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ABSTRACT

This report (Volume I), with accompanying appendices (Volume II), was developed as part of the Northwest Center for Sustainable Resources' (NCSR) efforts to upgrade the curriculum for natural resource technicians in associate degree programs. The primary purpose of revising the program was to increase technicians' knowledge and skills in mathematics, scientific procedures, analytical thinking, communications, and understanding concepts of ecosystem management. A major component of the program evaluation focused on determining the revised curriculum's success with students in the program and upon graduation. This report presents the data gathered through surveys of students, graduate students, and employers in relation to their natural resource education and the areas of NCSR program concentration. Volume I contains survey responses (n=149) from: (1) students, who reported that they find the programs within their academic ability, admitted they tend to take less math and science, and stressed the importance of ecosystem science in the programs; (2) graduates, who described limited mathematical and science preparation; and (3) employers, who stressed the importance of skills and knowledge. Volume II contains appendices A through G, which provide response rates, data and surveys from students, graduates and employers. (AS)

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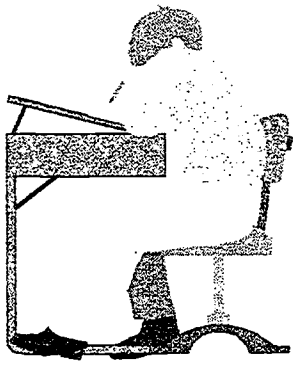

STUDENT SUCCESS DATA AND REPORT FEBRUARY 1999

VOLUME I - REPORT

PREPARED BY THE

WESTERN CENTER FOR COMMUNITY COLLEGE DEVELOPMENT

OREGON STATE UNIVERSITY

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INTRODUCTION

This report and data has been developed as part of the external evaluation of the Northwest Center for Sustainable Resources' (NCSR) efforts to upgrade the curriculum for educating natural resource technicians in associate degree programs. A major component of the evaluation is focused on determining the degree of success the revised curriculum is having on the success of students in there program and upon graduation. The primary focus of the program improvements has been to increase the technician's knowledge and skills in mathematics, scientific procedures, analytical thinking and analysis, communications and understanding concepts of ecosystem management. This report presents the data gathered through surveys of students, graduates and employers in relation to their natural resource education and the areas of NCSR program concentration.

Details of the NCSR's comprehensive effort including evaluation of other aspects of the program's objectives is included in the NCSR March 1999 Evaluation Report file by the Western Center for Community College Development.

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EXECUTIVE SUMMARY

The survey response rate varied by college. As a result the reliability of the data is questionable from a statistical viewpoint, however, the trends depicted by the aggregate data does provide a valuable in site into the effectiveness of the revised Natural Resource (NR) programs.

Students report that they find their programs within their academic ability. However, although reporting mathematics (algebra particularly) as important and stressed by professors, they tend to take less rigorous mathematics courses. This was also true in science with only half the students reporting taking a formal science course. Ecosystem science was stressed as important in the programs and taught in either discreet courses or as part of technical courses.

Graduates reported limited mathematical and science preparation, but said it was important on the job. Understanding the ecosystem was also rated as important and graduates felt they understood the concepts. The most important skill on the job was effective communications. Availability of jobs was limited but students had been advised of this factor. Approximately 66% of the graduates planned or were pursuing advanced education.

Employers tended to report the importance of skills and knowledge similarly to that of students. The respondents clearly felt employees from the program met or exceeded their expectation in the various knowledge and skills of the job.

SURVEY ANALYSIS

Response rate:

The survey was administered to students, graduates and employers of natural resource associate degree technician programs at five partner colleges of the NCSR. These colleges are:

COLLEGE	MAJOR PROGRAM
Central Oregon Community College, Bend, OR	Forestry Geographical Info Sys
Chemeketa Community College, Salem, OR	Forestry
Feather River College, Quincy, CA	Wildlife
Grays Harbor College	Fisheries
Shasta College	Agriculture

In addition to the major programs two colleges expanded their offerings in related existing or new disciplines. Students in these disciplines were included in the survey population and are reflected in the specific data for each college.

The survey response rate varied by college with Central Oregon Community College having excellent rate and Grays Harbor and Feather River College having less than desired rates. Shasta College failed to administer the survey to graduates and employers. As a result the reliability of the data is questionable from a statistical viewpoint, however, the trends depicted by the aggregate data does provide a valuable in site into the effectiveness of the revised Natural Resource (NR) programs. Response rates by college and survey type are reflected Attachment A.

Student survey:

A total of 149 student surveys were returned. The great majority of students were in their programs for less than two years (77%).

Below are some observations concerning student reported experiences in their programs.

Mathematics:

Most frequently taken mathematics was non-college level algebra, with 30% or less taking any form of higher level mathematics.

Eighty four percent of the students reported they used mathematics "often or occasionally" in their program. The same percentage reported learning mathematics was important.

Reported important mathematics were:

Basic arithmetic (96%)
Geometry (55%)
Algebra (81%)
Statistics (50%)

Mathematics appears to be stressed at least to a moderate degree in programs. Thirty nine percent of the students reported that mathematics was stressed as "important" by most professors, and 48% said some professors stressed it as important.

Science:

Approximately half of the students reported taking one or more science courses. Biology was the most frequently taken course (52%) with chemistry next taken by 44% of the students taking science. Most all science was lab based (97%). All student used science techniques in other courses at least occasionally, and 88% of the students reported science was stressed important by their professors.

Ecosystem based science:

A bit more than half of the students had taken at least one ecosystem science course (56%), while 73% said ecosystem principles were taught in other courses. Most (88%) students reported professors stressed the importance of ecosystems to some extent. Eighty six percent of the students reported they

understood ecosystems. However, a short sample test of ecosystem questions resulted in about half of the students getting the answers right.

Geographical Information Systems (GIS):

Avery limited number of students had taken a GIS course at the time of the survey. Ninety seven percent did, however report professors stressed GIS as important to some degree.

Job based education: Forty percent had participated in job based education, while 97% reported it was important.

Those having participated in job based education reported:

Work involved technical skills - 90%
They used mathematics at least sometimes - 83%
They used science less frequently (at least sometimes) - 52%
Communications skills were important to some degree - 92%

Rating of the program:

Most students rated their program as "challenging but with in abilities" (82%), while only 12% reported it was "very difficult and required special effort".

Most students rated their education to date as teaching essential knowledge (65%), while 27% felt it was mostly important but had some "unimportant parts".

Sixty nine percent stated they had a designated advisor and meet with the advisor during the term of study at least once (88%). Among other topics, advising covered the job market (67%) and did explain the required course sequence (61%). However, only 355 reported following the program course sequence.

Student readiness for the program:

The highest level of high school mathematics for most students was intermediate algebra (42%) or higher (18%). Elementary algebra or below was the highest level for 40% of the students.

Most had taken general science in high school (88%), with 64% having taken biology and 37% chemistry. Slightly less than half had a courses in environmental science (43%).

Sixty percent were high school graduates with 21% having less than two years of college prior to enrolling. The remaining 19% had two or more years of college.

Seventy one percent took and admission test prior to enrolling. The numbers taking remediation or bridging courses were:

Mathematics - 45%
Communications - 37%
Reading - 16%

The students future plans were almost evenly split with 51% planning to seek employment and 47% planning to continue their education. Conversely most think that obtaining a bachelors degree is at least "somewhat likely" (88%).

Fifty eight of the students are employed at least part-time. (48% part-time).

Forty eight are 22 years of age or younger. Twenty seven percent are 36 years of age or older.

Gender was fairly evenly split, with 59% male and 41% female.

Other areas of analysis:

Several sorts of the data were completed for analysis. In addition to the overall data depiction, these included: (1) the combination of The Feather River and Chemeketa responses (colleges in year two of the grant development); (2) Central Oregon, Grays Harbor, and Shasta (colleges in year three of the grant development); (3) distribution based on student program matriculation point; and (4) matriculation point sorts for the combined colleges referenced above.

Although, there were degrees of variance the overall pattern reported above was not significantly different. As a result a detail analysis of these data for each sort was not undertaken. The actual distribution of these sorts are included as external attachments to the report. (See page 3 for the contact for obtaining these and other attachments.)

Graduate Survey:

Distribution of respondents:

The majority of the 39 responding graduates were from Central Oregon (67%). As such, the responses are biased toward the programs at this college. Further complicating the analysis is the fact that of the 26 responding graduates from Central Oregon, 13 were from the GIS program. Although a NR emphasis program the curriculum for GIS has less science requirements and is more computer driven. I reviewing the analysis presented below these biases and the possible distortion should be borne in mind.

Period of enrollment and program content:

Most all graduate completed their program in less than three years (79%). And graduated from programs at least partially modified by grant objectives.

The graduates program mathematics preparation consisted of:

- Technical math - 69%
- Trigonometry - 59%
- Geometry - 64%
- Non-college algebra - 67%
- College algebra - 36%
- Other college level math - 15%

The graduates program science preparation consisted of:

- Biology - 36%
- Chemistry - 23%
- Geology - 26%

NOTE: *Central Oregon's programs require no formal science courses.*

Most students received information about ecosystems (92%) with 765 having one or more formal courses in the topic. Student report at least most (97%) of the professors stressed ecosystems as important to some degree. Students reported they understood ecosystems (95%).

Sixty percent took course(s) in GIS. GIS as a course for all students was added as part of the grant and some students may not have had the opportunity to take the courses.

Forty nine percent rated technical courses of equal importance with general education courses, while 41% responded technical courses were the most important.

Sixty eight percent of the students responded that they could not have successfully completed their program without the required general education. Generally students felt professors put the right amount of emphasis on integrating subjects. , and 99% felt the programs were good to excellent in teach them to solve complex problems.

As with the students currently in the programs, graduates felt the program was challenging bit doable (81%) and taught essential information (71%) that made them excellent (68%) or adequate (32%) technicians for their level of experience.

Job availability and employment:

Most graduates report permanent jobs are limited or non existent in their field (63%). The remaining 37% said jobs were available. The availability might be assumed to be in GIS since that is a new high demand area, however a review of the GIS data indicated that more than 50% indicated that jobs in their area were limited.

Graduates had discussions with advisors about the job market (82%) and reported they felt advisors were "honest" about the situation (83%). Less (56%) reported assistance by the college in seeking employment, and of these 60% rated the assistance as "helpful".

Sixty seven percent of the graduates were employed, most in jobs related to their field of study. However, only a third of the jobs were of a permanent nature. Jobs were generally in governmental agencies (64%) with 13% self employed and 23% working for private companies.

Of those not employed 85% were not currently seeking employment.

Value of subjects in the program based on job experience:

The following data was reported by the graduates employed in areas related to their program (n = 23):

(NOTE: Percentages indicate a rating of either very or somewhat important on the job)

Mathematics	
Arithmetic	100%
Trigonometry	82%
Geometry	86%
Algebra	82%
Statistics	86%

Scientific methodology	86%
Understanding the ecosystem	82%

(NOTE: Graduates reported their employers "very committed" [62%] or "somewhat committed" to managing their areas in a sound ecosystem manner.)

Technical courses were rated as equally important as general education by 46% and as most important by 36% of the employed graduates.

Future educational plans:

Sixty four percent of the 39 graduates indicated they were interested in a bachelors degree. Of these 25 indicated they were currently enrolled in further education (half full time & half part time).

The reported transfer of credits of those enrolled was:

Almost all	24%
Half to 75%	20%
Less than half	56%

Graduate demographics:

AGE	**NUMBER**	**PERCENT**
22 or younger	6	15%
23 to 28	13	33%
29 to 35	10	26%
36 or older	10	26%

GENDER	**NUMBER**	**PERCENT**
Male	18	46%
Female	21	54%

Approximately half (54%) of the graduates (n = 39) entered their program from high school, the remainder had had some college (7 with degrees).

Employer Survey:

A total of 53 employers returned usable survey forms. Of these responses 21 applied to co - op students or interns. Of the remaining 32 responses six were in permanent positions, 21 in full time temporary jobs, and 2 part time employees.

The employers were primarily governmental agencies (83%).

Of the inter/employee mix 23% were employed in GIS and the remainder in natural resource related areas.

Importance of certain skills and knowledge on the job:

Mathematics by type

Arithmetic	91%
Trigonometry	40%
Geometry	64%
Algebra	70%
Statistics	55%
Higher level math	9%

Apply principles of science

Very	38%
Somewhat	53%

Apply principles of GIS

Very	29%
Somewhat	37%

Apply ecosystem concepts

Very	36%
Somewhat	34%

Ability to communicate effectively

Very	92%
Somewhat	8%

Effectiveness in solving problems

Very	42%
Somewhat	54%

Knowledge of Technical applications

	Most important	50%
	Equal with general education	50%
Very	38%	
	Somewhat	53%

Degree program employees meet expectations:

SKILL & KNOWLEDGE	EXCEEDED	MET	BELOW
Technical	43%	55%	2%
Mathematics	33%	51%	
(NOTE: 14% [7] reported "not important")			
Science	42%	52%	
(NOTE: 6% [3] reported "not important")			
GIS	27%	35%	2%
(NOTE: 36% [18] reported "not important")			
Communications	62%	36%	2%
Analyze & solve problems	62%	38%	

The employers described the education received by employees as:

Excellent	17%
More than adequate	39%
Adequate for most areas	42%
Less than adequate	2%

Employers reported that the would very likely (83%) or somewhat likely (17%) to hire graduates of the program (83%).

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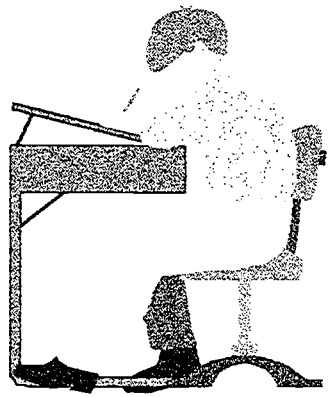

STUDENT SUCCESS DATA AND REPORT FEBRUARY 1999

VOLUME I I - APPENDICIES

PREPARED BY THE

WESTERN CENTER FOR COMMUNITY COLLEGE DEVELOPMENT

OREGON STATE UNIVERSITY

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For further information concerning Volume I (the basic report) contact:

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APPENDIX A

RESPONSE RATES

SUSTAINABLE RESOURCES SURVEY OF NATURAL RESOURCE EMPLOYERS, GRADUATE AND STUDENTS

Disposition

Type 1: Employers

	Population	Number Sent	Not Returned	Complete
Central Oregon C. C.	27	27	6	21
Chemeketa C. C.	15	15	4	11
Grays Harbor College	28	28	11	17
Feather River College	9	9	5	4
Shasta C.C. (did not participate)				

Type 2: Graduates

	Population	Handed Out	Declined	Wrong Group*	Complete
Central Oregon C. C.	35	35	8	1	26
Chemeketa C. C.	7	7	0	0	7
Grays Harbor College	11	?	?	0	5
Feather River College	9	9	8	0	1
Shasta C. C. (did not participate)					

***Did not graduate**

Type 3: Students

	Population	Handed Out	Declined	Complete
Central Oregon C. C.	18	18	2	16
Chemeketa C. C.	28	28	5	23
Grays Harbor College	38	38	19	19
Feather River College	34	17	0	17
Shasta C. C.	110	110	36	74

STUDENT DATA PROFILE
by
COLLEGE TOTALS

Natural Resource Students Survey

COLLEGE

CC	Frequency	Percent
Central Oregon	16	10.7
Chemekata	23	15.4
Grays Harbor	19	12.8
Feather River	17	11.4
Shasta	74	49.7

What is your major field?

Q1	Frequency	Percent
Wildlife	19	13.1
Forestry	23	15.9
Forestry-Option	8	5.5
Water Resources	2	1.4
Natural Resources	21	14.5
Agriculture	29	20.0
Equine	1	0.7
Horticulture	16	11.0
Fisheries	10	6.9
GIS	16	11.0

Frequency Missing = 4

How long have you been enrolled?

Q2	Frequency	Percent
Less than one year	67	45.3
More then one less than two years	47	31.8
Two to three years	27	18.2
More than three less than four years	3	2.0
Four years or more	4	2.7

Frequency Missing = 1

3. Indicate whether you took the following mathematics courses

a. Technical mathematics

Q3A	Frequency	Percent
Yes	39	26.5
No	108	73.5

Frequency Missing = 2

b. Trigonometry

Q3B	Frequency	Percent
Yes	30	20.4
No	117	79.6

Frequency Missing = 2

c. Geometry

Q3C	Frequency	Percent
Yes	54	36.7
No	93	63.3

Frequency Missing = 2

d. Algebra(non-college level)

Q3D	Frequency	Percent
Yes	94	63.9
No	53	36.1

Frequency Missing = 2

e. Algebra(college level)

Q3E	Frequency	Percent
Yes	58	39.7
No	88	60.3

Frequency Missing = 3

f. Statistics

Q3F	Frequency	Percent
Yes	37	25.5
No	108	74.5

Frequency Missing = 4

g. College level mathematics

Q3G	Frequency	Percent
Yes	33	22.8
No	112	77.2

Frequency Missing = 4

4. How often have used mathematics?

Q4	Frequency	Percent
Never	23	15.5
Often	61	41.2
Occasionally	64	43.2

Frequency Missing = 1

4a. Indicate if each are of mathematics was useful

a. Basic arithmetic

Q4AA	Frequency	Percent
Very	94	75.8
Somewhat	21	16.9
Not used	9	7.3

Frequency Missing = 25

b. Trigonometry

Q4AB	Frequency	Percent
Very	18	14.5
Somewhat	30	24.2
Not used	76	61.3

Frequency Missing = 25

c. Geometry

Q4AC	Frequency	Percent
Very	22	17.7
Somewhat	47	37.9
Not used	55	44.4

Frequency Missing = 25

d. Algebra

Q4AD	Frequency	Percent
Very	39	31.5
Somewhat	61	49.2
Not used	24	19.4

Frequency Missing = 25

e. Statistics

Q4AE	Frequency	Percent
Very	26	21.0
Somewhat	36	29.0
Not used	62	50.0

Frequency Missing = 25

5. Was learning math important?

Q5	Frequency	Percent
Important	124	84.9
Not important	22	15.1

Frequency Missing = 3

6. Profs stress math as important

Q6	Frequency	Percent
Yes, most did	58	39.2
Yes, some did	71	48.0
No	19	12.8

Frequency Missing = 1

7. Have you taken science courses?

Q7	Frequency	Percent
No	69	46.3
Yes	80	53.7

7a. Indicate whether you took the following science courses

a. General biology

Q7AA	Frequency	Percent
Yes	41	51.9
No	38	48.1

Frequency Missing = 70

b. Specialized biology or zoology

Q7AB	Frequency	Percent
Yes	20	25.3
No	59	74.7

Frequency Missing = 70

c. Chemistry

Q7AC	Frequency	Percent
Yes	35	44.3
No	44	55.7

Frequency Missing = 70

d. Geology

Q7AD	Frequency	Percent
Yes	17	21.5
No	62	78.5

Frequency Missing = 70

e. Other

Q7AE	Frequency	Percent
Yes	39	48.8
No	41	51.3

Frequency Missing = 69

7b. Which was used most in science?

Q7B	Frequency	Percent
Only lecture	2	2.5
Lecture and labs in an inside lab	22	27.8
Lecture and labs in the field	10	12.7
Lecture, science labs and field labs	45	57.0

Frequency Missing = 70

7c. How often did use science techniques

Q7C	Frequency	Percent
Often	38	47.5
Occasionally	42	52.5

Frequency Missing = 69

8. How important is science?

Q8	Frequency	Percent
Important	128	88.3
Unimportant	17	11.7

Frequency Missing = 4

9. Profs stress science as important

Q9	Frequency	Percent
Yes, most did	64	43.8
Yes, some did	56	38.4
No	26	17.8

Frequency Missing = 3

10. Have you taken ecosystem science?

Q10	Frequency	Percent
Yes	82	56.2
No	64	43.8

Frequency Missing = 3

11. Were concepts of ecosystem taught?

Q11	Frequency	Percent
Yes	105	73.4
No	38	26.6

Frequency Missing = 6

12. Profs stress importance of ecosystem

Q12	Frequency	Percent
Yes, most did	80	56.3
Yes, some did	45	31.7
No	17	12.0

Frequency Missing = 7

13. Do you understand ecosystems?

Q13	Frequency	Percent
Yes	122	86.5
No	19	13.5

Frequency Missing = 8

14. Understanding of ecological successi

Q14	Frequency	Percent
Plant and animal community change	63	47.4
Energy flow through ecosystems	6	4.5
Interrelationships between living and non-living	57	42.9
Abundance of plant and animal communities	7	5.3

Frequency Missing = 16

15. Food web describe which?

Q15	Frequency	Percent
Production and accumulation of carbohydrates	22	16.5
Energy flow through an ecosystem	77	57.9
Plant and animal community change	14	10.5
Population growth in an ecosystem	20	15.0

Frequency Missing = 16

16. Diff between community & ecosystem

Q16	Frequency	Percent
Plants	16	11.9
Animals	10	7.4
Bacteria	23	17.0
Humans	8	5.9
The physical environment	78	57.8

Frequency Missing = 14

17. Trees have the ability to

Q17	Frequency	Percent
Shade soils	7	4.9
Convert Carbon dioxide into carbohydrates	30	21.1
Store large quantities of water	3	2.1
Provide wildlife habitat	7	4.9
Produce oxygen	95	66.9

Frequency Missing = 7

18. Which decreases as succession proceed

Q18	Frequency	Percent
Soil depth	27	21.4
Humidity	7	5.6
Animal diversity	63	50.0
Soil temperature	29	23.0

Frequency Missing = 23

19. Least likely part of forest manageme

Q19	Frequency	Percent
Maintain decomposition and nitrogen fixation	6	4.6
Involve society in decision making	25	19.1
Use modern imaging techniques	33	25.2
Plant a monoculture of douglas fir	62	47.3
Consider downstream effects	5	3.8

Frequency Missing = 18

20. Have you taken a GIS course?

Q20	Frequency	Percent
No	114	76.5
Yes	35	23.5

20a. How often did you use GIS?

Q20A	Frequency	Percent
Often	20	57.1
Occasionally	14	40.0
Never	1	2.9

Frequency Missing = 114

20b. Was learning GIS important?

Q20B	Frequency	Percent
Important	34	97.1
Unimportant	1	2.9

Frequency Missing = 114

20c. Profs stress GIS as important

Q20C	Frequency	Percent
Yes, most did	27	77.1
Yes, some did	7	20.0
No	1	2.9

Frequency Missing = 114

21. Have taken part in job education

Q21	Frequency	Percent
No	88	59.1
Yes	61	40.9

21a. How important was work experience?

Q21A	Frequency	Percent
Very important	48	78.7
Somewhat important but not essential	12	19.7
Not important	1	1.6

Frequency Missing = 88

21b. Did work involve technical skills?

Q21B	Frequency	Percent
Yes	55	90.2
No	6	9.8

Frequency Missing = 88

21c. How often did you use the skills in each course

a. Mathematics courses

Q21CA	Frequency	Percent
Often	23	38.3
Sometimes	27	45.0
Never	7	11.7
Have not taken	3	5.0

Frequency Missing = 89

b. Science courses

Q21CB	Frequency	Percent
Often	19	32.2
Sometimes	23	39.0
Never	7	11.9
Have not taken	10	16.9

Frequency Missing = 90

c. GIS courses

Q21CC	Frequency	Percent
Often	10	17.5
Sometimes	11	19.3
Never	11	19.3
Have not taken	25	43.9

Frequency Missing = 92

d. Communications

Q21CD	Frequency	Percent
Often	41	68.3
Sometimes	14	23.3
Never	5	8.3

Frequency Missing = 89

22. Rating of academic level

Q22	Frequency	Percent
Very difficult and required special effort	17	11.7
Challenging but within my abilities	118	81.4
Fairly easy and required minimal effort	10	6.9

Frequency Missing = 4

23. Overall results of education

Q23	Frequency	Percent
Taught me essential knowledge	95	64.6
Important knowledge but unimportant parts	39	26.5
Important knowledge but not essential	7	4.8
Other	6	4.1

Frequency Missing = 2

24. Do you have an advisor?

Q24	Frequency	Percent
No	46	30.9
Yes	103	69.1

24a. How do you meet advisor?

Q24A	Frequency	Percent
At least once a month	30	29.4
One or two times a term	60	58.8
Never	12	11.8

Frequency Missing = 47

24b. Has advisor discussed job market?

Q24B	Frequency	Percent
Yes	69	67.6
No	33	32.4

Frequency Missing = 47

25. Was sequence clearly explained?

Q25	Frequency	Percent
Yes	89	61.4
No	56	38.6

Frequency Missing = 4

26. Have taken recommended sequence

Q26	Frequency	Percent
Yes, most courses	52	35.1
Yes, some courses	54	36.5
No. not following the sequence	19	12.8
I am not sure	23	15.5

Frequency Missing = 1

27. What is your class standing

Q27	Frequency	Percent
Freshman	66	44.9
First term senior	41	27.9
Second term senior	40	27.2

Frequency Missing = 2

28. Mathematics in high school

Q28	Frequency	Percent
Elementary algebra	35	24.5
Intermediate algebra	60	42.0
Advanced mathematics	26	18.2
Other	22	15.4

Frequency Missing = 6

29. Indicate whether you completed the following science courses

a. General science

Q29A	Frequency	Percent
Yes	129	87.8
No	18	12.2

Frequency Missing = 2

b. Biology

Q29B	Frequency	Percent
Yes	94	63.9
No	53	36.1

Frequency Missing = 2

c. Chemistry

Q29C	Frequency	Percent
Yes	55	37.4
No	92	62.6

Frequency Missing = 2

d. Physics

Q29D	Frequency	Percent
Yes	23	15.6
No	124	84.4

Frequency Missing = 2

e. Environmental Science

Q29E	Frequency	Percent
Yes	63	42.9
No	84	57.1

Frequency Missing = 2

30. Education level prior to program

Q30	Frequency	Percent
High school graduate or GED	88	59.9
Less than two years or college	31	21.1
More than two years but did not graduate	9	6.1
Associate degree	5	3.4
Bachelor degree	8	5.4
Other	6	4.1

Frequency Missing = 2

31. Did you take admission test?

Q31	Frequency	Percent
No	43	29.1
Yes	105	70.9

Frequency Missing = 1

31a. Did you take the following to prepare for college work?

a. Special courses in mathematics

Q31AA	Frequency	Percent
Yes	46	44.7
No	57	55.3

Frequency Missing = 46

b. Special courses in english

Q31AB	Frequency	Percent
Yes	38	36.9
No	65	63.1

Frequency Missing = 46

c. Special courses in reading

Q31AC	Frequency	Percent
Yes	16	15.5
No	87	84.5

Frequency Missing = 46

32. Plans upon graduation

Q32	Frequency	Percent
Employment in my field	73	50.7
Employment not in some other area	4	2.8
Continue my education	67	46.5

Frequency Missing = 5

33. How likely to obtain bachelors degre

Q33	Frequency	Percent
Very likely	63	43.8
Somewhat likely	51	35.4
Not too likely	24	16.7
Not at all likely	6	4.2

Frequency Missing = 5

34. Current employment status

Q34	Frequency	Percent
Not employed for pay	61	41.8
Part-time in area related to my program	35	24.0
Full-time in area related to my program	10	6.8
Part-time in area not related to program	35	24.0
Full-time in area not related to program	5	3.4

Frequency Missing = 3

35. Age category

Q35	Frequency	Percent
22 or younger	70	47.9
23 to 28	21	14.4
29 to 35	15	10.3
36 to 45	31	21.2
46 or older	9	6.2

Frequency Missing = 3

36. Gender

Q36	Frequency	Percent
Male	86	58.5
Female	61	41.5

Frequency Missing = 2

Natural Resource Students Survey

COLLEGE

CC	Frequency	Percent
Central Oregon	16	10.7
Chemekata	23	15.4
Grays Harbor	19	12.8
Feather River	17	11.4
Shasta	74	49.7

What is your major field?

Q1	Frequency	Percent
Wildlife	19	13.1
Forestry	23	15.9
Forestry-Option	8	5.5
Water Resources	2	1.4
Natural Resources	21	14.5
Agriculture	29	20.0
Equine	1	0.7
Horticulture	16	11.0
Fisheries	10	6.9
GIS	16	11.0

Frequency Missing = 4

How long have you been enrolled?

Q2	Frequency	Percent
Less than one year	67	45.3
More then one less than two years	47	31.8
Two to three years	27	18.2
More than three less than four years	3	2.0
Four years or more	4	2.7

Frequency Missing = 1

3. Indicate whether you took the following mathematics courses

a. Technical mathematics

Q3A	Frequency	Percent
Yes	39	26.5
No	108	73.5

Frequency Missing = 2

b. Trigonometry

Q3B	Frequency	Percent
Yes	30	20.4
No	117	79.6

Frequency Missing = 2

c. Geometry

Q3C	Frequency	Percent
Yes	54	36.7
No	93	63.3

Frequency Missing = 2

d. Algebra(non-college level)

Q3D	Frequency	Percent
Yes	94	63.9
No	53	36.1

Frequency Missing = 2

e. Algebra(college level)

Q3E	Frequency	Percent
Yes	58	39.7
No	88	60.3

Frequency Missing = 3

f. Statistics

Q3F	Frequency	Percent
Yes	37	25.5
No	108	74.5

Frequency Missing = 4

g. College level mathematics

Q3G	Frequency	Percent
Yes	33	22.8
No	112	77.2

Frequency Missing = 4

4. How often have used mathematics?

Q4	Frequency	Percent
Never	23	15.5
Often	61	41.2
Occasionally	64	43.2

Frequency Missing = 1

4a. Indicate if each are of mathematics was useful

a. Basic arithmetic

Q4AA	Frequency	Percent
Very	94	75.8
Somewhat	21	16.9
Not used	9	7.3

Frequency Missing = 25

b. Trigonometry

Q4AB	Frequency	Percent
Very	18	14.5
Somewhat	30	24.2
Not used	76	61.3

Frequency Missing = 25

c. Geometry

Q4AC	Frequency	Percent
Very	22	17.7
Somewhat	47	37.9
Not used	55	44.4

Frequency Missing = 25

d. Algebra

Q4AD	Frequency	Percent
Very	39	31.5
Somewhat	61	49.2
Not used	24	19.4

Frequency Missing = 25

e. Statistics

Q4AE	Frequency	Percent
Very	26	21.0
Somewhat	36	29.0
Not used	62	50.0

Frequency Missing = 25

5. Was learning math important?

Q5	Frequency	Percent
Important	124	84.9
Not important	22	15.1

Frequency Missing = 3

6. Profs stress math as important

Q6	Frequency	Percent
Yes, most did	58	39.2
Yes, some did	71	48.0
No	19	12.8

Frequency Missing = 1

7. Have you taken science courses?

Q7	Frequency	Percent
No	69	46.3
Yes	80	53.7

7a. Indicate whether you took the following science courses

a. General biology

Q7AA	Frequency	Percent
Yes	41	51.9
No	38	48.1

Frequency Missing = 70

b. Specialized biology or zoology

Q7AB	Frequency	Percent
Yes	20	25.3
No	59	74.7

Frequency Missing = 70

c. Chemistry

Q7AC	Frequency	Percent
Yes	35	44.3
No	44	55.7

Frequency Missing = 70

d. Geology

Q7AD	Frequency	Percent
Yes	17	21.5
No	62	78.5

Frequency Missing = 70

e. Other

Q7AE	Frequency	Percent
Yes	39	48.8
No	41	51.3

Frequency Missing = 69

7b. Which was used most in science?

Q7B	Frequency	Percent
Only lecture	2	2.5
Lecture and labs in an inside lab	22	27.8
Lecture and labs in the field	10	12.7
Lecture, science labs and field labs	45	57.0

Frequency Missing = 70

7c. How often did use science techniques

Q7C	Frequency	Percent
Often	38	47.5
Occasionally	42	52.5

Frequency Missing = 69

8. How important is science?

Q8	Frequency	Percent
Important	128	88.3
Unimportant	17	11.7

Frequency Missing = 4

9. Profs stress science as important

Q9	Frequency	Percent
Yes, most did	64	43.8
Yes, some did	56	38.4
No	26	17.8

Frequency Missing = 3

10. Have you taken ecosystem science?

Q10	Frequency	Percent
Yes	82	56.2
No	64	43.8

Frequency Missing = 3

11. Were concepts of ecosystem taught?

Q11	Frequency	Percent
Yes	105	73.4
No	38	26.6

Frequency Missing = 6

12. Profs stress importance of ecosystem

Q12	Frequency	Percent
Yes, most did	80	56.3
Yes, some did	45	31.7
No	17	12.0

Frequency Missing = 7

13. Do you understand ecosystems?

Q13	Frequency	Percent
Yes	122	86.5
No	19	13.5

Frequency Missing = 8

14. Understanding of ecological successi

Q14	Frequency	Percent
Plant and animal community change	63	47.4
Energy flow through ecosystems	6	4.5
Interrelationships between living and non-living	57	42.9
Abundance of plant and animal communities	7	5.3

Frequency Missing = 16

15. Food web describe which?

Q15	Frequency	Percent
Production and accumulation of carbohydrates	22	16.5
Energy flow through an ecosystem	77	57.9
Plant and animal community change	14	10.5
Population growth in an ecosystem	20	15.0

Frequency Missing = 16

16. Diff between community & ecosystem

Q16	Frequency	Percent
Plants	16	11.9
Animals	10	7.4
Bacteria	23	17.0
Humans	8	5.9
The physical environment	78	57.8

Frequency Missing = 14

17. Trees have the ability to

Q17	Frequency	Percent
Shade soils	7	4.9
Convert Carbon dioxide into carbohydrates	30	21.1
Store large quantities of water	3	2.1
Provide wildlife habitat	7	4.9
Produce oxygen	95	66.9

Frequency Missing = 7

18. Which decreases as succession proceed

Q18	Frequency	Percent
Soil depth	27	21.4
Humidity	7	5.6
Animal diversity	63	50.0
Soil temperature	29	23.0

Frequency Missing = 23

19. Least likely part of forest manageme

Q19	Frequency	Percent
Maintain decomposition and nitrogen fixation	6	4.6
Involve society in decision making	25	19.1
Use modern imaging techniques	33	25.2
Plant a monoculture of douglas fir	62	47.3
Consider downstream effects	5	3.8

Frequency Missing = 18

20. Have you taken a GIS course?

Q20	Frequency	Percent
No	114	76.5
Yes	35	23.5

20a. How often did you use GIS?

Q20A	Frequency	Percent
Often	20	57.1
Occasionally	14	40.0
Never	1	2.9

Frequency Missing = 114

20b. Was learning GIS important?

Q20B	Frequency	Percent
Important	34	97.1
Unimportant	1	2.9

Frequency Missing = 114

20c. Profs stress GIS as important

Q20C	Frequency	Percent
Yes, most did	27	77.1
Yes, some did	7	20.0
No	1	2.9

Frequency Missing = 114

21. Have taken part in job education

Q21	Frequency	Percent
No	88	59.1
Yes	61	40.9

21a. How important was work experience?

Q21A	Frequency	Percent
Very important	48	78.7
Somewhat important but not essential	12	19.7
Not important	1	1.6

Frequency Missing = 88

21b. Did work involve technical skills?

Q21B	Frequency	Percent
Yes	55	90.2
No	6	9.8

Frequency Missing = 88

21c. How often did you use the skills in each course

a. Mathematics courses

Q21CA	Frequency	Percent
Often	23	38.3
Sometimes	27	45.0
Never	7	11.7
Have not taken	3	5.0

Frequency Missing = 89

b. Science courses

Q21CB	Frequency	Percent
Often	19	32.2
Sometimes	23	39.0
Never	7	11.9
Have not taken	10	16.9

Frequency Missing = 90

c. GIS courses

Q21CC	Frequency	Percent
Often	10	17.5
Sometimes	11	19.3
Never	11	19.3
Have not taken	25	43.9

Frequency Missing = 92

d. Communications

Q21CD	Frequency	Percent
Often	41	68.3
Sometimes	14	23.3
Never	5	8.3

Frequency Missing = 89

22. Rating of academic level

Q22	Frequency	Percent
Very difficult and required special effort	17	11.7
Challenging but within my abilities	118	81.4
Fairly easy and required minimal effort	10	6.9

Frequency Missing = 4

23. Overall results of education

Q23	Frequency	Percent
Taught me essential knowledge	95	64.6
Important knowledge but unimportant parts	39	26.5
Important knowledge but not essential	7	4.8
Other	6	4.1

Frequency Missing = 2

24. Do you have an advisor?

Q24	Frequency	Percent
No	46	30.9
Yes	103	69.1

24a. How do you meet advisor?

Q24A	Frequency	Percent
At least once a month	30	29.4
One or two times a term	60	58.8
Never	12	11.8

Frequency Missing = 47

24b. Has advisor discussed job market?

Q24B	Frequency	Percent
Yes	69	67.6
No	33	32.4

Frequency Missing = 47

25. Was sequence clearly explained?

Q25	Frequency	Percent
Yes	89	61.4
No	56	38.6

Frequency Missing = 4

26. Have taken recommended sequence

Q26	Frequency	Percent
Yes, most courses	52	35.1
Yes, some courses	54	36.5
No. not following the sequence	19	12.8
I am not sure	23	15.5

Frequency Missing = 1

27. What is your class standing

Q27	Frequency	Percent
Freshman	66	44.9
First term senior	41	27.9
Second term senior	40	27.2

Frequency Missing = 2

28. Mathematics in high school

Q28	Frequency	Percent
Elementary algebra	35	24.5
Intermediate algebra	60	42.0
Advanced mathematics	26	18.2
Other	22	15.4

Frequency Missing = 6

29. Indicate whether you completed the following science courses

a. General science

Q29A	Frequency	Percent
Yes	129	87.8
No	18	12.2

Frequency Missing = 2

b. Biology

Q29B	Frequency	Percent
Yes	94	63.9
No	53	36.1

Frequency Missing = 2

c. Chemistry

Q29C	Frequency	Percent
Yes	55	37.4
No	92	62.6

Frequency Missing = 2

d. Physics

Q29D	Frequency	Percent
Yes	23	15.6
No	124	84.4

Frequency Missing = 2

e. Environmental Science

Q29E	Frequency	Percent
Yes	63	42.9
No	84	57.1

Frequency Missing = 2

30. Education level prior to program

Q30	Frequency	Percent
High school graduate or GED	88	59.9
Less than two years or college	31	21.1
More than two years but did not graduate	9	6.1
Associate degree	5	3.4
Bachelor degree	8	5.4
Other	6	4.1

Frequency Missing = 2

31. Did you take admission test?

Q31	Frequency	Percent
No	43	29.1
Yes	105	70.9

Frequency Missing = 1

31a. Did you take the following to prepare for college work?

a. Special courses in mathematics

Q31AA	Frequency	Percent
Yes	46	44.7
No	57	55.3

Frequency Missing = 46

b. Special courses in english

Q31AB	Frequency	Percent
Yes	38	36.9
No	65	63.1

Frequency Missing = 46

c. Special courses in reading

Q31AC	Frequency	Percent
Yes	16	15.5
No	87	84.5

Frequency Missing = 46

32. Plans upon graduation

Q32	Frequency	Percent
Employment in my field	73	50.7
Employment not in some other area	4	2.8
Continue my education	67	46.5

Frequency Missing = 5

33. How likely to obtain bachelors degre

Q33	Frequency	Percent
Very likely	63	43.8
Somewhat likely	51	35.4
Not too likely	24	16.7
Not at all likely	6	4.2

Frequency Missing = 5

34. Current employment status

Q34	Frequency	Percent
Not employed for pay	61	41.8
Part-time in area related to my program	35	24.0
Full-time in area related to my program	10	6.8
Part-time in area not related to program	35	24.0
Full-time in area not related to program	5	3.4

Frequency Missing = 3

35. Age category

Q35	Frequency	Percent
22 or younger	70	47.9
23 to 28	21	14.4
29 to 35	15	10.3
36 to 45	31	21.2
46 or older	9	6.2

Frequency Missing = 3

36. Gender

Q36	Frequency	Percent
Male	86	58.5
Female	61	41.5

Frequency Missing = 2

STUDENT DATA PROFILE
by
LEVEL OF PROGRAM COMPLETION

Student Survey Broken Down by Class Standing (Question 27)

TABLE OF Q27 BY Q1

Q27(27. What is your class standing) Q1(What is your major field?)

Frequency Percent Row Pct Col Pct	Wildlife	Forestry	Forestry -Option	Water Resources	Natural Resources	Total
Freshman	10	13	4	1	10	64
	6.99	9.09	2.80	0.70	6.99	44.76
	15.63	20.31	6.25	1.56	15.63	
	52.63	56.52	50.00	50.00	50.00	
First term senior	9	5	2	0	5	41
	6.29	3.50	1.40	0.00	3.50	28.67
	21.95	12.20	4.88	0.00	12.20	
	47.37	21.74	25.00	0.00	25.00	
Second term senior	0	5	2	1	5	38
	0.00	3.50	1.40	0.70	3.50	26.57
	0.00	13.16	5.26	2.63	13.16	
	0.00	21.74	25.00	50.00	25.00	
Total	19	23	8	2	20	143
	13.29	16.08	5.59	1.40	13.99	100.00

(Continued)

TABLE OF Q27 BY Q1

Q27(27. What is your class standing) Q1(What is your major field?)

Frequency Percent Row Pct Col Pct	Agriculture	Equine	Horticulture	Fisheries	GIS	Total
Freshman	14	0	7	5	0	64
	9.79	0.00	4.90	3.50	0.00	44.76
	21.88	0.00	10.94	7.81	0.00	
	48.28	0.00	43.75	55.56	0.00	
First term senior	10	1	5	2	2	41
	6.99	0.70	3.50	1.40	1.40	28.67
	24.39	2.44	12.20	4.88	4.88	
	34.48	100.00	31.25	22.22	12.50	
Second term senior	5	0	4	2	14	38
	3.50	0.00	2.80	1.40	9.79	26.57
	13.16	0.00	10.53	5.26	36.84	
	17.24	0.00	25.00	22.22	87.50	
Total	29	1	16	9	16	143
	20.28	0.70	11.19	6.29	11.19	100.00

Frequency Missing = 6

TABLE OF Q27 BY Q2

Q27(27. What is your class standing) Q2(How long have you been enrolled?)

Frequency Percent Row Pct Col Pct	Less than one year	More than one less than two years	Two to three years	More than three less than four years	Four years or more	Total
Freshman	56	7	2	1	0	66
	38.36	4.79	1.37	0.68	0.00	45.21
	84.85	10.61	3.03	1.52	0.00	
	83.58	14.89	7.69	33.33	0.00	
First term senior	9	26	5	0	0	40
	6.16	17.81	3.42	0.00	0.00	27.40
	22.50	65.00	12.50	0.00	0.00	
	13.43	55.32	19.23	0.00	0.00	
Second term senior	2	14	19	2	3	40
	1.37	9.59	13.01	1.37	2.05	27.40
	5.00	35.00	47.50	5.00	7.50	
	2.99	29.79	73.08	66.67	100.00	
Total	67	47	26	3	3	146
	45.89	32.19	17.81	2.05	2.05	100.00

Frequency Missing = 3

TABLE OF Q27 BY Q3A

Q27(27. What is your class standing)

Q3A(a. Technical mathematics)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	10	55	65
	6.90	37.93	44.83
	15.38	84.62	
	25.64	51.89	
First term senior	10	30	40
	6.90	20.69	27.59
	25.00	75.00	
	25.64	28.30	
Second term senior	19	21	40
	13.10	14.48	27.59
	47.50	52.50	
	48.72	19.81	
Total	39	106	145
	26.90	73.10	100.00

Frequency Missing = 4

TABLE OF Q27 BY Q3B

Q27(27. What is your class standing)

	Q3B(b. Trigonometry)		
Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	7	58	65
	4.83	40.00	44.83
	10.77	89.23	
	23.33	50.43	
First term senior	9	31	40
	6.21	21.38	27.59
	22.50	77.50	
	30.00	26.96	
Second term senior	14	26	40
	9.66	17.93	27.59
	35.00	65.00	
	46.67	22.61	
Total	30	115	145
	20.69	79.31	100.00

Frequency Missing = 4

TABLE OF Q27 BY Q3C

Q27(27. What is your class standing)

	Q3C(c. Geometry)		
Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	20 13.79 30.77 37.04	45 31.03 69.23 49.45	65 44.83
First term senior	14 9.66 35.00 25.93	26 17.93 65.00 28.57	40 27.59
Second term senior	20 13.79 50.00 37.04	20 13.79 50.00 21.98	40 27.59
Total	54 37.24	91 62.76	145 100.00

Frequency Missing = 4

TABLE OF Q27 BY Q3D

Q27(27. What is your class standing)

Q3D(d. Algebra(non-college level))

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	34	31	65
	23.45	21.38	44.83
	52.31	47.69	
	36.56	59.62	
First term senio r	27	13	40
	18.62	8.97	27.59
	67.50	32.50	
	29.03	25.00	
Second term seni or	32	8	40
	22.07	5.52	27.59
	80.00	20.00	
	34.41	15.38	
Total	93	52	145
	64.14	35.86	100.00

Frequency Missing = 4

TABLE OF Q27 BY Q3E

Q27(27. What is your class standing)

	Q3E(e. Algebra(college level))		
Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	17 11.81 26.15 29.82	48 33.33 73.85 55.17	65 45.14
First term senior	16 11.11 41.03 28.07	23 15.97 58.97 26.44	39 27.08
Second term senior	24 16.67 60.00 42.11	16 11.11 40.00 18.39	40 27.78
Total	57 39.58	87 60.42	144 100.00

Frequency Missing = 5

TABLE OF Q27 BY Q3F

Q27(27. What is your class standing)
Q3F(f. Statistics)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	12	52	64
	8.39	36.36	44.76
	18.75	81.25	
	33.33	48.60	
First term senio r	9	30	39
	6.29	20.98	27.27
	23.08	76.92	
	25.00	28.04	
Second term seni or	15	25	40
	10.49	17.48	27.97
	37.50	62.50	
	41.67	23.36	
Total	36	107	143
	25.17	74.83	100.00

Frequency Missing = 6

TABLE OF Q27 BY Q3G

Q27(27. What is your class standing)

Q3G(g. College level mathematics)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	13	50	63
	9.09	34.97	44.06
	20.63	79.37	
	40.63	45.05	
First term senio r	8	32	40
	5.59	22.38	27.97
	20.00	80.00	
	25.00	28.83	
Second term seni or	11	29	40
	7.69	20.28	27.97
	27.50	72.50	
	34.38	26.13	
Total	32	111	143
	22.38	77.62	100.00

Frequency Missing = 6

TABLE OF Q27 BY Q4

Q27(27. What is your class standing)

Q4(4. How often have used mathematics?)

Frequency Percent Row Pct Col Pct	Never	Often	Occasionally	Total
Freshman	15	22	29	66
	10.27	15.07	19.86	45.21
	22.73	33.33	43.94	
	65.22	37.29	45.31	
First term senior	5	18	17	40
	3.42	12.33	11.64	27.40
	12.50	45.00	42.50	
	21.74	30.51	26.56	
Second term senior	3	19	18	40
	2.05	13.01	12.33	27.40
	7.50	47.50	45.00	
	13.04	32.20	28.13	
Total	23	59	64	146
	15.75	40.41	43.84	100.00

Frequency Missing = 3

TABLE OF Q27 BY Q4AA

Q27(27. What is your class standing) Q4AA(a. Basic arithmetic)

Frequency Percent Row Pct Col Pct	Very	Somewhat	Not used	Total
Freshman	33	13	4	50
	27.05	10.66	3.28	40.98
	66.00	26.00	8.00	
	35.48	65.00	44.44	
First term senior	30	2	3	35
	24.59	1.64	2.46	28.69
	85.71	5.71	8.57	
	32.26	10.00	33.33	
Second term senior	30	5	2	37
	24.59	4.10	1.64	30.33
	81.08	13.51	5.41	
	32.26	25.00	22.22	
Total	93	20	9	122
	76.23	16.39	7.38	100.00

Frequency Missing = 27

TABLE OF Q27 BY Q4AB

Q27(27. What is your class standing) Q4AB(b. Trigonometry)

Frequency Percent Row Pct Col Pct	Very	Somewhat	Not used	Total
Freshman	2	14	34	50
	1.64	11.48	27.87	40.98
	4.00	28.00	68.00	
	11.11	46.67	45.95	
First term senio r	4	9	22	35
	3.28	7.38	18.03	28.69
	11.43	25.71	62.86	
	22.22	30.00	29.73	
Second term seni or	12	7	18	37
	9.84	5.74	14.75	30.33
	32.43	18.92	48.65	
	66.67	23.33	24.32	
Total	18	30	74	122
	14.75	24.59	60.66	100.00

Frequency Missing = 27

TABLE OF Q27 BY Q4AC

Q27(27. What is your class standing) Q4AC(c. Geometry)

Frequency Percent Row Pct Col Pct	Very	Somewhat	Not used	Total
Freshman	4	25	21	50
	3.28	20.49	17.21	40.98
	8.00	50.00	42.00	
	18.18	53.19	39.62	
First term senio r	9	10	16	35
	7.38	8.20	13.11	28.69
	25.71	28.57	45.71	
	40.91	21.28	30.19	
Second term seni or	9	12	16	37
	7.38	9.84	13.11	30.33
	24.32	32.43	43.24	
	40.91	25.53	30.19	
Total	22	47	53	122
	18.03	38.52	43.44	100.00

Frequency Missing = 27

TABLE OF Q27 BY Q4AD

Q27(27. What is your class standing) Q4AD(d. Algebra)

Frequency Percent Row Pct Col Pct	Very	Somewhat	Not used	Total
Freshman	10	29	11	50
	8.20	23.77	9.02	40.98
	20.00	58.00	22.00	
	26.32	47.54	47.83	
First term senio r	13	14	8	35
	10.66	11.48	6.56	28.69
	37.14	40.00	22.86	
	34.21	22.95	34.78	
Second term seni or	15	18	4	37
	12.30	14.75	3.28	30.33
	40.54	48.65	10.81	
	39.47	29.51	17.39	
Total	38	61	23	122
	31.15	50.00	18.85	100.00

Frequency Missing = 27

TABLE OF Q27 BY Q4AE

Q27(27. What is your class standing) Q4AE(e. Statistics)

Frequency Percent Row Pct Col Pct	Very	Somewhat	Not used	Total
Freshman	10	10	30	50
	8.20	8.20	24.59	40.98
	20.00	20.00	60.00	
	40.00	28.57	48.39	
First term senio r	6	11	18	35
	4.92	9.02	14.75	28.69
	17.14	31.43	51.43	
	24.00	31.43	29.03	
Second term seni or	9	14	14	37
	7.38	11.48	11.48	30.33
	24.32	37.84	37.84	
	36.00	40.00	22.58	
Total	25	35	62	122
	20.49	28.69	50.82	100.00

Frequency Missing = 27

TABLE OF Q27 BY Q5

Q27(27. What is your class standing)

Q5(5. Was learning math important?)

Frequency Percent Row Pct Col Pct	Important	Not important	Total
Freshman	56	10	66
	38.89	6.94	45.83
	84.85	15.15	
	45.90	45.45	
First term senior	34	6	40
	23.61	4.17	27.78
	85.00	15.00	
	27.87	27.27	
Second term senior	32	6	38
	22.22	4.17	26.39
	84.21	15.79	
	26.23	27.27	
Total	122	22	144
	84.72	15.28	100.00

Frequency Missing = 5

TABLE OF Q27 BY Q6

Q27(27. What is your class standing)

Q6(6. Profs stress math as important)

Frequency Percent Row Pct Col Pct	Yes, most did	Yes, some did	No	Total
Freshman	20	33	13	66
	13.70	22.60	8.90	45.21
	30.30	50.00	19.70	
	35.09	47.14	68.42	
First term senior	17	20	3	40
	11.64	13.70	2.05	27.40
	42.50	50.00	7.50	
	29.82	28.57	15.79	
Second term senior	20	17	3	40
	13.70	11.64	2.05	27.40
	50.00	42.50	7.50	
	35.09	24.29	15.79	
Total	57	70	19	146
	39.04	47.95	13.01	100.00

Frequency Missing = 3

TABLE OF Q27 BY Q7

Q27(27. What is your class standing)

Q7(7. Have you taken science courses?)

Frequency Percent Row Pct Col Pct	No	Yes	Total
Freshman	39	27	66
	26.53	18.37	44.90
	59.09	40.91	
	56.52	34.62	
First term senio r	14	27	41
	9.52	18.37	27.89
	34.15	65.85	
	20.29	34.62	
Second term seni or	16	24	40
	10.88	16.33	27.21
	40.00	60.00	
	23.19	30.77	
Total	69	78	147
	46.94	53.06	100.00

Frequency Missing = 2

TABLE OF Q27 BY Q7AA

Q27(27. What is your class standing)

Q7AA(a. General biology)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	14	12	26
	18.18	15.58	33.77
	53.85	46.15	
	35.00	32.43	
First term senio r	13	14	27
	16.88	18.18	35.06
	48.15	51.85	
	32.50	37.84	
Second term seni or	13	11	24
	16.88	14.29	31.17
	54.17	45.83	
	32.50	29.73	
Total	40	37	77
	51.95	48.05	100.00

Frequency Missing = 72

TABLE OF Q27 BY Q7AB

Q27(27. What is your class standing)

Q7AB(b. Specialized biology or zoology)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	5	21	26
	6.49	27.27	33.77
	19.23	80.77	
	26.32	36.21	
First term senio r	7	20	27
	9.09	25.97	35.06
	25.93	74.07	
	36.84	34.48	
Second term seni or	7	17	24
	9.09	22.08	31.17
	29.17	70.83	
	36.84	29.31	
Total	19	58	77
	24.68	75.32	100.00

Frequency Missing = 72

TABLE OF Q27 BY Q7AC

Q27(27. What is your class standing)

Q7AC(c. Chemistry)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	7	19	26
	9.09	24.68	33.77
	26.92	73.08	
	20.59	44.19	
First term senior	12	15	27
	15.58	19.48	35.06
	44.44	55.56	
	35.29	34.88	
Second term senior	15	9	24
	19.48	11.69	31.17
	62.50	37.50	
	44.12	20.93	
Total	34	43	77
	44.16	55.84	100.00

Frequency Missing = 72

TABLE OF Q27 BY Q7AD

Q27(27. What is your class standing)
Q7AD(d. Geology)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	5	21	26
	6.49	27.27	33.77
	19.23	80.77	
	31.25	34.43	
First term senio r	5	22	27
	6.49	28.57	35.06
	18.52	81.48	
	31.25	36.07	
Second term seni or	6	18	24
	7.79	23.38	31.17
	25.00	75.00	
	37.50	29.51	
Total	16	61	77
	20.78	79.22	100.00

Frequency Missing = 72

TABLE OF Q27 BY Q7AE

Q27(27. What is your class standing)

Frequency Percent Row Pct Col Pct	Q7AE(e. Other) Yes	 No	 Total
Freshman	15 19.23 55.56 38.46	12 15.38 44.44 30.77	27 34.62
First term senior	15 19.23 55.56 38.46	12 15.38 44.44 30.77	27 34.62
Second term senior	9 11.54 37.50 23.08	15 19.23 62.50 38.46	24 30.77
Total	39 50.00	39 50.00	78 100.00

Frequency Missing = 71

TABLE OF Q27 BY Q7B

Q27(27. What is your class standing)

Q7B(7b. Which was used most in science?)

Frequency Percent Row Pct Col Pct	Only lecture	Lecture and labs in an inside lab	Lecture and labs in the field	Lectue, science labs and field labs	Total
Freshman	2	6	4	15	27
	2.60	7.79	5.19	19.48	35.06
	7.41	22.22	14.81	55.56	
	100.00	27.27	40.00	34.88	
First term senior	0	9	4	14	27
	0.00	11.69	5.19	18.18	35.06
	0.00	33.33	14.81	51.85	
	0.00	40.91	40.00	32.56	
Second term senior	0	7	2	14	23
	0.00	9.09	2.60	18.18	29.87
	0.00	30.43	8.70	60.87	
	0.00	31.82	20.00	32.56	
Total	2	22	10	43	77
	2.60	28.57	12.99	55.84	100.00

Frequency Missing = 72

TABLE OF Q27 BY Q7C

Q27(27. What is your class standing)
Q7C(7c. How often did use science techniques)

Frequency Percent Row Pct Col Pct	Often	Occasionally	Total
Freshman	15 19.23 55.56 41.67	12 15.38 44.44 28.57	27 34.62
First term senior	12 15.38 44.44 33.33	15 19.23 55.56 35.71	27 34.62
Second term senior	9 11.54 37.50 25.00	15 19.23 62.50 35.71	24 30.77
Total	36 46.15	42 53.85	78 100.00

Frequency Missing = 71

TABLE OF Q27 BY Q8

Q27(27. What is your class standing)

Q8(8. How important is science?)

Frequency Percent Row Pct Col Pct	Important	Unimportant	Total
Freshman	61	4	65
	42.66	2.80	45.45
	93.85	6.15	
	48.41	23.53	
First term senior	35	5	40
	24.48	3.50	27.97
	87.50	12.50	
	27.78	29.41	
Second term senior	30	8	38
	20.98	5.59	26.57
	78.95	21.05	
	23.81	47.06	
Total	126	17	143
	88.11	11.89	100.00

Frequency Missing = 6

TABLE OF Q27 BY Q9

Q27(27. What is your class standing)

Q9(9. Profs stress science as important)

Frequency Percent Row Pct Col Pct	Yes, most did	Yes, some did	No	Total
Freshman	30	24	11	65
	20.83	16.67	7.64	45.14
	46.15	36.92	16.92	
	46.88	44.44	42.31	
First term senior	20	16	4	40
	13.89	11.11	2.78	27.78
	50.00	40.00	10.00	
	31.25	29.63	15.38	
Second term senior	14	14	11	39
	9.72	9.72	7.64	27.08
	35.90	35.90	28.21	
	21.88	25.93	42.31	
Total	64	54	26	144
	44.44	37.50	18.06	100.00

Frequency Missing = 5

TABLE OF Q27 BY Q10

Q27(27. What is your class standing)

Q10(10. Have you taken ecosystem science?)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	28	38	66
	19.44	26.39	45.83
	42.42	57.58	
	35.00	59.38	
First term senio r	29	11	40
	20.14	7.64	27.78
	72.50	27.50	
	36.25	17.19	
Second term seni or	23	15	38
	15.97	10.42	26.39
	60.53	39.47	
	28.75	23.44	
Total	80	64	144
	55.56	44.44	100.00

Frequency Missing = 5

TABLE OF Q27 BY Q11

Q27(27. What is your class standing)

Q11(11. Were concepts of ecosystem taught?)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	42	22	64
	29.79	15.60	45.39
	65.63	34.38	
	40.78	57.89	
First term senior	35	4	39
	24.82	2.84	27.66
	89.74	10.26	
	33.98	10.53	
Second term senior	26	12	38
	18.44	8.51	26.95
	68.42	31.58	
	25.24	31.58	
Total	103	38	141
	73.05	26.95	100.00

Frequency Missing = 8

TABLE OF Q27 BY Q12

Q27(27. What is your class standing)

Q12(12. Profs stress importance of ecosystem)

Frequency Percent Row Pct Col Pct	Yes, most did	Yes, some did	No	Total
Freshman	31	25	8	64
	22.14	17.86	5.71	45.71
	48.44	39.06	12.50	
	39.74	55.56	47.06	
First term senior	28	11	0	39
	20.00	7.86	0.00	27.86
	71.79	28.21	0.00	
	35.90	24.44	0.00	
Second term senior	19	9	9	37
	13.57	6.43	6.43	26.43
	51.35	24.32	24.32	
	24.36	20.00	52.94	
Total	78	45	17	140
	55.71	32.14	12.14	100.00

Frequency Missing = 9

TABLE OF Q27 BY Q13

Q27(27. What is your class standing)

Q13(13. Do you understand ecosystems?)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	53	11	64
	38.13	7.91	46.04
	82.81	17.19	
	44.17	57.89	
First term senior	36	3	39
	25.90	2.16	28.06
	92.31	7.69	
	30.00	15.79	
Second term senior	31	5	36
	22.30	3.60	25.90
	86.11	13.89	
	25.83	26.32	
Total	120	19	139
	86.33	13.67	100.00

Frequency Missing = 10

TABLE OF Q27 BY Q14

Q27(27. What is your class standing)

Q14(14. Understanding of ecological successi)

Frequency Percent Row Pct Col Pct	Plant and animal community change	Energy flow through ecosystems	Interrelationships between living and non-living	Abundance of plant and animal communities	Total
Freshman	29 22.14 48.33 46.03	0 0.00 0.00 0.00	27 20.61 45.00 49.09	4 3.05 6.67 57.14	60 45.80
First term senior	16 12.21 43.24 25.40	4 3.05 10.81 66.67	15 11.45 40.54 27.27	2 1.53 5.41 28.57	37 28.24
Second term senior	18 13.74 52.94 28.57	2 1.53 5.88 33.33	13 9.92 38.24 23.64	1 0.76 2.94 14.29	34 25.95
Total	63 48.09	6 4.58	55 41.98	7 5.34	131 100.00

Frequency Missing = 18

TABLE OF Q27 BY Q15

Q27(27. What is your class standing) Q15(15. Food web describe which?)

Frequency Percent Row Pct Col Pct	Production and accumulation of carbohydrates	Energy flow through an ecosystem	Plant and animal community change	Population growth in an ecosystem	Total
Freshman	12 9.16 19.35 54.55	31 23.66 50.00 41.33	5 3.82 8.06 35.71	14 10.69 22.58 70.00	62 47.33
First term senior	7 5.34 18.42 31.82	22 16.79 57.89 29.33	7 5.34 18.42 50.00	2 1.53 5.26 10.00	38 29.01
Second term senior	3 2.29 9.68 13.64	22 16.79 70.97 29.33	2 1.53 6.45 14.29	4 3.05 12.90 20.00	31 23.66
Total	22 16.79	75 57.25	14 10.69	20 15.27	131 100.00

Frequency Missing = 18

TABLE OF Q27 BY Q16

Q27(27. What is your class standing) Q16(16. Diff between community & ecosystem)

Frequency Percent Row Pct Col Pct	Plants	Animals	Bacteria	Humans	The physical environment	Total
Freshman	11	9	11	4	27	62
	8.27	6.77	8.27	3.01	20.30	46.62
	17.74	14.52	17.74	6.45	43.55	
	68.75	90.00	50.00	50.00	35.06	
First term senior	2	1	5	3	27	38
	1.50	0.75	3.76	2.26	20.30	28.57
	5.26	2.63	13.16	7.89	71.05	
	12.50	10.00	22.73	37.50	35.06	
Second term senior	3	0	6	1	23	33
	2.26	0.00	4.51	0.75	17.29	24.81
	9.09	0.00	18.18	3.03	69.70	
	18.75	0.00	27.27	12.50	29.87	
Total	16	10	22	8	77	133
	12.03	7.52	16.54	6.02	57.89	100.00

Frequency Missing = 16

TABLE OF Q27 BY Q17

Q27(27. What is your class standing) Q17(17. Trees have the ability to)

Frequency Percent Row Pct Col Pct	Shade soils	Convert Carbon dioxide into carbohydrates	Store large quaantities of water	Provide wildlife habitat	Produce oxygen	Total
Freshman	3 2.14 4.76 42.86	13 9.29 20.63 46.43	1 0.71 1.59 33.33	4 2.86 6.35 57.14	42 30.00 66.67 44.21	63 45.00
First term senior	4 2.86 10.00 57.14	4 2.86 10.00 14.29	1 0.71 2.50 33.33	2 1.43 5.00 28.57	29 20.71 72.50 30.53	40 28.57
Second term senior	0 0.00 0.00 0.00	11 7.86 29.73 39.29	1 0.71 2.70 33.33	1 0.71 2.70 14.29	24 17.14 64.86 25.26	37 26.43
Total	7 5.00	28 20.00	3 2.14	7 5.00	95 67.86	140 100.00

Frequency Missing = 9

TABLE OF Q27 BY Q18

Q27(27. What is your class standing)

Q18(18. Which decreases as succesion proceed)

Frequency Percent Row Pct Col Pct	Soil depth	Humidity	Animal diversity	Soil temperature	Total
Freshman	12	6	30	10	58
	9.68	4.84	24.19	8.06	46.77
	20.69	10.34	51.72	17.24	
	46.15	85.71	47.62	35.71	
First term senior	9	1	20	6	36
	7.26	0.81	16.13	4.84	29.03
	25.00	2.78	55.56	16.67	
	34.62	14.29	31.75	21.43	
Second term senior	5	0	13	12	30
	4.03	0.00	10.48	9.68	24.19
	16.67	0.00	43.33	40.00	
	19.23	0.00	20.63	42.86	
Total	26	7	63	28	124
	20.97	5.65	50.81	22.58	100.00

Frequency Missing = 25

TABLE OF Q27 BY Q19

Q27(27. What is your class standing)

Q19(19. Least likely part of forest manageme)

Frequency Percent Row Pct Col Pct	Maintain decomposition and nitrogen fixation	Involve society in decision making	Use modern imaging techniques	Plant a monculture of douglas fir	Consider downstream effects	Total
Freshman	3	8	25	20	4	60
	2.33	6.20	19.38	15.50	3.10	46.51
	5.00	13.33	41.67	33.33	6.67	
	50.00	33.33	75.76	32.79	80.00	
First term senior	2	6	4	24	1	37
	1.55	4.65	3.10	18.60	0.78	28.68
	5.41	16.22	10.81	64.86	2.70	
	33.33	25.00	12.12	39.34	20.00	
Second term senior	1	10	4	17	0	32
	0.78	7.75	3.10	13.18	0.00	24.81
	3.13	31.25	12.50	53.13	0.00	
	16.67	41.67	12.12	27.87	0.00	
Total	6	24	33	61	5	129
	4.65	18.60	25.58	47.29	3.88	100.00

Frequency Missing = 20

TABLE OF Q27 BY Q20

Q27(27. What is your class standing)

Q20(20. Have you taken a GIS course?)

Frequency Percent Row Pct Col Pct	No	Yes	Total
Freshman	65	1	66
	44.22	0.68	44.90
	98.48	1.52	
	57.02	3.03	
First term senio r	29	12	41
	19.73	8.16	27.89
	70.73	29.27	
	25.44	36.36	
Second term seni or	20	20	40
	13.61	13.61	27.21
	50.00	50.00	
	17.54	60.61	
Total	114	33	147
	77.55	22.45	100.00

Frequency Missing = 2

TABLE OF Q27 BY Q20A

Q27(27. What is your class standing)

Q20A(20a. How often did you use GIS?)

Frequency Percent Row Pct Col Pct	Often	Occasionally	Never	Total
Freshman	0	1	0	1
	0.00	3.03	0.00	3.03
	0.00	100.00	0.00	
	0.00	7.14	0.00	
First term senior	5	7	0	12
	15.15	21.21	0.00	36.36
	41.67	58.33	0.00	
	27.78	50.00	0.00	
Second term senior	13	6	1	20
	39.39	18.18	3.03	60.61
	65.00	30.00	5.00	
	72.22	42.86	100.00	
Total	18	14	1	33
	54.55	42.42	3.03	100.00

Frequency Missing = 116

TABLE OF Q27 BY Q20B

Q27(27. What is your class standing)

Q20B(20b. Was learning GIS important?)

Frequency Percent Row Pct Col Pct	Important	Unimportant	Total
Freshman	1	0	1
	3.03	0.00	3.03
	100.00	0.00	
	3.13	0.00	
First term senior	12	0	12
	36.36	0.00	36.36
	100.00	0.00	
	37.50	0.00	
Second term senior	19	1	20
	57.58	3.03	60.61
	95.00	5.00	
	59.38	100.00	
Total	32	1	33
	96.97	3.03	100.00

Frequency Missing = 116

TABLE OF Q27 BY Q20C

Q27(27. What is your class standing)

Q20C(20c. Profs stress GIS as important)

Frequency Percent Row Pct Col Pct	Yes, most did	Yes, some did	No	Total
Freshman	1	0	0	1
	3.03	0.00	0.00	3.03
	100.00	0.00	0.00	
	4.00	0.00	0.00	
First term senior	9	3	0	12
	27.27	9.09	0.00	36.36
	75.00	25.00	0.00	
	36.00	42.86	0.00	
Second term senior	15	4	1	20
	45.45	12.12	3.03	60.61
	75.00	20.00	5.00	
	60.00	57.14	100.00	
Total	25	7	1	33
	75.76	21.21	3.03	100.00

Frequency Missing = 116

TABLE OF Q27 BY Q21

Q27(27. What is your class standing)

Q21(21. Have taken part in job education)

Frequency Percent Row Pct Col Pct	No	Yes	Total
Freshman	48	18	66
	32.65	12.24	44.90
	72.73	27.27	
	55.17	30.00	
First term senio r	24	17	41
	16.33	11.56	27.89
	58.54	41.46	
	27.59	28.33	
Second term seni or	15	25	40
	10.20	17.01	27.21
	37.50	62.50	
	17.24	41.67	
Total	87	60	147
	59.18	40.82	100.00

Frequency Missing = 2

TABLE OF Q27 BY Q21A

Q27(27. What is your class standing)

Q21A(21a. How important was work experience?)

Frequency Percent Row Pct Col Pct	Very importan	Somewhat importan	Not importan	Total
Freshman	15	2	1	18
	25.00	3.33	1.67	30.00
	83.33	11.11	5.56	
	31.25	18.18	100.00	
First term senio r	13	4	0	17
	21.67	6.67	0.00	28.33
	76.47	23.53	0.00	
	27.08	36.36	0.00	
Second term seni or	20	5	0	25
	33.33	8.33	0.00	41.67
	80.00	20.00	0.00	
	41.67	45.45	0.00	
Total	48	11	1	60
	80.00	18.33	1.67	100.00

Frequency Missing = 89

TABLE OF Q27 BY Q21B

Q27(27. What is your class standing)
Q21B(21b. Did work involve technical skills?)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	15	3	18
	25.00	5.00	30.00
	83.33	16.67	
	27.78	50.00	
First term senior	16	1	17
	26.67	1.67	28.33
	94.12	5.88	
	29.63	16.67	
Second term senior	23	2	25
	38.33	3.33	41.67
	92.00	8.00	
	42.59	33.33	
Total	54	6	60
	90.00	10.00	100.00

Frequency Missing = 89

TABLE OF Q27 BY Q21CA

Q27(27. What is your class standing) Q21CA(a. Mathematics courses)

Frequency Percent Row Pct Col Pct	Often	Sometimes	Never	Have not taken	Total
Freshman	5	8	1	3	17
	8.47	13.56	1.69	5.08	28.81
	29.41	47.06	5.88	17.65	
	22.73	29.63	14.29	100.00	
First term senior	7	6	4	0	17
	11.86	10.17	6.78	0.00	28.81
	41.18	35.29	23.53	0.00	
	31.82	22.22	57.14	0.00	
Second term senior	10	13	2	0	25
	16.95	22.03	3.39	0.00	42.37
	40.00	52.00	8.00	0.00	
	45.45	48.15	28.57	0.00	
Total	22	27	7	3	59
	37.29	45.76	11.86	5.08	100.00

Frequency Missing = 90

TABLE OF Q27 BY Q21CB

Q27(27. What is your class standing) Q21CB(b. Science courses)

Frequency Percent Row Pct Col Pct	Often	Sometimes	Never	Have not taken	Total
Freshman	7	3	1	6	17
	12.07	5.17	1.72	10.34	29.31
	41.18	17.65	5.88	35.29	
	36.84	13.64	14.29	60.00	
First term senior	7	7	2	1	17
	12.07	12.07	3.45	1.72	29.31
	41.18	41.18	11.76	5.88	
	36.84	31.82	28.57	10.00	
Second term senior	5	12	4	3	24
	8.62	20.69	6.90	5.17	41.38
	20.83	50.00	16.67	12.50	
	26.32	54.55	57.14	30.00	
Total	19	22	7	10	58
	32.76	37.93	12.07	17.24	100.00

Frequency Missing = 91

TABLE OF Q27 BY Q21CC

Q27(27. What is your class standing) Q21CC(c. GIS courses)

Frequency Percent Row Pct Col Pct	Often	Sometimes	Never	Have not taken	Total
Freshman	0	0	2	13	15
	0.00	0.00	3.57	23.21	26.79
	0.00	0.00	13.33	86.67	
	0.00	0.00	18.18	52.00	
First term senior	2	5	4	5	16
	3.57	8.93	7.14	8.93	28.57
	12.50	31.25	25.00	31.25	
	20.00	50.00	36.36	20.00	
Second term senior	8	5	5	7	25
	14.29	8.93	8.93	12.50	44.64
	32.00	20.00	20.00	28.00	
	80.00	50.00	45.45	28.00	
Total	10	10	11	25	56
	17.86	17.86	19.64	44.64	100.00

Frequency Missing = 93

TABLE OF Q27 BY Q21CD

Q27(27. What is your class standing)

Q21CD(d. Communications)

Frequency Percent Row Pct Col Pct	Often	Sometimes	Never	Total
Freshman	12	4	1	17
	20.34	6.78	1.69	28.81
	70.59	23.53	5.88	
	30.00	28.57	20.00	
First term senior	12	4	1	17
	20.34	6.78	1.69	28.81
	70.59	23.53	5.88	
	30.00	28.57	20.00	
Second term senior	16	6	3	25
	27.12	10.17	5.08	42.37
	64.00	24.00	12.00	
	40.00	42.86	60.00	
Total	40	14	5	59
	67.80	23.73	8.47	100.00

Frequency Missing = 90

TABLE OF Q27 BY Q22

Q27(27. What is your class standing)

Q22(22. Rating of acedemic level)

Frequency Percent Row Pct Col Pct	Very difficult and required special effort	Challenging but within my abilities	Fairly easy and required minimal effort	Total
Freshman	8	52	5	65
	5.59	36.36	3.50	45.45
	12.31	80.00	7.69	
	47.06	44.83	50.00	
First term senior	2	32	4	38
	1.40	22.38	2.80	26.57
	5.26	84.21	10.53	
	11.76	27.59	40.00	
Second term senior	7	32	1	40
	4.90	22.38	0.70	27.97
	17.50	80.00	2.50	
	41.18	27.59	10.00	
Total	17	116	10	143
	11.89	81.12	6.99	100.00

Frequency Missing = 6

TABLE OF Q27 BY Q23

Q27(27. What is your class standing)

Q23(23. Overall results of education)

Frequency Percent Row Pct Col Pct	Taught me essential knowlege	Important knowlege but unimportant parts	Important knowlege but not essential	Other	Total
Freshman	41 28.28 62.12 44.09	18 12.41 27.27 46.15	3 2.07 4.55 42.86	4 2.76 6.06 66.67	66 45.52
First term senior	29 20.00 74.36 31.18	9 6.21 23.08 23.08	1 0.69 2.56 14.29	0 0.00 0.00 0.00	39 26.90
Second term senior	23 15.86 57.50 24.73	12 8.28 30.00 30.77	3 2.07 7.50 42.86	2 1.38 5.00 33.33	40 27.59
Total	93 64.14	39 26.90	7 4.83	6 4.14	145 100.00

Frequency Missing = 4

TABLE OF Q27 BY Q24

Q27(27. What is your class standing)

Q24(24. Do you have an advisor?)

Frequency Percent Row Pct Col Pct	No	Yes	Total
Freshman	26	40	66
	17.69	27.21	44.90
	39.39	60.61	
	57.78	39.22	
First term senio r	8	33	41
	5.44	22.45	27.89
	19.51	80.49	
	17.78	32.35	
Second term seni or	11	29	40
	7.48	19.73	27.21
	27.50	72.50	
	24.44	28.43	
Total	45	102	147
	30.61	69.39	100.00

Frequency Missing = 2

TABLE OF Q27 BY Q24A

Q27(27. What is your class standing)

Q24A(24a. How do you meet advisor?)

Frequency Percent Row Pct Col Pct	At least once a month	One or two times a term	Never	Total
Freshman	12	21	7	40
	11.88	20.79	6.93	39.60
	30.00	52.50	17.50	
	41.38	35.00	58.33	
First term senior	11	19	2	32
	10.89	18.81	1.98	31.68
	34.38	59.38	6.25	
	37.93	31.67	16.67	
Second term senior	6	20	3	29
	5.94	19.80	2.97	28.71
	20.69	68.97	10.34	
	20.69	33.33	25.00	
Total	29	60	12	101
	28.71	59.41	11.88	100.00

Frequency Missing = 48

TABLE OF Q27 BY Q24B

Q27(27. What is your class standing)

Q24B(24b. Has advisor discussed job market?)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	25	14	39
	24.75	13.86	38.61
	64.10	35.90	
	36.76	42.42	
First term senior	25	8	33
	24.75	7.92	32.67
	75.76	24.24	
	36.76	24.24	
Second term senior	18	11	29
	17.82	10.89	28.71
	62.07	37.93	
	26.47	33.33	
Total	68	33	101
	67.33	32.67	100.00

Frequency Missing = 48

TABLE OF Q27 BY Q25

Q27(27. What is your class standing)

	Q25(25. Was sequence clearly explained?)		
Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	36 25.17 55.38 40.91	29 20.28 44.62 52.73	65 45.45
First term senio r	28 19.58 71.79 31.82	11 7.69 28.21 20.00	39 27.27
Second term seni or	24 16.78 61.54 27.27	15 10.49 38.46 27.27	39 27.27
Total	88 61.54	55 38.46	143 100.00

Frequency Missing = 6

TABLE OF Q27 BY Q26

Q27(27. What is your class standing)

Q26(26. Have taken reccomended sequence)

Frequency Percent Row Pct Col Pct	Yes, most courses	Yes, some courses	No. not following the sequence	I am not sure	Total
Freshman	21	20	5	19	65
	14.38	13.70	3.42	13.01	44.52
	32.31	30.77	7.69	29.23	
	40.38	37.74	27.78	82.61	
First term senior	14	18	7	2	41
	9.59	12.33	4.79	1.37	28.08
	34.15	43.90	17.07	4.88	
	26.92	33.96	38.89	8.70	
Second term senior	17	15	6	2	40
	11.64	10.27	4.11	1.37	27.40
	42.50	37.50	15.00	5.00	
	32.69	28.30	33.33	8.70	
Total	52	53	18	23	146
	35.62	36.30	12.33	15.75	100.00

Frequency Missing = 3

TABLE OF Q27 BY Q28

Q27(27. What is your class standing) Q28(28. Mathematics in high school)

Frequency Percent Row Pct Col Pct	Elementary algebra	Intermediate algebra	Advanced mathematics	Other	Total
Freshman	13	27	12	12	64
	9.15	19.01	8.45	8.45	45.07
	20.31	42.19	18.75	18.75	
	37.14	45.00	46.15	57.14	
First term senior	7	19	7	6	39
	4.93	13.38	4.93	4.23	27.46
	17.95	48.72	17.95	15.38	
	20.00	31.67	26.92	28.57	
Second term senior	15	14	7	3	39
	10.56	9.86	4.93	2.11	27.46
	38.46	35.90	17.95	7.69	
	42.86	23.33	26.92	14.29	
Total	35	60	26	21	142
	24.65	42.25	18.31	14.79	100.00

Frequency Missing = 7

TABLE OF Q27 BY Q29A

Q27(27. What is your class standing)

	Q29A(a. General science)		
Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	57 39.31 86.36 44.88	9 6.21 13.64 50.00	66 45.52
First term senior	31 21.38 77.50 24.41	9 6.21 22.50 50.00	40 27.59
Second term senior	39 26.90 100.00 30.71	0 0.00 0.00 0.00	39 26.90
Total	127 87.59	18 12.41	145 100.00

Frequency Missing = 4

TABLE OF Q27 BY Q29B

Q27(27. What is your class standing)
Q29B(b. Biology)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	43	23	66
	29.66	15.86	45.52
	65.15	34.85	
	46.24	44.23	
First term senio r	26	14	40
	17.93	9.66	27.59
	65.00	35.00	
	27.96	26.92	
Second term seni or	24	15	39
	16.55	10.34	26.90
	61.54	38.46	
	25.81	28.85	
Total	93	52	145
	64.14	35.86	100.00

Frequency Missing = 4

TABLE OF Q27 BY Q29C

Q27(27. What is your class standing)

Q29C(c. Chemistry)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	24	42	66
	16.55	28.97	45.52
	36.36	63.64	
	44.44	46.15	
First term senior	13	27	40
	8.97	18.62	27.59
	32.50	67.50	
	24.07	29.67	
Second term senior	17	22	39
	11.72	15.17	26.90
	43.59	56.41	
	31.48	24.18	
Total	54	91	145
	37.24	62.76	100.00

Frequency Missing = 4

TABLE OF Q27 BY Q29D

Q27(27. What is your class standing)
Q29D(d. Physics)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	8	58	66
	5.52	40.00	45.52
	12.12	87.88	
	34.78	47.54	
First term senio r	5	35	40
	3.45	24.14	27.59
	12.50	87.50	
	21.74	28.69	
Second term seni or	10	29	39
	6.90	20.00	26.90
	25.64	74.36	
	43.48	23.77	
Total	23	122	145
	15.86	84.14	100.00

Frequency Missing = 4

TABLE OF Q27 BY Q29E

Q27(27. What is your class standing)

	Q29E(e. Environmental Science)		
Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	30 20.69 45.45 47.62	36 24.83 54.55 43.90	66 45.52
First term senior	20 13.79 50.00 31.75	20 13.79 50.00 24.39	40 27.59
Second term senior	13 8.97 33.33 20.63	26 17.93 66.67 31.71	39 26.90
Total	63 43.45	82 56.55	145 100.00

Frequency Missing = 4

TABLE OF Q27 BY Q30

Q27(27. What is your class standing) Q30(30. Education level prior to program)

Frequency Percent Row Pct Col Pct	High school graduate or GED	Less than two years or college	More than two years but did not graduate	Associate degree	Bachelor degree	Other	Total
Freshman	45	10	4	1	2	3	65
	31.03	6.90	2.76	0.69	1.38	2.07	44.83
	69.23	15.38	6.15	1.54	3.08	4.62	
	51.72	33.33	44.44	20.00	25.00	50.00	
First term senior	25	10	1	1	3	1	41
	17.24	6.90	0.69	0.69	2.07	0.69	28.28
	60.98	24.39	2.44	2.44	7.32	2.44	
	28.74	33.33	11.11	20.00	37.50	16.67	
Second term senior	17	10	4	3	3	2	39
	11.72	6.90	2.76	2.07	2.07	1.38	26.90
	43.59	25.64	10.26	7.69	7.69	5.13	
	19.54	33.33	44.44	60.00	37.50	33.33	
Total	87	30	9	5	8	6	145
	60.00	20.69	6.21	3.45	5.52	4.14	100.00

Frequency Missing = 4

TABLE OF Q27 BY Q31

Q27(27. What is your class standing)

Q31(31. Did you take admission test?)

Frequency Percent Row Pct Col Pct	No	Yes	Total
Freshman	15	51	66
	10.27	34.93	45.21
	22.73	77.27	
	35.71	49.04	
First term senio r	15	25	40
	10.27	17.12	27.40
	37.50	62.50	
	35.71	24.04	
Second term seni or	12	28	40
	8.22	19.18	27.40
	30.00	70.00	
	28.57	26.92	
Total	42	104	146
	28.77	71.23	100.00

Frequency Missing = 3

TABLE OF Q27 BY Q31AA

Q27(27. What is your class standing)

Q31AA(a. Special courses in mathematics)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	26	24	50
	25.49	23.53	49.02
	52.00	48.00	
	57.78	42.11	
First term senio r	10	15	25
	9.80	14.71	24.51
	40.00	60.00	
	22.22	26.32	
Second term seni or	9	18	27
	8.82	17.65	26.47
	33.33	66.67	
	20.00	31.58	
Total	45	57	102
	44.12	55.88	100.00

Frequency Missing = 47

TABLE OF Q27 BY Q31AB

Q27(27. What is your class standing)

Q31AB(b. Special courses in english)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	21	29	50
	20.59	28.43	49.02
	42.00	58.00	
	55.26	45.31	
First term senio r	8	17	25
	7.84	16.67	24.51
	32.00	68.00	
	21.05	26.56	
Second term seni or	9	18	27
	8.82	17.65	26.47
	33.33	66.67	
	23.68	28.13	
Total	38	64	102
	37.25	62.75	100.00

Frequency Missing = 47

TABLE OF Q27 BY Q31AC

Q27(27. What is your class standing)

Q31AC(c. Special courses in reading)

Frequency Percent Row Pct Col Pct	Yes	No	Total
Freshman	11	39	50
	10.78	38.24	49.02
	22.00	78.00	
	73.33	44.83	
First term senio r	2	23	25
	1.96	22.55	24.51
	8.00	92.00	
	13.33	26.44	
Second term seni or	2	25	27
	1.96	24.51	26.47
	7.41	92.59	
	13.33	28.74	
Total	15	87	102
	14.71	85.29	100.00

Frequency Missing = 47

TABLE OF Q27 BY Q32

Q27(27. What is your class standing)

Q32(32. Plans upon graduation)

Frequency Percent Row Pct Col Pct	Employment in my field	Employment not in some other area	Continue my education	Total
Freshman	31 21.83 47.69 43.06	3 2.11 4.62 75.00	31 21.83 47.69 46.97	65 45.77
First term senior	17 11.97 44.74 23.61	1 0.70 2.63 25.00	20 14.08 52.63 30.30	38 26.76
Second term senior	24 16.90 61.54 33.33	0 0.00 0.00 0.00	15 10.56 38.46 22.73	39 27.46
Total	72 50.70	4 2.82	66 46.48	142 100.00

Frequency Missing = 7

TABLE OF Q27 BY Q33

Q27(27. What is your class standing)

Q33(33. How likely to obtain bachelors degre)

Frequency Percent Row Pct Col Pct	Very likely	Somewhat likely	Not too likely	Not at all likely	Total
Freshman	27	27	7	2	63
	19.01	19.01	4.93	1.41	44.37
	42.86	42.86	11.11	3.17	
	44.26	52.94	29.17	33.33	
First term senior	19	10	9	1	39
	13.38	7.04	6.34	0.70	27.46
	48.72	25.64	23.08	2.56	
	31.15	19.61	37.50	16.67	
Second term senior	15	14	8	3	40
	10.56	9.86	5.63	2.11	28.17
	37.50	35.00	20.00	7.50	
	24.59	27.45	33.33	50.00	
Total	61	51	24	6	142
	42.96	35.92	16.90	4.23	100.00

Frequency Missing = 7

TABLE OF Q27 BY Q34

Q27(27. What is your class standing) Q34(34. Current employment status)

Frequency Percent Row Pct Col Pct	Not employed for pay	Part-time in area related to my program	Full-time in area related to my program	Part-time in area not related to program	Full-time in area not related to program	Total
Freshman	30 20.69 46.15 50.00	13 8.97 20.00 37.14	2 1.38 3.08 20.00	18 12.41 27.69 51.43	2 1.38 3.08 40.00	65 44.83
First term senior	16 11.03 40.00 26.67	11 7.59 27.50 31.43	2 1.38 5.00 20.00	9 6.21 22.50 25.71	2 1.38 5.00 40.00	40 27.59
Second term senior	14 9.66 35.00 23.33	11 7.59 27.50 31.43	6 4.14 15.00 60.00	8 5.52 20.00 22.86	1 0.69 2.50 20.00	40 27.59
Total	60 41.38	35 24.14	10 6.90	35 24.14	5 3.45	145 100.00

Frequency Missing = 4

TABLE OF Q27 BY Q35

Q27(27. What is your class standing) Q35(35. Age category)

Frequency Percent Row Pct Col Pct	22 or younger	23 to 28	29 to 35	36 to 45	46 or older	Total
Freshman	38	7	8	10	1	64
	26.39	4.86	5.56	6.94	0.69	44.44
	59.38	10.94	12.50	15.63	1.56	
	54.29	33.33	53.33	34.48	11.11	
First term senior	23	5	3	7	2	40
	15.97	3.47	2.08	4.86	1.39	27.78
	57.50	12.50	7.50	17.50	5.00	
	32.86	23.81	20.00	24.14	22.22	
Second term senior	9	9	4	12	6	40
	6.25	6.25	2.78	8.33	4.17	27.78
	22.50	22.50	10.00	30.00	15.00	
	12.86	42.86	26.67	41.38	66.67	
Total	70	21	15	29	9	144
	48.61	14.58	10.42	20.14	6.25	100.00

Frequency Missing = 5

TABLE OF Q27 BY Q36

Q27(27. What is your class standing)

Frequency Percent Row Pct Col Pct	Q36(36. Gender) Male	Female	Total
Freshman	40 27.40 60.61 47.06	26 17.81 39.39 42.62	66 45.21
First term senio r	23 15.75 57.50 27.06	17 11.64 42.50 27.87	40 27.40
Second term seni or	22 15.07 55.00 25.88	18 12.33 45.00 29.51	40 27.40
Total	85 58.22	61 41.78	146 100.00

Frequency Missing = 3

STUDENT DATA PROFILE
by
YEAR 1 VERSUS YEAR 2 COLLEGES

Natural Resource Students Survey--Central Oregon, Grays Harbor and Shasta

COLLEGE

CC	Frequency	Percent
Central Oregon	16	14.7
Grays Harbor	19	17.4
Shasta	74	67.9

What is your major field?

Q1	Frequency	Percent
Wildlife	6	5.7
Forestry	6	5.7
Forestry-Option	2	1.9
Water Resources	2	1.9
Natural Resources	21	19.8
Agriculture	29	27.4
Equine	1	0.9
Horticulture	16	15.1
Fisheries	7	6.6
GIS	16	15.1

Frequency Missing = 3

How long have you been enrolled?

Q2	Frequency	Percent
Less than one year	44	40.7
More then one less than two years	33	30.6
Two to three years	24	22.2
More than three less than four years	3	2.8
Four years or more	4	3.7

Frequency Missing = 1

3. Indicate whether you took the following mathematics courses

a. Technical mathematics

Q3A	Frequency	Percent
Yes	29	27.1
No	78	72.9

Frequency Missing = 2

b. Trigonometry

Q3B	Frequency	Percent
Yes	24	22.4
No	83	77.6

Frequency Missing = 2

c. Geometry

Q3C	Frequency	Percent
Yes	39	36.4
No	68	63.6

Frequency Missing = 2

d. Algebra(non-college level)

Q3D	Frequency	Percent
Yes	69	64.5
No	38	35.5

Frequency Missing = 2

e. Algebra(college level)

Q3E	Frequency	Percent
Yes	46	43.0
No	61	57.0

Frequency Missing = 2

f. Statistics

Q3F	Frequency	Percent
Yes	34	32.4
No	71	67.6

Frequency Missing = 4

g. College level mathematics

Q3G	Frequency	Percent
Yes	25	23.8
No	80	76.2

Frequency Missing = 4

4. How often have used mathematics?

Q4	Frequency	Percent
Never	18	16.7
Often	41	38.0
Occasionally	49	45.4

Frequency Missing = 1

4a. Indicate if each are of mathematics was useful

a. Basic arithmetic

Q4AA	Frequency	Percent
Very	70	78.7
Somewhat	15	16.9
Not used	4	4.5

Frequency Missing = 20

b. Trigonometry

Q4AB	Frequency	Percent
Very	13	14.6

Somewhat	19	21.3
Not used	57	64.0

Frequency Missing = 20

c. Geometry

Q4AC	Frequency	Percent
Very	18	20.2
Somewhat	30	33.7
Not used	41	46.1

Frequency Missing = 20

d. Algebra

Q4AD	Frequency	Percent
Very	24	27.0
Somewhat	43	48.3
Not used	22	24.7

Frequency Missing = 20

The SAS System

e. Statistics

Q4AE	Frequency	Percent
Very	21	23.6
Somewhat	27	30.3
Not used	41	46.1

Frequency Missing = 20

5. Was learning math important?

Q5	Frequency	Percent
Important	87	82.1
Not important	19	17.9

Frequency Missing = 3

6. Profs stress math as important

Q6	Frequency	Percent
Yes, most did	41	38.0
Yes, some did	51	47.2
No	16	14.8

Frequency Missing = 1

7. Have you taken science courses?

Q7	Frequency	Percent
No	59	54.1
Yes	50	45.9

7a. Indicate whether you took the following science courses

a. Genearal biology

Q7AA	Frequency	Percent
Yes	22	44.9
No	27	55.1

Frequency Missing = 60

b. Specialized biology or zoology

Q7AB	Frequency	Percent
Yes	11	22.4
No	38	77.6

Frequency Missing = 60

c. Chemistry

Q7AC	Frequency	Percent
Yes	26	53.1
No	23	46.9

Frequency Missing = 60

d. Geology

Q7AD	Frequency	Percent
Yes	13	26.5
No	36	73.5

Frequency Missing = 60

e. Other

Q7AE	Frequency	Percent
Yes	20	40.0
No	30	60.0

Frequency Missing = 59

7b. Which was used most in science?

Q7B	Frequency	Percent
Only lecture	2	4.0
Lecture and labs in an inside lab	18	36.0
Lecture and labs in the field	8	16.0
Lecture, science labs and field labs	22	44.0

Frequency Missing = 59

7c. How often did use science techniques

Q7C	Frequency	Percent
Often	22	44.0
Occasionally	28	56.0

Frequency Missing = 59

8. How important is science?

Q8	Frequency	Percent
Important	89	84.8
Unimportant	16	15.2

Frequency Missing = 4

9. Profs stress science as important

Q9	Frequency	Percent
Yes, most did	38	35.5
Yes, some did	46	43.0
No	23	21.5

Frequency Missing = 2

10. Have you taken ecosystem science?

Q10	Frequency	Percent
Yes	55	51.9
No	51	48.1

Frequency Missing = 3

11. Were concepts of ecosystem taught?

Q11	Frequency	Percent
Yes	71	68.3
No	33	31.7

Frequency Missing = 5

12. Profs stress importance of ecosystem

Q12	Frequency	Percent
Yes, most did	55	53.4
Yes, some did	36	35.0
No	12	11.7

Frequency Missing = 6

13. Do you understand ecosystems?

Q13	Frequency	Percent
Yes	88	86.3
No	14	13.7

Frequency Missing = 7

14. Understanding of ecological successi

Q14	Frequency	Percent
Plant and animal community change	40	42.1
Energy flow through ecosystems	5	5.3
Interrelationships between living and non-living	44	46.3
Abundance of plant and animal communities	6	6.3

Frequency Missing = 14

15. Food web describe which?

Q15	Frequency	Percent
Production and accumulation of carbohydrates	19	20.0
Energy flow through an ecosystem	47	49.5
Plant and animal community change	12	12.6
Population growth in an ecosystem	17	17.9

Frequency Missing = 14

16. Diff between community & ecosystem

Q16	Frequency	Percent
Plants	9	9.3
Animals	7	7.2
Bacteria	22	22.7
Humans	6	6.2
The physical environment	53	54.6

Frequency Missing = 12

17. Trees have the ability to

Q17	Frequency	Percent
Shade soils	5	4.8
Convert Carbon dioxide into carbohydrates	24	23.1
Store large quantities of water	3	2.9
Provide wildlife habitat	5	4.8
Produce oxygen	67	64.4

Frequency Missing = 5

18. Which decreases as succession proceed

Q18	Frequency	Percent
Soil depth	20	22.7
Humidity	5	5.7
Animal diversity	45	51.1
Soil temperature	18	20.5

Frequency Missing = 21

19. Least likely part of forest manageme

Q19	Frequency	Percent
Maintain decomposition and nitrogen fixation	6	6.4
Involve society in decision making	20	21.3
Use modern imaging techniques	22	23.4
Plant a monoculture of douglas fir	43	45.7
Consider downstream effects	3	3.2

Frequency Missing = 15

20. Have you taken a GIS course?

Q20	Frequency	Percent
No	83	76.1
Yes	26	23.9

20a. How often did you use GIS?

Q20A	Frequency	Percent
Often	17	65.4
Occasionally	9	34.6

Frequency Missing = 83

20b. Was learning GIS important?

Q20B	Frequency	Percent
Important	25	96.2
Unimportant	1	3.8

Frequency Missing = 83

20c. Profs stress GIS as important

Q20C	Frequency	Percent
Yes, most did	21	80.8
Yes, some did	4	15.4
No	1	3.8

Frequency Missing = 83

21. Have taken part in job education

Q21	Frequency	Percent
No	55	50.5
Yes	54	49.5

21a. How important was work experience?

Q21A	Frequency	Percent
Very important	43	79.6
Somewhat important but not essential	10	18.5
Not important	1	1.9

Frequency Missing = 55

21b. Did work involve technical skills?

Q21B	Frequency	Percent
Yes	49	90.7
No	5	9.3

Frequency Missing = 55

21c. How often did you use the skills in each course

a. Mathematics courses

Q21CA	Frequency	Percent
Often	18	34.0
Sometimes	27	50.9
Never	6	11.3
Have not taken	2	3.8

Frequency Missing = 56

b. Science courses

Q21CB	Frequency	Percent
Often	17	32.7
Sometimes	21	40.4
Never	5	9.6
Have not taken	9	17.3

Frequency Missing = 57

c. GIS courses

Q21CC	Frequency	Percent
Often	10	20.0
Sometimes	8	16.0
Never	9	18.0
Have not taken	23	46.0

Frequency Missing = 59

d. Communications

Q21CD	Frequency	Percent
Often	35	66.0
Sometimes	13	24.5
Never	5	9.4

Frequency Missing = 56

22. Rating of academic level

Q22	Frequency	Percent
Very difficult and required special effort	13	12.4
Challenging but within my abilities	87	82.9
Fairly easy and required minimal effort	5	4.8

Frequency Missing = 4

23. Overall results of education

Q23	Frequency	Percent
Taught me essential knowledge	69	63.9
Important knowledge but unimportant parts	28	25.9
Important knowledge but not essential	6	5.6
Other	5	4.6

Frequency Missing = 1

24. Do you have an advisor?

Q24	Frequency	Percent
No	34	31.2
Yes	75	68.8

24a. How do you meet advisor?

Q24A	Frequency	Percent
At least once a month	22	29.7
One or two times a term	45	60.8
Never	7	9.5

Frequency Missing = 35

24b. Has advisor discussed job market?

Q24B	Frequency	Percent
Yes	53	71.6
No	21	28.4

Frequency Missing = 35

25. Was sequence clearly explained?

Q25	Frequency	Percent
Yes	65	61.9
No	40	38.1

Frequency Missing = 4

26. Have taken recommended sequence

Q26	Frequency	Percent
Yes, most courses	35	32.4
Yes, some courses	40	37.0
No. not following the sequence	19	17.6
I am not sure	14	13.0

Frequency Missing = 1

27. What is your class standing

Q27	Frequency	Percent
Freshman	42	39.3
First term senior	29	27.1
Second term senior	36	33.6

Frequency Missing = 2

28. Mathematics in high school

Q28	Frequency	Percent
Elementery algebra	24	23.3
Intermediate algebra	42	40.8
Advanced mathematics	21	20.4
Other	16	15.5

Frequency Missing = 6

29. Indicate whether you completed the following science courses

a. General science

Q29A	Frequency	Percent
Yes	92	86.0
No	15	14.0

Frequency Missing = 2

b. Biology

Q29B	Frequency	Percent
Yes	68	63.6
No	39	36.4

Frequency Missing = 2

c. Chemistry

Q29C	Frequency	Percent
Yes	41	38.3
No	66	61.7

Frequency Missing = 2

d. Physics

Q29D	Frequency	Percent
Yes	15	14.0
No	92	86.0

Frequency Missing = 2

e. Environmental Science

Q29E	Frequency	Percent
Yes	46	43.0
No	61	57.0

Frequency Missing = 2

30. Education level prior to program

Q30	Frequency	Percent
High school graduate or GED	60	56.1
Less than two years or college	24	22.4
More than two years but did not graduate	6	5.6
Associate degree	5	4.7
Bachelor degree	7	6.5
Other	5	4.7

Frequency Missing = 2

31. Did you take admission test?

Q31	Frequency	Percent
No	35	32.1
Yes	74	67.9

31a. Did you take the following to prepare for college work?

a. Special courses in mathematics

Q31AA	Frequency	Percent
Yes	30	41.7
No	42	58.3

Frequency Missing = 37

b. Special courses in english

Q31AB	Frequency	Percent
Yes	28	38.9
No	44	61.1

Frequency Missing = 37

c. Special courses in reading

Q31AC	Frequency	Percent
Yes	8	11.1
No	64	88.9

Frequency Missing = 37

32. Plans upon graduation

Q32	Frequency	Percent
Employment in my field	57	54.3
Employment not in some other area	2	1.9
Continue my education	46	43.8

Frequency Missing = 4

33. How likely to obtain bachelors degre

Q33	Frequency	Percent
Very likely	45	42.5
Somewhat likely	36	34.0
Not too likely	21	19.8
Not at all likely	4	3.8

Frequency Missing = 3

34. Current employment status

Q34	Frequency	Percent
Not employed for pay	43	40.2
Part-time in area related to my program	29	27.1
Full-time in area related to my program	10	9.3
Part-time in area not related to program	23	21.5
Full-time in area not related to program	2	1.9

Frequency Missing = 2

35. Age category

Q35	Frequency	Percent
22 or younger	43	40.2
23 to 28	17	15.9
29 to 35	10	9.3
36 to 45	29	27.1
46 or older	8	7.5

Frequency Missing = 2

36. Gender

Q36	Frequency	Percent
Male	56	51.9
Female	52	48.1

Frequency Missing = 1

Natural Resource Students Survey--Central Oregon, Grays Harbor and Shasta

COLLEGE

CC	Frequency	Percent
Central Oregon	16	14.7
Grays Harbor	19	17.4
Shasta	74	67.9

What is your major field?

Q1	Frequency	Percent
Wildlife	6	5.7
Forestry	6	5.7
Forestry-Option	2	1.9
Water Resources	2	1.9
Natural Resources	21	19.8
Agriculture	29	27.4
Equine	1	0.9
Horticulture	16	15.1
Fisheries	7	6.6
GIS	16	15.1

Frequency Missing = 3

How long have you been enrolled?

Q2	Frequency	Percent
Less than one year	44	40.7
More then one less than two years	33	30.6
Two to three years	24	22.2
More than three less than four years	3	2.8
Four years or more	4	3.7

Frequency Missing = 1

3. Indicate whether you took the following mathematics courses

a. Technical mathematics

Q3A	Frequency	Percent
Yes	29	27.1
No	78	72.9

Frequency Missing = 2

b. Trigonometry

Q3B	Frequency	Percent
Yes	24	22.4
No	83	77.6

Frequency Missing = 2

c. Geometry

Q3C	Frequency	Percent
Yes	39	36.4
No	68	63.6

Frequency Missing = 2

d. Algebra(non-college level)

Q3D	Frequency	Percent
Yes	69	64.5
No	38	35.5

Frequency Missing = 2

e. Algebra(college level)

Q3E	Frequency	Percent
Yes	46	43.0
No	61	57.0

Frequency Missing = 2

f. Statistics

Q3F	Frequency	Percent
Yes	34	32.4
No	71	67.6

Frequency Missing = 4

g. College level mathematics

Q3G	Frequency	Percent
Yes	25	23.8
No	80	76.2

Frequency Missing = 4

4. How often have used mathematics?

Q4	Frequency	Percent
Never	18	16.7
Often	41	38.0
Occasionally	49	45.4

Frequency Missing = 1

4a. Indicate if each are of mathematics was useful

a. Basic arithmetic

Q4AA	Frequency	Percent
Very	70	78.7
Somewhat	15	16.9
Not used	4	4.5

Frequency Missing = 20

b. Trigonometry

Q4AB	Frequency	Percent
Very	13	14.6

Somewhat	19	21.3
Not used	57	64.0

Frequency Missing = 20

c. Geometry

Q4AC	Frequency	Percent
Very	18	20.2
Somewhat	30	33.7
Not used	41	46.1

Frequency Missing = 20

d. Algebra

Q4AD	Frequency	Percent
Very	24	27.0
Somewhat	43	48.3
Not used	22	24.7

Frequency Missing = 20

The SAS System

e. Statistics

Q4AE	Frequency	Percent
Very	21	23.6
Somewhat	27	30.3
Not used	41	46.1

Frequency Missing = 20

5. Was learning math important?

Q5	Frequency	Percent
Important	87	82.1
Not important	19	17.9

Frequency Missing = 3

6. Profs stress math as important

Q6	Frequency	Percent
Yes, most did	41	38.0
Yes, some did	51	47.2
No	16	14.8

Frequency Missing = 1

7. Have you taken science courses?

Q7	Frequency	Percent
No	59	54.1
Yes	50	45.9

7a. Indicate whether you took the following science courses

a. Genearal biology

Q7AA	Frequency	Percent
Yes	22	44.9
No	27	55.1

Frequency Missing = 60

b. Specialized biology or zoology

Q7AB	Frequency	Percent
Yes	11	22.4
No	38	77.6

Frequency Missing = 60

c. Chemistry

Q7AC	Frequency	Percent
Yes	26	53.1
No	23	46.9

Frequency Missing = 60

d. Geology

Q7AD	Frequency	Percent
Yes	13	26.5
No	36	73.5

Frequency Missing = 60

e. Other

Q7AE	Frequency	Percent
Yes	20	40.0
No	30	60.0

Frequency Missing = 59

7b. Which was used most in science?

Q7B	Frequency	Percent
Only lecture	2	4.0
Lecture and labs in an inside lab	18	36.0
Lecture and labs in the field	8	16.0
Lecture, science labs and field labs	22	44.0

Frequency Missing = 59

7c. How often did use science techniques

Q7C	Frequency	Percent
Often	22	44.0
Occasionally	28	56.0

Frequency Missing = 59

8. How important is science?

Q8	Frequency	Percent
Important	89	84.8
Unimportant	16	15.2

Frequency Missing = 4

9. Profs stress science as important

Q9	Frequency	Percent
Yes, most did	38	35.5
Yes, some did	46	43.0
No	23	21.5

Frequency Missing = 2

10. Have you taken ecosystem science?

Q10	Frequency	Percent
Yes	55	51.9
No	51	48.1

Frequency Missing = 3

11. Were concepts of ecosystem taught?

Q11	Frequency	Percent
Yes	71	68.3
No	33	31.7

Frequency Missing = 5

12. Profs stress importance of ecosystem

Q12	Frequency	Percent
Yes, most did	55	53.4
Yes, some did	36	35.0
No	12	11.7

Frequency Missing = 6

13. Do you understand ecosystems?

Q13	Frequency	Percent
Yes	88	86.3
No	14	13.7

Frequency Missing = 7

14. Understanding of ecological successi

Q14	Frequency	Percent
Plant and animal community change	40	42.1
Energy flow through ecosystems	5	5.3
Interrelationships between living and non-living	44	46.3
Abundance of plant and animal communities	6	6.3

Frequency Missing = 14

15. Food web describe which?

Q15	Frequency	Percent
Production and accumulation of carbohydrates	19	20.0
Energy flow through an ecosystem	47	49.5
Plant and animal community change	12	12.6
Population growth in an ecosystem	17	17.9

Frequency Missing = 14

16. Diff between community & ecosystem

Q16	Frequency	Percent
Plants	9	9.3
Animals	7	7.2
Bacteria	22	22.7
Humans	6	6.2
The physical environment	53	54.6

Frequency Missing = 12

17. Trees have the ability to

Q17	Frequency	Percent
Shade soils	5	4.8
Convert Carbon dioxide into carbohydrates	24	23.1
Store large quantities of water	3	2.9
Provide wildlife habitat	5	4.8
Produce oxygen	67	64.4

Frequency Missing = 5

18. Which decreases as succession proceed

Q18	Frequency	Percent
Soil depth	20	22.7
Humidity	5	5.7
Animal diversity	45	51.1
Soil temperature	18	20.5

Frequency Missing = 21

19. Least likely part of forest manageme

Q19	Frequency	Percent
Maintain decomposition and nitrogen fixation	6	6.4
Involve society in decision making	20	21.3
Use modern imaging techniques	22	23.4
Plant a monoculture of douglas fir	43	45.7
Consider downstream effects	3	3.2

Frequency Missing = 15

20. Have you taken a GIS course?

Q20	Frequency	Percent
No	83	76.1
Yes	26	23.9

20a. How often did you use GIS?

Q20A	Frequency	Percent
Often	17	65.4
Occasionally	9	34.6

Frequency Missing = 83

20b. Was learning GIS important?

Q20B	Frequency	Percent
Important	25	96.2
Unimportant	1	3.8

Frequency Missing = 83

20c. Profs stress GIS as important

Q20C	Frequency	Percent
Yes, most did	21	80.8
Yes, some did	4	15.4
No	1	3.8

Frequency Missing = 83

21. Have taken part in job education

Q21	Frequency	Percent
No	55	50.5
Yes	54	49.5

21a. How important was work experience?

Q21A	Frequency	Percent
Very important	43	79.6
Somewhat important but not essential	10	18.5
Not important	1	1.9

Frequency Missing = 55

21b. Did work involve technical skills?

Q21B	Frequency	Percent
Yes	49	90.7
No	5	9.3

Frequency Missing = 55

21c. How often did you use the skills in each course

a. Mathematics courses

Q21CA	Frequency	Percent
Often	18	34.0
Sometimes	27	50.9
Never	6	11.3
Have not taken	2	3.8

Frequency Missing = 56

b. Science courses

Q21CB	Frequency	Percent
Often	17	32.7
Sometimes	21	40.4
Never	5	9.6
Have not taken	9	17.3

Frequency Missing = 57

c. GIS courses

Q21CC	Frequency	Percent
Often	10	20.0
Sometimes	8	16.0
Never	9	18.0
Have not taken	23	46.0

Frequency Missing = 59

d. Communications

Q21CD	Frequency	Percent
Often	35	66.0
Sometimes	13	24.5
Never	5	9.4

Frequency Missing = 56

22. Rating of academic level

Q22	Frequency	Percent
Very difficult and required special effort	13	12.4
Challenging but within my abilities	87	82.9
Fairly easy and required minimal effort	5	4.8

Frequency Missing = 4

23. Overall results of education

Q23	Frequency	Percent
Taught me essential knowledge	69	63.9
Important knowledge but unimportant parts	28	25.9
Important knowledge but not essential	6	5.6
Other	5	4.6

Frequency Missing = 1

24. Do you have an advisor?

Q24	Frequency	Percent
No	34	31.2
Yes	75	68.8

24a. How do you meet advisor?

Q24A	Frequency	Percent
At least once a month	22	29.7
One or two times a term	45	60.8
Never	7	9.5

Frequency Missing = 35

24b. Has advisor discussed job market?

Q24B	Frequency	Percent
Yes	53	71.6
No	21	28.4

Frequency Missing = 35

25. Was sequence clearly explained?

Q25	Frequency	Percent
Yes	65	61.9
No	40	38.1

Frequency Missing = 4

26. Have taken recommended sequence

Q26	Frequency	Percent
Yes, most courses	35	32.4
Yes, some courses	40	37.0
No. not following the sequence	19	17.6
I am not sure	14	13.0

Frequency Missing = 1

27. What is your class standing

Q27	Frequency	Percent
Freshman	42	39.3
First term senior	29	27.1
Second term senior	36	33.6

Frequency Missing = 2

28. Mathematics in high school

Q28	Frequency	Percent
Elementery algebra	24	23.3
Intermediate algebra	42	40.8
Advanced mathematics	21	20.4
Other	16	15.5

Frequency Missing = 6

29. Indicate whether you completed the following science courses

a. General science

Q29A	Frequency	Percent
Yes	92	86.0
No	15	14.0

Frequency Missing = 2

b. Biology

Q29B	Frequency	Percent
Yes	68	63.6
No	39	36.4

Frequency Missing = 2

c. Chemistry

Q29C	Frequency	Percent
Yes	41	38.3
No	66	61.7

Frequency Missing = 2

d. Physics

Q29D	Frequency	Percent
Yes	15	14.0
No	92	86.0

Frequency Missing = 2

e. Environmental Science

Q29E	Frequency	Percent
Yes	46	43.0
No	61	57.0

Frequency Missing = 2

30. Education level prior to program

Q30	Frequency	Percent
High school graduate or GED	60	56.1
Less than two years or college	24	22.4
More than two years but did not graduate	6	5.6
Associate degree	5	4.7
Bachelor degree	7	6.5
Other	5	4.7

Frequency Missing = 2

31. Did you take admission test?

Q31	Frequency	Percent
No	35	32.1
Yes	74	67.9

31a. Did you take the following to prepare for college work?

a. Special courses in mathematics

Q31AA	Frequency	Percent
Yes	30	41.7
No	42	58.3

Frequency Missing = 37

b. Special courses in english

Q31AB	Frequency	Percent
Yes	28	38.9
No	44	61.1

Frequency Missing = 37

c. Special courses in reading

Q31AC	Frequency	Percent
Yes	8	11.1
No	64	88.9

Frequency Missing = 37

32. Plans upon graduation

Q32	Frequency	Percent
Employment in my field	57	54.3
Employment not in some other area	2	1.9
Continue my education	46	43.8

Frequency Missing = 4

33. How likely to obtain bachelors degre

Q33	Frequency	Percent
Very likely	45	42.5
Somewhat likely	36	34.0
Not too likely	21	19.8
Not at all likely	4	3.8

Frequency Missing = 3

34. Current employment status

Q34	Frequency	Percent
Not employed for pay	43	40.2
Part-time in area related to my program	29	27.1
Full-time in area related to my program	10	9.3
Part-time in area not related to program	23	21.5
Full-time in area not related to program	2	1.9

Frequency Missing = 2

35. Age category

Q35	Frequency	Percent
22 or younger	43	40.2
23 to 28	17	15.9
29 to 35	10	9.3
36 to 45	29	27.1
46 or older	8	7.5

Frequency Missing = 2

36. Gender

Q36	Frequency	Percent
Male	56	51.9
Female	52	48.1

Frequency Missing = 1

GRADUATE DATA PROFILE

Natural Resources Graduates Survey

COLLEGE

CC	Frequency	Percent
Central Oregon	26	66.7
Chemekata	7	17.9
Grays Harbor	5	12.8
Feather River	1	2.6

1. What was your field of study?

Q1	Frequency	Percent
Wildlife	1	2.6
Forestry	18	47.4
Forestry-Option	2	5.3
Natural Resources	1	2.6
Fisheries	3	7.9
GIS	13	34.2

Frequency Missing = 1

2. How long were you enrolled?

Q2	Frequency	Percent
Two Years	19	48.7
More then two less than three years	12	30.8
Three to four years	7	17.9
More than four less than five years	1	2.6

3. What year did you graduate?

Q3	Frequency	Percent
89	1	2.6
95	1	2.6
96	1	2.6
97	9	23.1
98	27	69.2

4. Indicate whether you took the following courses

a. Technical mathematics

Q4A	Frequency	Percent
Yes took	27	69.2
No, did not	12	30.8

b. Trigonometry

Q4B	Frequency	Percent
Yes took	23	59.0
No, did not	16	41.0

c. Geometry

Q4C	Frequency	Percent
Yes took	25	64.1
No, did not	14	35.9

d. Algebra(non-college level)

Q4D	Frequency	Percent
Yes took	26	66.7
No, did not	13	33.3

e. Algebra(college level)

Q4E	Frequency	Percent
Yes took	14	35.9
No, did not	25	64.1

f. Statistics

Q4F	Frequency	Percent
Yes took	14	35.9
No, did not	25	64.1

g. College level mathematics

Q4G	Frequency	Percent
Yes took	6	15.4
No, did not	33	84.6

h. General biology

Q4H	Frequency	Percent
Yes took	14	35.9
No, did not	25	64.1

i. Specialized biology or zoology

Q4I	Frequency	Percent
Yes took	13	33.3
No, did not	26	66.7

j. Chemistry

Q4J	Frequency	Percent
Yes took	9	23.1
No, did not	30	76.9

k. Geology

Q4K	Frequency	Percent
Yes took	10	25.6
No, did not	29	74.4

5. Did you take ecosystem science?

Q5	Frequency	Percent
Yes	29	76.3
No	9	23.7

Frequency Missing = 1

6. Were concepts of ecosystem taught?

Q6	Frequency	Percent
Yes	35	92.1
No	3	7.9

Frequency Missing = 1

7. Profs stress importance of principals

Q7	Frequency	Percent
Yes, most did	23	62.2
Yes, some did	13	35.1
No	1	2.7

Frequency Missing = 2

8. Do you understand ecosystems?

Q8	Frequency	Percent
Yes	35	94.6
No	2	5.4

Frequency Missing = 2

9. Did you take GIS?

Q9	Frequency	Percent
Yes	23	60.5
No	15	39.5

Frequency Missing = 1

10. What concepts of GIS taught?

Q10	Frequency	Percent
Yes	30	78.9
No	8	21.1

Frequency Missing = 1

11. Importance of technical courses

Q11	Frequency	Percent
The most important part of my education	15	40.5
Equally important with science, math,...	18	48.6
Less important than science, math,...	4	10.8

Frequency Missing = 2

12. Completed tech courses w/o science..

Q12	Frequency	Percent
Yes	12	31.6
No	26	68.4

Frequency Missing = 1

13. Emphasis of integrating areas of stud

Q13	Frequency	Percent
Too little emphasis	5	13.2
About the right amount	33	86.8

Frequency Missing = 1

14. Teaching to solve complex problems

Q14	Frequency	Percent
Excellent	22	57.9
Good	16	42.1

Frequency Missing = 1

15. Academic level of education

Q15	Frequency	Percent
Very difficult and required special effort	5	13.5
Challenging but within my abilities	30	81.1
Fairly easy and required limited effort	2	5.4

Frequency Missing = 2

16. Overall results of education

Q16	Frequency	Percent
Taught me essential knowledge	27	71.1
Important knowledge but unimportant parts	11	28.9

Frequency Missing = 1

17. Ability as a technician

Q17	Frequency	Percent
An excellent technician	26	68.4
An adequate technician	12	31.6

Frequency Missing = 1

18. Availability of permanent jobs

Q18	Frequency	Percent
Non-existent or very limited	5	13.5
Can obtain permanent employment	13	35.1
Limited but in my area	6	16.2
Limited if willing to relocate	12	32.4
Can be found without much difficulty	1	2.7

Frequency Missing = 2

19. Did you discuss job market?

Q19	Frequency	Percent
No	7	18.4
Yes	31	81.6

Frequency Missing = 1

19a. Did you feel advisors were honest?

Q19A	Frequency	Percent
Yes	25	83.3
No	5	16.7

Frequency Missing = 9

20. Assistance in seeking employment

Q20	Frequency	Percent
No	17	43.6
Yes	22	56.4

20a. Rate assistance seeking employment

Q20A	Frequency	Percent
Very helpful	13	59.1
Helpful but of limited assistance	9	40.9

Frequency Missing = 17

21. Employment situation

Q21	Frequency	Percent
Employed	26	66.7
Unemployed	13	33.3

21a. Interest in employment

Q21A	Frequency	Percent
Not seeking employment	11	84.6
Seeking employment in my field	2	15.4

Frequency Missing = 26

21b. Would you relocate?

Q21B	Frequency	Percent
Yes but only near my home	4	30.8
Yes in most any location	8	61.5
No would not relocate	1	7.7

Frequency Missing = 26

22. Describe employment

Q22	Frequency	Percent
Employed full time/permanent in my field	9	34.6
Employed full time/temporary in my field	6	23.1
Employed part time in my field	7	26.9
Employed full or part time not in my field	4	15.4

Frequency Missing = 13

22a. Seeking a full time position?

Q22A	Frequency	Percent
No	3	17.6
Yes	14	82.4

Frequency Missing = 22

22b. Would you relocate?

Q22B	Frequency	Percent
Yes, but only near my home	7	41.2
Yes, to a job in most any location	3	17.6
No, would not relocate	7	41.2

Frequency Missing = 22

23. Organization where you are employed

Q23	Frequency	Percent
Private company	5	22.7
Self employed	3	13.6
Federal agency	9	40.9
State agency	2	9.1
local agency	3	13.6

Frequency Missing = 17

24. Importance of learning mathematics

Q24	Frequency	Percent
Very important	18	81.8
Somewhat important	3	13.6
No particular importance	1	4.5

Frequency Missing = 17

25. Indicate if each area of mathematics is useful

a. Basic arithmetic

Q25A	Frequency	Percent
Very	18	81.8
Somewhat	4	18.2

Frequency Missing = 17

b. Trigonometry

Q25B	Frequency	Percent
Very	11	50.0
Somewhat	7	31.8
Not used	4	18.2

Frequency Missing = 17

c. Geometry

Q25C	Frequency	Percent
Very	10	45.5
Somewhat	9	40.9
Not used	3	13.6

Frequency Missing = 17

d. Algebra

Q25D	Frequency	Percent
Very	8	36.4
Somewhat	10	45.5
Not used	4	18.2

Frequency Missing = 17

e. Statistics

Q25E	Frequency	Percent
Very	11	50.0
Somewhat	8	36.4
Not used	3	13.6

Frequency Missing = 17

26. Importance of learning science

Q26	Frequency	Percent
Very important	13	59.1
Somewhat important	6	27.3
Limited importance	2	9.1
No particular importance	1	4.5

Frequency Missing = 17

27. Importance of learning ecosystem

Q27	Frequency	Percent
Very important	14	63.6
Somewhat important	4	18.2
Limited importance	3	13.6
No particular importance	1	4.5

Frequency Missing = 17

28. Understanding ecosystem valuable

Q28	Frequency	Percent
Yes	18	81.8
No	4	18.2

Frequency Missing = 17

29. Commitment by employer to ecosystem

Q29	Frequency	Percent
Very committed	13	61.9
Somewhat committed	6	28.6
Not very committed	2	9.5

Frequency Missing = 18

30. Importance of technical courses

Q30	Frequency	Percent
The most important part of my education	8	36.4
Equally important with science, math,...	10	45.5
Less important than science, math,...	2	9.1
Less important than proper attitude	2	9.1

Frequency Missing = 17

31. Ability to apply knowledge from cour

Q31	Frequency	Percent
Excellent	12	54.5
Adequate	10	45.5

Frequency Missing = 17

32. Level of education

Q32	Frequency	Percent
High school graduate or GED	21	53.8
Less than two years or college	8	20.5
More than two years but did not graduate	2	5.1
Associate degree	2	5.1
Bachelor degree	5	12.8
Other	1	2.6

33. Interest in bachelors degree

Q33	Frequency	Percent
No plans to enroll in bachelor program	14	35.9
Plan to enroll my natural resource area	12	30.8
Plan to enroll in another area	5	12.8
Enrolled in bachelor program in another field	3	7.7
Enrolled in bachelor program in natural resources	5	12.8

33a. Are you enrolled?

Q33A	Frequency	Percent
Full time	13	52.0
Part time	12	48.0

Frequency Missing = 14

33b. How much credits did you transfer?

Q33B	Frequency	Percent
Almost all	6	24.0
Half to 75%	5	20.0
Less than half but more than 25%	9	36.0
About 25% or less	4	16.0
None	1	4.0

Frequency Missing = 14

33c. Advisor honest about transfer credi

Q33C	Frequency	Percent
Yes	15	60.0
No	2	8.0
I dont know	8	32.0

Frequency Missing = 14

34. Plan to take professional dev. cours

Q34	Frequency	Percent
Yes	17	43.6
No	16	41.0
Not sure	6	15.4

35. Age category

Q35	Frequency	Percent
22 or younger	6	15.4
23 to 28	13	33.3
29 to 35	10	25.6
36 to 45	3	7.7
46 or older	7	17.9

36. Gender

Q36	Frequency	Percent
Male	18	46.2
Female	21	53.8

EMPLOYER DATA PROFILE

Natrual Resource Employee Survey

COLLEGE

CC	Frequency	Percent
Central Oregon	21	39.6
Chemekata	11	20.8
Grays Harbor	17	32.1
Feather River	4	7.5

1. Which describes your organization?

Q1	Frequency	Percent
Private company	9	17.3
Federal agency	12	23.1
State agency	27	51.9
local agency	4	7.7

Frequency Missing = 1

2. What position was individual employed

Q2	Frequency	Percent
An intern or co-op student	21	42.0
Full time in permanent job	6	12.0
Full time in a temporary job	21	42.0
Part time	2	4.0

Frequency Missing = 3

3. Which resource area perform duties?

Q3	Frequency	Percent
Wildlife	6	11.8
Forestry	11	21.6
General Natural Resources	6	11.8
GIS	12	23.5
Other	16	31.4

Frequency Missing = 2

4. Indicate if it is important to have knowledge of each level of mathematics

a. Arithmetic

Q4A	Frequency	Percent
Important	48	90.6
Unimportant	5	9.4

b. Trigonometry

Q4B	Frequency	Percent
Important	21	39.6
Unimportant	32	60.4

c. Geometry

Q4C	Frequency	Percent
Important	34	64.2
Unimportant	19	35.8

d. Algebra

Q4D	Frequency	Percent
Important	37	69.8
Unimportant	16	30.2

e. Statistics

Q4E	Frequency	Percent
Important	29	54.7
Unimportant	24	45.3

f. Higher level mathematics

Q4F	Frequency	Percent
Important	4	8.7
Unimportant	42	91.3

Frequency Missing = 7

5. Indicate importance of each skill

a. Ability to apply principals of scienc

Q5A	Frequency	Percent
Very	20	37.7
Somewhat	28	52.8
Little	4	7.5
Not at all	1	1.9

b. Ability to apply principals of GIS

Q5B	Frequency	Percent
Very	15	28.8
Somewhat	19	36.5
Little	6	11.5
Not at all	12	23.1

Frequency Missing = 1

c. Ability to apply ecosystem concepts

Q5C	Frequency	Percent
Very	19	35.8
Somewhat	18	34.0
Little	12	22.6
Not at all	4	7.5

d. Ability to communicate effectively

Q5D	Frequency	Percent
Very	48	92.3
Somewhat	4	7.7

Frequency Missing = 1

e. Knowledge of technical applications

Q5E	Frequency	Percent
Very	32	60.4
Somewhat	19	35.8
Little	2	3.8

f. Effectiveness in solving problems

Q5F	Frequency	Percent
Very	22	42.3
Somewhat	28	53.8
Little	1	1.9
Not at all	1	1.9

Frequency Missing = 1

6. Rate importance of employee knowledge

Q6	Frequency	Percent
The most important part of my job	12	23.1
Equally important with science, math,...	26	50.0
Less important than science, math,...	6	11.5
Less important than proper attitude	8	15.4

Frequency Missing = 1

7. Indicate expectation of overall knowledge and skills

a. Technical knowledge and skills

Q7A	Frequency	Percent
Far exceeded	9	17.0
Usually exceeded	14	26.4
Met all	16	30.2
Met most	13	24.5
Fell below	1	1.9

b. Mathematical knowledge and skills

Q7B	Frequency	Percent
Not important	7	13.5
Far exceeded	7	13.5
Usually exceeded	10	19.2
Met all	19	36.5
Met most	9	17.3

Frequency Missing = 1

c. Science knowledge and skills

Q7C	Frequency	Percent
Not important	3	5.8
Far exceeded	7	13.5
Usually exceeded	15	28.8
Met all	13	25.0
Met most	14	26.9

Frequency Missing = 1

d. GIS knowledge and skills

Q7D	Frequency	Percent
Not important	18	35.3
Far exceeded	5	9.8
Usually exceeded	9	17.6
Met all	9	17.6
Met most	9	17.6
Fell below	1	2.0

Frequency Missing = 2

e. Communication knowledge and skills

Q7E	Frequency	Percent
Far exceeded	14	26.4
Usually exceeded	19	35.8
Met all	13	24.5
Met most	6	11.3
Fell below	1	1.9

f. Ability to analyze and solve job

Q7F	Frequency	Percent
Far exceeded	12	23.1
Usually exceeded	20	38.5
Met all	11	21.2
Met most	9	17.3

Frequency Missing = 1

8. Which describes education received

Q8	Frequency	Percent
Excellent in providing knowledge	9	17.3
More than adequate in providing knowledge	20	38.5
Adequate for most knowledge	22	42.3
Less than adequate for knowledge	1	1.9

Frequency Missing = 1

9. How likely would hire other graduates

Q9	Frequency	Percent
Very likely	43	82.7
Somewhat likely	9	17.3

Frequency Missing = 1

STUDENT SURVEY FORM

1. What is your natural resource program major field of study? *(Circle one number)*

01 WILDLIFE
02 FORESTRY
03 FORESTRY-TRANSFER OPTION
04 WATER RESOURCES
05 NATURAL RESOURCES
06 AGRICULTURE
07 EQUINE
08 HORTICULTURE
09 FISHERIES
10 GIS

2. How long have you been enrolled in your natural resource program? *(Circle one number)*

1 LESS THAN ONE YEAR
2 MORE THAN ONE BUT LESS THAN TWO YEARS
3 TWO TO THREE YEARS
4 MORE THAN THREE BUT LESS THAN FOUR YEARS
5 FOUR YEARS OR MORE

The next section asks about your experience in the natural resource program.

3. Please indicate whether or not you took (or are taking) each of the following mathematics courses? *(Circle one number for each)*

	YES	NO
a. Technical mathematics	1	2
b. Trigonometry (even if included as part of another course)	1	2
c. Geometry (even if included as part of another course)	1	2
d. Algebra (non-college transfer level)	1	2
e. Algebra (college transfer level)	1	2
f. Statistics	1	2
g. College transfer level mathematics (pre-calculus, analytical algebra calculus, etc.)	1	2

(PLEASE GO ON TO THE NEXT PAGE)

4. How often have you used mathematics required by your program to solve problems or perform applications in your technical courses? *(Circle one number)*

1 NEVER ***(Skip to Question 5)***
2 OFTEN
3 OCCASIONALLY

→ 4a. Indicate if each area of mathematics listed below was very useful, somewhat useful, or not used by you in your technical course work. *(Circle one number for each)*

	VERY	SOME-WHAT	NOT USED
a. Basic arithmetic	1	2	3
b. Trigonometry	1	2	3
c. Geometry	1	2	3
d. Algebra	1	2	3
e. Statistics	1	2	3

5. In your opinion, was learning how to do the mathematics important or not important in understanding how to apply the principals to technical applications or problems? *(Circle one number)*

1 IMPORTANT
2 NOT IMPORTANT

6. Did your professors stress the use of mathematics as an important tool in the technical duties in your specific natural resource area? *(Circle one number)*

1 YES, MOST DID
2 YES, SOME DID
3 NO

The next sections is about the specific science courses you took (or are taking). Do not include "technical science" courses such as water analysis, fish culture, soils, etc. normally taught by your technical professors.

7. Have you taken any specific science courses yet? *(Circle one number)*

1 NO ***(Skip now to Question 8)***
2 YES ***(Go on to Question 7a, 7b and 7c)***

7a. Please indicate whether or not you took (or are taking) each of the following science courses. *(Circle one number for each)*

	YES	NO
a. General biology	1	2
b. Specialized biology or zoology	1	2
c. Chemistry	1	2
d. Geology	1	2
e. Other (Specify_____)	1	2

7b. Which one of the instructional methods below was used for most of your science courses. *(Circle one number)*

1 ONLY LECTURE
2 LECTURE AND LABS IN A COLLEGE INSIDE LAB
3 LECTURE AND LABS CONDUCTED IN THE FIELD (even if part of the work was done using an inside lab to analyze samples or data)
4 LECTURE, SCIENCE LABS AND FIELD LABS

7c. How often did you use the required science or the techniques learned in "doing science" to solve problems or perform applications in your technical courses? *(Circle one number)*

1 OFTEN
2 OCCASIONALLY

8. In your opinion is learning how to "do science" important or unimportant in understanding how to apply the principals to technical applications and problems? *(Circle one number)*

1 IMPORTANT
2 UNIMPORTANT

9. Did your professors stress the use of science as an important tool in the technical duties in your specific natural resource area? *(Circle one number)*

1 YES, MOST DID
2 YES, SOME DID
3 NO

(PLEASE GO ON TO THE NEXT PAGE)

The next section asks about the concepts of ecosystem science and management of natural resources which were taught in courses you took or are taking.

10. Have you taken a specific course(s) in ecosystem science or management as part of your program? *(Circle one number)*

    1 YES
    2 NO

11. Were concepts of ecosystem science and management taught as part of your technical courses? *(Circle one number)*

    1 YES
    2 NO

12. Did your professors stress the importance of understanding principles of ecosystem science and management as a tool in sustaining the natural environment and the specific resources associated with your natural resource area? *(Circle one number)*

    1 YES, MOST DID
    2 YES, SOME DID
    3 NO

13. As a result of your studies, do you feel you understand what ecosystems are and how they relate to preserving our natural resources? *(Circle one number)*

    1 YES
    2 NO

Please answer the following questions based on the knowledge gained from your program relating to ecosystem science and management.

14. Which of the following phrases best describes your understanding of "ecological succession"? *(Circle one number)*

    1 THE PROCESS OF PLANT AND ANIMAL COMMUNITY CHANGE THROUGH TIME
    2 THE PROCESS OF ENERGY FLOW THROUGH ECOSYSTEMS
    3 THE INTERRELATIONSHIPS THAT EXIST BETWEEN LIVING AND NON-LIVING COMPONENTS OF ECOSYSTEMS
    4 THE ABUNDANCE OF PLANT AND ANIMAL COMMUNITIES AT A PARTICULAR LOCATION

(PLEASE TURN THE PAGE)

15. The term "food web" is used to describe which of the following? *(Circle one number)*

1 THE PRODUCTION AND ACCUMULATION OF CARBOHYDRATES BY PHOTOSYNTHETIC ORGANISMS
2 ENERGY FLOW THROUGH AN ECOSYSTEM
3 CHANGES IN PLANT AND ANIMAL COMMUNITIES THROUGH TIME
4 POPULATION GROWTH IN AN ECOSYSTEM

16. Choose the word that best fills in the blank in this statement: "The primary difference between a 'community' and an 'ecosystem' is that _____ is (are) considered to be part of ecosystems but not part of communities. *(Circle one number)*

1 PLANTS
2 ANIMALS
3 BACTERIA
4 HUMANS
5 THE PHYSICAL ENVIRONMENT

17. Planting trees has been proposed as a potential solution to reversing the "greenhouse effect". This seems sensible since tress have the ability to: *(Circle one number)*

1 SHADE SOILS
2 CONVERT CARBON DIOXIDE INTO CARBOHYDRATES
3 STORE LARGE QUANTITIES OF WATER
4 PROVIDE WILDLIFE HABITAT
5 PRODUCE OXYGEN

18. In general, which on of the following characteristics or physical factors DECREASES as succession proceeds? *(Circle one number)*

1 SOIL DEPTH
2 HUMIDITY
3 ANIMAL DIVERSITY
4 SOIL TEMPERATURE

(PLEASE GO ON TO THE NEXT PAGE)

19. Ecosystem management (EM) has been proposed as a more appropriate way to manage our natural resources. Of the following items, which one is LEAST likely to be part of a forest management plan that uses EM as it guiding principle? *(Circle one number)*

1 MAINTAIN THE PROCESSES OF DECOMPOSITION AND NITROGEN FIXATION IN SOILS
2 INVOLVE SEVERAL ELEMENTS OF SOCIETY IN THE DECISION-MAKING PROCESS
3 USE MODERN IMAGING TECHNIQUES SUCH AS SATELLITE PHOTOS AND GIS
4 PLANT A MONOCULTURE OF DOUGLAS FIR
5 CONSIDER DOWNSTREAM EFFECTS OF MANAGEMENT ACTIVITIES

The next section asks about the GIS course work you took (or are taking).

20. Have you (or are you now) taking GIS course(s) as part of your program? *(Circle one number)*

1 NO ***(Skip to Question 21)***
2 YES

20a. How often did you use the GIS principles or data covered in your program's technical courses to solve problems or perform technical applications? *(Circle one number)*

1 OFTEN
2 OCCASIONALLY
3 NEVER

20b. Was learning about GIS important or unimportant to your understanding of how to perform technical applications and solve problems? *(Circle one number)*

1 IMPORTANT
2 UNIMPORTANT

20c. Did your professors stress the use of GIS as an important tool in the technical duties in your specific natural resource area? (Circle one number)

1 YES, MOST DID
2 YES, SOME DID
3 NO

(PLEASE TURN THE PAGE)

Now we'd like to ask a few questions about your program sponsored or natural resource required work experience. Sponsored means the work experience is encouraged but not mandatory in your program. Work experiences can be either paid or unpaid.

21. Have you taken (or are you now taking) part in an "on the job" education experience as part of your program? *(Circle one number)*

    1 NO ***(Skip to Question 22)***
    2 YES

    21a. How important was your work experience to your educational program? *(Circle one number)*

        1 VERY IMPORTANT
        2 SOMEWHAT IMPORTANT BUT NOT ESSENTIAL
        3 NOT IMPORTANT

    21b. Did the work involve the technical skills taught in your program? *(Circle one number)*

        1 YES
        2 NO

    21c. How often did (do) you use the skills gained in each of the following course work areas in your work experience? *(Circle one number for each)*

	OFTEN	SOME-TIMES	NEVER	HAVEN'T TAKEN
a. Mathematics courses	1	2	3	4
b. Science courses	1	2	3	4
c. GIS courses	1	2	3	4
d. Communications (writing, speaking)	1	2	3	4

The next sections asks your overall impression of the natural resource program.

22. Based on your experience in the program , which one of the following best describes your rating of the academic level of your education? *(Circle one number)*

    1 VERY DIFFICULT ACADEMICALLY AND REQUIRED SPECIAL EFFORT
    2 CHALLENGING ACADEMICALLY BUT WITHIN MY ABILITIES
    3 FAIRLY EASY ACADEMICALLY AND REQUIRED ONLY MINIMAL EFFORT

(PLEASE GO ON TO THE NEXT PAGE)

23. Which one of the following best describes the overall results of the education you received? *(Circle one number)*

1 TAUGHT ME ESSENTIAL KNOWLEDGE AND SKILLS IN MY NATURAL RESOURCE AREA
2 GENERALLY TAUGHT IMPORTANT KNOWLEDGE AND SKILLS BUT HAD SOME UNIMPORTANT PARTS
3 TAUGHT ME SOME IMPORTANT KNOWLEDGE AND SKILLS BUT THERE WERE MANY PARTS NOT ESSENTIAL OR RELEVANT
4 OTHER (Specify_____)

And a few questions on advising....

24. Do you have an assigned advisor from the faculty? *(Circle one number)*

1 NO ***(Skip to Question 25)***
2 YES

24a. How often does your advisor meet with you to review your progress and discuss the program? *(Circle one number)*

1 AT LEAST ONCE A MONTH
2 ONE OR TWO TIMES A TERM
3 NEVER

24b. Has your advisor discussed the job market for persons in your specific natural resource area? *(Circle one number)*

1 YES
2 NO

25. Was the sequence in which you should take your courses clearly explained to you? *(Circle one number)*

1 YES
2 NO

26. Have you taken (are you taking) the courses in the recommended sequence? *(Circle one number)*

1 YES, MOST COURSES IN SEQUENCE
2 YES, SOME COURSES IN SEQUENCE
3 NO, NOT FOLLOWING THE SEQUENCE
4 I'M NOT SURE

(PLEASE TURN THE PAGE)

27. Counting the credits you are now taking, what is your class standing in the program? *(Circle one number)*

1 FRESHMAN (Less than 30 semester hours-or 45 quarter hours)
2 FIRST TERM SENIOR (31 to 45 semester hours-or 46 to 63 quarter hours)
3 SECOND TERM SENIOR (46 or more semester hours-or 64 or more quarter hours)

Finally, a few questions about your background.

28. What level of mathematics did you successfully complete in high school? *(Circle one number)*

1 ELEMENTARY ALGEBRA
2 INTERMEDIATE ALGEBRA
3 ADVANCED MATHEMATICS (Trig, pre-calculus, etc.)
4 OTHER (Specify_____)

29. Indicate whether or not you successfully completed the following science courses in high school. *(Circle one number for each)*

	YES	NO
a. General science.....	1	2
b. Biology.....	1	2
c. Chemistry.....	1	2
d. Physics.....	1	2
e. Environmental science/natural resources.	1	2

30. What was your education level prior to starting your natural resource program at community college? *(Circle one number)*

1 HIGH SCHOOL GRADUATE OR GED
2 LESS THAN TWO YEARS OF COLLEGE
3 MORE THAN TWO YEARS OF COLLEGE BUT DID NOT GRADUATE
4 ASSOCIATE DEGREE
5 BACHELOR DEGREE
6 OTHER (Specify_____)

(PLEASE GO ON TO THE NEXT PAGE)

31. Did you take placement/admission tests prior to entering this college? *(Circle one number)*

1 NO ***(Skip to Question 32)***
2 YES

→ 31a. Based on your test scores, did you have to take or were you advised to take each of the following to prepare for college level work. *(Circle one number for each)*

	YES	NO
a. Special courses in mathematics.....	1	2
b. Special courses in English.....	1	2
c. Special courses in reading.....	1	2

32. Which one of the following best describes your plans immediately upon graduation from community college? *(Circle one number)*

1 OBTAIN OR CONTINUE EMPLOYMENT IN MY FIELD OF STUDY
2 OBTAIN OR CONTINUE EMPLOYMENT NOT IN SOME OTHER AREA
3 CONTINUE MY EDUCATION

33. How likely is it that you will continue your education and obtain a bachelor's degree? *(Circle one number)*

1 VERY LIKELY
2 SOMEWHAT LIKELY
3 NOT TOO LIKELY
4 NOT AT ALL LIKELY

34. Which one of the following best describes your current employment status? *(Circle one number)*

1 NOT EMPLOYED FOR PAY
2 EMPLOYED PART-TIME IN AN AREA RELATED TO MY PROGRAM
3 EMPLOYED FULL-TIME IN AN AREA RELATED TO MY PROGRAM
4 EMPLOYED PART-TIME IN AN AREA NOT RELATED TO MY PROGRAM
5 EMPLOYED FULL-TIME IN AN AREA NOT RELATED TO MY PROGRAM

35. In which age category are you? *(Circle one number)*

1 22 OR YOUNGER
2 23 TO 28
3 29 TO 35
4 36 TO 45
5 46 OR OLDER

36. Are you:

1 MALE
2 FEMALE

37. Thank you for completing this survey. Is there anything else you would like to say about your natural resource program or your experience attending community college?

(THANK YOU FOR YOUR COOPERATION)

GRADUATE SURVEY FORM

1. What was your natural resource program major field of study? *(Circle one number)*

01 WILDLIFE
02 FORESTRY
03 FORESTRY-TRANSFER OPTION
04 WATER RESOURCES
05 NATURAL RESOURCES
06 AGRICULTURE
07 EQUINE
08 HORTICULTURE
09 FISHERIES
10 GIS

2. How long were you enrolled in your natural resource program prior to graduating? Include any time taking "bridging or remedial" courses. *(Circle one number)*

1 TWO YEARS
2 MORE THAN TWO YEARS BUT LESS THAN THREE YEARS
3 THREE TO FOUR YEARS
4 MORE THAN FOUR YEARS BUT LESS THAN FIVE YEARS
5 FIVE YEARS OR MORE

3. In what year did you graduate from your natural resources program?

_____YEAR GRADUATED

4. Please indicate whether or not you took each of the following courses to meet your graduation requirements. *(Circle one number for each)*

	YES TOOK	NO, DID NOT
a. Technical mathematics	1	2
b. Trigonometry (even if included as part of another course)	1	2
c. Geometry (even if included as part of another course)	1	2
d. Algebra (non-college transfer level)	1	2
e. Algebra (college transfer level)	1	2
f. Statistics	1	2
g. College transfer level mathematics (pre-calculus, analytical algebra, calculus, etc.)	1	2
h. General biology	1	2
i. Specialized biology or zoology	1	2
j. Chemistry	1	2
k. Geology	1	2

(PLEASE TURN THE PAGE)

5. Did you take specific course(s) in ecosystem science or management as part of your program? *(Circle one number)*

1 YES
2 NO

6. Were concepts of ecosystem science and management taught as part of your technical courses? *(Circle one number)*

1 YES
2 NO

7. Did your professors stress the importance of understanding principles of ecosystem science and management as a tool in sustaining the natural environment and the specific resources associated with your natural resource area? *(Circle one number)*

1 YES, MOST DID
2 YES, SOME DID
3 NO

8. As a result of your studies, do you feel you understand what ecosystems are and how they relate to preserving our natural resources? *(Circle one number)*

1 YES
2 NO

9. Did you take a specific course(s) in GIS as part of your program? *(Circle one number)*

1 YES
2 NO

10. Were concepts of GIS taught as part of your technical courses? *(Circle one number)*

1 YES
2 NO

(PLEASE GO ON TO THE NEXT PAGE)

This next sections is about specific technical courses you took such as water analysis, fish culture, soils, etc. normally taught by your technical professors.

11. Which one of the following best describes the importance of these technical courses to you in understanding various aspects of your natural resource area? *(Circle one number)*

    1 THE MOST IMPORTANT PART OF MY EDUCATION
    2 EQUALLY IMPORTANT WITH SCIENCE, MATHEMATICS AND COMMUNICATION SKILLS
    3 LESS IMPORTANT THAN UNDERSTANDING SCIENCE, MATHEMATICS AND COMMUNICATION SKILLS

12. In your opinion, do you think you could have adequately completed the technical courses in your field without the required science, mathematics and communications courses. *(Circle one number)*

    1 YES
    2 NO

13. In general, did your professors place too much, too little, or about the right degree of emphasis on the importance of integrating all your areas of technical study and critical reasoning skills when defining and solving problems in your natural resource field? *(Circle one number)*

    1 TOO MUCH EMPHASIS
    2 TOO LITTLE EMPHASIS
    3 ABOUT THE RIGHT AMOUNT

14. Would you rate the program's effectiveness in teaching you techniques and ways to identify and solve complex problems requiring critical reasoning and application of knowledge learned in your courses as excellent, good, fair or poor? *(Circle one number)*

    1 EXCELLENT
    2 GOOD
    3 FAIR
    4 POOR

15. Based on your experience in the program would you rate the academic level of your education as: *(Circle one number)*

    1 VERY DIFFICULT AND REQUIRED A SPECIAL EFFORT
    2 CHALLENGING ACADEMICALLY BUT WITHIN MY ABILITIES
    3 FAIRLY EASY ACADEMICALLY AND REQUIRED ONLY LIMITED EFFORT

(PLEASE TURN THE PAGE)

16. Which one of the following best describes the over all results of the education you received? *(Circle one number)*

1 TAUGHT ME ESSENTIAL KNOWLEDGE AND SKILLS IN MY FIELD
2 GENERALLY TAUGHT IMPORTANT KNOWLEDGE AND SKILL BUT HAD SOME UNIMPORTANT PARTS
3 TAUGHT ME SOME IMPORTANT KNOWLEDGE AND SKILLS BUT THERE WAS MUCH THAT WAS NOT ESSENTIAL
4 OTHER (Specify_____)

17. How would you describe your ability as a technician as a result of the education you received in your natural resources program? *(Circle one number)*

1 AN EXCELLENT TECHNICIAN FOR MY LEVEL OF EXPERIENCE
2 AN ADEQUATE TECHNICIAN FOR MY LEVEL OF EXPERIENCE
3 NOT AS GOOD AS I COULD BE IF THE PROGRAM HAD BEEN BETTER

The next section asks about job availability, your current employment status and how your education relates to employment.

18. Which one of the following best describes the availability of permanent jobs in your field of study? *(Circle one number)*

1 NON-EXISTENT OR VERY LIMITED
2 CAN OBTAIN PERMANENT EMPLOYMENT WILLING TO WORK INTO IT FROM A TEMPORARY/SEASONAL JOB
3 LIMITED BUT ARE AVAILABLE IN MY GEOGRAPHICAL AREA
4 LIMITED BUT ARE AVAILABLE IF WILLING TO RELOCATION
5 CAN BE FOUND WITHOUT MUCH DIFFICULTY

19. Did you discuss the job market in your field of study with advisors or other college personnel? *(Circle one number)*

1 NO
2 YES

→ 19a. Do you feel your advisors or other college personnel were honest in telling you about the job market in your field of study? *(Circle one number)*

1 YES
2 NO

(PLEASE GO ON TO THE NEXT PAGE)

20. Did you request or receive any assistance from college personnel in seeking employment? *(Circle one number)*

1 NO
2 YES

→ 20a. Would you rate the assistance and help you received or are receiving from the college personnel in seeking employment in your field as very helpful, helpful but limited, of very little help, or of not help at all? *(Circle one number)*

1 VERY HELPFUL
2 HELPFUL BUT OF LIMITED ASSISTANCE
3 VERY LITTLE HELP
4 NO HELP AT ALL

21. Which one of the following best describes your employment situation? *(Circle one number)*

1 EMPLOYED *(Skip to Question 22)*
2 NOT EMPLOYED

→ 21a. Which one of the following best describes your interest in employment at this time? *(Circle one number)*

1 NOT SEEKING EMPLOYMENT AT THIS TIME
2 SEEKING EMPLOYMENT IN MY FIELD OF STUDY
3 SEEKING EMPLOYMENT IN MY FIELD OR IN OTHER AREAS

21b. Would you relocate to another area to take a full time permanent position in your field of study? *(Circle one number)*

1 YES, BUT ONLY IN SELECTED AREAS NEAR MY HOME
2 YES, TO A JOB IN MOST ANY LOCATION
3 NO, WOULD NOT RELOCATE

(SINCE YOU ARE NOT CURRENTLY EMPLOYED PLEASE SKIP NOW TO QUESTION 32, PAGE 11)

(PLEASE TURN THE PAGE)

The rest of this section is for those who are currently employed.

22. Which one of the following best describes your employment? *(Circle one number)*

1 EMPLOYED FULL TIME IN A PERMANENT JOB IN MY FIELD OF STUDY *(Skip to Question 23)*
2 EMPLOYED FULL TIME IN A TEMPORARY OR SEASONAL JOB IN MY FIELD
3 EMPLOYED PART TIME IN MY FIELD OF STUDY
4 EMPLOYED FULL OR PART TIME IN A JOB NOT IN MY FIELD OF STUDY

→ 22a. Are you seeking a full time permanent position in your field of study? *(Circle one number)*

1 NO
2 YES

22b. Would you relocate to another area to take a full time permanent position in your field of study? *(Circle one number)*

1 YES, BUT ONLY IN SELECTED AREAS NEAR MY HOME
2 YES, TO A JOB IN MOST ANY LOCATION
3 NO, WOULD NOT RELOCATE

ANSWER THE NEXT SECTION ONLY IF YOUR EMPLOYMENT IS IN YOUR FIELD OF STUDY, IF NOT EMPLOYED IN YOUR FIELD PLEASE SKIP TO QUESTION 32, PAGE 11.

23. Which one of the following best describes the organization where you are employed? *(Circle one number)*

1 PRIVATE COMPANY
2 SELF EMPLOYED OR A FAMILY BUSINESS
3 FEDERAL AGENCY (FOREST SERVICES, BLM, ETC.)
4 STATE AGENCY
5 LOCAL GOVERNMENTAL AGENCY (COUNTY, CITY)

(PLEASE GO ON TO THE NEXT PAGE)

The next few questions ask you to rate elements of your natural resources program as they relate to you current employment in your field.

24. Would you rate the importance of learning how to do *mathematics* as very important, somewhat important, of limited importance, or not particularly important in carrying out technical applications and solving problems in your job? *(Circle one number)*

    1 VERY IMPORTANT
    2 SOMEWHAT IMPORTANT
    3 LIMITED IMPORTANCE
    4 NO PARTICULAR IMPORTANCE

25. Indicate if each area of mathematics listed below is very useful, somewhat useful or not used by you in performing your job. *(Circle one number for each)*

	VERY	SOME-WHAT	NOT USED
a. Basic arithmetic	1	2	3
b. Trigonometry	1	2	3
c. Geometry	1	2	3
d. Algebra	1	2	3
e. Statistics	1	2	3

26. Would you rate the importance of learning how to do *science* as very important, somewhat important, of limited importance, or not particularly important in carrying out technical applications and solving problems in your job? *(Circle one number)*

    1 VERY IMPORTANT
    2 SOMEWHAT IMPORTANT
    3 LIMITED IMPORTANCE
    4 NO PARTICULAR IMPORTANCE

27. Would you rate the importance of learning ecosystem concepts and principals of management important, of limited importance, or not particularly important in knowing how to best approach the technical applications an and problems in your job? *(Circle one number)*

    1 VERY IMPORTANT
    2 SOMEWHAT IMPORTANT
    3 LIMITED IMPORTANCE
    4 NO PARTICULAR IMPORTANCE

(PLEASE TURN THE PAGE)

28. In your opinion, does your employer believe your understanding of the concepts of ecosystem management is valuable in understanding how job tasks are performed ? *(Circle one number)*

1 YES
2 NO

29. How would you rate the level of commitment by your employer to the principle of managing the ecosystem and our natural resources in a sustainable manner? *(Circle one number)*

1 VERY COMMITTED (Actively expresses support for the efforts and implement principles.)
2 SOMEWHAT COMMITTED (Supports the need for some compliance with principles and regulations)
3 NOT VERY COMMITTED (Complies only to meet imposed regulations)
4 NOT AT ALL COMMITTED (Actively expresses disagreement with regulations)

30. Thinking now about specific technical courses your took such as water analysis, fish culture, soils, etc., which one of the following best describes the importance of these technical courses to you in understanding how to best approach the applications and problems in your job? *(Circle one number)*

1 THE MOST IMPORTANT PART OF MY EDUCATION
2 EQUALLY IMPORTANT WITH SCIENCE, MATHEMATICS AND COMMUNICATION SKILLS
3 LESS IMPORTANT THAN UNDERSTANDING SCIENCE, MATHEMATICS AND COMMUNICATION SKILLS
4 LESS IMPORTANT THAN HAVING THE PROPER ATTITUDE TOWARD MY WORK.

31. Would you rate your ability to apply the knowledge gained in your courses, and the critical reasoning skills you developed to solving problems and performing your job as excellent, adequate, limited or poor? *(Circle one number)*

1 EXCELLENT
2 ADEQUATE
3 LIMITED
4 POOR

(PLEASE GO ON TO THE NEXT PAGE)

Finally, a few questions about your education history, continuing education and you.

32. What was your level of education prior to starting your community college natural resources program? *(Circle one number)*

1 HIGH SCHOOL GRADUATE OR GED
2 LESS THAN TWO YEARS OF COLLEGE
3 MORE THAN TWO YEARS OF COLLEGE BUT DID NOT GRADUATE
4 ASSOCIATE DEGREE
5 BACHELOR DEGREE
6 OTHER (Specify_____)

33. Which one of the following best describes your interest in a bachelor's degree program? *(Circle one number)*

1 HAVE NO PLANS TO ENROLL IN BACHELOR'S PROGRAM *(Skip to Question 34)*
2 PLAN TO ENROLL MY NATURAL RESOURCE AREA
3 PLAN TO ENROLL IN ANOTHER FIELD
4 CURRENTLY ENROLLED IN A BACHELORS PROGRAM IN ANOTHER FIELD
5 CURRENTLY ENROLLED IN A BACHELORS PROGRAM IN NATURAL RESOURCES

33a. Are you enrolled (or plan to enroll) as a full-time or part-time student? *(Circle one number)*

1 FULL TIME
2 PART TIME

33b. Considering only those courses taken to meet your graduation requirements, not to prepare you to transfer, how much of your community college credits did you (or will you be able to) transfer to your bachelor's degree program? *(Circle one number)*

1 ALMOST ALL (More than 75%)
2 HALF TO 75%
3 LESS THAN HALF BUT MORE THAN 25%
4 ABOUT 25% OR LESS
5 NONE

33c. Do you feel your advisors or other college personnel were honest in telling you about the transfer of credits in your field? *(Circle one number)*

1 YES
2 NO
3 I DON'T KNOW

(PLEASE TURN THE PAGE)

34. Do you plan to (or are you taking) any "professional development" courses or training related to you field of study? *(Circle one number)*

1 YES
2 NO
3 NOT SURE

35. In which age category are you?

1 22 OR YOUNGER
2 23 TO 28
3 29 TO 35
4 36 TO 45
5 46 OR OLDER

36. Are you:

1 MALE
2 FEMALE

37. Thank you for completing this survey. Is there anything else you would like to say about your natural resource program or your experience attending community college?

(THANK YOU FOR YOUR COOPERATION)

EMPLOYER SURVEY FORM

NATURAL RESOURCES EMPLOYEE SURVEY

1. Which best describes your organization? *(Circle one number)*

   1 PRIVATE COMPANY
   2 SELF EMPLOYED OR A FAMILY BUSINESS
   3 FEDERAL AGENCY SUCH AS THE FOREST SERVICE, BLM ETC.
   4 STATE AGENCY
   5 LOCAL GOVERNMENTAL AGENCY

Please complete the rest of the questionnaire for the graduate/intern named on the identification form that was enclosed with this survey. The first section asks about knowledge and skills necessary to perform the job.

2. In what type of position was this individual employed? *(Circle one number)*

   1 AN INTERN OR CO-OP STUDENT
   2 FULL TIME IN A PERMANENT JOB
   3 FULL TIME IN A TEMPORARY OR SEASONAL JOB
   4 PART TIME

3. In which primary natural resource area does (did) the employee perform his or her duties? *(Circle one number)*

   1 WILDLIFE
   2 FORESTRY
   3 WATER RESOURCES
   4 GENERAL NATURAL RESOURCES
   5 GIS
   6 OTHER (Specify_____)

4. Please indicate if it is important or unimportant for the employee to have knowledge of each level of mathematics listed below. *(Circle one number)*

	IMPORTANT	UNIMPORTANT
a. Arithmetic	1	2
b. Trigonometry	1	2
c. Geometry	1	2
d. Algebra	1	2
e. Statistics	1	2
f. Higher level mathematics (Specify_____)	1	2

(PLEASE TURN THE PAGE)

5. In the table below is a list of abilities, knowledge, or skills that may or may not be important for this job. Please indicate if each is very important, somewhat important , of little importance, or not at all important in performing the job held by this individual. *(Circle one number for each)*

	VERY	SOME-WHAT	LITTLE	NOT AT ALL
a. Ability to apply the principles of science to technical applications and problem solving.....	1	2	3	4
b. Ability to apply the principles of GIS to technical applications and problem solving.....	1	2	3	4
c. Ability to apply ecosystem concepts and principles of ecosystem management when choosing the best approach to technical applications and problems.....	1	2	3	4
d. Ability to communicate effectively (write, speak and listen to and understand others).....	1	2	3	4
e. Knowledge of "technical applications".....	1	2	3	4
f. Effectiveness in identifying and solving complex problems requiring critical reasoning and application of knowledge.....	1	2	3	4

6. Please rate the importance of the employee's knowledge of job related "technical applications" in relations to other skills and knowledge. *(Circle one number)*

1 THE MOST IMPORTANT PART OF THE JOB
2 EQUALLY IMPORTANT WITH UNDERSTANDING SCIENCE, MATHEMATICS AND COMMUNICATION SKILLS
3 LESS IMPORTANT THAN UNDERSTANDING SCIENCE, MATHEMATICS AND COMMUNICATION SKILLS
4 LESS IMPORTANT THAN HAVING THE PROPER ATTITUDE TOWARD WORK

The last section asks for your overall impression of this employee's performance. Please base your answers on the expectations you would have of an employee who is a recent graduate of a community college OR if the individual was an intern or co-op student, rate the performance in relation to your expectations for that level of employee.

(PLEASE TO ON TO THE NEXT PAGE)

7. Please indicate if the employee's *overall knowledge, skills or abilities* far exceeded expectations, usually exceeded expectations, met all expectations, met most expectations, or fell below expectations for each in the following areas. *(Circle one number for each)*

	FAR EXCEEDED	USUALLY EXCEEDED	MET ALL	MET MOST	FELL BELOW	NOT IMPORTANT
a. Technical knowledge and skills.....	1	2	3	4	5	0
b. Mathematical knowledge and skills..	1	2	3	4	5	0
c. Science knowledge and skills.....	1	2	3	4	5	0
d. GIS knowledge and skills.....	1	2	3	4	5	0
e. Communication knowledge and skills.	1	2	3	4	5	0
f. Ability to analyze and solve job related problems.....	1	2	3	4	5	0

8. Which one of the following best describes the education this individual has received. Please make your rating based the level of knowledge and skills needed to perform the job without consideration for personal attributes or attitude. *(Circle one number)*

1 EXCELLENT IN PROVIDING KNOWLEDGE AND SKILLS
2 MORE THAN ADEQUATE IN PROVIDING KNOWLEDGE AND SKILLS
3 ADEQUATE FOR MOST KNOWLEDGE AND SKILLS
4 LESS THAN ADEQUATE FOR KNOWLEDGE AND SKILLS
5 SIGNIFICANTLY DEFICIENT IN KNOWLEDGE AND SKILLS

9. Based on your experience with this employee or intern, and considering the knowledge and skills required by the job, how likely is it that you would hire other graduates or interns of the college's program? *(Circle one number)*

1 VERY LIKELY
2 SOMEWHAT LIKELY
3 NOT TOO LIKELY
4 NOT AT ALL LIKELY

(PLEASE TURN THE PAGE)

10. Is there anything else you would like to say about the employee's performance, qualifications or about the college's natural resource program?

(THANK YOU FOR YOUR COOPERATION!)

NORTHWEST CENTER FOR SUSTAINABLE RESOURCES

WESTERN CENTER FOR COMMUNITY COLLEGE DEVELOPMENT
SCHOOL OF EDUCATION
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