ASSIST

Automated Test Scoring Service

User's Manual

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ASSIST Overview

ASSIST is a computerized system for scoring multiple-choice examinations with these specifications:

- exam may have a maximum of 160 items
- items may have a maximum of five answer choices
- exam can be subdivided into a maximum of six subtests
- raw scores can be weighted and corrected for guessing

ASSIST generates:

- individual **student responses** to each question
- **Score distribution** including raw score, frequency, cumulative frequency, percentile rank, percent score, and standard score; summary statistics including mean, median, variance, standard deviation, etc.
- alphabetized **student score roster** that includes number of items right, wrong, and omitted, percent score, standard score and raw score
- descriptive item analysis (optional) that includes the number and percent of students responding to each answer alternative
- discriminative item analysis (optional) that includes high/middle/low group comparison, individual item indices and statistics, point biserial correlation, and right/wrong group means

Using ASSIST is easy:

- Complete the authorization form and submit to The Testing Office.
- Students mark their answers on NCS Trans-Optic 05-7338-23 answer sheets. You may obtain them from your department or have students purchase them at the Pioneer Bookstore.
- Before beginning the test, read instructions for completing the answer sheet. Most students are familiar with these answer sheets, but please be certain that everyone understands how to mark them accurately.
- Prepare a scoring key, indicating the scoring options you prefer.
- Bring scoring key and answer sheets to The Testing Office
- Test results are ready to pick-up within 48 hours. You must arrange to have your exams picked up in person (See Page 17).

Instructions for Completing The Answer Sheet

Successful and accurate computerized test scoring depends on properly completed answer sheets. Your students must:

- Read "Important Directions for Marking Answers" on page 2 of the answer sheet.
- Use only a No. 2 pencil.
- Make marks very dark so that the letter underneath mark cannot be seen.
- Erase unintended marks completely.

The following information must be completed on the student's answer sheet:

Last Name, **FI**, **MI** Students must enter their name in blocks at the top of this

section then blacken the circle correspondent to each letter.

SSN / NET ID Students must fill in NET ID then blacken the correspondent

circle under each box. Do not worry that there are no letters

in that section or that it says Social Security Number.

Sex/Class Level Optional

Instructor/Course

Section/Date

Students must complete this information (located on upper-

right corner of answer sheet.

Answers Students mark their responses to questions 1-100 on page 1

of the answer sheet and questions 101-160 on page 2.

See page 5 for a completed sample answer sheet.

Sample Answer Sheet

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Instruction for Coding The Answer Key Sheet

A blank answer sheet is used to make the answer key sheet (use *only* a No. 2 pencil). The following information must be completed in the sections indicated:

Last Name: Boxes 1-4 write and bubble abbreviated department name.

Boxes 5-14 Write and bubble instructor name.

SSN / NET ID: Write and bubble 999999999

Number of Questions: Write and bubble the number of the last test item to be

scored, even if that does not represent the total number of items. Leave blank items not to be scored. ASSIST will not

score items that have two or more correct answers.

Code Number: Write and bubble the four-digit course number (e.g. 3003).

Complete the **Instructor**, **Course**, **Section**, **and Date** blanks located in the upper-right corner.

Optional features of ASSIST can be marked on the answer key sheet as follows:

Form: For multiple versions of an examination, you may assign a

form letter designation of A-J and mark it here. Each version

will need a separate answer key sheet.

Item Analysis: Blank: You will receive simple statistics that include a score

distribution, summary statistics, and student score roster.

1: You will receive a basic descriptive item analysis, in

addition to the above statistics.

2: You will receive an extensive discriminative item analysis,

in addition to both of the above statistical options.

Formula Score Blank or 1: Student's score will equal the number of correct

responses.

Weighting It is possible to "weight" or assign more than one point to the

test items.

Blank or 1 Assigns 1 point to each item.

2 Assigns 2 points to each item.

3 Assigns 3 points to each item.

4 Assigns 4 points to each item.

Part Scores

On side 2 of the key sheet, you may organize the total test into subtests and get scores for each one, as well as for the total test. The subtest **items must be contiguous**, with the **maximum of 99 items** in any subtest; up to **six subtests** may be defined. Mark the number of items in the first subtest in "Part 1", the number of items in the second subtest in "Part 2", etc.

Additionally, each **subtest may have a distinct scoring formula and item weight.** These options are marked in the grid below the "Part Score" areas.

Marking Answers

In the item response area of side 1, mark the correct answers to test items 1-100; mark the correct answers to items 101-160 on Side 2. Items that are not to be scored or that have more than one correct answer must be left blank.

Upon completing the answer key sheet, place it on top of the student answer sheets. Please be certain that the key and answer sheets are organized with side 1 facing front and the notched edges in the lower right corner. Bring key and answer sheet packet to The Testing Office for scoring.

See Page 8 for a completed answer key sheet.

Sample Key Sheet

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Test Score Analysis

Student Responses:

ASSIST provides a listing of the answer key sheet and an alphabetical listing of each student's responses, showing the response used to score each item. **This listing is important in insuring that items were scored correctly since the student markings on the answer sheet can be compared to the response record.**

This listing begins with the answer key sheet; the first line says **Key Record**, followed by the department, instructor, and course number/section. The second line contains the correct answers (coded 1=a, 2=b, 3=c, 4=d, 5=e) for items 1-80; the third line lists correct answers for items 81-160. Items that are not to be scored are blank.

Following the answer key sheet listing is a record of each student's responses. The first line contains the student's name and social security number/Net ID. The second and third lines contain the student's responses, as interpreted by the scanner. **Items left blank by the student are blank on the listing; a multiple response is indicated by an asterisk***.

See Page 10 for a sample of the print-out listing key and student responses.

Score Distribution:

This section presents a frequency distribution and summary statistics for the total test and for each subtest if part scores have been requested.

Raw Score number correct (adjusted by weighting/scoring formula if used)

Frequency number of students obtaining that raw score

Cumulative number of students obtaining that raw score or lower

Frequency

Percentile Rank percent correct corresponding to that raw score

Standard Score a linear transformation of that raw score to a distribution with a

mean of 50 and a standard deviation of 10. This scale is useful if you wish to combine two or more tests that are unequal in difficulty.

See Page 11 for a sample of a score distribution print-out.

Sample Student Responses

PROGRAM NUMBER 108 BATCH ID: 900 RUN NUMBER: 1 OPTIONS 1:

KEY RECORD ENGL JONES 3003 01

141 1234143324213441

STUDENT 000-00-0008 14111234142*24213341

STUDENT A 000-00-0001 1414123414 324213411

STUDENT B 000-00-0002 1414133414

STUDENT C 000-00-0003 14241234143334223442

STUDENT D 000-00-0004 14141234143324213441

STUDENT E 000-00-0005 13141233143324113442

STUDENT F - -14341 34243324213331

STUDENT G 000-00-0007 34121231143334213432

Sample Score Distribution

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	RAW		CUMULATIVE	PERCENTILE	PERCENT	STANDARD			
	SCORE I	REGUENCA	FREQUENCY	PANK	SCORE	SCORE			
	19	1	10	90	100.0	63.58			
	17	1	9	80	89.4	58.25			
	16	1	9 8 7	70	84.2	55.59			
	15	3	7	40	78.9	52.93			
	14	2	4	20	73.6	50.26			
	6	1	2	10	42.1	34.28			
	6	1	7	0	31.5	28.95			

NUMBER OF QUESTIONS 20	NUMBER OF ON	ESSIONS IN KEY	NUMBER OF REYES	QUESTIONS
NUMBER OF STUDENTS	SUM OF	SCORES 19	SUM OF SQUARE	
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KUDER RICHARDSON REL	LABILITY	STANDARD	ERROR OF MEASURE	
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KR-20 AND S.E.M. ARE BASED ON THE NUMBER RIGHT AND ZEYED QUESTIONS.

Summary Statistics:

The following summary statistics are provided in the section after the raw score distribution:

Student Score Roster

An alphabetical roster providing the student's name, SSN/NET ID number, sex and class level, number of right, wrong, and omitted answers, percent score, standard score and raw score adjusted for weighting and scoring formula (if used).

See Page 14 for a sample of the Summary Statistics -Score Roster.

Descriptive Item Analysis

This item analysis option is only generated if the **Item Analysis** area of the key sheet is marked with a 1 (or 2).

For each item, the number "NO." and percent "%" of students responding to or omitting each answer alternative are given. The correct alternative is marked with an asterisk *. Items left blank on the answer key sheet are marked "Question not graded by the request of the instructor."

See Page 15 for a sample of the Descriptive Item Analysis.

Discriminative Item Analysis

This item analysis option is only generated if the **Item Analysis** area of the key sheet is marked with a 2. This option is useful for evaluating individual test items in greater detail than is possible with the descriptive item analysis.

The discriminative item analysis consists of two categories of information for each item:

High/Middle/Low Group Comparison

Students are separated into the following three groups:

Upper top 27% of the score distribution Middle 46% of the score distribution Low bottom 27% of the score distribution

Item Statistics/Indices

Index of Difficulty - This is the percentage of the total group that has responded incorrectly to the item (including omissions).

Index of Discrimination - This is the difference between the percent of correct responses in the upper group and the percent of correct responses in the lower group.

Maximum Discrimination - This is the sum of the percent in the upper and lower groups marking the item correctly. (If this sum is greater than 100, it is subtracted from 200.) This index indicates the maximum *Index of Discrimination* possible for the item, given the obtained response distribution. This maximum would be attained if the entire percentage of correct responses came from the upper group, with none coming from the lower.

Discriminating Efficiency - This is a ratio, calculated by dividing the *Index of Discrimination* by the *Maximum Discrimination*. This ratio thus obtained indicates how well the item actually did discriminate, as compared to how well it possibly could have discriminated.

Point Biserial Correlation -This is a correlation between examinees' performance on the item (right or wrong) and total test score. The value calculated by the *Student T-test for Point Biserial Correlation* can be used to determine if the *Point Biserial Correlation* obtained is statistically significant. To make this determination, compare the value given by the t-test with the value given for N-2 degrees of freedom in a table of t-distribution values, where N=the number of examinees.

Right/Wrong Group Means - Examinees are categorized into those correctly answering the item and those incorrectly answering the item. The mean total score for the two groups is given.

See Page 16 for a sample of the Discriminative Item Analysis.

Sample Summary Statistics

CALIFORNIA STATE UNIVERSITY-HAYWARD

DATE SEPTEMBER 09, 1996 EXAMINATION RESULTS FOR PAGE NUMBER 2

HNGL 3003 01 JOHNS FORM

SCCIAL NUMBER NUMBER NUMBER PERCENT STD NAME SECURITY SEX C.L. RIGHT WRONG OMITTED SCORE SCORE SCORE STUDENT 000-00-0008 TOTAL 16 3 0 84.2 55.59 STUDENT A 000-00-0001 TOTAL 17 1 1 89.4 58.25 STUDENT 000-00-0002 TOTAL 8 1 10 42.1 34.28 000-00-0003 STUDENT C TOTAL 15 4 0 78.9 52.93 15 STUDENT D 000-00-0004 TOTAL 19 0 100.0 63.58 0 19 STUDENT 000-00-0005 TOTAL 15 0 78.9 52.93 15 STUDENT Y 14 4 73.6 50.26 TOTAL 1 14 G STUDENT 000-00-0007 TOTAL 14 5 0 73.6 50.26

TOTAL

TOTAL 5

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31.5 28.95

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STUDENT

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Sample Descriptive Item Analysis

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						. 1	D\$	IL.	3	1001		1									JO	WE	88									3.5	FORM	14:	

	****	*******	****	*******	***	RESP	ONS	E 5 ****	****		*****	******
QUESTION	A	TRUE	8	FALSE		C	THEFT	D		E	ОМ	TTED
HUMBER	NO.	1	NO.		100.	N.	110.	*	NO.		NO.	
1	9	90.00*	0	0.00	1	10.00	0	0.00	0	0.00	0	0.00
2	0	0.00	0	0.00	1	10.00	9	90.00*	0	0.00	0	0.00
3	. 8	80.00*	1	10.00	1	10.00	0	0.00	0	0.00	0	7450 (150)
4	QUES	TION NOT	GRAD	ED BY THE	0 R10	QUEST OF	INSTR	UCTOR.	- 01			0100
5		80.00*	2	20.00	0	Terres de la constitue de la c	0	0.00	0	0.00	0	0.00
6	0	0.00		*0.00	1	10.00	0	0.00	0	0.00	1	10.00
7	0	0.00	0	0.00	10	100.00*	0	0.00	0	0.00	0	0.00
8	1	10.00	0	0.00	1	10.00		80.00*	0	0.00	0	0.00
. 9	8	80.00*	1	10.00	0	0.00	0	0.00	0	0.00	1	10.00
10	0	0.00	0	0.00	1	10.00	5	90.00*	0	0.00	0	0.00
11	0	0.00	1	10.00	5	60.00*	0	0.00	0	0.00	3	30.00
12	0	0.00	0	0.00	7	70.00*	0	0.00	0	0.00	3	30.00
13	0	0.00	6	60.00*	2	20.00	0	0.00	0	0.00	2	20.00
14	0	0.00	0	0.00	0	0.00	7	70.00*	0	0.00	3	30.00
15	1	10.00	6	60.00*	0	0.00	0	0.00	0	0.00	1	30.00
16	7	70.00*	1	10.00	0	0.00	0	0.00	0	0.00	1	
17	0	0.00	0	0.00	8	80.00*	0	0.00		0.00	1650	20.00
18	0	0.00	0	0.00	2	20.00	6	60.00*			2	20.00
19	1	10.00	0	0.00	2	20.00	5	50.00*	0	0.00	2	20.00
20	4	40.00+	4	40.00	0	0.00	0			0.00	3	20.00
557/1	1.5	2000	70	44144		4.00	W	0.00	n.	0.00	2	20.00

^{*} ASTERISK INDICATES THE CORRECT RESPONSE.

Sample Discriminative Item Analysis

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CALIFORNIA STATE UNIVERSITY-HAYWARD
DATE SEPTEMBER 09, 1996 DISCRIMINATIVE ITEM ANALYSIS FOR
               ENGL 3003 01
                                     JONES
THE INDEX OF DIFFICULTY IS THE PERCENTAGE OF THE TOTAL GROUP
     MARKING A WRONG ANSWER OR CHITTING THE ITEM.
         THE INDEX OF DISCRIMINATION IS THE DIFFERENCE BETWEEN THE PERCENTAGE
     OF THE UPPER GROUP MARKING THE RIGHT ANSWER AND THE PERCENTAGE OF
     THE LOWER GROUP MARKING THE RIGHT ANSWER.
         THE UPPER AND LOWER GROUPS EACH CONTAIN 27% OF THE TOTAL GROUP.
* QUESTION 1 OF 20. THE CORRECT RESPONSE IS A(T). . INDEX OF DIFFICULTY
. GROUP AND ..... RESPONSES ...... . INDEX OF DISCRIMINATION
* PERCENTAGE A(T) B(F) C
                             OMIT TOTAL . MAXIMUM DISCRIMINATION
                     D
* UPPER 27%
            0 0 0
         2
                              0 2 . DISCRIMINATING EFFICIENCY
         100% 0% 0% 0% 0% 0% 100% .
 MIDDLE 46%
         5
              0 1
                      0 0 0 6 . POINT BISERIAL CORR. -0.0093 *
         83% 0% 17% 0% 0% 0% 100% . STUDENT T-YEST FOR POINT

    LOWER 27%

         2 0 0
                      0 0 0 2 . BISERIAL CORRELATION -0.0265 *
         100% 0% 0% 0% 0% 0% 100% .
* TOTAL
         9
                      0 0 10 . MEAN SCORE - RIGHTS
              0 1
         90% 0% 10%
                      0% 0% 0% 100% . MEAN SCORE - WRONGS
* QUESTION 2 OF 20. THE CORRECT RESPONSE IS D.
                                    . INDEX OF DIFFICULTY
* GROUP AND ******** BESPONSES *********
                                    . INDEX OF DISCRIMINATION

    PERCENTAGE A(T) B(F) C

                     D
                             OMIT TOTAL . MAXIMUM DISCRIMINATION
* UPPER 27%
          0 0 0 2
                          0 0 2 DISCRIMINATING REFICIENCY
          #0
             0% 0% 100%
                          0% 0% 100% .
* HIDDLE 46%
             0
                1
                     5
                             0 6 , POINT BISERIAL CORR, -0.1029 *
                          0
          0% 0% 17% 83% 0% 0% 100% , STUDENT T-TEST FOR POINT
* LOWER 27%
          0 0 0 2 0
                             0 2 . BISERIAL CORRELATION -0.2928 *
          0% 0% 0% 100% 0% 0% 100% .
* TOTAL
          0 0
                1 9 0 0 10 . HEAN SCORE - RIGHTS
                                                     11.77 *
                          DN ON 100% . MEAN SCORE - MRONGS 15.00
```

ASSIST Automated Test Scoring Services

Authorization for Pick-Up of Test Results

If you intend to use ASSIST, you must complete and forward this form to The Testing Office, either before or when you bring your first test for scoring.

To insure the security of your test and the confidentiality of your student scores, your results should be picked up either by you or an authorized individual listed below. It is extremely important that this form includes your signature and the signature(s) of all other authorized individuals, including the department secretary.

I authorize the following individuals to pick-up my test results from The Testing Office:

NAME (Print)	SIGNATURE	POSITION	
Instructor Name (Print)	Instructor Signature		

This authorization will remain in effect until notification from you or your department. If you wish to delete an authorized individual from this list, please inform Testing Office.