OREGON STATE UNIVERSITY
TEST SCORING USER'S GUIDE

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THE TEST SCORING SYSTEM IN BRIEF

INPUT

Basic input for the Test Scoring System is a specially designed orange Scantron answer sheet which can be processed by a reflective read Optical Mark Recognition Scanner.

The form has blocks for entering the student's Last Name, First Name, Middle Initial, and Identification Number. In addition the form contains blocks for entering the Class Section number and Test Form Number. There are spaces on side 2 of the form to record the student responses for up to 200 questions with answer choices of A through E. A Number 2 or softer lead pencil must be used on the answer sheet. Ink pens cannot be read by our scanners.

OUTPUT

Four different types of test printouts are available at the instructor's option.

1. **Alphabetical Class List**
2. **Individual Student Summary with Key**
3. **Statistical Summary**
4. **Item Analysis**

These reports can be transmitted electronically to the instructor OSU email account in either MS Word format or PDF format or both.

Report options 1 and 3 display exam statistics at the end of each report list.

Report option 2 can be optionally formatted to print one student results per page or a condensed version that fits as many students test reports as practical per page.

If the multiple test forms option (more than one answer key) is used, test printouts can be optionally printed separated by Test Form Number. A test can have up to 9 test forms.

If the multiple Class Section option is used test printouts can be optionally printed separated by Class Section Number.

Test scores can also be broken down into a maximum of 5 parts (subsections) in addition to the total test score.

Samples of the test printouts are shown in Appendix A.

In addition to printer reports, the instructor may also receive two data files suitable for use in Spread Sheets or Statistical software.

1. Grade information file containing student name, ID, and test scores data.
2. Raw Data file contains the information read directly from the scan sheets, and is not delimited.

These files can be transmitted electronically to the instructors OSU email accounts.

OTHER FEATURES

Questions can be eliminated from scoring or point credit can be awarded regardless of what answer the student marked.

Questions or answers can be assigned varying point values.

More than one answer may be correct.

Extra credit can be assigned to questions.

PROCESSING TIME

Test Scoring turn around time during normal working hours (7:30 am – 5:30 PM Monday through Friday) generally runs less than one hour for an average size test. Tests utilizing many separate section/form combinations for large classes will take longer.

SCHEDULING

Exams are processed first-in, first-out.

COSTS

You will be asked to provide a FIS Index Number (department charge number) to have a test scored or to purchase answer sheets.

There is a nominal charge to score a test and answer sheets are sold on a cost recovery basis. Contact the Test Scoring Service for information on current charges.

PURCHASING FORMS

You may purchase forms across the counter or order them at our web site:

http://oregonstate.edu/admin/cc/ops/scanorder.html

THE BASIC TEST PACKAGE

When a test package is delivered to the Test Scoring Service it must contain:

1. A completed Test Scoring Service Work Order Form, (AKA Orange Form).
2. An Exam Key.
3. The student answer sheets.

PREPARING ANSWER SHEETS

Only the specially designed answer sheets provided by the Test Scoring Service may be used to score tests.

Answer sheets duplicated on copying devices are not machine readable and cannot be used.

The large orange shaded blocks on the front and back sides of the answer sheet are provided for the instructor's or student's use. As an example if you wanted to number each student's answer sheet use this area. Marks in this area are not read by the optical scanner.

Answer sheets should not be damaged. Sheets that have holes punched in them, have been stapled, or have been wet probably will not read in the optical scanner.

Multiple choice questions must have no more than five choices and these choices should be coded A through E.

The scanner read reflective optical marks and only a number 2 or softer lead pencil should be used. Ball Point Pen and Marker type pencils should not be used.

A student may mark only one answer to each question. It will ignore erasures. If the student's form does have multiple marks, it will output an asterisk * to the data record, and that response will be scored as incorrect.

If you use the print by Class Sections and / or Multiple Test Forms options – students must blacken in the circles corresponding to Class Section number and / or Test Form number.

PREPARING THE EXAM KEY

Use a standard answer sheet to prepare your Exam Key.

In the LAST NAME block of the answer sheet, code the letters EXAM KEY.   (Make sure you leave a space between the word EXAM and the word KEY.) Darken in the corresponding circles. No other marks should be made in the LAST NAME block.

Fill in the correct answers for the test on side 2 of the answer sheet.

If a question has more than one correct answer, mark the <u>most correct </u>answer on the answer sheet. Only one answer can be marked per question. Use Option #12 of the Test Scoring Service Work Order to assign values to the correct answer and to the other answers to be accepted.

If a question is not to be scored, please use Test Scoring Service Work Order Option #13 to throw that question out. Points can be awarded or 0 points can be awarded.

If you wish points to be awarded for all answers – mark any one answer on the exam key and complete Test Scoring Service Work Order Option #12 to award points.

PREPARING KEYS FOR MULTIPLE TEST FORMS

If you have scrambled the questions or answers in the student's test document you need to use the Multiple test form Option. This means you must complete an EXAM KEY for each form of the test.

You may have up to 9 forms of a test.

Complete an EXAM KEY for each Test Form. Blacken in the Test Form Number in the space provided on the answer sheet. Students must also blacken in the test form # to receive credit.

PREPARING FORMS FOR SCORING

When answer sheets are prepared for delivery to the Test Scoring Service some preparation is necessary.

Always check and ensure the corner cuts on the forms are in alignment. This ensures no forms are backwards or upside down in the stack.

HOW TO GET REPORT PRINTOUTS SEPARATED BY CLASS SECTION NUMBER

If you want your test reports separated by class section number when they are printed, you have two options in the way you prepare the answer sheets for scoring.

If the students have clearly marked their Class Section Numbers on their answer sheets – no special preparation is required. The scoring software will read the Class Section Number from the Student answer sheet and assign it to that section in the report printout.

If a student has not filled in the Class Section Number or it is filled in improperly, the scoring software will assign this student score to Class Section 000, and print that score in that section number.

HOW TO USE MULTIPLE TEST FORMS

If you scrambled your question or answers on the student test documents you will have more than one EXAM KEY sheets.

Use of this option also lets you have your test reports optionally printed separated by Test Form Number. The item analysis report is always printed separated by Test Form Number.

If you are using the Multiple Test Form option you have two options in the way you prepare the answer sheets for scoring:

1. If the students have clearly marked their Test Form Number on their answer sheets – no special preparation is required. The scoring software will read the Test Form Number from the student answer sheet and assign it to it's

corresponding EXAM KEY for grading. If an invalid Test Form Number is entered (that is, it doesn't match an existing EXAM KEY and it isn't modified by a SET FORM), then the system will reject this Student Answer Sheet without attempting to score it. This rejection will be noted on an <u>Edit and Validation Report.</u>

2. If the students <u>have not marked </u>the Test Form Number on their answer sheets – you must batch the answer sheets:

    a. Hand separate the answer sheets into their appropriate Test Form Number groups.

    b. Rubber band the answer sheets in Test Form Number groups.

    c. Mark each group with it's corresponding Test Form Number (use of post-it notes is o.k.).

When your answer sheets are grouped in this way the Test Scoring Service personnel will read a special scan sheet called a SET FORM sheet that will assign every answer sheet following it a specific Test Form Number.

It is very important that the student answer sheets be placed in the correct batch because the SET FORM sheet will override any Test Form Number marked on the student answer sheet whether this number is correct or not. A sheet placed in the wrong batch will be scored with the wrong EXAM KEY.

If an invalid test form number is entered (that is, it doesn't match an existing EXAM KEY and it isn't modified by a SET FORM), then the system will reject this Student's Answer Sheet without attempting to score it. This rejection will be noted on an <u>Edit and Validation Report</u>.

The advantage to hand separating the forms in this manner is that a student will always be scored without relying on students to correctly blacken in this information on their answer sheets.

<u>COMPLETING THE TEST SCORING SERVICE WORK ORDER FORM</u>

Instructor Name: **Print the name you wish printed on the test results.**

Course Number: **Print the course number as it appears in the Schedule of Classes e.g.: BA 131**

Campus Email: **Print your OSU or ONID email acct.**

FIS Index Number: **This number is assigned by your department. It is required for billing purposes. We cannot score your test without a valid FIS Index Number.**

<u>REPORTS SECTION – OPTIONS 01-04</u>

Selecting the Printouts and/or Files you want.

Information you provide in this section will determine which reports you receive and how they are separated into report sets.

Options 01-04 are the basic printouts available from the test scoring system. You may select any or all report items, there is no limit on which reports you can receive.

Report Letter Codes

Use the letters A, B, C, D opposite each report number to define how you want your reports to be separated for printing if you have more than one class section and/or have more than one test form.

A   List all Sections together – do not separate by Form Number.
B   List all Sections separately – do not separate by Form Number.
C   List all Forms separately – do not separate by Section.
D   List all forms separately – separate by Section within Form Number.

Tests with only one class section

If you do not have more than one class section in your test group select the reports you wish to receive by circling the letter A or Y opposite the report titles.

FILES SECTION – OPTIONS 05-07

To obtain test data in electronic format, two file options are available.

Raw Unprocessed Data File

Marking Option 05 provides a file containing the raw data as it was read from the student sheets, no score information is provided with this option. This file is not delimited.

Grade Report File

Marking Option 06 provides a file containing Test Score information that may be utilized in a spread sheet with a CSV file extension.
File format is:
         (Last Name / First Name / Middle Initial / OSU Student ID# /
         Banner Username / Form # / Section # / Raw Score / % Scores /
         Subtest Raw Score / Sub Test % Scores).

Test Report Files

Marking Option 07 provides files that were marked in the Reports Section and will be transmitted electronically to the instructor OSU email accounts listed in either MS Word format or PDF format or both.

DEFINE THE TEST – OPTIONS 08-14

Option 08:   **Points per Question**

This option assigns an overall point value for the test. Completion of this section is required even if you want any other point value used.

When assigning points values to questions and / or answers to questions the following rules apply in all cases:

1. Decimal values are permitted – in tenths of points.
2. If you are using the multiple test form option the Test Form Number must be provided.
3. The maximum value that can be assigned a question or an answer is 99.9.

Question Lists (Options 09-14)

Options 09-14 include a question list section as part of the parameters. The question list can include individual Question Numbers in a string, separated by commas. Leading zeros are not required, and there should be no spaces in the string. For Example: 1,7,10,23,195

The questions list can also include a range. For Example: 1-200

Both these techniques may be included in the same Question List, and they may be mixed. The question numbers do not need to be in any particular order, but given that handwriting is often difficult to read it may be helpful if the user makes the attempt to list the question numbers in ascending order. For Example: 1,7,10,24,50-75,88,90-100,195,198

If there is insufficient room in a block to enter your test definition, page 4 contains extra space – or a separate paper may be used.

Option 09: **Define Test Items to Score**

Completion of this section is mandatory.

Assuming that the user may use the same test form repeatedly, it may be only desirable to score part of the question which is represented on the Student Answer Scan Sheets. This block tells the system which test items should be checked on both the EXAM KEY and on the Student Answer Scan Sheets.

Option 10: **Define Sub Sections (Sub-Tests)**

There are testing situations where more information is needed than one total test score. You may, for example, wish to compute separate scores for lecture questions, lab questions, and reading assignment questions, in addition to the overall test score.

Option 10 makes it possible to divide a test into up to 5 separate parts or subsections to be scored along with the whole test.

The questions for the different parts may be grouped separately or inter-mixed in any order, but no one item may be assigned to more than one part.

Option 11:   **Assigning Variable Points to Questions**

This block provides for assigning points or questions to OVERRIDE the point value assigned by Option 08. Let's say that on a 50 question test you wish 2 points to be awarded overall the test, but questions 10-20 are only worth 1 point. Use Option 08 to assign the overall 2 point value, and option 11 to assign question 10-20 the 1 point value.

Option 12: Partial Credit

This option assigns points to questions with more than one correct answer. It is important to not that while a question can have more than one correct answer, ONLY ONE RESPONSE may be blacked in on the Student Answer Scan Sheet.

Assign points by printing Answer and point value e.g.: A=2,D=1.

Only the correct answers need be noted, you do not need to assign zero points to incorrect answers. Example A=2,D=1 is correct A=2,B=0,C=0,D=1,E=0 is incorrect.

Note that report 04 – the Item Analysis – reports statistics based on selection of the correct answer. This will only consider the answer marked on the exam key to be "correct". The assignment of partial credit to other answers does not render them "correct".

Option 13: Throw Out Items

Use this option to assign point values to questions that YOU DO NOT WANT SCORED.

Any point value is acceptable up to 99.9.

Zero or 0 is acceptable.

This question will still be evaluated on the Item Analysis, and will be considered in computing scores and statistics. To avoid this consideration, do not include this question number in the list of items to score (option 09).

Option 14: Extra Credit

Use this option to assign additional point values to the main questions to be scored.

To have this option work correctly the credit question numbers need to be included in the list of items to score (option 09). If the main exam covers questions 1-50 and there are two extra credit questions 51 & 52, then the list of questions to be scored is 1-52 in option 09.

APPENDIX A: EXPLANATION OF STATISTICS

Raw Score: This is simply the total number of points a student earned on the test.

Percentage: The percentage score is the student's score converted to a scale of 0 to 100. For a test with 100 possible points the student's percentage score is identical to his or her test score.

Z-Score or Standard Score: The Z-score, like the percentage score, is simply a mathematical conversion of the student's test score. The Z-score conversion changes all student test scores to a scale in which the class mean is zero and the standard deviation is one. So a student's Z-score tells how many standard deviations above (if it is positive) or below (if it is negative) the class mean score lies. For example a Z-score of -0.5 is one-half a standard deviation below the mean for the class.
Because every distribution of Z-scores has the same mean (0) and standard deviation (1), a student's Z-score on several tests can be directly compared with each other. But the fact that Z-scores range from -3.00 to +3.00 is confusing to some people. For this reason the T-score is usually used instead.

T-Score: The T-score, like the Z-score, is a normalized standard score. The difference between the two is that the class distribution of T-scores has a mean of 50 and a standard deviation of 10. Because it is a normalized standard score, the T-score has several useful properties:

      a. Internals between scores tend to be equalized, so that the difference between 65 and 70 is much the same as the difference between 50-55.
      b. Because of the equal interval scale, scores from successive tests of different lab sections can be meaningfully compared, added, or averaged.
      c. The distribution of T-scores is predictable, so that grading on a strict curve is possible without sacrificing fairness. (Normally about 2/3 of a class will score between 40 and 60 or about 5/6 of the class will score above 40. The pass-fail cutoff is usually set between 35 and 40).

Standard Deviation: The standard deviation is an index of how the class scores are distributed (their "dispersion"). With the mean and the standard deviation, you can get a pretty good idea of how the scores are distributed.

Median: The median is the middle score in the group. The median, like the mean, is a measure of "central tendency". If there is an even number of scores, the mean value of the two closest to the middle is considered the median score.

Percentile (% tile):   This is a statistical conversion of the raw test score. The percentile rank of a test score indicated what percent of the class scores are lower than that particular score. So if a student has a percentile score of 92, he scored higher than 92% of the total group tested.

Stanine: A stanine is a standard score on a scale of 1 to 9. The stanine scale has a mean of 5 and a standard deviation of 2. Each stanine corresponds to a range of percentiles:

Stanine	Percentile
9	97-99
8	90-96
7	78-89
6	61-77
5	40-60
4	23-39
3	11-22
2	4-10
1	1-3

Top 27%-Bottom 27%:   This figure has been shown statistically to be the best cutoff point for the high and low groups to simulate the total class distribution.

Difficulty Index (Diff Index):   The difficulty index is the percentage of students who chose the correct answer, expressed in a decimal form. So a difficulty index of 0 means that nobody in the class chose the right answer and an index of 1.00 means everybody chose the correct answer.

Because of student guessing, the difficulty index of an item is affected by the number of possible choices. Here are some rules for selecting items based on difficulty:

a.   For a true-false question, the difficulty index should fall between .60 and .95 to maximize discrimination.
b.   For a three-choice multiple choice item, the difficulty index should be between .45 and .90.
c.   For an item with four or more choices, the difficulty index should be between .35 and .85.

Discrimination Index (Disc Index):   The discrimination index indicates how well the item discriminates the better students from the poorer students in a class. In general the larger the positive value of the discrimination index, the more discriminating the question. We look for items that were answered correctly by students with overall high test scores, and answered incorrectly by low-scoring students. Such items are said to have a high discrimination index, because they, like the test as a whole, discriminate students based on overall performance.

T-Value: The T-Value tells you this is a good question. Higher T-Values indicate a better test of student understanding of the subject as low-scoring students do not respond correctly as often as high scoring students.