

CSU/UC  
MATHEMATICS DIAGNOSTIC TESTING PROJECT

2012 California Community Colleges Validation Study  
Without College Names For Posting on Web Site

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CSU/UC  
MATHEMATICS DIAGNOSTIC TESTING PROJECT

CONSEQUENTIAL-RELATED VALIDITY  
EVIDENCE FOR MDTP TESTS

The following is an excerpt from the California Community College Chancellor's Office letter granting "Full Approval" Status for MDTP tests submitted for renewal.

In reviewing the evidence submitted to address the validity Standard, it was noted that in reporting the satisfaction rating data for faculty, judgments in the top three rating categories (3, 4, 5) were grouped together. A rating of 5 indicates the student is "Fully Prepared" and the implication is the student should have been placed in a higher level course. Rather than group ratings of 3, 4 and 5, ratings of 2, 3 and 4 should have been grouped to indicate "appropriate or somewhat appropriate" placement.

As a result of using ratings of 3, 4, & 5 instead of 2, 3, & 4 for reporting "x" in percent of instructor ratings showing appropriate placement were underreported in the November report. The supplement report has been revised to add revised tables and notes below the tables that were originally submitted in February. The revised tables and notes are clearly marked as additions and use the Instructor ratings of 2, 3, and 4 to indicate appropriate or somewhat appropriate placement.

Data submitted in response to California Community colleges Assessment Standards (March 2001, 4<sup>th</sup> edition) for renewal of placement test instruments.

November 2012

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## OVERVIEW

In this report MDTP is submitting consequential-related validity evidence in support of its request for renewal of approved status by the California Community Colleges Chancellor's Office. MDTP tests are currently used for placement in mathematics classes by approximately 40 community colleges in California.

Data was gathered from 11 colleges in 10 districts, representing the diversity of the community college system statewide. One additional college allowed MDTP to include their validation data as an appendix to this report. The evidence shows that when used for placement in the courses for which the tests were written, the CCC validation thresholds of an average over all colleges of 75% favorable responses was met for the student self-assessments of appropriate placement and adequate preparation for all four MDTP test levels. With the inclusion of the validation data from the 'additional college', the instructor assessment of student preparation met the 75% favorable responses or a minimum of six colleges with at least 75% favorable responses for three of the four test levels; the percent of favorable responses was approximately 70% for the fourth test level. **Note: When grouping instructor ratings of 2, 3, & 4 as noted on the cover all four test levels meet or exceed the 75% mark for faculty assessment of appropriate placement.**

## ACKNOWLEDGEMENTS

The CSU/UC Mathematics Diagnostic Testing Project is grateful to MaryAnne Anthony of Santa Ana College for conducting this study and writing this report. We deeply appreciate the statistical software and guidance provided by the Suzi Russell and Nga Pham in the Rancho Santiago Community College District Research Department and by Robin Kaplan, PhD candidate, School of Social Ecology, UC Irvine; Robert Elmore of CAPP Associates for coordinating and collecting placement test data from each of the participating colleges, and the support provided by Donna M. Ames in the MDTP Director's Office. We are pleased to thank the faculty and staff at each of the 12 colleges who participated in this study for their assistance and support.

# STUDY METHODOLOGY

## BRIEF DESCRIPTION OF THE STUDY

The purpose of this study is to validate the use of the MDTP test forms listed on page 6 as part of the California Community College matriculation process. Specifically, the goal is to provide consequential-related validity evidence for the CSU/UC MDTP Algebra Readiness, Elementary Algebra, Intermediate Algebra, and Precalculus placement tests consistent with the CCC standards for renewal. The tests were initially approved in 1992, and approval was renewed in 1999 and again in 2004. The tests continue to be available in Braille and large text versions.

Colleges currently using these assessments were invited to participate in this study and asked to provide class rosters and information on placement test scores for certain courses. In order to assess consequential-related validity, faculty administered a short in-class questionnaire to students addressing both method of placement and 'fit' in the course. Faculty also rated their students on the degree to which each was prepared for the course material. Examples of the student questionnaire and directions to instructors for the preparation ratings are included in the attachments section of this report. Copies of the tests are also being submitted with this report.

Below is a brief overview of the data elements survey instruments used in this study.

### Placement test results:

- Student name
- Student identification number
- MDTP test taken (identified by MDTP name, e.g. AR50/86)
- Date test taken
- Test score (total)

Placement test data was collected from colleges for students who took Algebra Readiness, Elementary Algebra, Intermediate Algebra, or Precalculus tests between January and September 2012. This is the time frame of placement testing for high school outreach and other entering community college students who enrolled in their first college mathematics class in Fall 2012.

### Faculty ratings of student preparedness:

- Class roster
- Five-point Likert scale rating for each student

Instructors were asked to generate their own class rosters and submit them either electronically or in print. Rating guidelines were provided to each instructor, with directions to base each student's rating on demonstrated skills, understandings, and ability to comprehend course material as evidenced in homework discussions, quizzes, tests, and other assignments. The scale was anchored so that a rating of '1' represented a student ill-prepared for the course, who probably should have enrolled in a lower level course, and a rating of '5' represented a student exceptionally well prepared for the course who possibly should have

enrolled in a more advanced course. Instructors were asked to rate all students in their class, regardless of whether they had qualified by completion of a prerequisite course or been advised based on a placement test score. The ratings were to be completed and sent to MDTP by the end of the sixth week of the term.

**Student questionnaires:**

- Student name
- Student identification number
- Self-report of method of placement in the course
- Self-report of course recommendation by the college
- Self-report of appropriateness of course placement
- Self-report of academic preparation for the course material
- Self-report of the degree to which non-school related responsibilities affect performance in the course

Student questionnaires were sent to each instructor as a class set, with a sufficient number of questionnaires according to the course enrollments as reported to MDTP by the colleges' math department chairs.

The method of placement (question 1) allowed students to select from eight options the factor(s) they believed were responsible for their course selection. Multiple responses were accepted.

Self-report of appropriateness of course placement (question 3) assessed students' attitudes toward the course in which they enrolled, without regard to the avenue by which that selection occurred. Responses to this question were forced-choice, with students selecting from three alternatives, indicating that they 'belong in this course, 'should have enrolled in a lower (easier) course', and 'should have enrolled in a higher (harder) course'.

Self-report of academic preparation (question 4) allowed students to report on their level of academic preparation for the course material. A five-point Likert scale, similar to that used by the instructors, was provided for the responses. The anchors corresponded to 'I am not prepared for this course' with a rating of '1', 'I am adequately prepared for this course' with a rating of '3', and 'I am fully prepared for this course' with a rating of '5'.

**COLLEGE SELECTION**

In spring 2012, MDTP sent an email to the math chairs and testing coordinators at all colleges with current MDTP licenses explaining the resumption by the Chancellor's office of reviewing validation data for assessment instruments used for placement in the California community colleges. Colleges were asked if they had recently collected validation data and, if so, would they be willing to share their data with MDTP, and if they would be willing to participate in a validation study conducted by MDTP in Fall 2012. Responses were received from 17 colleges, including some negative responses. The list of colleges that indicated they would be willing to participate in the Fall 2012 validation study was examined as to college location, urban vs. rural designation, large vs. small college, and student diversity.

The colleges that provided data for this study are:

1. Cypress College
2. Glendale College
3. Lake Tahoe Community College
4. MiraCosta College
5. Monterey Peninsula College
6. Mount San Antonio College
7. Rio Hondo College
8. Santa Ana College
9. Santa Barbara City College
10. Santiago Canyon College
11. Southwestern College
12. West Hills College Lemoore

*Note added to report: The colleges are listed alphabetically above. The numbers to the left of the college name do not correspond to the random numbers assigned to each college for use in the data tables. In other words, "College 01 is not Cypress College".*

In addition, College 12 agreed to allow MDTP to include data from their recent validation studies as part of this report. Their results are provided in Attachment I. The faculty ratings of student preparedness used the same scale as that used by the 11 colleges listed above, so this data was included in the MDTP consequential-related validity table, in the column 'Instructor Assessment of Student Preparation'.

There are seven MDTP test forms currently on the Chancellor's 'Approved Assessment Instruments (April 09) Revised September 2011' list. Among the 38 California community colleges licensed in 2011-12 to use MDTP tests, the EA50C86 was used by the most colleges (30) and the PC60C86 was used by the fewest (9). Two tests are available at each level except for Elementary Algebra, and colleges generally have chosen to use just one of the two tests. College 11 used both forms of the Algebra Readiness Test in 2012.

The numbers of colleges providing data for each test level and for each individual test are shown in the following table. The counts include test forms used by College 12.

MDTP Test	Number of Colleges for This Test Level	Test Form	Number of Colleges for This Test Form
Algebra Readiness	10	AR50/86	7
		AR50/90	4
Elementary Algebra Diagnostic	12	EA50C86	12
Intermediate Algebra Diagnostic	12	IA45C86	9
		IA45C91	3
Precalculus Diagnostic	11	PC40C86	7
		PC60C86	4

## **COURSE SELECTION**

A careful study was made of the course descriptions in the catalogs of each of the colleges that agreed to participate in the study. Based on the catalog course descriptions, input from the MDTP community college coordinator who is familiar with course content at the colleges, rationales provided by the MDTP director and administrative assistant on the history and intent of the tests, past practice in the 1999 and 2004 validation renewal studies, and information provided by the colleges on test use, MDTP identified courses whose content matched the intended use of the MDTP tests. Courses that were preparatory or immediately subsequent to the intended use of the Algebra Readiness, Elementary Algebra Diagnostic, Intermediate Algebra Diagnostic, or Precalculus Diagnostic tests were also identified. Only courses meeting a preparatory, intended, or subsequent classification were included in the study. (A Course Classification Table listing the abbreviations used for these classifications is on page 10.)

Altogether, the study sample consisted of student surveys received for 70 courses, 539 sections, and 16,035 students, and 533 section rosters from instructors. Data from the students or instructor in a course section were needed in order to include that section in the course analysis.

## **SELECTION OF STUDENTS**

Students' self-report of method of placement in Question 1, 'as a result of a placement test for this college', in conjunction with students' self-report of course recommendation in Question 2, 'this course', were used to filter students for this study. In courses where course recommendation could result from either a high score on one test or a low score on another test, students were also categorized by specific MDTP test taken. In all, data were analyzed for more than 6,400 students in each of the student self-assessment and instructor assessment consequential-related validity studies.



## **LIMITATIONS OF THIS STUDY**

- Low sample sizes: Some courses, especially at the smaller colleges where there may have been only one section of a targeted course, had very few students who had been placed via recommendation of an MDTP test.
- Difficulties matching student records: Asking instructors to use their own electronic or printed rosters to record their assessments of their students' preparation caused difficulties matching student surveys to the instructors' ratings. In addition, testing data did not always match the names and/or ID numbers students recorded on their surveys.
- Lack of full compliance: In some courses, the large difference in sample sizes between the student responses and instructor ratings suggests that there may have been some course sections in which students completed their surveys but the instructor did not. Some instructors did not return rating rosters while others returned rosters without ratings.
- Delays in receiving data: Despite repeated requests for a prompt return of the student and instructor surveys, some class packets were received as the analysis was being run and could not be included in this study.

# CONSEQUENTIAL-RELATED VALIDITY EVIDENCE

## DATA ORGANIZATION

### Consequential-related validity evidence:

- Students' self-assessment of the appropriateness of their placement and of the adequacy of their preparation for the course
- Instructors' assessment of their students' preparation

### TEST-COURSE CLASSIFICATION CODE

Table headings show the MDTP test for which evidence is being presented, as well as the course classification of preparatory, intended, or subsequent to the MDTP test.

## I. RESULTS BY COURSE

<b>1</b> College	<b>2</b> Course(s)	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		<b>3</b>			<b>4</b>			<b>5</b>		
		x	n	%	x	n	%	x	n	%
College 01										
College 02										
College 03										
Total n and x <b>6</b>										
Weighted mean proportion <b>7</b>										

1. College: source colleges for the data presented
2. Course(s): Course number(s) of the course(s) from which data were collected.
3. Appropriate Placement: information from Question 3 on the student questionnaire. Students were asked to complete the sentence 'I now believe that...'
  1. I should have enrolled in a lower (easier) course—this course is too difficult.
  2. I belong in this course.
  3. I should have enrolled in a higher (harder) course—this course is too easy.

The table gives the number (x) of students who responded 'I belong in this course', the total number (n) of responses to this question, and the percent (%) of students who responded 'I belong in this course.'

4. Adequate Preparation: information from Question 4 on the student questionnaire. Students were asked ‘How do you feel about your academic preparation for this course?’ and asked to fill in one of bubbles 1 through 5, with the following anchors:
1. I am not prepared for this course.
  3. I am adequately prepared for this course.
  5. I am fully prepared for this course.

The table gives the number (x) of students who chose 3, 4, or 5 (adequately to fully prepared), the number (n) of responses to this question, and the percent (%) of students who chose responses 3, 4, or 5.

5. Instructor Assessment of Student Preparation: information from the faculty ratings of students’ mathematical preparedness. Instructors rated students on a 5-point scale with the following anchors:
1. Unprepared.
  3. Adequately prepared.
  5. Fully prepared.

The table gives the number (x) of instructors who chose 3, 4, or 5 (adequately to fully prepared), the number (n) of responses to this question, and the percent (%) of instructors who chose 3, 4, or 5.

6. Total n and x: n represents the total number of responses among all colleges listed, and x represents the total number of students whose self-rating indicates they believe they were appropriately placed and adequately prepared, and the total number of students rated by instructors as being adequately or better prepared.
7. Weighted mean proportion: the weighted mean proportions across the colleges for columns 3, 4, and 5.

## II. COLLEGE SUMMARIES

College	Student Self-Assessment		Instructor		
	Appropriate Placement <b>1</b>	Adequate Preparation <b>2</b>	Assessment of Student Preparation <b>3</b>		
College 01					
College 02					
College 03					
Number of colleges <b>4</b>					
Number of colleges $\geq$ 75% <b>5</b>					

1. Percent of all students at each college (combining courses when more than one has been included in the Results by Course table) who chose option 2 'I now believe that I belong in this course' to Question 3 of the student questionnaire.
2. Percent of all students at each college (combining courses when more than one has been included in the Results by Course table) who reported they are adequately to fully prepared for the course on Question 4 of the student questionnaire.
3. Percent of all students at each college (combining courses when more than one has been included in the Results by Course table) rated by their instructors as being adequately to fully prepared for the course.
4. The number of colleges for the given test and level.
5. The number of colleges for the given test and level meeting the standard of at least 75% affirmative responses.

Note that the College Summaries tables are provided only for those courses whose content matched the use of the test intended by MDTP.

### III. MDTP TESTS INCLUDED IN THIS REPORT

Test Type	Abbreviation
Algebra Readiness	AR
Elementary Algebra Diagnostic	EAD
Intermediate Algebra Diagnostic	IAD
Precalculus Diagnostic	PCD

### IV. COURSE CLASSIFICATION TABLE

Test	Course Classification	Abbreviation
AR	Preliminary to AR test	PAR
AR	Intended for AR test	IAR
EA	Preliminary to EAD test	PEA
EA	Intended for EAD test	IEA
EA	Subsequent to EAD	SEA
IA	Preliminary to IAD test	PIA
IA	Intended for IAD test	IIA
PC	Preliminary to PC test	PPC
PC	Intended for PC test	IPC

## MDTP CONSEQUENTIAL-RELATED VALIDITY TABLES

### Results By Course

Algebra Readiness Test – Course Preliminary to AR Test Target (PAR)

College	Course	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		x	n	%	x	n	%	x	n	%
College 03	101	53	74	72%	63	74	85%	47	50	94%
College 04	4	73	95	77%	90	95	95%	68	82	83%
College 05	15	128	172	74%	154	171	90%	116	151	77%
College 09	N48	84	134	63%	116	133	87%	92	107	86%
College 10	35	266	404	66%	367	403	91%	305	378	81%
College 11	N48	209	279	75%	250	275	91%	195	237	82%
Total x and n		813	1,158		1,040	1,151		823	1,005	
Weighted mean proportion		70%			90%			82%		

## Results By Course

Algebra Readiness Test - Intended Course for AR Test Target (IAR)

College	Course	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		x	n	%	x	n	%	x	n	%
College 02	50	97	128	76%	118	127	93%	99	127	78%
College 03	61	0	1	0%	1	1	100%			
College 04	100	75	93	81%	78	94	83%	55	87	63%
College 05	20	156	226	69%	207	226	92%	160	223	72%
	41	47	62	76%	56	62	90%	43	54	80%
College 07	261	39	51	77%	37	51	73%	18	23	78%
College 09	60	44	64	69%	52	64	81%	45	59	76%
College 10	45	196	248	80%	223	249	90%	160	230	70%
	152A 152AA	9	11	82%	11	12	92%			
College 11	60	27	33	82%	29	33	88%	20	23	87%
College 12	830							213	253	84%
Total x and n		690	917		812	919		813	1,079	
Weighted mean proportion				75%			88%			75%

**SUMMARY BY COLLEGE**  
**ALGEBRA READINESS TEST - IAR**

College	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
College 02	76%	93%	78%
College 03		100%	
College 04	81%	83%	63%
College 05	71%	91%	73%
College 07	77%	73%	78%
College 09	69%	81%	76%
College 10	79%	90%	70%
College 10	82%	92%	
College 11	82%	88%	87%
College 12			84%
Number of colleges	9	9	8
Number of colleges $\geq 75\%$	6	8	5

## Results By Course

### Elementary Algebra Diagnostic Test - Course Preliminary to EAD Test Target (PEA)

College	Course	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		x	n	%	x	n	%	x	n	%
College 01	141	113	139	81%	125	140	89%	68	134	51%
College 02	50	120	160	75%	148	160	93%	114	159	72%
College 03	61	46	68	68%	65	66	99%	46	53	87%
College 04	100	84	107	79%	85	106	80%	48	86	56%
College 07	261	31	40	78%	29	39	74%	10	15	67%
College 09	60	71	107	66%	96	107	90%	72	102	71%
College 10	152A 152AA	7	12	58%	11	12	92%			
	45	219	319	69%	296	319	93%	201	288	70%
College 11	60	88	107	82%	94	107	88%	44	70	63%
Total x and n		779	1,059		949	1,056		603	907	
Weighted mean proportion				74%			90%			67%



## Results By Course

Elementary Algebra Diagnostic Test - Intended Course for EAD Test Target (IEA)

College	Course	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		x	n	%	x	n	%	x	n	%
College 01	101	59	73	81%	68	72	94%	42	61	69%
College 02	70	35	45	78%	41	45	91%	34	43	79%
College 03	63	7	9	78%	7	9	78%			
College 04	107	145	170	85%	144	170	85%	97	128	76%
	111	20	24	83%	18	24	75%	17	24	71%
College 05	40	106	149	71%	140	148	95%	83	112	74%
College 07	263	61	79	77%	68	78	87%	38	44	86%
College 08	71	302	375	81%	330	375	88%	217	328	66%
College 09	80	7	10	70%	9	10	90%	4	10	40%
	81	128	163	79%	142	164	87%	72	93	77%
College 10	60	243	336	72%	318	336	95%	223	284	79%
College 11	80	25	28	89%	27	28	96%	25	28	89%
	81	227	279	81%	249	279	89%	163	239	68%
College 12	101							202	246	82%
Total x and n		1,365	1,740		1,561	1,738		1,217	1,640	
Weighted mean proportion				78%			90%			74%

## SUMMARY BY COLLEGE

### ELEMENTARY ALGEBRA DIAGNOSTIC TEST - IEA

College	Student Self-Assessment		Instructor Assessment of Student Preparation
	Appropriate Placement	Adequate Preparation	
College 01	81%	94%	69%
College 02	78%	91%	79%
College 03	78%	78%	78%
College 04	85%	84%	75%
College 05	71%	95%	74 %
College 07	77%	87%	86%
College 08	81%	88%	66%
College 09	78%	87%	74%
College 10	72%	95%	79%
College 11	82%	90%	70%
College 12			82%
Number of colleges	10	10	11
Number of colleges $\geq 75\%$	8	10	6

## Results By Course

Elementary Algebra Diagnostic Test - Course Subsequent to EAD Test Target (SEA)

		Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
College	Course	x	n	%	x	n	%	x	n	%
College 10	70	61	90	68%	85	90	94%	58	70	83%

## Results By Course

Intermediate Algebra Diagnostic Test - Course Preliminary to IAD Test Target (PIA)

College	Course	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		x	n	%	x	n	%	x	n	%
College 01	101	103	122	84%	115	122	94%	50	96	52%
College 02	70	38	76	50%	74	76	97%	62	76	82%
College 03	61	14	17	82%	15	17	88%	13	14	93%
College 04	107	66	94	70%	78	93	84%	57	71	80%
	111	10	11	91%	9	11	82%	7	11	64%
College 07	263	23	30	77%	26	30	87%	15	17	88%
College 10	60	5	8	63%	8	8	100%	6	7	86%
	70	11	17	65%	16	17	94%	14	14	100%
Total x and n		270	375		341	374		224	306	
Weighted mean proportion				72%			91%			73%

## Results By Course

Intermediate Algebra Diagnostic Test - Intended Course for IAD Test Target (IIA)

College	Course	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		x	n	%	x	n	%	x	n	%
College 01	100	41	47	87%	38	47	81%	16	36	44%
	110	31	34	91%	30	32	94%	3	11	27%
College 02	160	9	14	64%	11	14	79%	8	14	57%
College 03	15	2	3	67%	2	3	67%	2	3	67%
College 04	120	50	63	79%	49	62	79%	38	54	70%
	130	21	25	84%	23	25	92%	19	20	95%
	137	29	34	85%	29	34	85%	24	34	71%
College 05	141	10	11	91%	10	11	91%	3	5	60%
College 07	13	3	4	75%	4	4	100%	2	2	100%
College 08	130	70	82	85%	72	82	88%	49	71	69%
College 09	140	30	37	81%	30	37	81%	27	35	77%
	150	25	30	83%	21	30	70%	18	30	60%
College 10	101	1	1	100%	1	1	100%	0	1	0%
	244	10	14	71%	8	8	100%	3	4	75%
College 11	140	26	27	96%	26	27	96%	9	15	60%
	150	20	23	87%	21	23	91%	16	23	70%
College 12	125							52	57	91%
Total x and n		378	449		375	440		289	415	
Weighted mean proportion				84%			85%			70%

## SUMMARY BY COLLEGE

### INTERMEDIATE ALGEBRA DIAGNOSTIC TEST - IIA

College	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
College 01	89%	86%	40%
College 02	64%	79%	57%
College 03	67%	67%	67%
College 04	82%	84%	75%
College 05	91%	91%	60%
College 07	75%	100%	100
College 08	85%	88%	69%
College 09	82%	76%	69%
College 10	73%	100%	60%
College 11	92%	94%	66%
College 12			91%
Number of colleges	10	10	11
Number of colleges $\geq 75\%$	7	9	3

## Results By Course

Precalculus Diagnostic Test - Course Preliminary to PCD Test Target (PPC)

College	Course	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		x	n	%	x	n	%	x	n	%
College 01	101	7	7	100%	7	7	100%	3	5	60%
	110	36	43	84%	38	43	88%	7	20	35%
College 04	114	8	11	73%	11	11	100%	10	10	100%
	117	54	57	95%	54	57	95%	33	33	100%
	120	16	20	80%	17	20	85%	16	18	89%
	130	12	13	92%	12	13	92%	10	11	91%
	137	7	12	58%	13	13	100%	12	13	92%
	138	25	32	78%	29	32	91%	29	32	91%
College 07	13	10	12	83%	10	12	83%	7	8	88%
College 09	170	32	40	80%	35	39	90%	31	41	76%
College 10	244	10	14	71%	13	14	93%	9	11	82%
College 11	170	24	28	86%	24	28	86%	9	21	43%
Total x and n		241	289		263	289		176	223	
Weighted mean proportion				83%			91%			79%

## Results By Course

Precalculus Diagnostic Test - Intended course for PCD Test Target (IPC)

College	Course	Student Self-Assessment						Instructor		
		Appropriate Placement			Adequate Preparation			Assessment of Student Preparation		
		x	n	%	x	n	%	x	n	%
College 01	103	38	41	93%	36	41	88%	19	31	61%
College 02	190	8	8	100%	8	8	100%	7	8	88%
College 03	1A	1	1	100%	1	1	100%	0	1	0.0%
College 04	150	67	73	92%	68	73	93%	62	72	86%
College 05	150A	51	66	77%	60	67	90%	47	61	77%
College 07	20A	11	13	85%	12	13	92%	11	11	100%
College 08	180	77	82	94%	76	82	93%	69	81	85%
College 09	180	20	21	95%	15	21	71%	10	21	48%
College 10	250	12	13	92%	11	13	85%	9	13	69%
College 11	180	39	43	91%	37	43	86%	28	41	68%
College 12	150							32	37	87%
Total x and n		324	361		324	362		294	377	
Weighted mean proportion				90%			90%			78%



## SUMMARY BY COLLEGE

### PRECALCULUS TEST - IPC

College	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
College 01	93%	88%	61%
College 02	100%	100%	88%
College 03	100%	100%	0%
College 04	92%	93%	86%
College 05	77%	90%	77%
College 07	85%	92%	100%
College 08	94%	93%	85%
College 09	95%	71%	48%
College 10	92%	85%	69%
College 11	91%	86%	68%
College 12			87%
Number of colleges	10	10	11
Number of colleges $\geq 75\%$	10	9	6

## SUMMARY OF RESULTS

### ALGEBRA READINESS TEST - IAR

	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
Number of colleges	9	9	8
Number of colleges $\geq 75\%$	6	8	5
Weighted mean proportion	75%	88%	75%

### ELEMENTARY ALGEBRA DIAGNOSTIC TEST – IEA

	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
Number of colleges	10	10	11
Number of colleges $\geq 75\%$	8	10	6
Weighted mean proportion	79%	90%	74%

### INTERMEDIATE ALGEBRA DIAGNOSTIC TEST - IIA

	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
Number of colleges	10	10	11
Number of colleges $\geq 75\%$	7	9	3
Weighted mean proportion	84%	85%	70%

### PRECALCULUS DIAGNOSTIC TEST – IPC

	Student Self-Assessment		Instructor
	Appropriate Placement	Adequate Preparation	Assessment of Student Preparation
Number of colleges	10	10	11
Number of colleges $\geq 75\%$	10	9	6
Weighted mean proportion	90%	90%	78%

## APPENDIX

### College 12 Consequential-Related Validity Analysis Tables

The tables below are taken from the College 12's Fall 2012 Consequential-Related Validity Analysis and Spring 2012 Addendum to the Consequential-Related Validity Analysis. While the tables include all courses that use MDTP scores as part of the multiple measures model, the courses at the Intended level have been highlighted in red to supplement the MDTP consequential-related validity evidence.

The data shows that for these courses

- Faculty Perception of Student Preparedness (Table 3) – “Total Prepared/Mastered” are at least 75%
- Student Perception of Preparedness (Table 5) – “I belong in this class” are at least 75%
- Faculty Perception of Student Preparedness (Table 1) – “Student was appropriately placed” are at least 75%

The courses at the Level Intended for the respective MDTP tests (highlighted in red in the tables below) are:

- Algebra Readiness
  - Math 830, 830A Elementary Algebra (formerly Math 100)
- Elementary Algebra Diagnostic
  - Math 101, 101A Intermediate Algebra
- Intermediate Algebra Diagnostic
  - Math 125 College Algebra
- Precalculus Diagnostic
  - Math 150 Calculus & Analytic Geometry

Tables from Fall 2010 consequential-related validity analysis:

**Table 1: Faculty Perception of Student Preparedness – Placed by MDTP only**

	n	Student is NOT prepared for this level	Student IS prepared for this level	Student has mastered this level	Total Prepared/ Mastered
		%	%	%	%
Math 830	253	17%	70%	14%	84%
Math 101	246	18%	73%	9%	82%
Math 103	38	26%	58%	16%	74%
Math 105	5	20%	80%	0%	80%
Math 115	37	30%	65%	5%	70%
Math 125	57	12%	84%	4%	92%
Math 130	58	31%	45%	24%	69%
Math 135	13	23%	77%	0%	77%
Math 150	37	14%	70%	16%	86%
<b>Grand Total</b>	<b>744</b>	<b>19%</b>	<b>69%</b>	<b>12%</b>	<b>81%</b>

**Table 2: Student Perception of Preparedness**

	n	I should have enrolled in a lower (easier) course	I belong in this course	I should have enrolled in a higher (harder) course
Math 830	264	1%	81%	19%
Math 101	235	0%	89%	11%
Math 103	61	0%	98%	2%
Math 105	5	0%	80%	20%
Math 115	40	3%	93%	5%
Math 125	54	0%	85%	15%
Math 130	70	0%	79%	21%
Math 135	14	0%	93%	7%
Math 150	34	0%	94%	6%
<b>Grand Total</b>	<b>777</b>	<b>1%</b>	<b>86%</b>	<b>14%</b>

Tables from Spring 2012 consequential-related validity addendum

**Table 3: Faculty Perception of Student Preparedness – Placed by MDTP only**

	n	Student should have been placed in a lower class	Student was appropriately placed	Student should have been placed in a higher class	Number Unrated *
Math 820	155	6%	92%	3%	6
Math 830	282	15%	78%	7%	30
Math 101	161	12%	82%	6%	12
Math 103	87	14%	86%	0%	7
Math 105	5	20%	80%	0%	
Math 115	33	6%	94%	0%	2
Math 125	52	13%	75%	12%	6
Math 130	50	6%	84%	10%	1
Math 135	5	0%	100%	0%	1
Math 150	21	10%	90%	0%	
<b>Grand Total</b>	<b>851</b>	<b>11%</b>	<b>83%</b>	<b>5%</b>	

## ATTACHMENTS

- I. Sample of the Student Questionnaire
- II. Sample of the Instructions to the Faculty
- III. CSU/UC MDTP Tests
  - a. Algebra Readiness
    - i. AR50/86
    - ii. AR50/90
  - b. Elementary Algebra Diagnostic
    - i. EA50C86
  - c. Intermediate Algebra Diagnostic
    - i. IA45C86
    - ii. IA45C91
  - d. Precalculus Diagnostic
    - i. PC40C86
    - ii. PC60C86







**End of “CSU/UC MATHEMATICS DIAGNOSTIC TESTING PROJECT  
CONSEQUENTIAL-RELATED VALIDITY EVIDENCE FOR MDTP TESTS”  
NOVEMBER 2012**

# The University of Kansas

**Memo to:** Donna Ames, MDTP Director's Office  
**From:** Doug Glasnapp and John Poggio  
**Date:** January 28, 2013  
**RE:** Preliminary report for the MDTP (Mathematics Diagnostic Testing Project)

In response to requirements of State of California Assembly Bill 3 (1986) and the procedures identified in the California Community Colleges Standards, Policies and Procedures for Assessment Instruments, (2001), the your office submitted material and documentation for review to renew the approval status for four (4) MDTP tests: the Algebra Readiness, Elementary Algebra, Intermediate Algebra, and Precalculus placement tests. The Preliminary Report of findings and recommendations based on the review of the evidence submitted \ follows.

Following past procedures, the Preliminary Report is shared with the sponsor of an instrument prior to the findings being submitted for final review and recommendation by the CCC Matriculation Advisory Assessment Work Group. The intent in sharing the preliminary findings is to communicate the information and provide feedback if material pertinent to the review has not been provided, has been overlooked during the initial review process, or is in need of clarification.

The review process allows time to respond to the Preliminary Report. If there are no additional materials or documentation pertinent to the review at this time, you need not respond to this letter. If there are additional materials that you will provide, they are to be received by us no later than February 14, 2013. After making any modifications in the Preliminary Report necessitated by a consideration of any additional materials provided by your office, findings will be sent to the CCC Matriculation Advisory Assessment Work Group for its final review, discussion and recommendation. It should be noted that it is the Assessment Work Group that will make the final recommendation on the approval status to the CCC Chancellor's Office and that the current feedback is preliminary. The recommendation resulting from the committee's review will be sent to the Chancellor who will decide whether a test will be included on the Community College approved instrument list. The last step in the process after the Chancellor's decision provides an opportunity for an appeal based on the Chancellor's decision. We proceed with the MDTP Preliminary Report.

The November 2012 MDTP Report (Consequential-Related Validity Evidence for the MDTP Tests) addresses a key yet necessary area for Renewal Approval: Consequential Validity. The data and findings addressing each facet of consequential test validation was found to be satisfactory. We are proceeding with this review under the assumption that there has been no change or alteration of MDTP content, items or format since the prior review on those tests submitted for review. Please confirm this in writing. We are not concluding this is either desirable or undesirable, but noting this condition. With that assumption, this review for Renewal proceeds.

The range of colleges representing distinct courses, no doubt instruction and student samples were well planned and conducted. Overall Consequential Validity data and findings and on balance were supportive meeting the CCC Assessment Standards. It must be noted that Content Validation and attention to development and offering of Alternate Forms of the MDTP for students with special needs is yet to be forthcoming, thus leading to a less than Full Approval judgment.

The lengthy report on Consequential Validity evidence (26 pp.) does address the key components: does the MDTP result in evaluation by faculty and by students which support (> 75 percent endorsement) the recommendations of student placement. What is lacking in these data summaries, though not fatal, is complete description of the exact rating scales used (what are the 1 through 5 categories employed?) and the total absence of the percent ratings into each of these scale categories for each analysis (course, test topic and level) presented. Data aggregations across the scales are satisfactory in a strictly summative sense, yet more precise and detailed information would help notably interpretation and “diagnostic” use (e.g., questions of why, who, where, etc.) of results by the reader, reviewers and the eventual college personnel user. For example, while it can be surmised, we are unable to know definitively (or probabilistically), whether students (or faculty) on a campus in a course believed they were over- or under-prepared and then to what extent, etc. This omission of detail was unfortunate and frankly, unnecessary. But this omission does not limit the conclusion of this review: the data summaries provided and findings derived appear to be sufficiently supportive of a recommendation for Provisional Approval at this time. Failure to attend to Content related validity evidence and Alternate Form availability are serious omissions that need to be addressed. The changing conditions in community colleges brought on by College and Career Readiness attention in mathematics make such attention necessary and needed ASAP. As noted earlier, the final judgment on the approval status/level given the quantity of data and interpretation submitted is deferred to the CCCCO Assessment Workgroup.

If you have any questions or need clarification, please contact one of us: Doug Glasnapp ([drg@ku.edu](mailto:drg@ku.edu); 785-864-9692) or John Poggio ([jpoggio@ku.edu](mailto:jpoggio@ku.edu); 785-864-9605). Thank you.

**End of “MDTP PRELIMINARY REPORT 2012/2013”  
from Doug Glasnapp and John Poggio, University of Kansas**

(In response to “CSU/UC MATHEMATICS DIAGNOSTIC TESTING PROJECT  
CONSEQUENTIAL-RELATED VALIDITY EVIDENCE FOR MDTP TESTS”, November  
2012)

CSU/UC  
MATHEMATICS DIAGNOSTIC TESTING PROJECT

CONSEQUENTIAL-RELATED VALIDITY  
EVIDENCE FOR MDTP TESTS

Supplement February 2013

The following is an excerpt from the California Community College Chancellor's Office letter granting "Full Approval" Status for MDTP tests submitted for renewal.

In reviewing the evidence submitted to address the validity Standard, it was noted that in reporting the satisfaction rating data for faculty judgments in the top three rating categories (3, 4, 5) were grouped together. A rating of 5 indicates the student is "Fully Prepared" and the implication is the student should have been placed in a higher level course. Rather than group ratings of 3, 4 and 5, ratings of 2, 3 and 4 should have been grouped to indicate "appropriate or somewhat appropriate" placement.

This Supplement February 2013 report has been revised to add tables and notes below the tables that were originally submitted in February. The revised tables and notes are clearly marked as additions and use the Instructor ratings of 2, 3, and 4 to indicate appropriate or somewhat appropriate placement.

Data submitted in response to California Community colleges Assessment Standards (March 2001, 4<sup>th</sup> edition) for renewal of placement test instruments

This supplement contains additional material in response to the memo providing the “Preliminary Report for the MDTP” from Doug Glasnapp and John Poggio dated January 28, 2013.

**Confirmation that there has been no change or alteration of MDTP content, items or format since prior review on those items submitted for review**

- The MDTP tests submitted for renewal were initially approved in 1992; the approval was renewed in 1999 and again in 2004. The content, item order, and format remain the same as when initially approved.

**Alternate Forms of the MDTP for students with special needs**

- MDTP tests continue to be available in Braille and large text versions. The college or its Students Disability Program and Services division are allowed to provide other accommodations that may be needed. Braille versions may be ordered from the Sacramento Braille Transcribers, Inc. or other transcription services that have specialists in mathematics on staff to review the transcriptions. Upon request, MDTP provides large text versions of the test to colleges.

**Correction to typographical error on page 11 of November 2012 report**

The weighted mean proportions should be 75, 88, and 75.

**Complete description of the exact rating scales used**

Student self-analysis data was collected from two items on the instrument included as the first attachment to the November 2012 MDTP Report.

- Question 3: Students completed the phrase “I now believe that” with one of the following statements.
  1. I should have enrolled in a lower (easier) course – this course is too difficult
  2. I belong in this course
  3. I should have enrolled in a higher (harder) course – this course is too easy
- Question 4: Students were asked, “How do you feel about your academic preparation for this course?” and directed to mark one of five bubbles, of which the first, third, and fifth were labeled as anchors.
  1. I am not prepared for this course
  2. Blank bubble
  3. I am adequately prepared for this course
  4. Blank bubble
  5. I am fully prepared for this course
- Instructor ratings of student preparation for the course were collected from rosters supplied by each instructor. The directions to the instructors as well as the rating scale they were to use were given in the letter included as the second attachment of the November 2012 MDTP Report. Instructors were asked to base their ratings on each “student’s demonstrated skills, understandings, and ability to comprehend course material” and to use the following scale.
  1. Unprepared for the course – probably should be enrolled in a lower course.
  2. Marginally prepared for the course.
  3. Adequately prepared for the course.
  4. Well prepared for the course.
  5. Exceptionally well prepared for the course – possibly should be enrolled in a higher course.

Instructor ratings of student preparation on this scale were subject to each instructor’s interpretation of the difference between ‘marginally’ and ‘adequately’ prepared. It is possible that the same student could have been rated ‘marginally prepared’ by one instructor and ‘adequately prepared’ by another even if both instructors were considering identical factors.

### Percent ratings into each scale category for each analysis

Data tables showing the percent rating for each scale category can be found at the end of this document (see Tables 1 to 7). There will be some differences in overall sample sizes between this document and the November 2012 report, due to the omission of the College 12 data from this document; their data tables in the Appendix to the November 2012 report did show the percent of responses for each scale category.

***It should be noted here that each college that contributed data to this study will be given its own complete data file, along with a recommendation to review the data carefully and consider modifications to their placement matrix and adjustments to their cut scores if a test does not meet the standard of 75 favorable responses locally.*** An additional issue to be considered is the Multiple Measures model used by California community colleges. Most colleges add or subtract one or more points to students' raw test scores based upon a variety of factors deemed to affect the likelihood of student success in a course. We could not separate Multiple Measures points from raw test scores for this analysis. For some colleges and some courses, failure to meet the 75 standard may be a result of an over-generous award of points for factors other than demonstrated mathematical skills.

A summary of the findings for each test level is given here.

- **Courses at the level Intended for each test**

- **Algebra Readiness (Table 1)**

- **Student self-analysis:** Of 916 students, 75.3% said they belong in the course and 21.1% thought they could have enrolled in a higher course. Out of 914 students, 88.4% rated their academic preparation as adequate to full, while only 3.7% said they were not prepared.
    - **Instructor rating of student preparation:** Among 822 students rated by their instructors, 73.0% were rated adequately to well-prepared, 18.7% were rated marginally prepared and only 8.3% were rated unprepared. As indicated in the November 2012 report, 5 of the 8 colleges with Instructor Rating data at this level met the 75 standard. The 3 colleges below the 75% standard (College 04, College 05, and College 06) represent a large portion of the overall sample size at this level (590 of 822 students). Data from these 3 colleges is given below. We note that in each case the percent of students receiving rating 2 'marginally prepared' exceeds that of those who were rated 'unprepared'.

*Note: When grouping ratings of 2-3-4, 8.3% of the 822 students were rated unprepared, 80.7% were rated as marginally to well prepared, and 11.1 % were rated as Exceptionally well-prepared.*

College/rating	1	2	3	4	5	n
College 04	3 (3.6)	25 (30.1)	34 (41.0)	19 (22.9)	2 (2.4)	83
College 05	26 (9.4)	48 (17.3)	105 (37.9)	58 (20.9)	40 (14.4)	277
College 06	23 (10)	47 (20.4)	87 (37.8)	54 (23.5)	19 (8.3)	230

*Note: When grouping ratings of 2-3-4 per the final report from the Chancellor's Office, then no colleges were below the 75% standard. (College 04 is 94%, College 05 is 76.1%, and College 06 is 81.7%)*

- **Courses at the level Intended for each test continued**

- **Elementary Algebra Diagnostic (Table 2)**

- **Student self-analysis:** In the sample of 1739 students, 78.5% said they belong in the course and 17.7% thought they could have enrolled in a higher course. Of the 1738 students who rated their academic preparation for the course, 89.8% rated it as adequate to full, while only 3.9% said they were not prepared.
- **Instructor rating of student preparation:** Instructors rated 1394 students who had been placed via the EAD test. Of them, 73.0% of students were rated adequately to well-prepared, 18.2% were rated marginally prepared, and only 8.8% were rated unprepared. As indicated in the November 2012 report, 6 of the 11 colleges with Instructor Rating data at this level met the 75% standard, and 2 more colleges had 74% favorable instructor ratings. Data from the remaining 3 colleges (College 01, College 08, and College 11), which represent nearly half of the overall sample at this level (656 of the total of 1394), is given below. At each college the percent of students receiving rating 2 'marginally prepared' exceeds that of those who were rated 'unprepared'.

*Note: When grouping ratings of 2-3-4, 8.8% of the 1394 students were rated unprepared, 80.9% were rated as marginally to well prepared, and 10.3% were rated as Exceptionally well-prepared.*

College/rating	1	2	3	4	5	n
College 01	7 (11.5)	12 (19.7)	20 (32.8)	20 (32.8)	2 (3.3)	61
College 08	32 (9.8)	76 (23.2)	107 (32.6)	85 (25.9)	28 (8.5)	328
College 11	30 (11.2)	49 (18.4)	76 (28.5)	89 (33.3)	23 (8.6)	267

*Note: When grouping ratings of 2-3-4 per the final report from the Chancellor's Office, then no colleges were below the 75% standard. (College 01 is 85.3%, College 08 is 81.7%, and College 11 is 80.2%)*

- **Intermediate Algebra Diagnostic (Table 3)**

- **Student self-analysis:** Data from 442 students found that 84.8% said they belong in the course and 9.3% thought they could have enrolled in a higher course. In the sample of 440 students, 85.2% rated their academic preparation as adequate to full, while only 3.2% said they were not prepared.

**Instructor rating of student preparation:** Instructor ratings of 360 students at this level found that 65.8% of students were rated adequately to well-prepared, 20.0% were rated marginally prepared, and 14.2% were rated unprepared. Only 3 of the 11 colleges with Instructor Rating data at this level met the 75% standard. This indicates a disconnect at this level between instructor expectations and course placement recommendations. ***MDTP will advise all its colleges, not just those who contributed data to this report, to review their cut scores and multiple measures models at this level.***

*Note: When grouping ratings of 2-3-4, 5 of 11 colleges met the 75 standard, 1 college was at 72% and another at 74%. The remaining 4 colleges were below 70%. 14.2% of the 360 students were rated unprepared, 78.3% were rated as marginally to well prepared, and 7.5% were rated as Exceptionally well-prepared.*



- **Precalculus Diagnostic (Table 4)**

- Student self-analysis: Of 361 students, 89.8% said they belong in the course and 6.6% thought they could have enrolled in a higher course. Among 362 students, 89.5% rated their academic preparation as adequate to full, while only 3.0% said they were not prepared.

Instructor rating of student preparation: 77.1% of the 340 students in this sample were rated adequately to well-prepared, 15.6% were rated marginally prepared, and only 7.4% were rated unprepared.

*Note: When grouping ratings of 2-3-4, 7.4% of the 340 students were rated unprepared, 80.9% were rated as marginally to well prepared, and 11.8 % were rated as Exceptionally well-prepared.*

- **Courses at the level Preliminary to the target course for each test**

Methods for recommending placement in the course preliminary to the target course vary among the colleges. At some colleges, placement recommendations for a course Preliminary to the target course may be by default, i.e., for any score below the cut score for the target course. Alternatively, students may be advised to take a lower level test; however, that advice is sometimes over-ridden based on the college's review of student transcripts showing prior math courses taken and a reluctance to require students to take another test. The relatively high proportion of students in the AR, EAD, and IAD groups believing they should have enrolled in higher courses could be a result of students' lack of preparation for the placement test and/or inflated self-assessment of the mathematical skills they retain from their previous courses.

**Algebra Readiness (Table 5)**

- Student self-analysis: Among 1,159 students, 70.1% said they belong in the course and 27.3% said they should have enrolled in a higher (easier)\* course. This result is not surprising as this level of placement is often into the lowest college math class offered and many students do not want to admit that they need to take that course. Lack of preparation for the placement test may also contribute to students' poor scores and resulting placement in low level courses. In the sample of 1151 students, 90% rated their academic preparation as adequate to full, and only 3.0% said they were not prepared.

*Note: It should have read 27.3% said they should have enrolled in a higher-level course*

- Instructor rating of student preparation: All 6 colleges met the 75% standard, with percent of students rated adequately to well-prepared ranging from 77% to 94%. The weighted mean percent was 82% out of 1,005 students.

- **Elementary Algebra Diagnostic (Table 6)**

- Student self-analysis: In the sample of 1058 students, 73.6% said they belong in the course and 24.1% said they belong in higher-level course. As at the AR level, this is not surprising. Placement into a course at this level means the student was advised to repeat a course taken in high school, and this is a disappointment for many students. The large discrepancy between students' self-analyses and instructor ratings supports this reasoning. Among 1056 students, 90% rated their academic preparation as adequate to full.

- Instructor rating of student preparation: The instructors rated only 66.5% of the 907 students adequately to well-prepared, 21.6% were rated marginally prepared, and 11.9% were rated unprepared. At only 1 of the 8 colleges with data at this level did the percent of favorable responses exceed 75%. ~~**MDTP will advise all its colleges, not just those who contributed data to this report, to review their cut scores and multiple measures models at this level.**~~

*Note: When grouping ratings of 2-3-4, 11.9% of the 907 students were rated unprepared, 83% were rated as marginally to well prepared, and 5.1 % were rated as Exceptionally well-prepared.*

- **Intermediate Algebra Diagnostic (Table 7)**

- Student self-analysis: Among 375 students at this level, 72% said they belong in the course and 23.7% thought they could have enrolled in a higher course; 91% rated their academic preparation as adequate to full.

Instructor rating of student preparation: In the sample of 306 students, 73.5% were rated adequately to well-prepared, 16.0% were rated marginally prepared, and 10.5% were rated unprepared. One of the 6 colleges with data at this level had a favorable response rate of only 52%, but it accounted for nearly one-third of the sample. The other colleges had favorable response rates ranging from 78% to 95%.

*Note: When grouping ratings of 2-3-4, 10.5% of the 306 students were rated unprepared, 81.4% were rated as marginally to well prepared, and 8.2 % were rated as Exceptionally well-prepared.*

- **Courses at the level Preliminary to the target course for each test continued**

- **Precalculus Diagnostic**

- Student self-analysis: In the sample of 289 students, 83% said they belong in the course and 91% rated their academic preparation as adequate to full.
- Instructor rating of student preparation: As indicated in the November 2012 MDTP report, overall 79% of the sample of 223 students was rated adequately to well-prepared. Further breakdown of data at this level is not given here since the sample sizes are too small (a total of 223 students distributed among 12 courses). The weighted mean was skewed by two courses with n=20 and n=21 that had only 35% and 43% favorable responses, respectively. These could possibly represent just two classes with disgruntled instructors. Except for one course with 5 students rated and 60% favorable responses, all the other classes had favorable response rates ranging from 76% to 100%.

**Additional Data Tables**

Note: columns with favorable responses are shaded.

**Courses at the level Intended for each test**

Table 1  
Algebra Readiness Submitted

COLLEGE	Student Self-Assessment										Instructor Assessment of Student Preparation					
	Appropriate Placement				Adequate Preparation						Appropriate Placement					
	1	2	3	n	1	2	3	4	5	n	1	2	3	4	5	n
College 02	2	97	29	128	5	4	59	16	43	127	8	20	52	37	10	127
College 03	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0
College 04	5	75	13	93	2	14	36	15	27	94	3	25	34	19	2	83
College 05	9	203	76	288	14	11	105	34	124	288	26	48	105	58	40	277
College 06	9	196	43	248	5	21	109	32	82	249	23	47	87	54	19	230
College 07	4	39	8	51	5	9	19	3	15	51	2	3	2	8	8	23
College 09	4	44	15	63	1	11	19	8	25	64	4	10	24	13	8	59
College 10	0	9	2	11	1	0	3	2	6	12	0	0	0	0	0	0
College 11	0	27	6	33	1	3	18	3	8	33	2	1	7	9	4	23
Total Count	33	690	193	916	34	73	369	113	330	919	68	154	311	198	91	822
Percent	3.6	75.3	21.1		3.7	7.9	40.2	12.3	35.9		8.3	18.7	37.8	24.1	11.1	
Percent favorable responses		75.3					88.4							73.0		

Table 1-A

Table 1-A was added to report after Full Approval was given noting that grouping should be 2-3-4

COLLEGE	Student Self-Assessment										Instructor Assessment of Student Preparation					
	Appropriate Placement				Adequate Preparation						Appropriate Placement					
	1	2	3	n	1	2	3	4	5	n	1	2	3	4	5	n
College 02	2	97	29	128	5	4	59	16	43	127	8	20	52	37	10	127
College 03	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0
College 04	5	75	13	93	2	14	36	15	27	94	3	25	34	19	2	83
College 05	9	203	76	288	14	11	105	34	124	288	26	48	105	58	40	277
College 06	9	196	43	248	5	21	109	32	82	249	23	47	87	54	19	230
College 07	4	39	8	51	5	9	19	3	15	51	2	3	2	8	8	23
College 09	4	44	15	63	1	11	19	8	25	64	4	10	24	13	8	59
College 10	0	9	2	11	1	0	3	2	6	12	0	0	0	0	0	0
College 11	0	27	6	33	1	3	18	3	8	33	2	1	7	9	4	23
Total Count	33	690	193	916	34	73	369	113	330	919	68	154	311	198	91	822
Percent	3.6	75.3	21.1		3.7	7.9	40.2	12.3	35.9		8.3	18.7	37.8	24.1	11.1	
Percent favorable responses		75.3					88.4							80.7		

Table 2  
Elementary Algebra Diagnostic

COLLEGE	Student Self-Assessment										Instructor Assessment of Student Preparation					
	Appropriate Placement				Adequate Preparation						Appropriate Placement					
	1	2	3	n	1	2	3	4	5	n	1	2	3	4	5	n
College 01	4	59	10	73	1	3	35	10	23	72	7	12	20	20	2	61
College 02	1	35	9	45	1	3	11	11	19	45	4	6	19	7	7	43
College 03	1	7	1	9	1	1	4	2	1	9						
College 04	9	165	20	194	9	23	84	35	43	194	15	23	55	40	19	152
College 05	3	106	40	149	3	5	52	18	70	148	10	19	37	30	16	112
College 06	8	243	84	335	12	6	137	63	118	336	15	46	85	95	43	284
College 07	3	61	15	79	3	7	33	10	25	78	2	4	17	17	4	44
College 08	18	302	55	375	22	23	150	61	119	375	32	76	107	85	28	328
College 09	8	135	30	173	6	18	77	26	47	174	8	19	45	29	2	103
College 11	11	252	44	307	10	21	161	36	79	307	30	49	76	89	23	267
Total Count	66	1365	308	1739	68	110	744	272	544	1738	123	254	461	412	144	1394
Percent	3.8	78.5	17.7		3.9	6.3	42.8	15.7	31.3		8.8	18.2	33.1	29.6	10.3	
Percent favorable responses		78.5						89.8						73.0		

Table 2-A  
Table 2-A was added to report after Full Approval was given noting that grouping should be 2-3-4

COLLEGE	Student Self-Assessment										Instructor Assessment of Student Preparation					
	Appropriate Placement				Adequate Preparation						Appropriate Placement					
	1	2	3	n	1	2	3	4	5	n	1	2	3	4	5	n
College 01	4	59	10	73	1	3	35	10	23	72	7	12	20	20	2	61
College 02	1	35	9	45	1	3	11	11	19	45	4	6	19	7	7	43
College 03	1	7	1	9	1	1	4	2	1	9						
College 04	9	165	20	194	9	23	84	35	43	194	15	23	55	40	19	152
College 05	3	106	40	149	3	5	52	18	70	148	10	19	37	30	16	112
College 06	8	243	84	335	12	6	137	63	118	336	15	46	85	95	43	284
College 07	3	61	15	79	3	7	33	10	25	78	2	4	17	17	4	44
College 08	18	302	55	375	22	23	150	61	119	375	32	76	107	85	28	328
College 09	8	135	30	173	6	18	77	26	47	174	8	19	45	29	2	103
College 11	11	252	44	307	10	21	161	36	79	307	30	49	76	89	23	267
Total Count	66	1365	308	1739	68	110	744	272	544	1738	123	254	461	412	144	1394
Percent	3.8	78.5	17.7		3.9	6.3	42.8	15.7	31.3		8.8	18.2	33.1	29.6	10.3	
Percent favorable responses		78.5						89.8						80.9		

Table 3  
Intermediate Algebra Diagnostic

COLLEGE	Student Self-Assessment										Instructor Assessment of Student Preparation					
	Appropriate Placement				Adequate Preparation						Appropriate Placement					
	1	2	3	n	1	2	3	4	5	n	1	2	3	4	5	n
College 01	4	72	4	80	3	8	46	7	15	79	13	15	11	8	0	47
College 02	1	9	4	14	1	2	5	2	4	14	2	4	4	4	0	14
College 03	1	2	0	3	0	1	1	0	1	3	1	0	2	0	0	3
College 04	8	100	14	122	4	16	55	23	23	121	6	21	47	29	5	108
College 05	0	10	1	11	0	1	3	2	5	11	0	2	1	1	1	5
College 06	0	8	1	9	0	0	2	3	4	9	1	1	1	1	1	5
College 07	0	3	1	4	0	0	1	2	1	4	0	0	0	1	1	2
College 08	4	70	8	82	0	10	33	12	27	82	14	10	22	16	11	73
College 09	6	55	6	67	5	11	33	9	9	67	9	11	34	8	3	65
College 11	2	46	2	50	1	2	29	7	11	50	5	8	12	8	5	38
Total Count	26	375	41	442	14	51	208	67	100	440	51	72	134	76	27	360
Percent	5.9	84.8	9.3		3.2	11.6	47.3	15.2	22.7		14.2	20.0	37.2	21.1	7.5	
Percent favorable responses		84.8					85.2						65.8			

Table 3-A  
Table 3-A was added to report after Full Approval was given noting that grouping should be 2-3-4

COLLEGE	Student Self-Assessment										Instructor Assessment of Student Preparation					
	Appropriate Placement				Adequate Preparation						Appropriate Placement					
	1	2	3	n	1	2	3	4	5	n	1	2	3	4	5	n
College 01	4	72	4	80	3	8	46	7	15	79	13	15	11	8	0	47
College 02	1	9	4	14	1	2	5	2	4	14	2	4	4	4	0	14
College 03	1	2	0	3	0	1	1	0	1	3	1	0	2	0	0	3
College 04	8	100	14	122	4	16	55	23	23	121	6	21	47	29	5	108
College 05	0	10	1	11	0	1	3	2	5	11	0	2	1	1	1	5
College 06	0	8	1	9	0	0	2	3	4	9	1	1	1	1	1	5
College 07	0	3	1	4	0	0	1	2	1	4	0	0	0	1	1	2
College 08	4	70	8	82	0	10	33	12	27	82	14	10	22	16	11	73
College 09	6	55	6	67	5	11	33	9	9	67	9	11	34	8	3	65
College 11	2	46	2	50	1	2	29	7	11	50	5	8	12	8	5	38
Total Count	26	375	41	442	14	51	208	67	100	440	51	72	134	76	27	360
Percent	5.9	84.8	9.3		3.2	11.6	47.3	15.2	22.7		14.2	20.0	37.2	21.1	7.5	
Percent favorable responses		84.8					85.2						78.3			

Table 4  
Precalculus Diagnostic

COLLEGE	Student Self-Assessment										Instructor Assessment of Student Preparation					
	Appropriate Placement				Adequate Preparation						Appropriate Placement					
	1	2	3	n	1	2	3	4	5	n	1	2	3	4	5	n
College 01	3	38	0	41	1	4	21	3	12	41	7	5	13	5	1	31
College 02	0	8	0	8	0	0	2	3	3	8	0	1	3	4	0	8
College 03	0	1	0	1	0	0	0	0	1	1	0	1	0	0	0	1
College 04	1	67	5	73	3	2	27	18	23	73	0	10	19	37	6	72
College 05	2	51	13	66	3	4	25	14	21	67	5	9	15	17	15	61
College 06	0	12	1	13	0	2	6	0	5	13	1	3	4	4	1	13
College 07	0	11	2	13	0	1	4	4	4	13	0	0	2	7	2	11
College 08	3	77	2	82	2	4	39	14	23	82	4	8	30	31	8	81
College 09	1	20	0	21	0	6	12	3	0	21	3	8	6	4	0	21
College 11	3	39	1	43	2	4	25	3	9	43	5	8	9	12	7	41
Total Count	13	324	24	361	11	27	161	62	101	362	25	53	101	1231	40	340
Percent	3.6	89.8	6.6		3.0	7.5	44.5	17.1	27.9		7.4	15.6	29.7	35.6	11.8	
Percent favorable responses		89.8						89.5						77.1		

Table 4-A

*Table 4-A was added to report after Full Approval was given noting that grouping should be 2-3-4*

COLLEGE	Student Self-Assessment										Instructor Assessment of Student Preparation					
	Appropriate Placement				Adequate Preparation						Appropriate Placement					
	1	2	3	n	1	2	3	4	5	n	1	2	3	4	5	n
College 01	3	38	0	41	1	4	21	3	12	41	7	5	13	5	1	31
College 02	0	8	0	8	0	0	2	3	3	8	0	1	3	4	0	8
College 03	0	1	0	1	0	0	0	0	1	1	0	1	0	0	0	1
College 04	1	67	5	73	3	2	27	18	23	73	0	10	19	37	6	72
College 05	2	51	13	66	3	4	25	14	21	67	5	9	15	17	15	61
College 06	0	12	1	13	0	2	6	0	5	13	1	3	4	4	1	13
College 07	0	11	2	13	0	1	4	4	4	13	0	0	2	7	2	11
College 08	3	77	2	82	2	4	39	14	23	82	4	8	30	31	8	81
College 09	1	20	0	21	0	6	12	3	0	21	3	8	6	4	0	21
College 11	3	39	1	43	2	4	25	3	9	43	5	8	9	12	7	41
Total Count	13	324	24	361	11	27	161	62	101	362	25	53	101	1231	40	340
Percent	3.6	89.8	6.6		3.0	7.5	44.5	17.1	27.9		7.4	15.6	29.7	35.6	11.8	
Percent favorable responses		89.8						89.5						80.9		

**Courses Preliminary to the Target Course for each test**

Table 5  
Algebra Readiness – courses Preliminary to the AR test target

COLLEGE	Student Self-Assessment Appropriate Placement			
	1	2	3	n
College 03	4	53	17	74
College 04	0	73	22	95
College 05	5	128	39	172
College 06	12	266	127	405
College 09	6	84	44	134
College 11	3	209	67	279
Total Count	30	813	316	1159
Percent	2.6	70.1	27.3	
Percent favorable responses		70.1		

Table 6  
Elementary Algebra Diagnostic– courses Preliminary to the EAD test target

COLLEGE	Student Self-Assessment Appropriate Placement				Instructor Assessment of Student Preparation					
	1	2	3	n	1	2	3	4	5	n
College 01	2	113	24	139	29	37	44	22	2	134
College 02	4	120	36	160	19	26	58	51	5	159
College 03	1	46	21	68	2	5	20	20	6	53
College 04	2	84	20	106	8	30	36	9	3	86
College 06	5	219	95	319	30	57	96	82	23	288
College 07	5	31	4	40	3	2	4	4	2	15
College 09	3	71	33	107	9	21	42	27	3	102
College 10	0	7	5	12	0	0	0	0	0	0
College 11	2	88	17	107	8	18	23	19	2	70
Total Count	24	779	255	1058	108	196	323	234	46	907
Percent	2.3	73.6	24.1		11.9	21.6	35.6	25.8	5.1	
Percent favorable responses		73.6						66.5		

Table 6-A  
*Table 6-A was added to report after Full Approval was given noting that grouping should be 2-3-4*

COLLEGE	Student Self-Assessment Appropriate Placement				Instructor Assessment of Student Preparation					
	1	2	3	n	1	2	3	4	5	n
College 01	2	113	24	139	29	37	44	22	2	134
College 02	4	120	36	160	19	26	58	51	5	159
College 03	1	46	21	68	2	5	20	20	6	53
College 04	2	84	20	106	8	30	36	9	3	86
College 06	5	219	95	319	30	57	96	82	23	288
College 07	5	31	4	40	3	2	4	4	2	15
College 09	3	71	33	107	9	21	42	27	3	102
College 10	0	7	5	12	0	0	0	0	0	0
College 11	2	88	17	107	8	18	23	19	2	70
Total Count	24	779	255	1058	108	196	323	234	46	907
Percent	2.3	73.6	24.1		11.9	21.6	35.6	25.8	5.1	
Percent favorable responses		73.6						83.0		



Table 7  
Intermediate Algebra Diagnostic– courses Preliminary to the IAD test target

COLLEGE	Student Self-Assessment Appropriate Placement				Instructor Assessment of Student Preparation					
	1	2	3	n	1	2	3	4	5	n
College 01	8	103	11	122	18	28	33	15	2	96
College 02	2	38	36	76	3	11	22	32	8	76
College 03	0	14	3	17	0	0	9	4	1	14
College 04	4	76	25	105	9	9	38	21	5	82
College 06	0	16	9	25	0	1	7	6	7	21
College 07	2	23	5	30	2	0	9	4	2	17
Total Count	16	270	89	375	32	49	118	82	25	306
Percent	4.3	72.0	23.7		10.5	16.0	38.6	26.8	8.2	
Percent favorable responses		72.0						73.5		

Table 7-A

*Table 7-A was added to report after Full Approval was given noting that grouping should be 2-3-4*

COLLEGE	Student Self-Assessment Appropriate Placement				Instructor Assessment of Student Preparation					
	1	2	3	n	1	2	3	4	5	n
College 01	8	103	11	122	18	28	33	15	2	96
College 02	2	38	36	76	3	11	22	32	8	76
College 03	0	14	3	17	0	0	9	4	1	14
College 04	4	76	25	105	9	9	38	21	5	82
College 06	0	16	9	25	0	1	7	6	7	21
College 07	2	23	5	30	2	0	9	4	2	17
Total Count	16	270	89	375	32	49	118	82	25	306
Percent	4.3	72.0	23.7		10.5	16.0	38.6	26.8	8.2	
Percent favorable responses		72.0						81.4		

**End of “CSU/UC MATHEMATICS DIAGNOSTIC TESTING PROJECT  
CONSEQUENTIAL-RELATED VALIDITY EVIDENCE FOR MDTP TESTS”  
Supplement February 2013**

STATE OF CALIFORNIA

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CALIFORNIA COMMUNITY COLLEGES  
CHANCELLOR'S OFFICE

1102 Q STREET  
SACRAMENTO, CA 95814-6511  
(916) 445-8752  
HTTP://WWW.CCCCO.EDU

March 14, 2013

Donna M Ames  
University of California San Diego  
9500 Gilman Drive  
La Jolla CA 92093-0112

Dear Ms. Ames:

The materials submitted on behalf of the four MDTP test areas (Algebra Readiness Forms AR50/86 and AR50/90, Elementary Algebra Form EA50C86, Intermediate Algebra Forms IA45C86 and IA45C91 and Precalculus Forms PC40C86 and PC 60C86) for approval renewal to support course placement decisions in the California community colleges have been reviewed and evaluated. Our psychometric consultants, members of the Chancellor's staff, and the appointed campus-based assessment review committee considered the original set of documents and reviewed the supplemental information provided during this review cycle. The guidelines followed for test review are contained in the *Standards, Policies and Procedures for the Evaluation of Assessment Instruments Used in the California Community Colleges* (4th Edition, 2001).

In reviewing the evidence submitted to address the validity Standard, it was noted that in reporting the satisfaction rating data for faculty, judgments in the top three rating categories (3, 4, 5) were grouped together. A rating of 5 indicates the student is "Fully Prepared" and the implication is the student should have been placed in a higher level course. Rather than group ratings of 3, 4 and 5, ratings of 2, 3 and 4 should have been grouped to indicate "appropriate or somewhat appropriate" placement. When the latter grouping is made, the faculty judgments of students appropriately placed reach or exceed the 75% criterion required by the Standards. Based on the composite of the faculty and student evidence submitted to address the Validity Standard, these data were judged to be acceptable and sufficient. Thus, **Full Approval** status is awarded for all test forms.

Upon your consideration of these findings, an Appeals process is available to publishers if there are concerns or matters of significant disagreement regarding the review and final action. These procedures, should you wish to pursue an appeal, are detailed in the assessment Standards.

Should you have questions, need additional information or clarification, please do not hesitate to contact me in my office (916) 323-0799. I am willing to provide you with whatever information or assistance you may find necessary. You may also contact Dr. John Poggio (785-864-9605) or Dr. Doug Glasnapp (785- 550-6309), psychometric consultants to the Chancellor's Office.

Sincerely,

Kimberly McDaniel, Ph.D.  
Assessment Coordinator  
[kmcdaniel@CCCCO.edu](mailto:kmcdaniel@CCCCO.edu)  
(916) 323-0799

**End of Final Report from California Community College Chancellor's Office**