

## **Summary of Test Development Processes Used for Development and/or Refresh of DSST Examinations**

Review and approval for college credit is conducted by the American Council on Education (ACE) at 3-year intervals for each test title. The test development steps described below are carried out on a rolling 3-year cycle, with roughly a third of the 30+ titles being attended to each year.

### ***Subject-Matter Experts Serving Every Step***

Prometric maintains a database of hundreds of subject-matter experts (SMEs) and conducts nationwide searches to continually refresh the pool of SMEs to assist with one or more steps in the test development process. All SMEs must teach or have taught within the preceding three years one or more courses related to the respective DSST test title(s) on which they will be asked to work, and said teaching must have been within a U.S. accredited college/university. For each panel of SMEs to work on each respective test, SMEs are selected to provide appropriate representation in terms of geographic location, type of higher education institution (2-year, 4-year), gender and other demographics. To ensure protection of test content, all SMEs are required to sign security agreements (e.g., non-disclosure, conflict of interest, security and other documents) prior to working on any of the DSST tests.

### ***Test Specifications & References***

Test specifications delineate the content domains and subdomains to be covered in each test as well as the proportion of test items from each domain that should be included in each test form. Test specifications also form the backbone of the Item Classification System (ICS) that organizes and identifies test items within Prometric's item banking system, *intelitest™*.

For new test titles, a panel of 6-10 SMEs meet to develop test specifications for each test – a detailed outline of content to be covered by the test and the proportions of the test to be devoted to each content domain. For tests being refreshed, the then-current test specifications are reviewed and updated as needed.

For both new and existing test titles, each panel of SMEs identify and agree on 3-5 text books in broad use to serve as reference(s) for test items. Every test item must be referenced to information provided in one or more reference sources. A list of references used for each test is published, along with the test specifications and other descriptive information about each test, for candidates to use to prepare for test taking.

### ***Test Item Analyses & Identifying Needs for Developing New Test Items***

Prometric has a series of proprietary programs to analyze performance of test items, assessing difficulty levels and the degree to which individual test items identify those who know the content from those who do not. If current test items are to be used in new test forms, statistical item analyses are run, and items with optimal statistics are selected for review by subject matter experts (SMEs) during item currency and reclassification reviews described below.

With new test specifications reviewed and approved, another panel of 5-8 SMEs review existing test items for currency and for fit within the content domains/subdomains established in the new test specifications. Those items found to be out of date are either archived (deleted from the item bank) or are designated for rewrite/update. Items found to no longer fit within the test specifications are archived. Finally, remaining items tagged to be re-used are reclassified to reflect their position within the new test specifications. Results of these activities are used to target assignments for item writing to content domains/subdomains for which there are insufficient numbers of items available.

### ***Item Writing***

SMEs selected for item writing participate in an item-writing training session. Item writer training provides participants with the essential guidelines necessary for writing quality items. Item writing training includes the presentation of guidelines and item writing best practices, including samples of item types and accepted style

guidelines for the DSST examinations. Instruction is also provided on the Prometric web-enabled offline item writing tool – *MyItemWriter™*. Item writers are provided with DSST-specific style guidelines (style sheet) and an item writing guide to reference during remote item writing. Upon completion of item writer training, each item writer is assigned a number of items to write in specific content areas.

Using *MyItemWriter™*, item writers draft items including additional information needed about each item such as test classification codes and reference(s). As item writing assignments are submitted, Prometric test developers keep a tally of the items written to determine the distribution of items according to the test specification for each exam so that adjustments can be made to shift focus, if necessary, to other content areas still needing more test items.

### ***Item Review & Form Assembly***

Another panel of 5-7 SMEs for each test is selected for item review and undergo web-based training. Item review training sessions provide participating SMEs with essential guidelines necessary to revise and approve quality items. Item review training involves presentation of style guidelines and item review best practices, including samples of quality items and accepted styles for the DSST examinations. Multiple item review sessions, each of 3-hour duration, are held to complete review/editing and selection of newly-written test items and any test items from the existing item bank that were earlier identifying as statistically acceptable but needing review for currency.

All items are reviewed for structure, accuracy, grammar, validity/relevance, differentiation level, cognitive level, difficulty and tie(s) to appropriate reference material. Once consensus was reached on all item features, the item is recorded as useable or is rejected. For any content areas for which insufficient numbers of items survived review, Prometric test developers loop back with item writing SMEs to produce additional items which then undergo item review by the panel of item-review SMEs.

From the bank of newly-reviewed and approved test items, Prometric test developers assemble items into multiple forms (versions) for each test title in accordance with the approved test specifications. Assembled forms are provided for standard-setting (see below), for review by the American Council on Education (ACE), and for Prometric’s test publishing team to begin production.

### ***Standard-Setting & Ongoing Performance Monitoring***

An additional panel of SMEs is recruited to participate in a standard-setting study for each test form. Using Modified Angoff methodology (supplemented by the Beuk Relative-Absolute Compromise method when forms contain sufficient numbers of items with statistics from past use), SMEs develop a common definition and understanding of the minimally-qualified test candidate (the “C student” or one that would just pass the like course). Each item is rated in accordance with this minimally-qualified standard. Once each individual item is rated, SMEs are also asked to estimate likely pass rate on the exam as a whole (Beuk). Items for which there is a significant spread of ratings across SMEs and/or spread between past-use statistics vs. SME ratings are reviewed with SMEs to ensure all were adhering to the same minimally-qualified standard, and SMEs are permitted to adjust their original ratings, up or down, if discussion indicates deviation from the standard. Interrater reliability, standard error of judgment and other related statistics are calculated and accompany the recommended cut score (pass/fail score) for Prometric decision-making on the final cut score for each form.

Test form performance is monitored periodically through the 3-year ACE approval period. If statistical analyses indicate a limited number of items may have gone out of date or are otherwise not performing as expected, additional SME reviews may be conducted and necessary adjustment to scoring may be made. In the unlikely event that significant proportions of the test specifications are no longer relevant for a given test title, the affected test title would be added to the slate for rework in the next refresh cycle, even if sooner than the scheduled 3-year interval.