



# **Preparing for Scanning, Analyzing, and Reporting**

## **An Instructor's Guide**

105 Pollock Building  
University Park, PA 16802  
(814) 863-2802  
(814) 863-2322 FAX  
[scan@psu.edu](mailto:scan@psu.edu)  
[www.schreyerinstitute.psu.edu](http://www.schreyerinstitute.psu.edu)

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## Getting Started

You will need to begin by setting up a request file. This file includes information about the course, the instructor, the number of exams and the email address where you want us to send the report. We recommend that you set up this file at the beginning of each semester using the [Request File form](#). You can either send the form to us through campus mail to 105 Pollock Building, or set the file up over the phone by calling us at (814) 863-2802.

## Preparing and Scoring Course Examinations

For your convenience, we support a variety of methods for preparing and scoring course examinations or tests.

### Item/Response Weighting

In scoring an examination, you can assign different **weights** to the test items so that some items count for more points than others or assign different **weights** to the response options within an item so that some responses count for more points than others. If you have weighted items or responses, you will need to submit either the [Item Weighting Form](#) or the [Response Weighting Form](#) with your job request.

### Item/Response Scrambling

To help reduce cheating, you may choose to create **alternate versions** of an examination by reordering (scrambling) the test items, reordering the response options within items, or reordering both the test items and the response options. If you are using multiple versions of a test, you will receive a separate score report for each form unless you submit an [Item Unscrambler form](#) or a [Response Unscrambler form](#).

We can support any combination of weighting and/or scrambling. If you are interested in using some combination of these methods, please give us a call at (814) 863-2802 and we will explain which forms you will need.

### Instructor-Graded Test Items

In addition to supporting different combinations of weighting and scrambling, we can also incorporate instructor-graded test items (such as essays) into our exam processing (see 3B.11 below). These scores will be included in the total score reported for each student.

### Processing Exams using answer sheets

#### 1. *Prior to the test*

- Pick up answer sheets from your departmental office.
- Please don't mix answer sheets of different sizes or colors in the same test administration.
- We won't be able to process folded, stapled, wet or wrinkled sheets.
- If examinees must sit close together, we recommend administering alternate versions of the test by scrambling the order of the questions and/or responses. We can process up to ten alternate versions of a test. Please label test booklets with uppercase letters, beginning with "A."

2. *During administration of the test, include the following comments to students:*

- Use pencils to mark the sheets; #2 pencils are the most reliable.
- Enter the student's name, the course name, the instructor's name, and the date in the spaces provided.
- Enter the student's ID number in the boxes at the top of the area labeled "STUDENT NUMBER" and darken the one block in each column that corresponds to the number above. It is important that this information be coded correctly. If the ID is miscoded, the student will not be assigned a score for this test.
- Darken the lettered block that corresponds to their choice as the best answer for each test question.
- Darken the entire block.
- Darken only one block. A multiple response is scored as incorrect.
- Keep the sheet free from any stray marks or poor erasures because they may accidentally produce a multiple response.
- If you have multiple versions of the test, make sure to fill in the "TEST FORM" on the answer sheet that corresponds to the form label on the test.

3. *Following the test:*

A. Prepare the Answer Key

- Please use the same type of answer sheet used to collect the student test responses to code your answer sheet key.
- Use a #2 pencil to write your name, the course, the date, and the name of the test or exam (midterm, final, quiz 2, etc.) in the spaces provided at the top of the sheet.
- Code one correct option for each test question.
- If you find an error in a question and need to omit it from scoring, leave that item area blank on all answer keys.
- If more than one test version is administered, a key must be coded for each version. Darken the "TEST FORM" area to indicate which student answer sheets should be scored with that key.
- If you have an exam question, or questions, with more than one correct response, you will need to complete additional keys. On the second key write your name, the course, and the date. If there are multiple versions, code the appropriate letter for the test form. Then use the "SPEC CODE" area to code the key. The main key should be "1," and additional keys "2," "3," and "4," as needed. Finally, in the numbered area code only the response that corresponds to the additional correct response for each question with multiple correct responses. You don't need to darken any blocks already coded on the first key. Repeat this process for items with three or four correct options. For example, if both "a" and "c" are correct for question 5, but there is only one correct response for all other questions, you will submit a key that has answers to all questions including "a" for question 5. The second key (marked 2 in the SPEC CODE area) will have "c" coded for question 5, but no other answers coded.

B. Complete the Job Request Form

1. **Date:** Please provide the date that the test is submitted to the Schreyer Institute for Teaching Excellence for processing.

**Course:** What is the title of the course? The title can be abbreviated here, as in the course directory or catalogue.

**Section(s):** What number or numbers have the Registrar's Office given the course sections assigned to you?

2. **Instructor:** This is the person whose name appears in the Registrar's schedule of course listings. If there are multiple instructors, it is up to the individuals to decide whose name the Institute will use when filling in the Job Request file (the file that includes the course information regarding testing). If the course is team-taught and a second instructor assumes responsibility, we will continue to use the name of the first instructor to identify the Job Request file.

**Job:** What are you calling the job? The job type should match what has been stated in the Request File. Standard job types include qz1, ex1, ppr, mt, fnl, assn, part, attn, crit, etc. Job types can have no more than four characters in a name. Don't forget to add the number to the job if it has one.

3. **Number of test forms (versions):** How many different answer keys do you have? Code the number that responds to your answer.
4. **Are you submitting an unscramble form?** An unscramble form is used when an instructor has more than one form of the test, with either items or responses scrambled, and wants an item analysis that combines all of the forms into one analysis. This form is optional. If you do not complete an unscramble form, you will get a separate item analysis for each form. If you want a single analysis that combines data from all forms, code "yes" and complete the appropriate unscramble form, which are available in our office and online. **An answer key must be submitted for each test form.**
5. **Do all items have only one correct answer?** Although most test questions have only one correct answer, there are circumstances when this is not true. Should you decide to accept more than one answer as correct for any question, we need to be informed of the highest possible number of correct responses. For example, if questions 4, 7, and 9 have 2 correct answers and question 15 has 3 correct answers, code "3" for this question. **Please note:** Students should be told to select only one correct response on a given question because more than one response will result in a rejected scan sheet.
6. **Are some items or responses worth more points than others?** There are three possible options to this question. Please call if you have questions about these options.
  - If all items and all responses to each item are equally weighted then proceed with a "no" response.
  - If some items carry more weight than others, then answer "yes" and submit an [Item Weighting Form](#), which is available in our office and online.
  - Some responses could be more "correct" than others. For example, let's say that of four possible responses ("a" to "d") to a single question, "a" is worth two points, "b" is worth one point, and "c" and "d" are worth zero points. In such cases where partial (or unequal) credit is given to a particular response, answer "yes" and submit a [Response Weighting Form](#), which is available in our office and online.
7. **Are any items to be omitted from scoring?** Should you want to throw out certain questions (due to confusing wording, clerical error, etc.), select "yes" and indicate the total number of faulty questions. For example, if there are two faulty questions, mark the first column "0" and the second column "2." If not, select "no" and proceed to question 9.

8. **Should students receive credit for omitted items?** If you want to give students credit for questions thrown out (regardless of the student's response or lack of response), select "yes" and proceed to question 9. If you want to remove faulty questions entirely from your test, select "no" and proceed to question 9.
9. **Last item used on key?** What is the total number of questions on your test?
10. **Maximum score based on all multiple-choice items.** What is the highest score one could receive if one answered all questions correctly? In other words, what is a perfect score?
11. **Maximum coded score on answer sheet.** If a portion of your test has been coded or scored by hand, i.e. instructor-graded (e.g., short answer, essay, etc.), what total number of points is that portion worth? If no part has been hand scored, leave #11 blank.
12. **Are there any extra credit items?** Simply indicate whether or not your test includes questions for extra credit. If "yes," please confirm the point total of all other questions, not including any extra credit points.
13. **Print your name and campus address.**

**Please sign the form!**

**IMPORTANT:** Please complete the shaded section on the top with your email and phone number. This information will allow us to contact you if we have questions regarding your job.

### **Reporting Test Results to Instructors**

All exams are scanned and processed within one business day of being dropped off at either of our two locations. You can choose to receive your score report by one of two methods. We can print the report for you and send it to you via campus mail or have it available for pick-up at our Rider II location. Alternatively, we can send an electronic report to you via e-mail. The report includes a "Score Report" which lists the students' scores on current and previous examinations and an "Item Analysis" which provides a comprehensive analysis of the test and test questions (see Appendix A). If your test has multiple versions and you want a report that combines data from both forms, you will need to submit an Item Unscrambler with your job request.

If you have asked us to send the results to students via email, we will send you an instructor's feedback report that provides information about the emails that were sent to students (see Appendix B).

### **Requesting a Re-run of an Exam**

Occasionally after an exam is processed problems are found with the answer key(s). This can be a mis-keyed item, an item you would like to omit from scoring or an item that requires more than one correct answer. If this happens you can proceed in one of two ways:

1. Using a web browser, go to <http://instructor.uts.psu.edu> and follow the directions on the Web page. This will allow you to change a key or change the maximum score of an exam.
2. Bring your new key(s) to 105 Pollock Building and fill out a new Job Request form following the directions above. It is not necessary for you to resubmit your original scan sheets.

## Interpreting the Item Analysis

The item analysis provided with each examination or quiz is useful in identifying problems with the test or how students are learning the course materials (a sample item analysis is provided in Appendix A). Two indices reported in the item analysis —the “item effectiveness” and “percentage correct” values—are particularly helpful in evaluating specific items or student knowledge. A third index, the “reliability” coefficient, is an estimate of the amount of error associated with the total scores of the test.

The “ITEM EFFECT” values (biserial correlation coefficients) indicate the relationship between each item and the total test score. Positive values indicate that the examinees who answered the item correctly had a higher average score on the entire test than did those who answered incorrectly. Negative values indicate the opposite and suggest that the item needs to be reworded. Items 3, 6, 11, and 14 of the example have negative values.

Items with negative values have one or more incorrect options selected by examinees who did well on the entire test. These options are identified by a “+” sign in the “PERCENT RESPONSE TABLE.” For example, the groups of examinees who selected the C option to item 6 had higher average test scores than did those who selected the correct option, E. Why option C is attractive to the better performing students may be an important clue as to how to reword the item.

The “KEY-%” values indicate the percentage of examinees selecting the correct option. Item 5 was the easiest item and item 15 was the hardest. Items that are very “easy” or very “difficult” tend to provide less information about student ability than items of moderate difficulty.

“RELIABILITY” coefficients range from .00 to 1.00 with higher values indicating greater precision of measurement. That is, the higher the reliability coefficient, the more confidence the instructor can have in using the test scores to rank students from strong to weak. When reliability coefficients fall below .50, test scores are not very precise.

## Reporting Scores to Students

Upon request, we will send scores to students via email. We can send the scores to the students either with or without the answer key (see Appendix C). If you have included instructor-graded portions to the test, the students will also receive their scores on that section of the test. If the student did not receive a score because he or she did not take the test or there was an error on the scan sheet, a No Score Report is sent. Finally, if students respond to our email with questions, we send a standard reply (see Appendix C for “Reply to Student Feedback Questions”).

If you review your results before sending feedback to the students via email, there are three ways in which you can release the results to the students.

1. Using a Web browser, go to <http://instructor.uts.psu.edu> and follow the directions on the Web page. You will need your job number and job code, both located on the top of your Exam Report.
2. Call (814) 863-2802 and let us know you wish to release feedback for your course job name and/or job number.
3. Email [scan@psu.edu](mailto:scan@psu.edu) and let us know you wish to release feedback for your course job name and/or job number.

## Making Score Changes to Previous Jobs

You may find that you need to change a student's score in our file. This can happen as a result of incomplete coding on the student's answer sheet, if you have modified a score for a student, or if the student has taken a make-up exam. In this case you will need to submit an answer sheet coded with the score change when you bring your next job in for processing. You can use the back of the original answer sheet or a new answer sheet. **We cannot process score changes submitted between jobs.** To make a score change, please use the following procedure:

- Using a #2 pencil, code the student ID number in the "STUDENT NUMBER" area on the front of a blank answer sheet, or use the student's original answer sheet.
- Using your most recent Score Report, identify the score column number associated with the job for which you are submitting changes.
- On the back of the answer sheet, code in the score column number of the job you are editing in the first column and the revised score in the second column.
- To prevent stray marks from creating errors, please right-justify the new score by coding with leading zeros. For example, if the new score is 85, the coding is 085. All three score columns must contain one code.
- If necessary, one sheet may be used to make more than one score change.
- Keep score change answer sheets separate from the answer sheets in the current job.
- When you receive the new Score Report, check the error messages and the roster to make certain the score change was coded correctly. Recode any sheets with errors and resubmit them with your next job.

**NOTE:** The backs of answer sheets being submitted for the current job may not be used to code score changes.

Appendix A

**Instructor's Report**

---SECTION 3 - Instructor's roster of student scores (DO NOT POST)

8899 12/15/98 DOE ACCTG 247 001 3 - EX3

- Symbols: & = missing scores for student.  
 - = class roster does not include student.  
 @ = mid-semester evaluation required for student.  
 \* = last four digits of student no. duplicate of another student.  
 + = a zero score which is an earned zero and not a missing score.

The scores listed below are PERCENTAGE SCORES. If you change a score or replace a missing score, please be sure your score change forms contain PERCENTAGE SCORES. Submit score changes with new jobs and reruns.

SCORE COLUMN NUMBERS -> (Current) 3 2 1  
 SCORE LABELS -> EX3 EX2 EX1

006 ACCTG 654 R UP SHT FM BOOK (RAW)

MAXIMUM SCORES ->				100	100	100
006 ADAM	DK	8888888888	8	100 (60)	80	85
006 BECK	MJ	9999999999	7	95 (57)	84	83
006 CHANCE	KL	0000000000	NO SCORE		0	0
006 MATT	AJ	5555555555	26	80 (48)	0	83
006 STEPHEN	PD	4444444444	53	90 (54)	76	88
006 WAGNER	SJ	1111111111	101	100 (60)	98	93

**SCORE DISTRIBUTION**

8899 12/15/98 DOE ACCTG 247 001 3 - EX3

TEST SCORE (%)	T-SCORE	CEN-TILE	FREQ	DISTRIBUTION
33 ( 55%)	21	1	1	IX
34 ( 57%)	22	3	0	I
35 ( 58%)	24	3	0	I
36 ( 60%)	25	3	0	I
51 ( 85%)	49	44	9	IXXXXXXXXXX
57 ( 95%)	59	80	3	IXXX
58 ( 97%)	61	85	0	I
59 ( 98%)	62	85	0	I
60 (100%)	64	92	4	IXXXX

NUMBER OF "X" S = 28.  
 EACH "X" = 1 SCORE (S).

TEST MEAN = 51.32 (85.5%) STANDARD DEVIATION = 6.23 TEST RANGE = 28

**Item Analysis**

NUMBER OF STUDENTS IN ITEM ANALYSIS: 28 NO. OF ITEMS: 20

The RESPONSE TABLE below contains the percentages of students who selected each option to each item. The percentage selecting the correct option is repeated in the KEY - % column. The ITEM EFFECT column contains biserial coefficients. Negative values indicate ineffective items; more students in the higher score group answered the items incorrectly compared to students in the lower score group. A “+” sign identifies an incorrect option selected by students with a higher average test score than those who selected the correct option.

ITEM NO.	OMIT %	RESPONSE TABLE - FORM A							ITEM EFFECT
		A %	B %	C %	D %	E %	KEY- %		
1	0	0	18	82	0	0	C	82	0.22
2	0	79	0	0	21	0	A	79	0.23
3	0	4	7	89	0	0	C	89	-0.12
4	0	0	4	96	0	0	C	96	0.18
5	0	100	0	0	0	0	A	100	0.00
6	0	0	0	5+	0	95	E	95	-0.11
7	0	68	7	21	4	0	A	68	0.52
8	0	0	43	0	57	0	D	57	0.46
9	0	0	0	99	0	1	C	99	0.00
10	0	0	7	93	0	0	C	93	0.25
11	0	3	4	89	4+	0	C	89	-0.03
12	0	0	93	3	4	0	B	93	0.47
13	0	10	86	0	4	0	B	86	0.51
14	0	7	4	0	75	14	D	75	-0.19
15	0	5	12	27	31	25	D	31	0.10
16	0	0	93	3	4	0	B	93	0.04
17	0	0	14	86	0	0	C	86	0.22
18	0	7	4	14	75	0	D	75	0.61
19	0	0	0	89	11	0	C	89	0.14
20	0	11	68	0	21	0	B	68	0.28

Distribution of items by % CORRECT:		Distribution of items by ITEM EFFECT:		%
Correct	No. of items	Biserial Coefficient	No. of items	
0 - 20 (very difficult)	1	Negative (ineffective)	4	
21 - 60 (difficult)	1	.00 - .20 (low effectiveness)	6	
61 - 90 (moderately difficult)	11	.21 - .40 (medium effectiveness)	5	
91 - 100 (easy)	7	.41 - 1.00 (high effectiveness)	5	

The RELIABILITY of scores for this test is 0.500

The reliability coefficient above is a Kuder-Richardson formula 20 value. KR-20 values range from .00 to 1.00. Higher values indicate greater consistency in measuring a student's true ability. Typically, KR-20 values below .50 suggest that the assessment tool is not a good measure of the student's ability. As a guideline the coefficient values should exceed .60 for tests that are used to make non-critical decisions and .90 for tests that are used in making critical decisions. An example of a non-critical decision is when several quizzes are used as part of the overall assessment of a student. Critical decisions include when final grades are based on a limited number of evaluations, such as two or three exams. Several factors that can affect reliability scores are test question ambiguity, time needed to take the test, and test items that contain answer clues. If you are interested in learning more on how to improve the quality of your assessments, please contact the Schreyer Institute for Teaching Excellence.

Appendix B

**Instructor's Feedback Report**

From: Feedback [feedback@www.uts.psu.edu]  
Sent: Thursday, March 11, 1999 3:00 PM  
To: Feedback  
Subject: Feedback report for EX 3 in ACCTG 247

Feedback report for EX 3 in ACCTG 247

\*\*\*\*\*  
47 Emails were successfully sent  
\*\*\*\*\*

- 0 Students scored between 1% and 10%
- 0 Students scored between 11% and 20%
- 0 Students scored between 21% and 30%
- 2 Students scored between 31% and 40%
- 3 Students scored between 41% and 50%
- 2 Students scored between 51% and 60%
- 10 Students scored between 61% and 70%
- 10 Students scored between 71% and 80%
- 9 Students scored between 81% and 90%
- 8 Students scored between 91% and 100%
- 0 Students scored above 100%

\*\*\*\*\*  
Errors are as follows  
\*\*\*\*\*

No Score for ADAM 888888888  
No Score for BECK 999999999  
No Score for CHANCE 000000000  
Unable to email JONES 555555555 No email address on file  
No Score for MATT 444444444  
No Score for STEPHEN 111111111  
Unable to email WAGNER 333333333No email address on file

Errors can be caused by any of the reasons listed below:

- All 9 digits of the student number may not have been coded correctly on the answer sheet.
- If there was more than one test form for the exam the form number must be filled in.
- If a student registered late for the course then the student number and email address may not be updated in the files.

For questions or concerns regarding this information, please call 863-2802 or email Feedback@www.uts.psu.edu.

Appendix C

**Student Score Report without Key**

From: Feedback [Feedback@www.uts.psu.edu]  
Sent: Wednesday, March 10, 1999 1:29 PM  
To: BECK  
Subject: Your score report on EX 3 in ACCTG 247

Your total score was 87 out of 100.  
The class average was 80.4

The highest score was 97 and the lowest score was 47.

Of the 144 other students taking the test, 44 scored higher than you did, 10 had a score equal, and 90 scored lower than you.

.....  
: If you are having problems reading this section of the report it may  
: be because your email viewer is NOT set up to use non-  
: proportional fonts (i.e., Courier). In Eudora select 'Tools' from the  
: menu and then choose 'options.' On the left side of the 'Options'  
: menu find 'Fonts' and uncheck the 'Use proportional font by  
: default' then close and re-open the message.  
: .....

Your answer sheet was marked 'Form B.'

Here's how you did on each question of the test:

Question Number: 1 2 3 4 5 6 7 8 9 10 11 12 13 14  
Your Error: D A

Question Number: 15 16 17 18 19 20 21 22 23 24 25 26 27 28  
Your Error:

Question Number: 29 30 31 32 33 34 35 36 37 38 39 40 41 42  
Your Error: B D

Question Number: 43 44 45 46 47 48 49 50 51 52 53 54 55 56  
Your Error: B B C

Question Number: 57 58 59 60  
Your Error: B

Here's a summary of your performance so far this semester:

Score Name: EX 1 EX 2 EX 3  
Your Score: 83 83 87  
Max Score: 100 100 100

**Student Score Report with Instructor-Graded Portion and Key**

From: Feedback [Feedbcak@www.uts.psu.edu]

Sent: Wednesday, March 10, 1999 9:56 AM

To: WAGNER

Subject: Your score report on EX3 in ACCTG 247

Your total score was 93 out of 100.

The class average was 85.4.

The highest score was 97 and the lowest score was 67.

Of the 31 other students taking the test, 10 scored higher than you did, 3 had a score equal, and 18 scored lower than you.

Your score on the instructor-graded portion of the test is 5 out of 5

.....  
: If you are having problems reading this section of the report it may  
: be because your email viewer is NOT set up to use non-  
: proportional fonts (i.e., Courier). In Eudora select 'Tools' from the  
: menu and then choose 'options.' On the left side of the 'Options'  
: menu find 'Fonts' and uncheck the 'Use proportional font by  
: default' then close and re-open the message.  
: .....

Your answer sheet was marked 'Form A.'

Here's how you did on each question of the test:

Question Number: 1 2 3 4 5 6 7 8 9 10 11 12 13 14  
Correct Choice: A C B A D C B C A C C A A B  
Your Error: C B  
Question Number: 15 16 17 18 19 20 21 22 23 24 25  
Correct Choice: C C A A D B B B B B A  
Your Error:

Here's a summary of your performance so far this semester:

Score Name: EX1  
Your Score: 93  
Max Score: 100

**Student No Score Report**

From: Feedback [Feedback@www.uts.psu.edu]  
Sent: Wednesday, March 10, 1999 1:28 PM  
To: JONES  
Subject: Your score report on EX 3in ACCTG 247

If you are no longer enrolled in this course, please disregard this message

You have no score for EX 3. Here's a summary of your performance so far this semester:

Score Name:	EX 1	EX 2	EX 3
Your Score:	82	83	0
Max Score:	100	100	100

**Reply to Student Feedback Questions**

If you have questions about your Feedback score, you must speak with your instructor about the problem. However, there are some things you should be aware of:

- All 9 digits of your student number may not have been coded correctly on your answer sheet.
- If there was more than one test form for the exam, the form number must be filled in.
- If you registered late for the course, your student number and e-mail address may not be updated in the files.

In any case, you must speak with your instructor who will work with us to take care of your score.