11-15-2016

General Education Subcommittee Agenda, November 15, 2016

Utah State University

GENERAL EDUCATION COMMITTEE

November 15, 2016
8:30 a.m. – 9:30 a.m.
Old Main – Champ Hall

Agenda

Call to Order – Lee Rickords

Approval of Minutes – October 18, 2016 - link

Depth Requirement for Teacher Education Majors .....Beth Foley

Course Approvals/Removals/Syllabi Approvals
https://usu.curriculog.com/

ADVS 5630 (CI) ..... Brock Dethier

APEC 1600 (BAI) .....Dan McInerney

BIOL 5630 (CI) ..... Brock Dethier

CMST 5800 (CI)..... Brock Dethier

Business
Data collection for writing/communication committee .....Joyce Kinkead

Discussion/Review of information gathered regarding lack of adequate writing/communication skills in students.

- ACT Report on College Readiness
- SAT Data
- Utah School Assessment
- Writing Skills – National Data
- English 1010 Objectives
- Assessment Rubric
- Survey of Graduate Engineering
- Graduate Training: Results of a Survey of Employers

Should a meeting be held in December?

Adjourn:

GENERAL EDUCATION SUBCOMMITTEE MINUTES

October 18, 2016
9:30 am – 10:30 am
Old Main - Champ Hall

Present: Lee Rickords, Agriculture and Applied Sciences (Chair)
Michele Hillard, Secretary
Larry Smith, Provost's Office
Mykel Beorchia, University Advising
Kacy Lundstrom, Library
Melanie Nelson, USU Eastern
Dean Adams, Engineering
Dick Mueller, Science
Kris Miller, Honors
Claudia Radel, Natural Resources
Barbara Williams, Registrar's Office
Eddy Berry, Social Sciences
Brock Dethier, Writing Program
Harrison Kleiner, Connections
Bob Mueller, Regional Campus
Laura Gelfand, Arts
David Brown, Quantitative Intensive
Stephanie Hamblin, Exploratory Advising
Konrad Lee, Business
Ashley Waddoups, USUSA President
Matt Sanders, Humanities and Social Sciences

Absent: Dan McInerney, American Institutions
Shelley Lindauer, Education and Human Services
Brian McCuskey, Humanities
Janet Anderson, Office of the Provost
Ryan Dupont, Life and Physical Sciences
Jessica Hansen, Academic and Instructional Services
John Mortensen, Student Services
Cindy Dewey, Creative Arts

Call to Order – Lee Rickords
Meeting called to order at 9:30 a.m.
Approval of Minutes – August 16, 2016
Motion to approve minutes from the September 20, 2016 meeting made by Dean Adams. Seconded by Eddy Berry. Minutes approved.

Course Approvals/Removals/Syllabi Approvals
HIST 3010 (DHA) Approved ..... Brian McCuskey

Motion to approve the DHA designation made by Claudia Radel. Seconded by Ashley Waddoups. Designation approved.

HIST 3481 (DHA) Approved ..... Brian McCuskey
Motion to approve the DHA designation made by Claudia Radel. Seconded by Ashley Waddoups. Designation approved.

MATH 1051 (QL) Approved ..... David Brown
Motion to approve the QL designation made by Claudia Radel. Seconded by Ashley Waddoups. Designation approved.

PHIL 4410 (DHA) Approved ..... Brian McCuskey
Motion to approve the DHA designation made by Claudia Radel. Seconded by Ashley Waddoups. Designation approved

Business

Concerns with Student Written Communication Skills

The committee agreed that studies need to be provided to substantiate or refute the hypothesis that some graduates don't have adequate writing/communication skills. It was suggested that the members gather national data as well as data for other Utah institutions. The committee believes that the students don't know or think they have a problem. If constructive criticism is not being provided by the faculty students aren't aware of any problem. Providing a rubric to students to assist with their writing assignments was suggested. Also, using a rubric for consistent grading would be helpful. This is not just a departmental problem but a university-wide issue. Committee members will provide data at the next meeting and the committee will move forward with defining the problem, developing best practices and information university administration.

General Education meetings will now return to the 8:30 – 9:30 a.m. time period.

Adjourned: 10:30 am

SAT®

2015 College-Bound Seniors

State Profile Report

CollegeBoard

UTAH

Included in This Report

SAT® Data

SAT Subject Tests™ Data

Demographic and Academic Information

College Plans

DATA EMBARGO IN EFFECT. This report contains information on college-bound students in the class of 2015 who took the SAT or SAT Subject Tests at any time during high school. ***Data and other information in this report are embargoed from dissemination to the media and general public until after the College Board makes state and total group-level data and information publically available. The embargo will be lifted no later than September 30, 2015.*** Prior to that time, you may use the data and other information in this report for internal purposes. The College Board will post updated information in the coming weeks about the embargo at https://collegeboard.org/press; if you have questions about the College Board Program Results press briefing, please contact the College Board communications department at communications@collegeboard.org.

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The SAT® Program

The SAT® (formerly known as the SAT® I: Reasoning Test) assesses student reasoning based on knowledge and skills developed by the students in their course work. The SAT Subject Tests™ (formerly known as SAT II: Subject Tests) are a series of one-hour, mostly multiple-choice tests that measure how much students know about a particular academic subject and how well they can apply that knowledge. Most students also complete the optional SAT Questionnaire (formerly known as the Student Descriptive Questionnaire) when they register to take SAT Program tests, providing valuable contextual information to aid in interpreting and understanding individual and group scores. *College-Bound Seniors 2015* includes students who tested through June 2015.

Using This Report

College-Bound Seniors presents data on high school graduates in the year 2015 who participated in the SAT Program. Students are counted only once, no matter how often they tested, and only their latest scores and most recent SAT Questionnaire responses are summarized. Because the accuracy of self-reported information has been documented and the college-bound population is relatively stable from year to year, SAT Questionnaire responses from these students can be considered highly accurate. Therefore, you can use this report to:

- Interpret scores of individual students within the broader context of data aggregated across groups of college-bound seniors.
- Study changes over time in the characteristics of students taking SAT tests.
- Look at year-to-year educational and demographic changes in this population, along with changes in test performance.

Keep in mind, however, that:

- Relationships between test scores and other factors such as educational background, gender, racial/ethnic background, parental education, and household income are complex and interdependent.These factors do not directly affect test performance; rather, they are associated with educational experiences both on tests such as the SAT and in schoolwork.
- Not all students in a high school, school district or state take the SAT. Since the population of test-takers is self-selected, using aggregate SAT scores to compare or evaluate teachers, schools, districts, states or other educational units is not valid, and the College Board strongly discourages such uses.
- Interpreting SAT scores for subgroups requires unique considerations. The most significant factor to consider in interpreting SAT scores for any group, or subgroup, of test-takers is the proportion of students taking the test. For example, if state data are being considered, it is appropriate to recognize that in some states there are lower participation rates. Typically, test-takers in these states have strong academic backgrounds and apply to the nation's most selective colleges and scholarship programs. For these states, it is expected that the SAT mean scores reported for students will be higher than the national average.

Statistical Definitions

The following terms are used throughout this report. For more statistical information, visit the College Board website at www.collegeboard.org.

Mean
The *mean* is the arithmetic average.

Percentile
The *percentile*, also called the *percentile point*, is the point on the measurement scale below which a specified percentage of scores falls. The 25th, 50th and 75th percentile points are often reported for large data sets. The 50th percentile point is also called the *median* and, like the mean, is an average and a good indicator of the center of the distribution of scores. Comparing the 25th and 75th percentile points gives an idea of the range of scores in the populations reported in this document. Like the standard deviation, the difference between the scores associated with the 75th and 25th percentiles is an indication of the variability of the scores in a particular sample.

Scaled score
A *scaled score* is a score that has been converted from the raw score (number of questions answered correctly minus a fraction of the incorrect answers) for reporting. The SAT Program uses a 200- to 800-point scale.

Standard deviation (SD)
The *standard deviation* (SD) is a measure of the variability of a set of scores. If test scores cluster tightly around the mean score, as they do when the group tested is relatively homogeneous, the standard deviation is smaller than it would be with a more diverse group and a greater scatter of scores around the mean.

About the College Board

The College Board is a mission-driven not-for-profit organization that connects students to college success and opportunity. Founded in 1900, the College Board was created to expand access to higher education. Today, the membership association is made up of over 6,000 of the world's leading educational institutions and is dedicated to promoting excellence and equity in education. Each year, the College Board helps more than seven million students prepare for a successful transition to college through programs and services in college readiness and college success — including the SAT® and the Advanced Placement Program® (AP®). The organization also serves the education community through research and advocacy on behalf of students, educators and schools. For further information, visit www.collegeboard.org.

Total Group Mean SAT Scores

College-Bound Seniors, 1972–2015

Year	Critical Reading			Mathematics			Writing		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1972	531	529	530	527	489	509	-	-	-
1973	523	521	523	525	489	506	-	-	-
1974	524	520	521	524	488	505	-	-	-
1975	515	509	512	518	479	498	-	-	-
1976	511	508	509	520	475	497	-	-	-
1977	509	505	507	520	474	496	-	-	-
1978	511	503	507	517	474	494	-	-	-
1979	509	501	505	516	473	493	-	-	-
1980	506	498	502	515	473	492	-	-	-
1981	508	496	502	516	473	492	-	-	-
1982	509	499	504	516	473	493	-	-	-
1983	508	498	503	516	474	494	-	-	-
1984	511	498	504	518	478	497	-	-	-
1985	514	503	509	522	480	500	-	-	-
1986	515	504	509	523	479	500	-	-	-
1987	512	502	507	523	481	501	-	-	-
1988	512	499	505	521	483	501	-	-	-
1989	510	498	504	523	482	502	-	-	-
1990	505	496	500	521	483	501	-	-	-
1991	503	495	499	520	482	500	-	-	-
1992	504	496	500	521	484	501	-	-	-
1993	504	497	500	524	484	503	-	-	-
1994	501	497	499	523	487	504	-	-	-
1995	505	502	504	525	490	506	-	-	-
1996	507	503	505	527	492	508	-	-	-
1997	507	503	505	530	494	511	-	-	-
1998	509	502	505	531	496	512	-	-	-
1999	509	502	505	531	495	511	-	-	-
2000	507	504	505	533	498	514	-	-	-
2001	509	502	506	533	498	514	-	-	-
2002	507	502	504	534	500	516	-	-	-
2003	512	503	507	537	503	519	-	-	-
2004	512	504	508	537	501	518	-	-	-
2005	513	505	508	538	504	520	-	-	-
2006	505	502	503	536	502	518	491	502	497
2007	503	500	501	532	499	514	487	499	493
2008	502	499	500	532	499	514	486	499	493
2009	502	497	499	533	498	514	485	498	492
2010	502	498	500	533	499	515	485	497	491
2011	500	495	497	531	500	514	482	496	489
2012	498	493	496	532	499	514	481	494	488
2013	499	494	496	531	499	514	482	493	488
2014	499	495	497	530	499	513	481	492	487
2015	497	493	495	527	496	511	478	490	484

Note: For 1972–1986 a formula was applied to the original mean and standard deviation to convert the mean to the recentered scale. For 1987–1995 individual student scores were converted to the recentered scale and then the mean was recomputed. From 1996–1999, nearly all students received scores on the recentered scale. Any score on the original scale was converted to the recentered scale prior to computing the mean. From 2000–2015, all scores are reported on the recentered scale. Cohort data presented prior to 2007 include students testing through March of the senior year, while cohort data from 2007 to present include students testing through June. For further information see www.collegeboard.org/cbs.

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SAT® Data

Data in this report are for high school graduates in the year 2015. Information is summarized for seniors who took the SAT at any time during their high school years through June 2015. If a student took the test more than once, the most recent score is used.

Table 1: Overall Mean Scores

								Writing Subscores			
SAT	**Test-Takers**	**Critical Reading**		**Mathematics**		**Writing ***		**Multiple Choice**		**Essay**	
	Number	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total	1,527	579	116	575	117	554	108	55.8	11.2	7.6	1.4

Table 2: Mean Scores by Gender

								Writing Subscores			
SAT	**Test-Takers**	**Critical Reading**		**Mathematics**		**Writing**		**Multiple Choice**		**Essay**	
	Number	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Male	744	590	122	601	120	555	113	56.2	11.6	7.4	1.5
Female	783	568	109	550	108	553	104	55.4	10.8	7.7	1.3

Table 3: Year in Which Seniors Last Took the SAT

Scores are from the last administration in which seniors took the SAT.

								Writing Subscores			
SAT	**Test-Takers**	**Critical Reading**		**Mathematics**		**Writing**		**Multiple Choice**		**Essay**	
	Number	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Senior (2014-2015)	905	574	116	573	117	548	107	55.4	11.2	7.5	1.5
Junior (2013-2014)	597	586	114	577	116	563	111	56.5	11.2	7.6	1.4
Sophomore (2012-2013)	24	573		578		542		54.8		7.4	
Freshman (2011-2012)	1										
Total	1,527	579	116	575	117	554	108	55.8	11.2	7.6	1.4

Table 4: Mean Scores for Total Group

Mean scores for the total group may serve as points of reference when evaluating mean scores for the state.

								Writing Subscores			
SAT	**Test-Takers**	**Critical Reading**		**Mathematics**		**Writing**		**Multiple Choice**		**Essay**	
	Number	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total Group	1,698,521	495	116	511	120	484	115	48.7	11.6	7.0	1.7

*Writing data are based on students who took the current version of the SAT, first administered in March 2005. All students in the 2015 cohort took the SAT Writing section. The Writing section contains one essay (30 percent of the total score) and 49 multiple-choice questions (70 percent of the total score). Essay scores range from 2-12, with a very small percentage of students (less than 0.3 percent) receiving scores of 0 on the essay, for essays written completely off topic. Multiple-choice scores range from 20 to 80.

Note: Mean scores are reported when there are five or more test-takers. Standard deviations are reported when there are 25 or more test-takers.

SAT Data

Table 5: Percentiles for State and Total Group

A percentile represents the point below which a percentage of scores fall. Comparing the 25th percentile point to the 75th percentile point gives an idea of the range of performance in a group.

SAT	State			Total Group		
Percentile	Critical Reading	Mathematics	Writing	Critical Reading	Mathematics	Writing
75th	660	660	630	570	590	560
50th	580	580	560	490	510	480
25th	500	490	480	410	430	400

Table 6: Score Distributions

SAT	Critical Reading			Mathematics			Writing		
Score Range	Male	Female	Total	Male	Female	Total	Male	Female	Total
700–800	148	95	243	161	69	230	73	60	133
600-690	226	220	446	251	218	469	214	223	437
500-590	219	260	479	190	253	443	232	270	502
400-490	96	168	264	102	187	289	168	182	350
300-390	43	32	75	33	50	83	46	42	88
200-290	12	8	20	7	6	13	11	6	17

Table 7: Type of High School

SAT	Test-Takers		Percent by Gender		Mean Scores		
	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
Public	877	60	50	50	603	600	575
Religiously Affiliated	315	22	51	49	548	562	536
Independent	258	18	44	56	537	519	510
Other or Unknown	77		43	57	561	526	530

Note: Percentiles are reported when there are 20 or more test-takers.
The College Board is no longer collecting data regarding Disabling Conditions.

Demographic Information

SAT: Mean Scores by Gender Within Ethnicity

Table 8: Total Mean Scores by Ethnicity

SAT	Test-Takers		Critical Reading		Mathematics		Writing	
Test-Takers Who Described Themselves As:	Number	Pct	Mean	SD	Mean	SD	Mean	SD
American Indian or Alaska Native	9	1	503		500		477	
Asian, Asian American, or Pacific Islander	188	12	540	136	620	116	537	127
Black or African American	35	2	500	130	468	121	473	112
Mexican or Mexican American	40	3	535	93	538	94	514	89
Puerto Rican	5	0	520		524		488	
Other Hispanic, Latino, or Latin American	46	3	524	113	504	108	498	88
White	1,084	71	598	106	582	112	570	101
Other	32	2	541	123	579	104	526	106
No Response	88	6	521	116	499	110	488	106
Total	1,527	100	579	116	575	117	554	108

Table 9: Male Mean Scores by Ethnicity

SAT	Test-Takers		Critical Reading		Mathematics		Writing	
Test-Takers Who Described Themselves As:	Number	Pct	Mean	SD	Mean	SD	Mean	SD
American Indian or Alaska Native	5	0	548		542		492	
Asian, Asian American, or Pacific Islander	97	6	543	150	633	122	536	145
Black or African American	12	1	501		480		472	
Mexican or Mexican American	17	1	539		555		494	
Puerto Rican	4	0						
Other Hispanic, Latino, or Latin American	18	1	547		529		499	
White	540	35	608	110	608	115	570	104
Other	17	1	546		592		539	
No Response	34	2	534	129	525	120	478	120
Total	744	49	590	122	601	120	555	113

Table 10: Female Mean Scores by Ethnicity

SAT	Test-Takers		Critical Reading		Mathematics		Writing	
Test-Takers Who Described Themselves As:	Number	Pct	Mean	SD	Mean	SD	Mean	SD
American Indian or Alaska Native	4	0						
Asian, Asian American, or Pacific Islander	91	6	537	120	605	106	539	105
Black or African American	23	2	500		462		473	
Mexican or Mexican American	23	2	531		526		528	
Puerto Rican	1	0						
Other Hispanic, Latino, or Latin American	28	2	510	120	488	109	498	92
White	544	36	588	100	556	102	570	98
Other	15	1	535		564		512	
No Response	54	4	513	105	483	99	494	97
Total	783	51	568	109	550	108	553	104

Demographic Information

SAT: Student Background Information and Characteristics

Table 11: Student Background Information and Characteristics

Student demographic information provides a broader context to aid in interpreting and understanding individual and group scores.

SAT	Test-Takers		Critical Reading		Mathematics		Writing	
	Number	Pct	Mean	SD	Mean	SD	Mean	SD
All Test-Takers	1,527	100	579	116	575	117	554	108
First Language Learned								
English	1,194	82	592	110	577	115	563	104
English and Another	147	10	566	117	572	118	551	114
Another Language	121	8	488	128	595	124	494	121
No Response	65		534	106	507	109	505	92
Citizenship								
U.S. Citizen / U.S. National	1,323	94	591	109	578	115	563	104
U.S. Permanent Resident or Refugee	26	2	551	162	558	133	537	130
Citizen of Another Country	65	5	494	110	590	116	492	118
Other, Unknown, or No Response	113		487	121	531	121	481	107
Plans to Apply for Financial Aid								
Yes	829	64	591	111	581	113	564	104
No	165	13	584	112	585	114	556	104
Don't Know	295	23	578	118	578	124	556	115
No Response	238		533	121	541	115	513	109
Family Income								
$0 - $20,000	49	5	509	112	532	130	496	106
$20,000–$40,000	84	8	535	117	537	112	516	98
$40,000–$60,000	88	9	568	114	566	106	545	97
$60,000–$80,000	134	13	585	108	580	98	555	95
$80,000–$100,000	128	13	574	112	582	110	562	101
$100,000–$120,000	151	15	594	101	586	113	560	99
$120,000–$140,000	78	8	609	114	610	115	573	110
$140,000–$160,000	59	6	608	95	609	94	594	94
$160,000–$200,000	68	7	618	106	618	117	588	106
More than $200,000	158	16	602	104	582	112	579	106
No Response	530		569	123	563	123	543	115
Highest Level of Parental Education								
No High School Diploma	16	1	434		489		442	
High School Diploma	189	13	519	114	526	111	497	102
Associate Degree	58	4	509	94	516	101	490	92
Bachelor's Degree	487	35	578	103	577	107	555	94
Graduate Degree	651	46	622	103	610	109	593	101
No Response	126		496	122	494	118	473	105
Took the PSAT/NMSQT®								
Yes, As a Junior	483	36	606	106	592	111	573	100
Yes, As a Sophomore or Younger	224	17	574	109	567	118	551	105
Yes, As a Junior and As a Sophomore or Younger	327	24	628	100	631	100	609	95
No	312	23	529	114	524	112	503	104
No Response	181		507	109	523	107	493	97

Note: Occasional updates are made to the optional Student Questionnaire to improve student response rates. Fluctuations from year to year should be interpreted with appropriate consideration.

Academic Information

Academic Record

Table 12: High School Rank

SAT	Test-Takers		Percent by Gender		Mean Scores		
	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
Highest Tenth	429	61	58	42	642	652	615
Second Tenth	165	23	41	59	558	561	545
Second Fifth	61	9	41	59	539	538	509
Final Three Fifths	48	7	44	56	486	476	479
No Response	824		47	53	558	546	531

Table 13: High School Grade Point Average

SAT	Test-Takers		Percent by Gender		Mean Scores		
	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
A+ (97–100)	294	21	53	47	642	647	619
A (93–96)	502	36	45	55	611	613	586
A- (90–92)	267	19	47	53	550	553	530
B (80–89)	312	22	53	47	519	497	492
C (70–79)	33	2	70	30	465	444	446
D, E, or F (below 70)		0					
No Response	119		42	58	537	524	504
Mean Grade Point Average	**All Students: 3.76**		**Male: 3.74**		**Female: 3.79**		

Table 14: Average Years of Study in Six Academic Subjects

SAT	Average Years of Study			Grade Point Average: Each Subject		
	Male	Female	Total	Male	Female	Total
Arts and Music	2.6	3.1	2.9	3.87	3.94	3.91
English and Language Arts	4.0	4.0	4.0	3.73	3.80	3.77
Foreign and Classical Languages	2.9	3.0	3.0	3.69	3.74	3.72
Mathematics	4.1	3.9	4.0	3.62	3.58	3.60
Natural Sciences	3.8	3.7	3.7	3.71	3.67	3.69
Social Sciences and History	3.7	3.7	3.7	3.74	3.74	3.74
Total for All Subjects	**21.1**	**21.4**	**21.3**			

Note: Occasional updates are made to the optional Student Questionnaire to improve student response rates. Fluctuations from year to year should be interpreted with appropriate consideration.

Academic Information

Course-Taking Patterns

Table 15: English, Mathematics

English and Language Arts	Test-Takers		Percent by Gender		SAT Mean Scores		
Years of Study	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
More Than 4 Years	191	15	52	48	593	598	570
4 Years	938	76	48	52	597	589	570
3 Years	78	6	46	54	532	530	508
2 Years	15	1	27	73	482	459	455
1 Year	6	0	50	50	542	593	553
1/2 Year or Less	10	1	50	50	493	470	451
No Response	289		49	51	531	534	511
AP®/Honors Courses	825	67	48	52	626	615	597
Course Work or Experience							
English/Language Arts	1,134	95	49	51	592	585	566
Journalism	139	12	34	66	609	574	589
Creative Writing	315	26	39	61	590	565	567
American Literature	626	52	47	53	607	598	581
Composition/Writing	510	43	47	53	590	575	564
British Literature	254	21	46	54	617	608	590
World Literature	303	25	45	55	612	598	585
Communications	99	8	48	52	567	561	537
Public Speaking	198	17	42	58	602	576	574
English As Second Language	39	3	28	72	489	558	492

Mathematics	Test-Takers		Percent by Gender		SAT Mean Scores		
Years of Study	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
More Than 4 Years	267	22	59	41	612	626	587
4 Years	769	62	47	53	595	587	571
3 Years	158	13	41	59	548	526	520
2 Years	24	2	25	75	525	500	492
1 Year	10	1	40	60	469	527	458
1/2 Year or Less	11	1	45	55	474	461	428
No Response	288		50	50	531	534	510
AP/Honors Courses	811	65	49	51	625	629	595
Highest Level of Mathematics Achieved*							
Calculus	738	60	53	47	626	637	600
Pre-calculus	262	21	39	61	552	530	527
Geometry	159	13	43	57	510	463	480
Algebra II	19	2	37	63	533	505	507
Algebra I	7	1	71	29	356	367	409

*To better reflect the relationship between students' SAT scores and their Mathematics course work, course work is now being displayed as the highest level of mathematics achieved. This means that each student is counted only once under their highest level of mathematics course taken.

Note: Occasional updates are made to the optional Student Questionnaire to improve student response rates. Fluctuations from year to year should be interpreted with appropriate consideration.

Academic Information

Course-Taking Patterns

Table 16: Natural Sciences, Social Sciences and History

Natural Sciences	Test-Takers		Percent by Gender		SAT Mean Scores		
Years of Study	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
More Than 4 Years	218	18	56	44	613	620	586
4 Years	602	49	48	52	599	596	575
3 Years	320	26	46	54	572	556	545
2 Years	51	4	47	53	542	538	519
1 Year	20	2	40	60	547	543	517
1/2 Year or Less	19	2	42	58	499	483	455
No Response	297		49	51	532	533	512
AP/Honors Courses	679	55	51	49	632	633	601
Course Work or Experience							
Biology	1,154	95	48	52	591	584	565
Chemistry	1,097	90	48	52	597	593	571
Physics	854	70	52	48	604	608	577
Geology, Earth, or Space Science	490	40	46	54	560	548	538
Other Sciences	387	32	37	63	571	558	547

Social Sciences and History	Test-Takers		Percent by Gender		SAT Mean Scores		
Years of Study	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
More Than 4 Years	158	13	52	48	614	609	586
4 Years	694	57	48	52	601	590	573
3 Years	285	23	47	53	571	574	550
2 Years	65	5	55	45	546	565	524
1 Year	9	1	33	67	523	550	501
1/2 Year or Less	16	1	50	50	463	452	430
No Response	300		49	51	530	532	510
AP/Honors Courses	753	61	50	50	629	619	598
Course Work or Experience							
U.S. History	1,145	95	48	52	594	587	567
World History or Cultures	804	67	48	52	585	578	560
U.S. Government or Civics	976	81	49	51	595	587	568
Economics	297	25	54	46	596	594	568
Geography	854	71	49	51	594	589	568
Psychology	534	44	43	57	602	591	576
European History	450	37	48	52	615	606	589
Sociology	111	9	39	61	562	550	534
Ancient History	192	16	45	55	569	559	546
Other Courses	161	13	37	63	586	571	561

Note: Occasional updates are made to the optional Student Questionnaire to improve student response rates. Fluctuations from year to year should be interpreted with appropriate consideration.

Academic Information

Course-Taking Patterns

Table 17: Foreign and Classical Languages

Foreign and Classical Languages	Test-Takers		Percent by Gender		SAT Mean Scores		
Years of Study	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
More Than 4 Years	114	9	46	54	608	607	591
4 Years	319	26	45	55	624	616	606
3 Years	345	28	48	52	589	583	562
2 Years	344	28	53	47	576	568	542
1 Year	47	4	40	60	527	521	494
1/2 Year or Less	56	5	54	46	512	529	486
No Response	302		49	51	531	533	511
AP/Honors Courses	372	30	46	54	640	634	617
Course Work or Experience							
Chinese	101	8	50	50	609	635	595
French	257	21	37	63	617	591	585
German	87	7	47	53	612	610	586
Greek	1	0	0	100			
Hebrew	3	0	33	67			
Italian	12	1	25	75	600	583	588
Japanese	19	2	37	63	587	576	558
Korean	2	0	50	50			
Latin	58	5	57	43	620	611	594
Russian	5	0	40	60	494	592	584
Spanish	705	59	51	49	585	578	561
Other Languages	67	6	40	60	565	573	548

Note: Occasional updates are made to the optional Student Questionnaire to improve student response rates. Fluctuations from year to year should be interpreted with appropriate consideration.

Academic Information

Course-Taking Patterns

Table 18: Arts and Music, Computers

Arts and Music*	Test-Takers		Percent by Gender		SAT Mean Scores		
Years of Study	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
More Than 4 Years	160	14	39	61	612	606	588
4 Years	273	24	37	63	608	587	587
3 Years	205	18	44	56	579	571	554
2 Years	322	28	58	42	588	593	561
1 Year	153	13	62	38	594	597	561
1/2 Year or Less	40	3	50	50	508	506	481
No Response	374		50	50	535	537	513
AP/Honors Courses	214	19	39	61	641	628	614
Course Work or Experience							
Acting or Play Production	326	28	43	57	600	578	570
Art History or Appreciation	243	21	40	60	584	570	561
Dance	284	25	22	78	573	553	556
Drama: Study or Appreciation	242	21	42	58	582	566	554
Music: Study or Appreciation	219	19	48	52	618	604	590
Music Performance	599	52	50	50	613	607	587
Photography or Film	368	32	39	61	578	571	560
Studio Art and Design	420	36	41	59	594	584	569
None	62	5	66	34	538	542	520

Computers†	Test-Takers		Percent by Gender		SAT Mean Scores		
Course Work or Experience	Number	Pct	Male	Female	Critical Reading	Mathematics	Writing
Computer Literacy	141	73	50	50	623	635	598
Computer Programming	66	34	67	33	642	658	620
Word Processing	140	73	52	48	623	629	600
Internet Activity	121	63	53	47	626	631	603
Using Computer Graphics	72	38	57	43	630	649	605
Creating Spreadsheets/Databases	89	46	60	40	630	649	613
None	13	7	46	54	539	553	533

Note: Occasional updates are made to the optional Student Questionnaire to improve student response rates. Fluctuations from year to year should be interpreted with appropriate consideration.
*Information about Arts & Music is incomplete for the 2015 cohort as data was not collected through the online registration process between January and June 2015. The full collection of this data has resumed.
†Information about Computer Experience represents a small sample of the 2015 cohort as this information is no longer collected through the online registration process as of November 2013.

SAT Subject Tests™ Data

Table 19: Number of Test-Takers and Tests for SAT Subject Tests

Students Who Took SAT Subject Tests		Students Who Took an SAT Subject Test and Also Took the SAT			
Number of Test-Takers	Number of Tests	Number of Test-Takers	Critical Reading Mean	Mathematics Mean	Writing Mean
497	1,247	330	655	668	631

Students Who Took One or More Different SAT Subject Tests

Number of Tests Taken	Number of Test-Takers	Percent of Total Test-Takers Who Took One or More Tests
1	50	10
2	219	44
3	179	36
4 or More	49	10

Table 20: Mean Scores for SAT Subject Test Takers and for Students Who Also Took the SAT

Most, but not all, students who take SAT Subject Tests also take the SAT. This table provides SAT Subject Test scores for students who took SAT Subject Tests. It also provides the SAT scores for those students who also took the SAT.

	SAT Subject Test			SAT					
					Critical Reading		Mathematics		Writing	
English	N	Mean	SD	N	Mean	SD	Mean	SD	Mean	SD
Literature	136	658	82	91	672	70	645	87	653	79
History and Social Studies										
U.S. History	181	668	87	131	675	71	665	85	654	81
World History	16	673		10	712		667		662	
Mathematics										
Mathematics Level 1	102	645	87	63	623	96	653	79	587	83
Mathematics Level 2	306	688	90	215	661	94	693	69	640	90
Science										
Biology-E	70	665	78	57	655	84	656	86	628	88
Biology-M	90	688	71	62	666	70	683	58	642	78
Chemistry	164	656	96	114	677	82	695	74	649	86
Physics	118	656	83	73	642	110	688	78	622	99
Foreign and Classical Languages										
Chinese/Listening	9	733		7	639		656		634	
French	12	642		9	679		670		661	
French/Listening	2			2						
German	1			1						
German/Listening	2			2						
Modern Hebrew										
Italian										
Japanese/Listening	2			2						
Korean/Listening	1									
Latin	4			4						
Spanish	22	603		14	637		627		629	
Spanish/Listening	9	658		7	651		627		637	

SAT Subject Tests Score Distributions

Table 21: English, History and Social Studies

SAT Subject Tests	English		History and Social Studies			
	Literature		U.S. History		World History	
	N	Pct	N	Pct	N	Pct
750-800	21	15	43	24	4	25
700-740	35	26	33	18	4	25
650-690	28	21	38	21	3	19
600-640	22	16	31	17		
550-590	17	13	14	8	4	25
500-540	7	5	17	9	1	6
450-490	5	4	4	2		
400-440	1	1	1	1		
350-390						
300-340						
250-290						
200-240						
Total	136		181		16	
Mean	658		668		673	
SD	82		87			
75th percentile	720		740			
50th percentile	670		670			
25th percentile	600		610			

Table 22: Mathematics, Science

SAT Subject Tests	Mathematics				Science							
	Mathematics Level 1		Mathematics Level 2		Biology-E		Biology-M		Chemistry		Physics	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
750-800	9	9	105	34	10	14	22	24	32	20	17	14
700-740	26	25	46	15	20	29	21	23	32	20	24	20
650-690	29	28	48	16	15	21	24	27	31	19	22	19
600-640	13	13	52	17	8	11	16	18	25	15	26	22
550-590	9	9	31	10	14	20	4	4	15	9	17	14
500-540	8	8	21	7	2	3	2	2	17	10	9	8
450-490	5	5	2	1	1	1	1	1	11	7	3	3
400-440	3	3	1	0					1	1		
350-390												
300-340												
250-290												
200-240												
Total	102		306		70		90		164		118	
Mean	645		688		665		688		656		656	
SD	87		90		78		71		96		83	
75th percentile	710		770		720		740		730		720	
50th percentile	660		690		670		690		670		650	
25th percentile	570		610		590		640		580		590	

SAT Subject Tests Score Distributions

Table 23: Foreign and Classical Languages

SAT Subject Tests	Foreign and Classical Languages											
	Chinese/Listening		French		French/Listening		German		German/Listening		Modern Hebrew	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
750-800	4	44	4	33								
700-740	4	44	1	8								
650-690	1	11			2	100			1	50		
600-640			2	17			1	100				
550-590			2	17								
500-540			1	8					1	50		
450-490			2	17								
400-440												
350-390												
300-340												
250-290												
200-240												
Total	9		12		2		1		2			
Mean	733		642									
SD												
75th percentile												
50th percentile												
25th percentile												

Table 24: Foreign and Classical Languages (continued)

SAT Subject Tests	Foreign and Classical Languages											
	Italian		Japanese/Listening		Korean/Listening		Latin		Spanish		Spanish/Listening	
	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct	N	Pct
750-800					1	100			1	5	4	44
700-740			1	50			1	25	4	18		
650-690							1	25	3	14		
600-640									4	18	2	22
550-590									5	23	1	11
500-540			1	50			1	25	2	9	1	11
450-490									3	14	1	11
400-440							1	25				
350-390												
300-340												
250-290												
200-240												
Total			2		1		4		22		9	
Mean									603		658	
SD												
75th percentile									650			
50th percentile									600			
25th percentile									530			

College Plans

Table 25: Intended College Major, Degree-Level Goal

SAT	Test-Takers		Mean Scores		
Intended College Major	Number	Pct	Critical Reading	Mathematics	Writing
Agriculture, Agriculture Operations, and Related Sciences	7	1	541	509	503
Architecture and Related Services	11	1	582	602	554
Area, Ethnic, Cultural and Gender Studies	2	0			
Biological and Biomedical Sciences	112	9	597	597	583
Business Management, Marketing, and Related Support Services	122	10	543	552	524
Communication, Journalism and Related Programs	28	2	565	527	560
Computer and Information Sciences and Support Services	44	3	643	655	606
Construction Trades	1	0			
Education	21	2	575	539	542
Engineering	172	13	628	657	589
Engineering Technologies/Technicians	18	1	533	593	516
English Language and Literature/Letters	22	2	625	570	620
Family and Consumer Sciences/Human Sciences	4	0			
Foreign Languages, Literatures, and Linguistics	12	1	678	628	641
Health Professions and Related Clinical Services	188	15	561	551	534
History	12	1	577	533	564
Legal Professions and Studies	31	2	599	558	564
Liberal Arts and Sciences, General Studies, and Humanities	11	1	582	550	530
Library Science And Administration	1	0			
Mathematics and Statistics	29	2	643	699	619
Mechanic and Repair Technologies/Technician	3	0			
Military Technologies And Applied Sciences	5	0	554	532	494
Multi/Interdisciplinary Studies	16	1	648	651	624
Natural Resources and Conservation	7	1	623	576	600
Parks, Recreation, Leisure and Fitness Studies	2	0			
Personal and Culinary Services	1	0			
Philosophy and Religious Studies	5	0	640	508	578
Physical Sciences	47	4	653	655	604
Precision Production	0	0			
Psychology	51	4	551	528	526
Public Administration and Social Services Professions	3	0			
Security and Protective Services	9	1	470	478	476
Social Sciences	40	3	646	592	618
Theology and Religious Vocations	2	0			
Transportation and Materials Moving	0	0			
Visual and Performing Arts	131	10	584	552	564
Other	6	0	590	635	585
Undecided	99	8	607	610	578
Degree-Level Goal					
Certificate Program	5	0	566	508	554
Associate Degree	10	1	472	444	437
Bachelor's Degree	282	22	537	520	514
Master's Degree	425	33	586	585	565
Doctoral or Related Degree	437	33	626	624	595
Other	2	0			
Undecided	145	11	582	577	553

College Plans

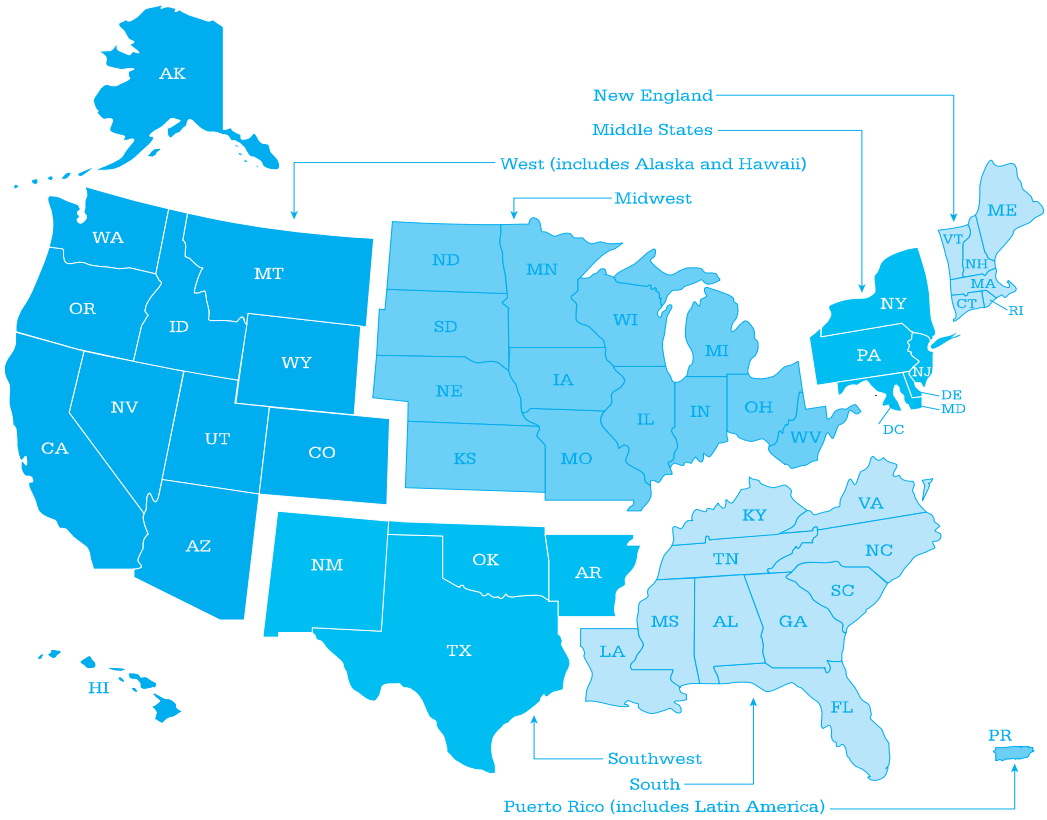
Table 26: Institutions That Received the Most SAT Program Score Reports from Your Students

Of the 1,694 students from your state who took the SAT and/or an SAT Subject Test, 1,124 designated that their score reports be sent to institutions. Students may designate more than one institution to receive scores. This list includes only the 45 institutions that received the most score reports. A total of 674 institutions received score reports from your students.

Institution	State	Type	Number of Students	Percent of Score Senders*
University of Utah	UT	Public	436	38.8
Stanford University	CA	Private	225	20.0
Brigham Young University	UT	Private	166	14.8
NMSC Scholarship Admin	IL	Scholarship	157	14.0
Harvard College	MA	Private	153	13.6
Utah State University	UT	Public	151	13.4
Massachusetts Institute of Technology	MA	Private	126	11.2
University of California: Berkeley	CA	Public	111	9.9
Princeton University	NJ	Private	100	8.9
Westminster College	UT	Private	87	7.7
University of Southern California	CA	Private	85	7.6
Yale University	CT	Private	80	7.1
University of Pennsylvania	PA	Private	79	7.0
Cornell University	NY	Private	78	6.9
Dartmouth College	NH	Private	74	6.6
University of California: Los Angeles	CA	Public	74	6.6
Columbia University	NY	Private	65	5.8
Utah Valley University	UT	Public	65	5.8
Duke University	NC	Private	65	5.8
University of Chicago	IL	Private	63	5.6
Washington University in St. Louis	MO	Private	61	5.4
Brown University	RI	Private	61	5.4
University of Washington	WA	Public	60	5.3
Northwestern University	IL	Private	58	5.2
Boston University	MA	Private	53	4.7
New York University	NY	Private	52	4.6
Johns Hopkins University	MD	Private	50	4.4
California Institute of Technology	CA	Private	50	4.4
Weber State University	UT	Public	48	4.3
University of California: San Diego	CA	Public	47	4.2
Southern Utah University	UT	Public	45	4.0
University of Michigan	MI	Public	45	4.0
Vanderbilt University	TN	Private	43	3.8
NCAA Eligibility Center	IN	Public	42	3.7
University of Colorado Boulder	CO	Public	38	3.4
Carnegie Mellon University	PA	Private	35	3.1
Rice University	TX	Private	33	2.9
Arizona State University	AZ	Public	33	2.9
Northeastern University	MA	Private	33	2.9
University of Portland	OR	Private	32	2.8
Lewis & Clark College	OR	Private	31	2.8
Georgetown University	DC	Private	30	2.7
University of Denver	CO	Private	30	2.7
University of California: Santa Barbara	CA	Public	30	2.7
Emory University	GA	Private	29	2.6

*Of your students who designated that their SAT and/or SAT Subject Test score reports be sent to institutions, the 'Percent of Score Senders' indicates the percent of those students who had their scores sent to each institution listed.

Areas Served by College Board Regional Offices



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Fingertip Facts

Data Reports - Assessment

Advanced Placement (AP)

2015

2014

2013

2012

2011

2010

Additional AP Data

American College Test (ACT)

The Condition of College & Career Readiness 2016 National ACT

The Condition of College & Career Readiness 2016 Utah ACT

Utah Report

2016

2015

2014

2013

2012

2007-2011: 5 Year Trends by Local Education Agency (LEA)

2011

2010

National and State Scores

Directed Writing Assessment (DWA)

2001-2011

State Year-end Assessments

Utah State Board of Education Release of the 2015-16 School Year SAGE English Language Arts, Mathematics, and Science Assessment Results

Student Assessment of Growth and Excellence (SAGE)

2015-2016

2014-2015

2013-2014

SAGE Proficiency Level

2016

2015

2014

Criterion-Referenced Tests (CRT)

2010-2013: All Schools

2009-2012: All Schools

2008-2011: All Schools

2011

2010

Reading (K-3)

2016

2015

2014

Scholastic Achievement Test (SAT)

2015

2014

2013

2012

2011

2010

Additional SAT Data

Special Education

2005-Present

Alternative Assessments

2016: State & LEA

2015: State & LEA

2014: State & LEA

2013: State & LEA

2012: State & LEA

2011: State

2011: By School

2010: State

2010: By Schools

Language Proficiency Assessments

World-class Instructional Design and Assessment (WIDA) Access

2015

2014

Utah Academic Language Proficiency Assessment (UALPA)

2013

2012

2011

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English 1010 Learning Objectives

This course will help you:

1. Use writing and reading for inquiry, learning, critical thinking, and communicating.
2. Analyze and respond appropriately to different rhetorical situations. Understand your purpose and determine the best genre, voice, tone and level of formality to address the needs of your audiences.
3. Understand the relationships between language, knowledge, and power and be able to integrate your ideas with those of others.
4. Employ flexible writing processes to draft, revise, edit, and proofread multiple drafts, using a variety of technologies and collaborations with other writers.
5. Understand and observe the conventions that govern genres, formats, grammar, mechanics, and the use and citation of sources.
6. Use electronic environments when appropriate to research and to share writing and ideas.

BIG PICTURES

Biggest picture: there are so many good things you can do in a composition course, you can never hope to do them all thoroughly. So *as long as you're making good use of your time in class, you're a success*. Over the course of a semester, we lead English 1010 and its students through the following developments or evolutions.

1. Stages of the writing process we emphasize: prewriting➔drafting➔rewriting
2. What we look for in students' papers: ideas➔organization➔mechanics
3. All you can hope for: where they start as writers➔better
4. Student attitudes: scared and resentful➔increased confidence, possibly even enjoyment
5. Belief in one-type-fits-all writing➔understanding discourse communities, rhetoric, genres, and transfer
6. Suspicious of working with others➔comfortable with peer revision groups
7. Fear of next writing task➔knowing what questions to ask and how to prepare
8. Painful, dysfunctional writing processes➔always knowing what to do next

English 1010 Learning Objectives

Draft 12/15
Brock

By the end of a semester of English 1010, students should

1. Understand that 1010 is different from previous English classes they've taken—it isn't just about grammar, red ink on the page, and figuring out what the teacher's interpretation is.
2. Understand that they will be writing for the rest of their lives and their career success may very well depend on their writing ability.
3. Understand that if they grew up speaking English, they knew "grammar" by the time they started elementary school, and the "mistakes" they make now are likely the result of a clash of discourse communities or poorly remembered "rules."
4. Understand what a discourse community is and why it matters—and why it explains how two different teachers can give the same work very different grades.
5. Understand that events in their past have created their reading and writing abilities and attitudes today...and that those abilities and attitudes can change.
6. Understand the importance of reading and analyzing the question or assignment very carefully and empathically.
7. Understand the basics of rhetoric—always think about purpose and audience, recognize that all communication situations are rhetorical, and learn to use the tools of rhetoric in all communication.
8. Value the discourse community and language they grew up with but also understand the practical value of being able to use the Language of Wider Communication.
9. Believe that English teachers care about their ideas and opinions, not just about their prowess with semicolons.
10. Believe that a bad grade or nasty comment on an English paper in the past doesn't forever doom them to being a poor writer.
11. Understand that content, organization, and focus are generally more important to "good writing" than perfect "MLA."
12. Believe that their tastes, interests, and opinions matter and are worth exploring and writing about.
13. Believe that they have much to learn about writing and reading and that arrogance is the worst enemy of learning and improvement.
14. Believe that anyone can become a very good writer.
15. Understand that revision is the heart of writing and that even the best writers revise—in fact, they may be the best writers BECAUSE they revise more than do less acclaimed writers.
16. Believe that they have plenty to write about.

17. Understand that different discourse communities define “good writing” differently and that they’ll need to be prepared to recognize those differences and modify their writing accordingly.
18. Believe that almost all written products beyond a journal or diary are in some sense collaborations.
19. Recognize that “objective” writing doesn’t exist, but writers can try to be fair.
20. Understand that writing is thinking.
21. Recognize that the first paragraph may be the last thing a writer writes.
22. Accept that any piece of writing can be interpreted in multiple ways, and there’s seldom one “right” or “best” interpretation.
23. Recognize that taking a stand and arguing forcefully for it may be appropriate for some contexts, but questioning or digging or explicating may be more appropriate for other contexts.
24. Understand the difference between “showing” and “telling,” and have some practice at using both.
25. Become a savvier, less easily manipulated reader, viewer, and consumer.
26. Understand what genres are, learn to choose appropriate genres for particular purposes and audiences, and practice writing in a variety of genres.
27. Improve every aspect of their writing, from organization to focus to use of sources to grammar and sentence structure.
28. Practice giving formal presentations using all the techniques of public speaking.
29. Learn to reflect on their own work, choose the best, and draw conclusions from their learning process.
30. Understand how to use online learning resources.
31. Begin to learn how to do college-level research and understand that librarians are a researcher’s best resource.
32. Learn to be good students and good employees by doing what is required when it’s required in a professional manner.
33. Learn to work in a group, negotiate, and come to a consensus.
34. Learn to follow directions.

English 2010 Assessment Rubric, Spring 2011

	Criterion	Superior	Avg.	Inferior
1	Title and Introductory Paragraphs	Title and introductory paragraphs identify topic and engage (2)	1	Title and introductory paragraphs are vague or misleading (0)
2	**Audience Awareness**	**Tone, style, content and structure are consistently tailored to audience (4)**	**2**	**Tone, style, content and structure are not consistently tailored to audience (0)**
3	Purpose	Purpose is clear (2)	1	Purpose is unclear (0)
4	Conclusion	Conclusion provides effective closure (2)	1	Conclusion doesn't provide closure (0)
5	**Thesis Quality**	**Thesis presents a uniquely narrowed angle (4)**	**2**	**Thesis doesn't present a uniquely narrowed angle (0)**
6	Thesis Clarity	Thesis is clearly stated or implied (2)	1	Thesis is unclearly stated or implied (0)
7	Ethos	Personal experiences and/or observations are relevant and proportionate; strong authorial credibility (2)	1	Personal experiences and/or observations are not consistently relevant or proportionate; weak authorial credibility (0)
8	**Critical Thinking**	**Discerning; that is, evidence, claims, and conclusions are effectively analyzed and evaluated (4)**	**2**	**Not discerning; that is, evidence, claims, and conclusions are ineffectively analyzed and evaluated (0)**
9	Structure	Overall organization is purposeful, focused and fluid; redundancy is not a problem (2)	1	Overall organization is unclear, unfocused AND disjointed; redundancy is a problem (0)
10	**Persuasiveness**	**Overall argument is logical and highly convincing (4)**	**2**	**Overall argument is illogical and unconvincing (0)**
11	Source Credibility	Sources are credible (2)	1	Sources are not credible (0)
12	**Source Information**	**Information derived from sources is typical, sufficient and relevant (4)**	**2**	**Information derived from sources is atypical, insufficient, AND irrelevant (0)**
13	Source Integration	Sources are integrated effectively (2)	1	Sources are missing, dropped in, AND ineffectively integrated (0)
14	Parenthetical Citation	Parenthetical citation is present and MLA-style formatting is accurate (2)	1	Parenthetical citation is missing or serious problems evident with MLA-style formatting (0)
15	Works Cited Page	Works Cited page is present and MLA-style formatting is accurate (2)	1	Works Cited page is missing or serious problems evident with MLA-style formatting (0)
16	Grammar	Grammar, punctuation, and spelling follow standard usage (2)	1	Grammar, punctuation, and spelling don't consistently follow standard usage (0)
17	Diction	Diction is consistently appropriate and precise (2)	1	Diction is consistently inappropriate AND imprecise (0)
18	Sentences	Sentences are consistently complete, clear, varied (2)	1	Consistent problems evident in sentence structure, variety (0)
19	Paragraph Unity, Coherence, and Development	Paragraphs are consistently unified, coherent, and well-developed (2)	1	Paragraphs are not consistently unified, coherent, or well-developed (0)
20	Transitions	Effective transitions are provided where appropriate (2)	1	Transitions are missing or consistently weak (0)
	TOTAL: /50	**Superior(40-50) / Average(21-39) / Inferior(0-20)**		

Key Outcomes for English 2010

Throughout the semester, students will hone existing writing skills, and by the end of the semester will be able to:

1. Demonstrate an understanding of audience and purpose.
2. Write logical, clear, and unique persuasive arguments that contain appropriate and sufficient evidence.
3. Locate, select, and evaluate appropriate sources and integrate information from sources in papers.
4. Cite and document sources using the MLA parenthetical documentation format.
5. Demonstrate a command of Standard English, including punctuation, grammar and usage.

General Education Committee – Writing Skills
November 10, 2016, Utah State University

Writing Skills – National Data

- *12th grade writing exam from National Center for Education Statistics* (2011): http://nces.ed.gov/nationsreportcard/pubs/main2011/2012470.asp
  Findings: Only ¼ of students performed at the proficient level as high school seniors.
- *Falling Short? College Learning and Career Success* - a Report by HART Research Associates on behalf of AACU https://www.aacu.org/sites/default/files/files/LEAP/2015employerstudentsurvey.pdf
  Findings: Page 12 shows the discrepancy between how employers rank graduates writing skills (27%) versus how students think they are prepared (65%)
- The Citation Project – a series of reports focusing on research writing https://web.archive.org/web/20160314095337/http://site.citationproject.net/publications-and-presentations/publications
  Findings: "*Those students work from one or two sentences in 94% of their citations, cite the first or second page of their sources 70% of the time, and cite only 24% of their sources more than twice. While 78% of the papers include at least one incidence of paraphrase, 52% include at least one incidence of patchwriting, with students moving back and forth between the two within the same paragraph"* (From Reading & Engaging Sources 2013)
  An Investitagtion of the Perceptions of Students' Proficiency in Reading and Writing…(2013)
  http://dist.lib.usu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED554982&site=ehost-live
  Findings: *"Significant differences in perception of student proficiency in reading and writing exist between high school and college English instructors. Overall, the high school teachers deemed more students proficient on every reading and writing standard than the college instructors."*
- *A preliminary report on student achievement in college* by AACU (2005) http://www.aacu.org/sites/default/files/files/LEAP/LEAP_Report_2005.pdf
  Findings: See section 5 – written and oral communication. ETS Academic Profile data show 11% of seniors are "proficient" at level 3 in writing (test does not actually require writing – it's mult choice)
- *Assessing and Improving Student Writing in College: A guide for Institutions, General Education, Departments, and Classroom* (e-book owned by USU Libraries)
  Summary: Shares numerous institutional examples. Chapt 2 is particularly relevant. Focuses on assessment and on how that assessment can lead to change at institutional and program levels. Good lists of resources and studies relating to student writing skills.

Writing Skills –USU Data

- USU Writing Program assessment data (2011)
  Results: 2010 papers scored on 20 criteria. Students scored above the "average" or "acceptable" level on 18 of the 20 rubric items, falling short only on "critical thinking" and "persuasiveness."
- *Information Literacy Snapshot* (890 research papers assessed of USU student work in four courses using AACU rubrics)
  http://crl.acrl.org/content/76/2/170.full.pdf+html
  Findings: There was improvement across the four levels, but scores were quite low across most categories. Students struggled particularly in Categories 3 and 4 (Evaluating & Using information effectively). These are all courses that provide students with substantial writing opportunities. See table below.

AACU Category 4 (Use Information Effectively): % of Scores in each course

Category Four	**0-0.5**	**1-1.5**	**2-2.5**	**3-3.5**	**4**
ENGL 1010	7.4%	79.3%	13.0%	0.4%	0.0%
ENGL 2010	3.2%	39.1%	47.1%	10.5%	0.4%
PSY 3500	0.0%	7.0%	76.0%	16.0%	1.0%
HIST 4990	0.0%	33.3%	46.7%	17.8%	2.2%

AACU Category 3 (Evaluate Information): %of Scores for Each Course

Category Three	**0-0.5**	**1-1.5**	**2-2.5**	**3-3.5**	**4**
ENGL 1010	93.3%	6.7%	0.0%	0.0%	0.0%
ENGL 2010	15.0%	52.6%	26.6%	5.7%	0.0%
PSY 3500	0.0%	17.8%	60.4%	19.8%	2.0%
HIST 4990	0.0%	31.1%	48.9%	17.8%	2.2%

Best Practices/Solutions:

- Conference on College Composition and Communication (CCCC) Gives Criteria for successful programs
  http://www.ncte.org/cccc/awards/writingprogramcert
- NCTE-WPA white paper on writing assessment in colleges and universities
  http://wpacouncil.org/whitepaper. See models of universities who enact these strategies here: http://wpacouncil.org/assessment-models
- Carlton College – Introduced sophomore writing portfolios to broaden its assessment of student writing.
  https://apps.carleton.edu/campus/writingprogram/

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WATER RESOURCES BULLETIN
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GRADUATE TRAINING IN WATER TRACK ENVIRONMENTAL ENGINEERING: RESULTS OF A SURVEY OF EMPLOYERS[1]

Roger D. Hansen, Michael F. Torpy, Michael Kemp, and David Mills[2]

ABSTRACT: The authors conducted a mail survey of 600 employers in the government and private sectors who were thought to hire water track environmental engineers. Of a total of 148 respondents, over 80 percent employed a combined total of over 2,800 environmental engineers. The survey addressed two basic questions: (1) what is the quality of graduate education recently trained engineers have received, and (2) what effect does a nonengineering undergraduate degree have on an engineering graduate student's employment potential.

In answer to the first question, respondents indicated that engineering graduates were deficient in report writing, business law (contracts and specifications), economics and finance, and practical design. Many employers stated that students could better prepare themselves for employment by (1) obtaining professional experience through internships and summer or part-time jobs, and (2) learning to communicate effectively, both orally and in writing. In answer to the second question, 50 percent of the respondents indicated that engineers without an engineering undergraduate degree would not necessarily be limited in their abilities to perform engineering duties.

(KEY TERMS: education; employment; engineering education; environmental engineering; graduate study; water resources.)

INTRODUCTION

Over the past few decades employers of civil engineers have protested the inadequacies of training of university graduates. Many employers have expressed the opinion that graduate engineers begin their careers with such serious deficiencies in their educational background that they have little knowledge of what it means to be an engineer. One spokesman (Rodenberger, 1978, p. 33), commenting on the recent trend of admitting students with nonengineering majors to graduate engineering programs, concluded that there are "graduates with masters and doctoral degrees in engineering who are not qualified to practice the profession."

Such statements prompted the Association of Environmental Engineering Graduate Students (AEEGS) at Utah State University to examine the question of how engineering students can better prepare themselves for a career in engineering. The study addressed two basic questions: first, in what subject areas are recently graduated water track environmental engineers deficient; and second, how does having a nonengineering undergraduate major such as biology, chemistry, or economics, affect the quality of graduate engineering training.

RESEARCH APPROACH

Questionnaires were mailed to 600 organizations that were thought to employ environmental engineers, including manufacturing firms that produce water related products, government agencies (national, state, and interstate), consulting engineering firms, and others, such as public utilities and construction firms. A total of 148 organizations (about 25 percent) responded. These respondents employ over 2,800 environmental engineers who as a group spend 40 percent of their time in design and review, 16 percent in water works, 10 percent in water resources, and 40 percent in water quality. Among the respondents were the Environmental Protection Agency (three regional offices), the Soil Conservation Service, the Forest Service, the National Park Service, 11 state agencies, 2 interstate agencies, and a large number of consulting and manufacturing firms. The distribution of respondents and variety of organization types are shown in Figures 1 and 2, respectively.

RESEARCH RESULTS

The survey results are described as they relate to the specific objectives of the questionnaire and to implications that are directly obtainable from the data. Overall conclusions pertaining to the evaluation of graduate training are discussed in the final section of this paper.

Subject Matter

Each organization was asked to evaluate the educational background of its recently graduated environmental engineers in a total of 25 subject areas (see Table 1). A scale of 0-100 was used with three ratings possible, a rating of 100 indicating sufficient training in a subject area; a rating of 50, marginal training; and a rating of 0, inadequate training. The mean of

[1]Paper No. 80057 of the *Water Resources Bulletin.* Discussions are open until June 1, 1981.

[2]Respectively, Water and Power Resources Services, Box 1338, Provo, Utah 84601; Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439; CH2M-Hill, 1400 114th Avenue S.E., Bellevue, Washington 98004; and Utah Power and Light Co., 1407 West North Temple, Salt Lake City, Utah 84116. (All are former graduate students in Civil and Environmental Engineering, Utah State University, Logan, Utah 84322).

the responses, as well as the percentage who chose not to rate a subject, are shown in Table 1.

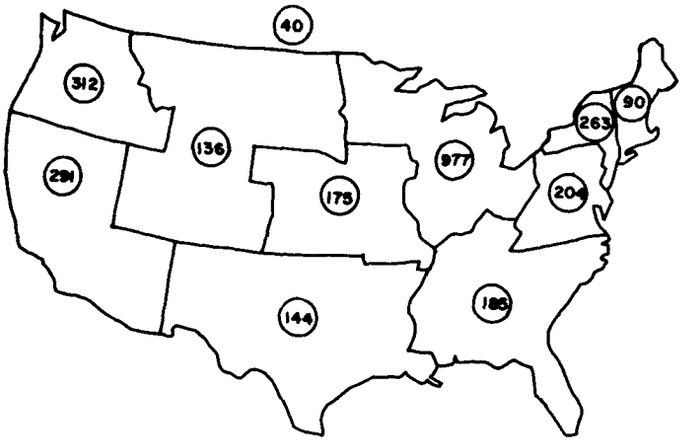

Figure 1. Total Number and Regional Distribution of Environmental Engineers Employed by the Respondents.

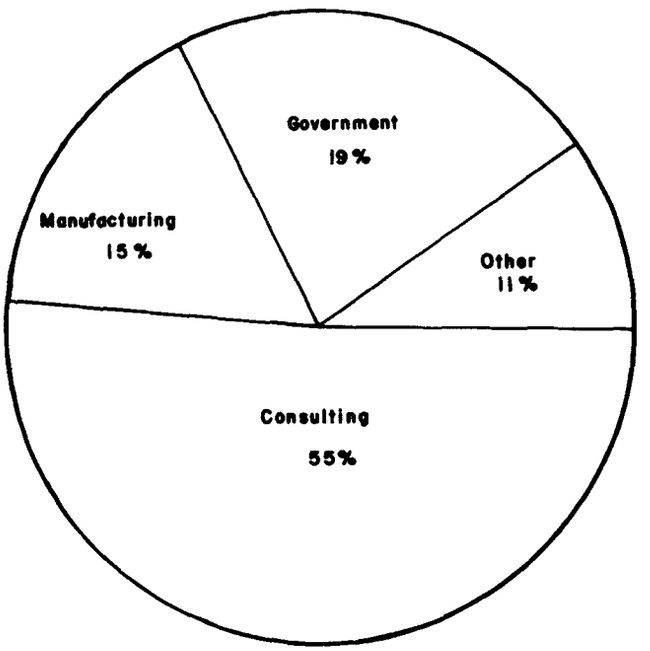

Figure 2. Distribution of Respondents by Types of Organizations.

The relative importance of any given rating can be determined by examining the percentage of respondents rating a subject area. For example, a high rating paired with a high percentage of responses suggests that the training in a subject area is adequate. Conversely, a low rating paired with a high percentage of responses suggests a need for improvement of the quality or quantity of requirements on the part of universities. In cases where a high percentage of respondents did not rate a given subject, this suggests that many respondents placed little value on the subject area.

TABLE 1. Ratings and Grades Assigned by Employers to the Training of Their Recently Graduated Environmental Engineers.

Subject Area	Rating	Grade*	Percent Responding**
Agricultural Engineering	65	B	47
Air Pollution	60	B	63
Biology	86	A	81
Business Law (contracts and specifications)	39	D	81
Business Management	40	C	75
Chemistry	85	A	88
Computer Science	83	A	81
Economics and Finance	54	C	86
Electrical Engineering	68	B	62
Engineering Drawings and Blueprints	60	B	86
Environmental Law	53	C	86
Fluid Mechanics	85	A	87
Hydrology	81	A	82
Industrial Waste Treatment	61	B	90
Mathematics	95	A	91
Modeling	58	C	68
Personnel Relations	47	C	83
Pipe Networks	71	B	78
Report Writing	32	D	93
Soil Mechanics	77	B	69
Solid Waste	58	C	68
Statistics	77	B	82
Structures	81	A	73
Water and Waste Water Treatment	82	A	92
Water Resources	82	A	88

*A = 80-100 rating; B = 60-79; C = 40-59; D = 20-39.
**Percent of respondents who chose to rate the subject area.

Eight subjects received an average rating higher than 80 with over 80 percent responding, indicating the majority of respondents felt that the training in these areas was sufficient. Among the subjects rated high are those vitally important to water track engineering, including chemistry, biology, fluid mechanics, hydrology, and water and waste water treatment (see Table 1). A total of 17 subject areas received an average rating of 60 or more.

Only two subjects received a rating lower than 40 – report writing and business law (contracts and specifications). Also rated low were solid waste, economics and finance, business management, personnel relations, environmental law, and modeling; and all of these, except for solid waste and modeling, had few nonresponsive answers.

The various types of organizations responding differed significantly in their ratings of six subjects (see Table 2). For example, consulting firms gave markedly lower ratings to report writing, engineering drawing and blueprints, economics and finance, and personnel relations. Manufacturing firms gave low ratings to report writing and structures.

TABLE 2. Ratings Given by Various Types of Organizations to Six Subject Areas.

Subject Area	Type of Organization				Significance Level*
	Consulting	Manufacturing	Government	Other	
Economics and Finance	47	62	70	29	0.01
Engineering Drawing and Blueprints	48	84	84	61	0.001
Fluid Mechanics	83	90	95	63	0.02
Personnel Relations	35	66	63	50	0.01
Report Writing	25	34	46	56	0.05
Structures	83	54	94	86	0.01

*Based on f-test.

Curriculum Deficiencies

To a question concerning which subjects should receive more emphasis in a graduate student's training, the most frequently given response involved some form of personal communication. Just under 40 percent of the responding organizations pointed to curriculum deficiencies in some aspect of written communication, whereas 10 percent indicated weaknesses in oral communication. Among subject areas respondents mentioned specifically were technical report writing, business correspondence, preparation of manuals, and proposal documentation. A surprising number of respondents mentioned English grammar as a curriculum deficiency, and one organization summed up the general situation with the statement that students need to develop the "ability to express ideas logically." Other frequently recurring responses to the question of currimulum deficiencies, as shown in Table 3, included economics and finance, business and public administration, personal relations, practical design, and governmental operations.

TABLE 3. Response Estimates to the Question: In your opinion, what subject areas should be emphasized more in an engineering student's course work to help prepare him or her for employment at your organization (please list)?

Subject Area	Percent of Those Responding*	Percent of Total**
Business and Public Administration	15	13
Economics and Finance	11	9
Governmental Operations	8	7
Personal Communication	45	37
Personnel Relations	7	6
Practical Design	14	12

*97 organizations responded to this question.
**120 respondents employed environmental engineers.

Respondents were also asked what specific advice they would offer students to help them prepare for employment. Respondents consistently indicated that students should (1) learn to communicate effectively; and (2) get professional experience wherever possible, including summer jobs, part-time employment during the school year, and internships. These comments are in general agreement with suggestions made by Rodenberger (1978), who, in proposing standard elements of a Doctor of Engineering degree, suggests: (1) an internship, (2) an understanding of basic business fundamentals, and (3) education and practice in communication skills, both oral and written. Respondents indicated that these elements should be included in all levels of graduate training.

Undergraduate Training

Many of the graduate students in civil engineering at Utah State University have undergraduate majors in nonengineering fields, and this situation is not unique to that institution. Many schools in the last ten years have permitted students with bachelor's degrees in biology to pursue master's degrees in environmental engineering. For this reason the present study attempted to determine what effect the lack of an undergraduate engineering degree would have on the graduate's employment potential. The responses were evenly split. Approximately 50 percent felt that the lack of an undergraduate engineering degree would limit an individual's ability to perform engineering duties, and 50 percent gave the opposite response. The responses from different types of organizations showed significant variations (see Table 4). More than 60 percent of the consulting firms – as compared to only 30 percent of the manufacturing firms – indicated that a nonengineering degree would be a problem.

Each employer was given a chance to comment on his response and the open-ended comments provide additional insights into the problem. Four such responses from a nonrandom sample of respondents are presented in Table 5. In general, respondents who felt a nonengineering undergraduate major would not be a problem expressed the opinion that a multidisciplinary background could be an advantage if basic engineering skills were not ignored during the student's graduate education. Those respondents having doubts about the usefulness of hybrid majors expressed concerns about the graduate's engineering skills and ability to pass the Engineer-in-Training (E.I.T.) examination.

TABLE 4. Response Estimates to the Question: Although all graduate students from the Civil Engineering Department at Utah State University receive engineering degrees at the graduate level, many have undergraduate degrees in areas such as biology, chemistry, and economics. Do you feel this would limit their ability to perform engineering duties with your organization?

Type of Organization	Responses*		
	Yes (percent)	No (percent)	No Response (percent)
Consulting	61	35	3
Government	43	57	0
Manufacturing	29	65	6
Other	17	83	0
TOTAL	48	49	3

*$\chi^2(6) = 13.98$.

TABLE 5. Responses to the Open-Ended Question: Would an engineering graduate degree preceded by an undergraduate degree in an area such as biology, chemistry, or economics limit a person's ability to perform engineering duties with your organization?

Agency	Response
Government Agency	Yes, but it certainly can be overcome by engineering course work. The greatest handicap is that the lack of undergraduate engineering courses would make it difficult to pass the Engineer-in-Training examination.
Government Agency	No, the biology and chemistry backgrounds would be beneficial as long as they have the basic civil and sanitary engineering math and science work.
Consulting Firm	Yes, (I) know one such person who has a B.S. in zoology and a Master of Science in Civil Engineering and doesn't know the differences between an engineer's and an architect's scale. That in itself is a small matter, but it is indicative and represents a ludicrous situation.
Consulting Firm	No, all (nonengineering backgrounds) can be valuable as long as the basic environmental engineering areas are not short-changed.

CONCLUSIONS

Generally, universities do remarkably well in training graduate engineers in a wide range of subjects. The possible subject areas that can be covered in a graduate curriculum in water track environmental engineering are numerous. The list of 25 subjects discussed in this study, although broad, is not exhaustive.

Several specific conclusions can be made about the attitudes of employers toward university curricula. First, they advocate an increased effort in graduate programs to train students in expressing themselves orally and in writing. Second, they recommend that universities place more emphasis in the following areas: business law (contracts and specifications), economics and finance, environmental law, and practical design. Third, they suggest that graduate students strongly consider taking business-oriented classes.

Concerning the question of whether a nonengineering undergraduate background would be detrimental to a graduate student's seeking employment as an environmental engineer, it is difficult to draw conclusions when opinions are evenly split. However, it would appear that with selected organizations there is a place for such individuals.

ACKNOWLEDGMENTS

This study was supported by the Department of Civil and Environmental Engineering at Utah State University. The following persons volunteered their time to various aspects of the survey: Steve Anderson, Margaret McCarthy, Becky Hansen, Vicki Westover, and Dona Hansen. Sincere appreciation is extended to all businesses and organizations that completed and returned their questionnaires. Joan M. Liechty contributed editing to the final draft of the paper. The authors remain responsible for errors or omissions.

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ENGR 3080, Tentative Class Schedule, Fall 2016

Week	Topics	Activities/Assignment	Textbook Readings
Week 1 **8/30 & 9/1**	• Course Orientation and Canvas Course • Communication and the 21st Century Engineer • Grammar and Language Mechanics Pre-Test	• Discuss Writing Diagnostic Assignment • Show Rubric and Discuss Common Elements of Rubrics • Do Knex Activity	Chapter 1
Week 2 **9/6 & 9/8**	• The Technical Writing Process (ABC Approach) • Obstacles to Effective Technical Communication (include TedTalk on Miscommunication) • The Rules of Technical Writing	• Writing Diagnostic Due September 8 at midnight (via Canvas)	
Week 3 **9/13 & 9/15**	• Employer Panel • Top 20 Grammar Rules & Weekly Assignments • Word Tips	• Will need room for concurrent 9:00 and 7:30 classes	Chapter 19
Week 4 **9/20 & 9/22**	• The Technical Resume • The Importance of Cover Letters, Interviewing, and Networking	• 1st Grammar Quiz Due (9/22)* • Discuss Resume and Cover Letter Assignments	Chapter 13 Chapter 18
Week 5 **9/27 & 9/29**	• Characteristics of and Commonly Written Technical Reports (Lab Reports, Status Reports) • Importance and Elements of Proposals • Discuss Final Project and Form Teams	• 2nd Grammar Quiz Due (9/29) • Technical Resume Due in Class 9/29 (hard copy) • Discuss Final Project and Form Teams	Chapter 6 Chapter 20
Week 6 **10/4 & 10/6**	• Citing Sources and Avoiding Plagiarism • Using Research to Write Technical Reports	• Cover Letter Due in Class 10/6 (hard copy) • All classes meet in Merrill-Cazier Library, Rm. 122 (10/6) • 3rd Grammar Quiz Due (10/6) • Return Technical Resume for STEM Fair	Chapters 11 and 14
Week 7 **10/11 & 10/13**	• Work in Teams to Brainstorm Proposal Topics • Technical Definitions • Engineering Standards	• 4th Grammar Quiz Due (10/13) • Discuss Topic Memo Assignment	Chapter 12 **Review** Chapters 7-10
Week 8 **10/17-10/21**	• Process and Mechanism Descriptions (this will become the Method of Work Section in the Proposal) • Attend Friday Class Schedule	• 5th Grammar Quiz Due (10/21) • Proposal Topics Due 10/24 at midnight (via Canvas)	Chapters 3 and 5

ENGR 3080, Tentative Class Schedule, Fall 2016

Week 9 **10/24-10/28**	• Technical Presentations • Technical Slides	• Final Due Date: Writing Center Review of Writing Diagnostic, 10/29 • 6th Grammar Quiz Due (10/28)	
Week 10 **10/31-11/4**	• Business Correspondence: Letters, Memos, and Email • Creating Figures and Tables	• Topic Memo Assignment Due 11/4 at midnight (via Canvas) • 7th Grammar Quiz Due (11/4) • Discuss Letter of Transmittal Assignment	Chapter 17
Week 11 **11/7-11/11**	• Visual Display of Technical Information (Bart's presentation) • Work in Teams for Presentations	• 8th Grammar Quiz Due (11/11)	Chapter 15
Week 12 **11/14-11/18**	• Presentations • Presentations	• Technical Slides Due, 11/13 at midnight (submit via Canvas) • 9th Grammar Quiz Due (11/18)	
Week 13 **11/21-11/25**	• Presentations (if needed) • Thanksgiving Break	• Letter of Transmittal Due In-Class (11/21) • No Grammar Quiz Due This Week	
Week 14 **11/28-12/2**	• Ethics of Technical Communication • Final Discussion of Proposal Components • Groups Meet With Instructor for Proposal Review (appointments 12/2 – 12/8)	• Return Letter of Transmittal Assignment (re-write will be in the proposal) • 10th Grammar Quiz Due (12/2)	
Week 15 **12/5-12/9**	• Work in Teams for Proposals	• Proposals Due December 9 at 3 p.m. (hard copy and via Canvas)	
Finals Week	• Classes take post-test		

***Grammar quizzes are due at midnight on the date listed**

A Survey of Graduate Education In Environmental Engineering

Thomas B. Hardy[1], V. Dean Adams[2], Betty-Ann Naeger[3], S. M. ASCE, Mary E. Pitts[4], S. M. ASCE, and Robert E. Hinchee[5], A. M. ASCE

ABSTRACT

To keep pace with the rapidly changing field of environmental engineering, a survey was conducted in 1983 to evaluate the overall effectiveness of environmental engineering curricula, to compare 1977 survey results for assessing changes in both the perceptions and the needs of potential employers, and to assist students in matching their interests with potential employers. The survey respondents were profiled based on type of organization, area of activity and number of engineers employed. The educational background of entry level environmental engineers as well as university curricula were addressed. The employment record of the respondents was surveyed as to their rating of important factors for hiring environmental engineers, and the number of environmental engineers predicted to be hired in the next year. Finally, since the discipline of toxic/hazardous wastes is expanding, the respondents were asked to name and rate university courses that are important for working in the hazardous waste area.

INTRODUCTION

During the past decade the field of environmental engineering has undergone many changes. Although the traditional areas of water and wastewater treatment continue as the cornerstone of unit operations, new and innovative technologies, increased computer usage, and the advent of increasingly complex waste disposal problems such as toxic and hazardous wastes has resulted in the necessity to evaluate the adequacy of present environmental engineering education. The ultimate benefit of such evaluations is to ensure that present educational programs are adequately preparing its graduating engineers in those skills perceived by potential employers as essential, and to provide students with information which will allow them to design a program of study to maximize their training and marketability.

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In 1977 the Utah State University Association of Environmental Engineering Graduate Students conducted a survey of potential employers from private firms and governmental agencies. That study reported on such factors as the type of organizations employing environmental engineers, what factors employers considered most important in an employee, and rating the educational training of recently graduated environmental engineers (1). The purpose of this paper is to report the results of a similar study conducted during 1983 and to provide comparative data between the two studies.

METHODS

The original framework of the questionnaire utilized by Hansen, et al. (1), was retained for use in this study for comparative purposes. However, the survey format was expanded to include additional input on subject areas not originally covered. The survey form was mailed to the original firms and agencies contacted in the 1977 study as well as an additional 150 potential employers. Survey results were coded and subjected to statistical analysis utilizing the SPSSX (2) statistical package on a VAX 11-780 computer system.

RESULTS AND DISCUSSION

Profile of Respondents

A total of 122 firms and agencies responded to the questionnaire which represents a return rate of approximately twenty percent. This was very similar to the 1977 study in which 120 surveys were returned. Fifty percent of those responding to the questionnaire were categorized as consulting firms; state and federal agencies each accounted for 12 percent; manufacturing accounted for 13 percent with the remaining respondents categorized as construction, equipment, manufacturing or other. These categories and corresponding percentages were virtually identical to those observed in the 1977 study. The total number of environmental engineers employed by the respondents is over 2300 nationwide. Consulting firms employed 44 percent of this total with state and federal agencies accounting for 13 and 17 percent respectively. Fifty-two percent of those answering the survey employed between one and ten environmental engineers which was similar to results obtained in 1977 (1).

In general, state and federal agencies reported that up to 30 percent of their time was spent in each of the areas of planning, regulatory activities, and research and development. Principal areas of concern for these agencies were air and water quality, solid waste, and wastewater treatment. Consulting and manufacturing firms spent up to 60 percent of their time in the areas of research and development and planning. These firms also indicated that considerable effort was placed on design and regulatory activities with the principal areas of concern being water and wastewater treatment, and solid waste disposal. Both governmental agencies and private firms indicated that up to 25 percent of their time was now devoted to toxic/hazardous wastes. When asked if there were any anticipated changes in their environmental engineering related activities, 55 percent indicated an increase, 6 percent a decrease, and 39 percent anticipated no change. The two primary areas listed for increased activity were toxic/hazardous wastes

and solid waste. The two areas cited most often to decrease were water and air quality. No comparable statistics are available from the 1977 study.

Education

Respondents were asked to rate the educational training of recently graduated environmental engineers in over 25 general areas. The results of the 1977 and 1983 surveys are presented in Table 1. The values reported are percents of the total responses within a given category. In both the 1977 and 1983 results, classical core courses in environmental engineering such as fluid mechanics, hydrology, water resources, water/wastewater treatment as well as basic courses in biology, mathematics, and chemistry received a high percentage of sufficient ratings. However, both survey results indicate that the areas of communication,

Table 1. Survey results rating areas of education, 1977 and 1983.

	SUFFICIENT		MARGINAL		INADEQUATE		N/A	
	1977	1983	1977	1983	1977	1983	1977	1983
Chemistry	65[a]	62	19	24	4	12	12	3
Biology	62	57	15	19	4	11	19	13
Mathematics	83	75	9	17	0	4	9	5
Computers	56	48	21	34	4	11	19	8
Statistics	53	43	20	36	9	13	18	8
Elec. Engr.	34	32	17	17	11	10	38	41
Structures	52	41	15	19	6	6	27	34
Soil Mech.	40	41	26	25	4	9	31	25
Fluid Mech.	62	67	23	17	2	3	13	13
Water Resources	59	69	26	17	3	4	12	10
Hydrology	53	56	27	28	2	8	18	8
Water/Wastew. Trt.	63	71	25	20	4	2	8	4
Ind. Wastes Trt.	34	44	42	37	14	13	10	7
Pipe Networks	40	50	31	15	7	7	22	28
Air Pollution	28	44	19	27	16	7	37	22
Solid Wastes	26	49	27	36	15	6	32	10
Drawing Blueprints	39	50	25	24	22	10	14	16
Econ. Blueprints	26	31	41	41	19	16	14	13
Business Mgmt.	20	18	20	31	35	34	25	17
Personal Relations	27	26	24	26	32	38	17	11
Business Law	18	20	27	27	36	34	19	19
Environ. Law	23	30	40	35	18	27	19	8
Ag./Irrig. Engr.	22	30	18	7	8	7	53	56
Modeling	25	41	29	24	14	14	32	22
Report Writing	17[b]	26	25[b]	33	51[b]	39	7[b]	2
Oral Commun.	--[b]	31	--[b]	42	--[b]	24	--[b]	3
Toxic/Haz. Wastes	--[b]	27	--[b]	38	--[b]	26	--[b]	9
Surveying	--[b]	36	--[b]	12	--[b]	9	--[b]	43

[a] The values are percents of total responses for a given category within each survey year.

[b] Not included in the 1977 survey.

business management, economics, environmental and business law, and solid and industrial waste treatment received many marginal and inadequate ratings.

Based upon those categories listed in Table 1 the employers were asked to list those areas considered both most and least important to help prepare a student for employment with their organization. The three areas cited most important overall were oral and written communication skills and knowledge of toxic/hazardous wastes. The three areas cited as least important overall were agricultural and irrigation engineering, surveying and electrical engineering. State and federal agencies tended to rate the importance of toxic/hazardous wastes while the private firms strongly emphasized the communications aspect of educational training.

The respondents were also asked to comment on the balance between theoretical and applied approaches to engineering education. Sixty-four percent indicated that both theoretical and applied training were most desirable within educational programs. Fifteen percent indicated that the theoretical aspects of engineering were of primary importance while 21 percent indicated that a more applied approach should be emphasized in the universities.

Employment

Forty-two percent of the respondents indicated that they had hired one or more entry level environmental engineers within the past year for a total of 311 positions. Of this total, 67 percent were BS, 28 percent were MS and 5 percent were at the PhD level. Sixty-one percent also indicated that they would be hiring additional entry level environmental engineers within the next year for a total of 289 positions. Sixty-three percent of those positions were anticipated to be at the BS level, 30 percent at the MS level and 7 percent at the PhD level. Only 3 percent of those responding to the survey indicated that they preferred hiring PhD's while 44 percent favored hiring MS's. Twenty-six percent indicated no preference between hiring PhD's versus MS's while 28 percent reported that they hired PhD's for certain tasks and MS's for others.

Since many of the students graduating with advanced degrees in environmental engineering have undergraduate degrees in areas such as biology, chemistry, and toxicology, respondents were asked if this would limit the employee's ability to perform engineering duties with their organization. In both the 1977 and 1983 surveys, the results were about equally divided between positive and negative responses. In general, those indicating that a non-engineering background was detrimental to job performance suggested that the lack of skills in this area was a handicap that could not be overcome. Conversely, those indicating that the non-engineering background was not a handicap suggested that the diversity in educational experience provided flexibility that was a potential asset.

Employers were asked to rate the relative importance of several factors when selecting new employees and the results of both the 1977 and 1983 surveys are presented in Table 2. The responses have been ranked in decreasing order of importance based on the relative per-

centage of those responding to each category. Course work and personality ranked highest in both years. These traits generally scored high for each type of organization surveyed in 1977 and 1983. In the 1977 results, interest in the organization, writing skills and completion of the E. I. T. were the least important. In the 1983 results, the successful completion of the E. I. T. scored low as did personal appearance. These trends were generally followed for each type of organization except that in the 1983 survey, consulting firms ranked writing as the top factor. It is interesting to note that the relative importance of grades dropped between the 1977 and 1983 results and an increased emphasis was placed upon writing skills. Communication skills and practical job experience were the most frequently cited areas for improvement that potential employers suggested when asked for advice to help prepare students for employment.

Table 2. Relative importance of eight factors used in selecting employees, listed in order of decreasing importance.

1977	1983
1. education-course work	1. education-course work
2. personality	2. personality
3. education-grades	3. education-writing
4. personal appearance	4. interest in organization
5. education-writing	5. references[1]
6. interest in organization	6. education-grades
7. completion of E. I. T.	7. personal appearance
	8. completion of E. I. T.

[1]This category was not included in the 1977 survey questionnaire.

Hazardous Waste

In anticipation of increased environmental engineering activity in toxic/hazardous wastes, the respondents were asked to rate ten areas of training that they would consider most important when hiring professional staff. The results are presented in Table 3 and represent the percent of the total responses within a given category. The subject areas of organic chemistry, groundwater hydrology, chemical and environmental engineering and toxicology were considered most important. The areas considered least important were soil mechanics, biochemistry and microbiology.

CONCLUSIONS

The 1983 survey results showed increased activity in the environmental engineering areas of toxic/hazardous and solid waste. Decreased activity in water and air quality was indicated. Employers would like more emphasis on communication, business management, economics, environmental and business law, and solid and industrial waste treatment in graduate programs. When employers were asked to rate factors used to select entry level engineers, coursework, personality, and writing skills were listed as the three most important.

Table 3. Rating of academic areas important for work in hazardous waste engineering.

	most important.....least important				
	5	4	3	2	1
Organic chemistry	39[a]	44	14	1	2
Soil science	8	45	33	8	6
Soil mechanics	7	26	39	22	7
Biochemistry	6	34	39	18	3
Groundwater hydrology	42	38	16	2	2
Chemical engineering	26	36	28	8	3
Environmental engineering	26	36	23	12	3
Toxicology	21	41	24	13	1
Microbiology	2	15	37	35	11
Industrial Safety	13	34	31	12	9

[a]The numbers represent the percent of total responses within each area.

APPENDIX. --References

1. Hansen, R. D., Torpy, M. F., Kemp, M., and Mills, D., "Graduate training in water track Environmental Engineering: results of a survey of employers," *Water Resources Bulletin*, Vol. 16, No. 5, 1980, pp. 862-865.

2. SPSS Inc., *SPSSX User's Guide*, McGraw-Hill Book Co., New York, N. Y., 1983.

Course Syllabus ENGR 3080: Technical Communication for Engineers Fall 2016

Professor
Melissa Scheaffer ENGR 405D 435.797.9876 melissa.sch@usu.edu

Office Hours
Tuesday, 1:30 p.m. to 3:00 p.m.; Wednesday, 10:30 a.m. to 12:00 p.m.; and by appointment. Email is always welcome and usually responded to within 24 hours.

Prerequisites and Expected Skills
- English 2010 and admission to the Professional Program in the College of Engineering.
- Knowledge of basic English grammar/language mechanics and computer skills (Word, PowerPoint). Free Microsoft Office for students is available at: http://office365.com/getoffice365

Course Description
The goal of this course is to prepare engineering students with the individual and collaborative technical writing, presentation, and research skills necessary to be effective technical communicators in academic and professional environments. This course meets the criteria for a Communications Intensive (CI) course.

Recommended Textbook
Finklestein, L. Pocketbook of Technical Writing for Engineers and Scientists, 3rd ed. McGraw-Hill, 2007. ISBN-13: 978-0073191591

Learning Objectives
The following course, ABET, and IDEA learning objectives will be achieved.

Course Objectives
At the conclusion of this course, students will demonstrate proficiency by:
a. Understanding the characteristics of technical writing and the importance of purpose, audience, and genre for written communication in technical fields.
b. Articulating complex engineering ideas appropriate for targeted audiences.
c. Planning, drafting, revising, editing, and critiquing technical and professional documents through individual and collaborative writing.
d. Writing effective technical and business documents that are grammatically and stylistically correct.
e. Preparing and delivering professional technical presentations through applying principles of effective oral communication and slide design.
f. Applying principles for the visual display of quantitative information.
g. Researching, analyzing, synthesizing, and applying information to create technical reports.
h. Recognizing ethical implications of technical communication in professional contexts.
i. Understanding the contemporary issues in engineering from an environmental, societal, economic, and global perspective.

ABET (Engineering Accreditation) Objectives
Students will develop:
a. An ability to communicate effectively.
b. The ability to function on multi-disciplinary teams.
c. An understanding of professional and ethical responsibility (as applies to communicating technical information).

IDEA Course Ranking Objectives
The following learning objectives will be evaluated upon completion of the course:

a. Developing skills in expressing oneself orally and in writing.
b. Acquiring skills in working with others as a member of a team.
c. Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course.

Homework Assignments and Revisions
All writing assignments are submitted hard copy in order to evaluate the formatting and visual display of the documents. Some of these assignments are also submitted electronically through Canvas in order to verify Turnitin (anti-plagiarism software) scores. All electronic files must be submitted in .pdf format to preserve document formatting.

As part of the differential tuition for this course, students will receive a credit for printing assignments. The credit for up to 35 prints (single-sided, black and white, 8.5 X 11) will be loaded on students' ID cards. These prints must be used by the end of the semester the student is enrolled and can be made only in the Engineering Computer Lab (ENR 305) or Industrial Science Computer Lab (IS 119).

Each written assignment will be evaluated by both the professor and teaching assistant. As this is a Communications Intensive (CI) course, each writing assignment, with the exception of the final project, may be revised and resubmitted one time after the initial evaluation. Revised documents must be submitted within one week of return of the originally graded document. The grade for the original submission and the revision will be averaged to determine the final grade for each assignment. *Successful revision of documents means incorporating feedback to improve the overall quality of the document, including content, style, language mechanics, and format.*

Due Dates
All homework assignments must be submitted on the due date and in the appropriate format. With prior permission, late assignments can be submitted but will receive a 20% grade deduction per day and are not eligible to be revised and resubmitted.

Engineering Writing Center
Students are encouraged to visit the Engineering Writing Center (EWC) in ENGR 405E for assistance in writing or revising assignments. The EWC is staffed by writing consultants who can provide feedback on homework assignments and papers for all engineering courses, including ENGR 3080. The Center will open in October and tentative hours are M/W/F from 9:30 a.m. to 12:30 p.m. and T/H from 1:30 p.m. to 4:30 p.m. More information will be provided regarding this resource for students.

Canvas
Canvas will be used for online resources, assignments, and grammar quizzes. All communication during this course will be sent via Canvas through the student email listed in Banner. Please ensure the email address listed in Banner is correct. Missing any deadlines as a result of not receiving announcements or emails will not be accepted as an excuse for submitting late work.

Style Manual
In order to ensure consistency in written formats and compliance with generally accepted technical writing standards, a Style Manual has been developed for this course and can be accessed from the course home page in Canvas. All formatting requirements for documents produced in this class are discussed in this Manual and must be adhered to in the production of course assignments.

Attendance and Participation
Attendance is critical and means arriving on time and staying for the entire class. Absences due to illness, personal emergency, religious observances, athletic or university-sponsored activities, or work obligations should be arranged with the professor in advance, if possible.

Given this course is about communication, active participation is expected. *This course is intended to be a dialog, not a monolog*. This includes completing assigned readings on time, engaging in class discussions on a regular basis, providing oral and written peer reviews, and completing in-class activities/quizzes.

Participation activities will be randomly completed in class. These activities are worth points; contribute to the participation grade; and cannot be made up due to missing class, arriving late to class, or leaving class early.

Professionalism Standards
In order to promote a classroom atmosphere conducive to learning and teaching that is free from distraction for all students and the professor, please observe the following:

1. Arrive on time and avoid leaving early; please inform the professor ahead of time if this is unavoidable.
2. Avoid leaving during class unless absolutely necessary.
3. Provide courteous attention to and respect the questions, comments, and opinions of other students, the professor, and guest speakers.
4. Come prepared to engage in classroom discussion by reading assigned chapters or resources.
5. Avoid doing homework for other classes or sleeping during scheduled class time.
6. Refrain from using cell phones, computers, tablets, and other electronic devices for personal use during class. Students are encouraged to bring these devices to class for use on certain in-class assignments and activities.

Students not observing the above guidelines will lose participation points at the professor's discretion.

Consider downloading and using Pocket Points (available on the App Store or Google Play). *"Pocket Points is a new mobile application that gives students rewards for not using their phones during class. Simply open the app on campus, lock your phone during class, and start gaining points. Points are then used at local and online businesses for awesome student discounts, coupons, or gifts."*

USU Policies
Please visit the following website for more information on USU Policies:
usu.edu/provost/faculty/teaching/syllabus_resources.cfm

Academic Integrity
Students have a responsibility to promote academic integrity at the University by not participating in or facilitating others' participation in any act of academic dishonesty and by reporting all violations or suspected violations of the Academic Integrity Standard to their instructors. To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

Violations of the Academic Integrity Standard (academic violations) include but are not limited to:

Cheating: (1) using or attempting to use or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity, including working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually"; (2) depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (3)

substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work; (4) acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission; (5) continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity; (6) submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or (7) engaging in any form of research fraud.
Falsification: altering or fabricating any information or citation in an academic exercise or activity.

Plagiarism: knowingly representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. This also includes the unacknowledged use of materials prepared by another person/student or agency engaged in the selling of term papers or other academic materials.

The penalties for plagiarism at USU and in this course include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, and referral to psychological counseling. Penalties for plagiarism in this class are determined by the Professor and Engineering Education Department Head and could include an automatic failing grade for the assignment or the class depending on the severity of the violation. More information on the codes of policies and Procedures for Students at Utah State University can be found at: http://www.usu.edu/studentservices/studentcode.

Sexual Harassment
Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at 797-1266.

Students with Disabilities
The Americans with Disabilities Act states: "Reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation within the program. Students with ADA documented impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC). Any request for special consideration relating to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative format, large print, audio, diskette, or Braille.

Grading
USU's standard grading scale will be applied:

Grade	Percentage
A	100 to 93
A-	92 to 90
B+	89 to 87
B	86 to 83
B-	82 to 80
C+	79 to 77
C	76 to 73
C-	72 to 70
D+	69 to 67
D	66 to 60
F	59 and below

Grades will be determined based on the following assignments:

• **Grammar and Writing:**	
Grammar Pre-Test and Post-Test	5%
Diagnostic Writing Assessment	5%
Grammar Quizzes	10%
• **Technical and Business Documents:**	
Topic Memo	10%
Letter of Transmittal	10%
Proposal—Final Project (Team Document)	15%
• **Professional Documents:**	
Technical Resume	10%
Cover Letter	10%
• **Technical Presentations:**	
Team Presentation	10%
Technical Slide Design	5%
• **Attendance/Participation**	10%
TOTAL	100%

Withdrawal Policy and "I" Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.