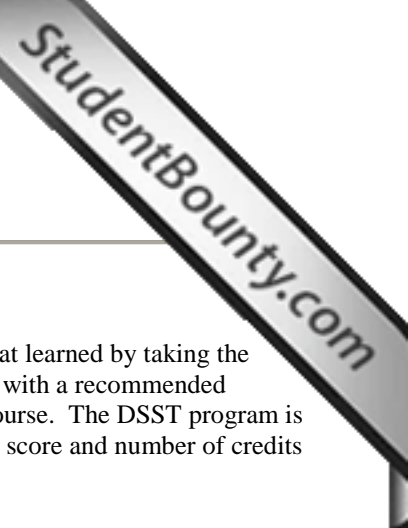




# Technical Data Sheet



## For Academic Counseling and Credit-Awarding Purposes

DSST exams were developed to enable schools to award credit to students for knowledge equivalent to that learned by taking the course. The ultimate passing score for each exam is determined by each school. Each school is provided with a recommended passing score established by subject matter experts comprised of college faculty who teach the relevant course. The DSST program is approved by the American Council on Education (ACE), and ACE provides both a recommended passing score and number of credits that could be awarded to students who achieve a passing score.

### Exam Updates

- A History of the Vietnam War
- Art of the Western World
- Astronomy
- Business Ethics & Society
- Business Mathematics
- Criminal Justice
- Environment and Humanity
- Ethics in America
- Foundations of Education
- Fundamentals of College Algebra
- Fundamentals of Counseling
- Fundamentals of Cybersecurity
- Here's to Your Health
- Human Cultural Geography
- Human Resources Management
- Introduction to Business
- Introduction to Computing
- Introduction to Law Enforcement
- Introduction to World Religions
- Lifespan Developmental Psychology
- Management Information Systems
- Organizational Behavior
- Personal Finance
- Principles of Finance
- Principles of Physical Science
- Principles of Public Speaking
- Principles of Statistics
- Principles of Supervision
- Substance Abuse
- Technical Writing
- The Civil War and Reconstruction

National panels of subject matter experts and college faculty were formed for each exam. Test items were newly written to match the updated content outline for each exam. In addition to updating content of the exams, pass/fail standard-setting methodologies and new score scales were introduced in 2008.

### Cut Score Determinations

Unlike the norm-referenced approach used previously for DSST exams, criterion-referenced methods are now used to set an absolute standard for all exams beginning in 2008. For each exam, subject matter experts participated in a series of standard-setting activities, including modified Angoff (1971) and Beuk (1985) procedures. For these procedures, the minimally competent candidate was defined as a student who would just pass the respective course.

### Equating Multiple Forms

Multiple forms for each exam were constructed to include an overlap of items in common. These overlapping items were drawn strategically from across the testing domains to approximate the domain coverage plan established in the content outline for each exam. Separate standard-setting procedures were conducted on each individual form, and linear scaling methodologies were used to map raw scores to scaled scores.

### Score Scales & Score Reporting

The new score scale introduced for the 2008 and later exams uses scores ranging from 200 to 500, with the cut score (pass point) set at 400 for all exams. Score reports for candidates provide scaled score achieved and corresponding pass/fail status.

### B-Grade Equivalent Scaled Scores

Because of the conversion to criterion-referenced standard-setting, various grade equivalents were not established. However, some credit-awarding schools have requested a B-grade equivalent scaled score be provided in addition to the 400 cut score. B-grade equivalent scores have been calculated for each of the exams updated or introduced since 2008 and are provided, along with B-grade equivalents for the remaining norm-referenced exams, in the table on the next page.

## B-Grade Equivalent Scores

Exam Title, 2008-present Updated Exams	Criterion-Referenced Cut Score	Calculated B-Grade Equivalent
A History of the Vietnam War	400	434
Art of the Western World	400	434
Astronomy	400	434
Business Ethics & Society	400	434
Business Mathematics	400	434
Criminal Justice	400	434
Environment and Humanity	400	434
Ethics in America	400	434
Foundations of Education	400	434
Fundamentals of College Algebra	400	434
Fundamentals of Counseling	400	434
Fundamentals of Cybersecurity	400	434
Here's to Your Health	400	434
Human Cultural Geography	400	434
Human Resources Management	400	434
Introduction to Business	400	434
Introduction to Computing	400	434
Introduction to Law Enforcement	400	434
Introduction to World Religions	400	434
Lifespan Developmental Psychology	400	434
Management Information Systems	400	434
Organizational Behavior	400	434
Personal Finance	400	434
Principles of Finance	400	434
Principles of Physical Science	400	434
Principles of Public Speaking	400	434
Principles of Statistics	400	434
Principles of Supervision	400	434
Substance Abuse (formerly Drug & Alcohol Abuse)	400	434
Technical Writing	400	434
The Civil War and Reconstruction	400	434

Exam Title, Exams Prior to 2008- present Updates	Norm-Referenced Cut Score (C-Grade)	B-Grade Equivalent
Art of the Western World	48	53
Astronomy	48	52
Business Law II	44	52
Business Mathematics	48	49
The Civil War and Reconstruction	47	52
Criminal Justice	49	54
Drug & Alcohol Abuse	49	53
Environment and Humanity: The Race to Save the Planet	46	53
Ethics in America	46	50
Foundations of Education	46	50
Fundamentals of College Algebra	47	50
Fundamentals of Counseling	45	48
General Anthropology	47	53
Here's to Your Health	48	51
A History of the Vietnam War	44	49
Human/Cultural Geography	48	54
Human Resource Management	46	53
Introduction to Business	46	54
Introduction to Computing	45	51
Introduction to Law Enforcement	45	52
Introduction to the Modern Middle East	47	51
Introduction to World Religions	48	52
Lifespan Developmental Psychology	46	51
Management Information Systems	46	50

Exam Title, Exams Prior to 2008- present Updates	Norm-Referenced Cut Score (C-Grade)	Equivalent
Money and Banking	48	
Organizational Behavior	48	
Personal Finance	46	51
Physical Geology	46	53
Principles of Finance	46	53
Principles of Financial Accounting	47	55
Principles of Physical Science	47	52
Principles of Public Speaking	47	52
Principles of Statistics	48	51
Principles of Supervision	46	49
Rise and Fall of the Soviet Union	45	51
Technical Writing	46	50
Western Europe Since 1945	45	49

## Technical Data Sheet for Norm-Referenced Exams Prior to 2008 Criterion-Referenced Phased Transition

Norming forms of DSST exams were administered to college-level students who were completing courses for credit in various subjects. The schools that participated ranged in size from large state universities to small private colleges to local community colleges. Geographic distribution was wide, with schools from all areas of the United States participating.

As each DSST was developed, it was administered to a representative sample of students who have completed a college course in the subject. The scale ranges from 20 to 80 with the average score of students in the representative sample set equal to 50 and the standard deviation of scores set equal to 10.

Raw scores were converted to scaled scores with a mean of 50.0 and a standard deviation of 10.0 using the formula  $S = AX + B$ , where  $S$  = the scaled score, and  $X$  = the raw score. Scaled scores are related to raw scores via the above linear transformation equation, using the  $A$  (the slope of the line) and  $B$  (The y-axis intercept) as conversion parameters which are test-form-specific.

### DSST Standard Scores

Tests in the DSST Program scored under the Norm-Referenced method are reported in terms of standard scores and not in terms of the number of correct answers. One reason for using a standard score is that if more than one form of a test is developed, the test can be equated statistically to allow for differences in difficulty level from one form to another. This means that the examinee could miss questions on a difficult form of a test and get the same standard score as an examinee who missed fewer questions on an easier form of the test.

When two test forms in the **same** subject have been equated, the scores have the same meaning, representing the same level of ability, and can be compared.

Scale scores for **different** subjects do not have the same meaning and cannot be compared. The calculation of a standard score requires a different conversion/formula for each test. Without the formula, one cannot work back from a standard score to learn the number of correct responses.

### ACE Recommendations

The American Council on Education (ACE<sup>®</sup>) reviewed and approved the standard setting procedures. ACE also recommends the amount of credit that should be awarded to candidates.

The decision regarding credit is based primarily on two factors. The first is that the content of the examination reflects the content of the course. The second is that the score a student could be expected to achieve on the test is comparable to the score achieved by a student who has successfully completed the course. For DSST exams, the recommended minimum scale score is the average score that was achieved on the test by college students who received a grade of C in the actual subject.

Examination	Average scaled score students with a grade of A	Average scaled score students with a grade of B	Average scaled score students with a grade of C	Number of Students	Number of Items	Mean Raw Score	Standard Deviation Raw Score	KR-20 Reliability	Standard Error of Measurement	Average grade/ Test score correlation
A History of the Vietnam War	56	49	44	183 104	100 103	58.2 54.2	11 11.7	0.84 0.86	Raw 4.4 Scaled 4.0 Raw 4.4 Scaled 3.8	0.6 0.41
Art of Western World	59	53	48	529	88	41.5	11.8	0.87	Raw 4.3 Scaled 3.65	0.53
Astronomy	58	52	48	745 639	87 82	44.9 37.1	13 12.4	0.9 0.89	Raw 4.1 Scaled 3.2 Raw 4.0 Scaled 3.3	0.64 0.67
Business Law II	56	53	52	643	94	42.3	13.7	0.9	Raw 4.3 Scaled 3.14	0.52
Business Mathematics*	56	49	48	345 421	54 59	23.5 26.6	7.1 8	0.79 0.82	Raw 3.3 Scaled 4.6 Raw 3.4 Scaled 4.0	0.62 0.56
Criminal Justice**	58	54	49	780 1460	88 90	53.5 52.5	12.6 11.7	0.9 0.87	Raw 4.1 Scaled 3.3 Raw 4.2 Scaled 3.1	0.56 0.57
Environment and Humanity: The Race to Save the Planet	55	53	46	995 831	95 104	60.4 62.8	13.5 14.5	0.91 0.91	Raw 4.1 Scaled 3.0 Raw 4.4 Scaled 3.1	0.67 0.66
Ethics in America**	54	50	46	590 687	111 110	67.9 68.3	12 11.5	0.85 0.84	Raw 4.6 Scaled 3.9 Raw 4.6 Scaled 4.0	0.46 0.46
Foundations of Education	54	50	46	795	94	45	10.7	0.83	Raw 4.4 Scaled 4.1	0.47
Fundamentals of College Algebra**	58	50	47	710 735	78 79	35 35.7	11.2 10.6	0.88 0.85	Raw 3.9 Scaled 3.5 Raw 4.0 Scaled 3.6	0.65 0.68

Examination	Average scaled score students with a grade of A	Average scaled score students with a grade of B	Average scaled score students with a grade of C	Number of Students	Number of Items	Mean Raw Score	Standard Deviation Raw Score	KR-20 Reliability	Standard Error of Measurement	Average Test
Fundamentals of Counseling	55	48	45	705 645	99 99	58.7 59.4	12.6 12.5	0.88 0.88	Raw 4.4 Scaled 3.5 Raw 4.4 Scaled 3.4	
General Anthropology	57	53	47	995	102	55.9	12.6	0.87	Raw 4.5 Scaled 3.4	0.60
Here's to Your Health**	56	51	48	775 835	101 101	67 62.1	12.9 14.4	0.89 0.91	Raw 4.2 Scaled 3.1 Raw 4.4 Scaled 3.1	0.5 0.61
Human Resource Management	54	53	46	556 653	100 99	57.5 60.7	12.9 11.4	0.88 0.86	Raw 4.4 Scaled 3.41 Raw 4.3 Scaled 3.61	0.42 0.51
Human/Cultural Geography	54	54	48	635 535	98 98	56.2 58.1	13.4 14.9	0.89 0.91	Raw 4.4 Scaled 3.3 Raw 4.4 Scaled 3.1	0.48 0.58
Introduction to Business*	58	54	46	970 1405	100 100	57.6 60.4	15.7 13.6	0.92 0.89	Raw 4.4 Scaled 2.8 Raw 4.4 Scaled 3.1	0.65 0.61
Introduction to Computing**	54	51	45	542 588	98 96	52.8 50.8	14.6 14.5	0.91 0.91	Raw 4.4 Scaled 3.0 Raw 4.4 Scaled 3.2	0.42 0.51
Introduction to Law Enforcement	57	52	45	465 594	97 97	60.2 56.6	11.9 13.2	0.87 0.89	Raw 4.3 Scaled 3.6 Raw 4.3 Scaled 3.3	0.49 0.53
Introduction to the Modern Middle East	58	51	47	86 133	99 95	43.9 45.6	11.7 12.7	0.85 0.88	Raw 4.5 Scaled 3.8 Raw 4.4 Scaled 3.8	0.65 0.61
Introduction to World Religions**	57	52	48	526 519	105 108	52.5 55.9	14.3 14.4	0.9 0.9	Raw 4.6 Scaled 3.22 Raw 4.6 Scaled 3.22	0.49 0.51
Lifespan Developmental Psychology	56	51	46	1070 1685	97 97	58.9 55.5	11.1 11.7	0.85 0.86	Raw 4.3 Scaled 3.9 Raw 4.4 Scaled 3.9	0.63 0.58
Management Info Systems**	57	50	46	1412 590	92 89	50.9 45.8	13.3 10.6	0.89 0.83	Raw 4.4 Scaled 3.3 Raw 4.3 Scaled 3.6	0.52 0.39
Money and Banking	59	54	48	755 605	94 94	52.7 50.6	12.9 13.8	0.88 0.9	Raw 4.4 Scaled 3.4 Raw 4.4 Scaled 3.0	0.59 0.68
Organizational Behavior	56	52	48	1025 920	96 96	58.1 50.9	12.2 12.8	0.87 0.88	Raw 4.3 Scaled 3.5 Raw 4.4 Scaled 3.7	0.55 0.52
Personal Finance**	59	51	46	780 280	98 98	54.1 51.2	12.8 13	0.88 0.88	Raw 4.5 Scaled 3.5 Raw 4.5 Scaled 3.3	0.61 0.61
Physical Geology	60	53	46	905 829	117 114	70.9 58.2	17 17.5	0.93 0.92	Raw 4.6 Scaled 2.7 Raw 4.8 Scaled 2.9	0.77 0.67
Principles of Finance*	59	53	46	655 525	88 88	50.3 43.6	12.5 14.2	0.89 0.91	Raw 4.1 Scaled 3.3 Raw 4.3 Scaled 3.0	0.7 0.61
Principles of Financial Accounting	61	52	49	765	73	42.4	11.1	0.88	Raw 3.8 Scaled 3.4	0.71
Principles of Physical Science I	57	52	47	788 519	75 71	31.6 29.2	10.6 9	0.87 0.82	Raw 3.8 Scaled 3.6 Raw 3.8 Scaled 3.8	0.6 0.55
Principles of Public Speaking	55	52	47	1010 765	84 84	52.3 58.1	11 12.7	0.87 0.91	Raw 3.9 Scaled 3.6 Raw 3.7 Scaled 2.2	0.44 0.56
Principles of Supervision*	53	49	46	935 620	85 86	56.3 53.2	10.8 12.4	0.87 0.9	Raw 3.9 Scaled 3.6 Raw 4.0 Scaled 3.3	0.53 0.6
Principles of Statistics**	58	51	48	1027 1186	100 97	45.1 45.1	13.1 11.7	0.88 0.86	Raw 4.5 Scaled 3.4 Raw 4.4 Scaled 3.6	0.54 0.52
Rise and Fall of the Soviet Union	57	51	45	401 200	100 95	50 50	13.9 12.7	0.9 0.88	Raw 4.5 Scaled 3.2 Raw 4.4 Scaled 3.1	0.55 0.58
Substance Abuse**	52	53	49	775 726	103 106	58 54.6	16.8 17.4	0.93 0.93	Raw 4.4 Scaled 2.6 Raw 4.5 Scaled 2.4	0.55 0.46
Technical Writing	56	50	46	1255 965	100 100	64.1 57.2	13.9 12.3	0.9 0.87	Raw 4.3 Scaled 3.1 Raw 4.4 Scaled 3.5	0.48 0.55
The Civil War and Reconstruction	58	52	47	495 475	112 112	62 56.1	15.5 19.8	0.91 0.94	Raw 4.7 Scaled 3.0 Raw 4.8 Scaled 2.7	0.62 0.54
Western Europe Since 1945	57	49	45	116 174	103 102	58.1 53.1	14.3 15.1	0.9 0.91	Raw 4.6 Scaled 3.2 Raw 4.5 Scaled 3.2	0.57 0.57

\* Applicable only for exams that have been taken prior to the 2009 refresh.

\*\* Applicable only for exams that have been taken prior to the 2008 refresh.