate in decisions to purchase equipment, price services, etc.		2.5	3
...perform data reduction, computations, analysis, etc.?		2	2
... develop solutions for complex surveying problems		3	2
... write reports, technical papers, articles, etc., related to surveying?		4	3
... asked to develop solutions to ethical problems?		4	3

TABLE 2

Importance of certain topics in the workplace.

How important is ...	Not important At All 1 2 3 4 5	Extremely Important	Alumni	Employers
Oral communication			4.6	4.1
Written communication			4.4	4.0
Interpersonal skills			4.2	4.0
Lifelong learning			4.3	4.0
Teamwork			4.1	4.5
Ethics and professional behavior			4.5	5.0
Registration as a Professional Surveyor			3.5	3.8
Participation in professional organizations			3.2	4.0

TABLE 3

Alumni evaluation

Importance of certain topics in the workplace / How well education prepared you

	How important is ...					How well prepared ...				
	Not important				Extremely	Not prepared				Extremely well
	1	2	3	4	5	1	2	3	4	5
Oral communication					4.6					3.4
Written communication					4.4					3.8
Interpersonal skills					4.2					3.4
Lifelong learning					4.3					3.6
Teamwork					4.1					3.6
Ethics and professional behavior					4.5					4.1
Registration as a Professional Surveyor					3.5					4.1
Participation in professional organizations					3.2					na

