



## 2008 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 students taking the course. The ultimate passing score for each exam is determined by the school. The school is provided with a recommended passing score established by a national council 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 successful students.

#### Exam Updates

In 2008, Prometric launched updated versions of 10 of its DSST examinations:

- Criminal Justice
- Ethics in America
- Fundamentals of College Algebra
- Here's to Your Health
- Introduction to Computing
- Introduction to World Religions
- Management Information Systems
- Personal Finance
- Principles of Statistics
- Substance Abuse (formerly Drug & Alcohol Abuse)

A national examination council of college faculty was formed for each exam. Test items were newly-written to match the updated content outline for each exam, and beta testing of all items was conducted via multiple exam forms in March-April 2008. In addition to updating content of the exams, pass/fail standard-setting methodologies and new score scales were introduced.

#### Cut Score Determinations

Unlike the norm-referenced approach used for DSST exams previously, criterion-referenced methods are being used to set an absolute standard for all updated exams beginning in 2008. For each exam, national council members 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 average of 30% 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. When sufficiency of beta data allowed, Rasch modeling and polynomial regression methodologies were used to equate forms for each exam. Separate standard-setting procedures were conducted on each individual form when sufficient beta data was not yet available, and linear equating methodologies were used to map raw scores to scaled scores.

#### Score Scales & Score Reporting

The new score scale introduced for the 2008 updated 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 the scaled score achieved and the 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 10 exams updated in 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 Updated Exams	Criterion-Referenced Cut Score	Calculated B-Grade Equivalent
Criminal Justice	400	428
Ethics in America	400	422
Fundamentals of College Algebra	400	434
Here's to Your Health	400	426
Introduction to Computing	400	432
Introduction to World Religions	400	426
Management Information Systems	400	430
Personal Finance	400	433
Principles of Statistics	400	441
Substance Abuse (formerly Drug & Alcohol Abuse)	400	428

Exam Title, Exams Prior to 2008 Update	Norm-Referenced Cut Score (C-Grade)	B-Grade Equivalent
Criminal Justice	49	54
Ethics in America	46	50
Fundamentals of College Algebra	47	50
Here's to Your Health	48	51
Introduction to Computing	45	51
Introduction to World Religions	48	52
Management Information Systems	46	50
Personal Finance	46	51
Principles of Statistics	48	51
Drug & Alcohol Abuse	49	53
Art of the Western World	48	53
Western Europe Since 1945	45	49
Introduction to the Modern Middle East	47	51
Human/Cultural Geography	48	54
Rise and Fall of the Soviet Union	45	51
A History of the Vietnam War	44	49
The Civil War and Reconstruction	47	52
Foundations of Education	46	50
Lifespan Developmental Psychology	46	51
General Anthropology	47	53
Introduction to Law Enforcement	45	52
Fundamentals of Counseling	45	48
Principles of Finance	46	53
Principles of Financial Accounting	49	52
Human Resource Management	46	53
Organizational Behavior	48	52
Principles of Supervision	46	49
Business Law II	52	53
Introduction to Business	46	54
Money and Banking	48	54
Business Mathematics	48	49
Astronomy	48	52
Environment & Humanity: The Race to Save the Planet	46	53
Principles of Physical Science	47	52
Physical Geology	46	53
Technical Writing	46	50
Principles of Public Speaking	47	52



## 2008 Technical Data Sheet

### For Norm-Referenced Exams – Prior to 2008 Criterion-Referenced Phased Transition\*

Norming forms of DSSTs (DANTES Subject Standardized Tests) 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

Current tests in the DSST Program 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 DSSTs, 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.

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\*In 2008, Prometric began a phased conversion to criterion-referenced standard setting coupled with a new 3-digit score reporting scale. Ten exams were converted in 2008, and those are annotated on the technical data table provided here. A separate 2008 Technical Data Sheet is provided for those 10 exams. The pre- and post-conversion exams are easily distinguished on score reports or transcripts – performance on pre-conversion norm-referenced exams, for which this Technical Data Sheet is appropriate, is reported as 2-digit scores; performance on post-conversion criterion-referenced exams, for which the 2008 Technical Data Sheet is appropriate, is reported as 3-digit scores.

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
Fundamental of College Algebra**	58	50	47	710 735	78 79	35 35.7	11.2 10.6	.88 .85	Raw 3.9 Scaled 3.5 Raw 4.0 Scaled 3.6	.65 .68
Principles of Statistics**	58	51	48	1027 1186	100 97	45.1 45.1	13.1 11.7	.88 .86	Raw 4.5 Scaled 3.4 Raw 4.4 Scaled 3.6	.54 .52
Art of Western World	59	53	48	529	88	41.5	11.8	.87	Raw 4.3 Scaled 3.65	.53
Western Europe Since 1945	57	49	45	116 174	103 102	58.1 53.1	14.3 15.1	.90 .91	Raw 4.6 Scaled 3.2 Raw 4.5 Scaled 3.2	.57 .57
Introduction to the Modern Middle East	58	51	47	86 133	99 95	43.9 45.6	11.7 12.7	.85 .88	Raw 4.5 Scaled 3.8 Raw 4.4 Scaled 3.8	.65 .61
Human/Cultural Geography	54	54	48	635 535	98 98	56.2 58.1	13.4 14.9	.89 .91	Raw 4.4 Scaled 3.3 Raw 4.4 Scaled 3.1	.48 .58
Rise and Fall of the Soviet Union	57	51	45	401 200	100 95	50.0 50.0	13.9 12.7	.90 .88	Raw 4.5 Scaled 3.2 Raw 4.4 Scaled 3.1	.55 .58
A History of the Vietnam War	56	49	44	183 104	100 103	58.2 54.2	11.0 11.7	.84 .86	Raw 4.4 Scaled 4.0 Raw 4.4 Scaled 3.8	.60 .41
The Civil War and Reconstruction	58	52	47	495 475	112 112	62.0 56.1	15.5 19.8	.91 .94	Raw 4.7 Scaled 3.0 Raw 4.8 Scaled 2.7	.62 .54
Foundations of Education	54	50	46	795	94	45.0	10.7	.83	Raw 4.4 Scaled 4.1	.47
Lifespan Developmental Psychology	56	51	46	1070 1685	97 97	58.9 55.5	11.1 11.7	.85 .86	Raw 4.3 Scaled 3.9 Raw 4.4 Scaled 3.9	.63 .58
General Anthropology	57	53	47	995	102	55.9	12.6	.87	Raw 4.5 Scaled 3.4	.66
Drug and Alcohol Abuse**	52	53	49	775 726	103 106	58.0 54.6	16.8 17.4	.93 .93	Raw 4.4 Scaled 2.6 Raw 4.5 Scaled 2.4	.55 .46
Introduction to Law Enforcement	57	52	45	465 594	97 97	60.2 56.6	11.9 13.2	.87 .89	Raw 4.3 Scaled 3.6 Raw 4.3 Scaled 3.6	.49 .53
Criminal Justice**	58	54	49	780 1460	88 90	53.5 52.5	12.6 11.7	.90 .87	Raw 4.1 Scaled 3.3 Raw 4.2 Scaled 3.1	.56 .57
Fundamentals of Counseling	55	48	45	705 645	99 99	58.7 59.4	12.6 12.5	.88 .88	Raw 4.4 Scaled 3.5 Raw 4.4 Scaled 3.4	.51 .59
Principles of Finance	59	53	46	655 525	88 88	50.3 43.6	12.5 14.2	.89 .91	Raw 4.1 Scaled 3.3 Raw 4.3 Scaled 3.0	.70 .61
Principles of Financial Accounting	61	52	49	765	73	42.4	11.1	.88	Raw 3.8 Scaled 3.4	.71
Human Resource Management	54	53	46	556 653	100 99	57.5 60.7	12.9 11.4	.88 .86	Raw 4.4 Scaled 3.41 Raw 4.3 Scaled 3.61	.42 .51
Organizational Behavior	56	52	48	1025 920	96 96	58.1 50.9	12.2 12.8	.87 .88	Raw 4.3 Scaled 3.5 Raw 4.4 Scaled 3.7	.55 .52
Principles of Supervision	53	49	46	935 620	85 86	56.3 53.2	10.8 12.4	.87 .90	Raw 3.9 Scaled 3.6 Raw 4.0 Scaled 3.3	.53 .60
Business Law II	56	53	52	643	94	42.3	13.7	.90	Raw 4.3 Scaled 3.14	.52
Introduction to Computing**	54	51	45	542 588	98 96	52.8 50.8	14.6 14.5	.91 .91	Raw 4.4 Scaled 3.0 Raw 4.4 Scaled 3.2	.42 .51
Introduction to Business	58	54	46	970 1405	100 100	57.6 60.4	15.7 13.6	.92 .89	Raw 4.4 Scaled 2.8 Raw 4.4 Scaled 3.1	.65 .61
Money and Banking	59	54	48	755 605	94 94	52.7 50.6	12.9 13.8	.88 .90	Raw 4.4 Scaled 3.4 Raw 4.4 Scaled 3.0	.59 .68
Personal Finance**	59	51	46	780 280	98 98	54.1 51.2	12.8 13.0	.88 .88	Raw 4.5 Scaled 3.5 Raw 4.5 Scaled 3.3	.61 .61
Management Info Systems**	57	50	46	1412 590	92 89	50.9 45.8	13.3 10.6	.89 .83	Raw 4.4 Scaled 3.3 Raw 4.3 Scaled 3.6	.52 .39
Business Mathematics	56	49	48	345 421	54 59	23.5 26.6	7.1 8.0	.79 .82	Raw 3.3 Scaled 4.6 Raw 3.4 Scaled 4.0	.62 .56
Astronomy	58	52	48	745 639	87 82	44.9 37.1	13.0 12.4	.90 .89	Raw 4.1 Scaled 3.2 Raw 4.0 Scaled 3.3	.64 .67
Here's to Your Health**	56	51	48	775 835	101 101	67.0 62.1	12.9 14.4	.89 .91	Raw 4.2 Scaled 3.1 Raw 4.4 Scaled 3.1	.50 .61
Environment and Humanity: The Race to Save the Planet	55	53	46	995 831	95 104	60.4 62.8	13.5 14.5	.91 .91	Raw 4.1 Scaled 3.0 Raw 4.4 Scaled 3.1	.67 .66
Principles of Physical Science I	57	52	47	788 519	75 71	31.6 29.2	10.6 9.0	.87 .82	Raw 3.8 Scaled 3.6 Raw 3.8 Scaled 3.8	.60 .55
Physical Geology	60	53	46	905 829	117 114	70.9 58.2	17.0 17.5	.93 .92	Raw 4.6 Scaled 2.7 Raw 4.8 Scaled 2.9	.77 .67
Technical Writing	56	50	46	1255 965	100 100	64.1 57.2	13.9 12.3	.90 .87	Raw 4.3 Scaled 3.1 Raw 4.4 Scaled 3.5	.48 .55
Ethics in America**	54	50	46	590 687	111 110	67.9 68.3	12.0 11.5	.85 .84	Raw 4.6 Scaled 3.9 Raw 4.6 Scaled 4.0	.46 .46
Introduction to World Religions**	57	52	48	526 519	105 108	52.5 55.9	14.3 14.4	.90 .90	Raw 4.6 Scaled 3.22 Raw 4.6 Scaled 3.22	.49 .51
Principles of Public Speaking	55	52	47	1010 765	84 84	52.3 58.1	11.0 12.7	.87 .91	Raw 3.9 Scaled 3.6 Raw 3.7 Scaled 2.2	.44 .56

\*\*See 2008 Technical Data Sheet for these exams if exams were taken in 2008 or later and reflect a 3-digit score scale.