



Universidad de Puerto Rico
Recinto Universitario de Mayagüez
SENADO ACADEMICO

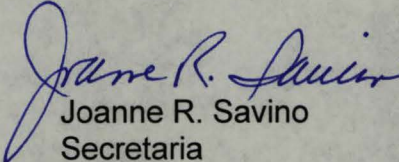
CERTIFICACION NUMERO 01-1

La que suscribe, Secretaria del Senado Académico del Recinto Universitario de Mayagüez de la Universidad de Puerto Rico, **CERTIFICA** que en reunión ordinaria celebrada el martes, 23 de enero de 2001, este organismo **aprobó el Informe del Comité de Asuntos Académicos relacionado con la Evaluación del examen de ubicación avanzada en Matemáticas.**

Las recomendaciones aprobadas son las siguientes:

1. Que el Recinto no prepare ni administre una prueba de ubicación que sustituya al Examen de Ubicación Avanzada I.
2. Que se acepte el procedimiento recomendado por el Departamento de Matemáticas, en el sentido de que se conceda crédito por el curso MATE 3171 a todo estudiante que haya obtenido una puntuación de 3 en el Examen de Nivel Avanzado II y una puntuación entre 725 y 800 en el Examen de Aprovechamiento en Matemáticas del CEEB.

Y para que así conste, expido y remito la presente certificación a las autoridades universitarias correspondientes, bajo el Sello de la Universidad de Puerto Rico a los catorce días del mes de febrero del año dos mil uno, en Mayagüez, Puerto Rico.


Joanne R. Savino
Secretaria



All students entering the University of Puerto Rico at Mayagüez with a score of 650 or less on the CEEB Mathematics Achievement Section will be required to participate in the Precalculus Intervention System. Of these students scoring 650 or less

- all who score less than 50% on the Diagnostic Examination will be required to attend the Precalculus Intervention Laboratory program for at least one semester before enrolling in Precalculus.
- all who score between 50% and 65% will be cautioned that they are under-prepared for Precalculus I and stand a risk to fail this course. They have the option to voluntarily withdraw from the course to attend the Precalculus Intervention Laboratory.
- all who score above 65% will pass on directly to Precalculus I without an warning.



8 de diciembre de 1998

Aprobado
14/mayo/99

A : Los miembros del Senado Académico

Certificación Números
99-15

Antonio A. González

DE : Sen. Antonio González Quevedo
Presidente
Comité de Asuntos Académicos

ASUNTO : PROPUESTA RELACIONADA CON EL PROGRAMA DE INTERVENCIÓN DE PRECÁLCULO DEL DEPARTAMENTO DE MATEMÁTICAS

El Comité de Asuntos Académicos tuvo ante su consideración la Propuesta relacionada con el Programa de Intervención de Precálculo del Departamento de Matemáticas. Luego de estudiar la misma el Comité recomienda lo siguiente:

1. Requerir a todos los estudiantes que obtengan una puntuación de 650 o menos en aprovechamiento en matemáticas en el examen de CEEB, que tomen al menos un examen diagnóstico a ser preparado por el Departamento de Matemáticas del Recinto. Aquellos que obtengan una puntuación menor de 50% en dicho examen, se verán obligados a asistir al Laboratorio de Intervención de precálculo, por lo menos durante un semestre antes de poderse matricular en el curso de precálculo.
2. Todos los estudiantes que obtengan entre 50 y 65 por ciento en el examen diagnóstico serán advertidos que están en riesgo de fracasar el curso de precálculo y podrán voluntariamente retirarse del curso y asistir al Laboratorio de Intervención de precálculo.
3. Los estudiantes que obtengan más del 65 por ciento en el examen diagnóstico pasarán directamente a tomar precálculo sin notificación alguna.
4. Solicitamos que se mantengan estadísticas sobre el aprovechamiento de los estudiantes que participan de este programa.

AGQ:lpm

Anejo





Universidad de Puerto Rico
Recinto Universitario de Mayagüez

Oficina del Decano de Asuntos Académicos

14 de abril de 1998

Dr. Fred V. Soltero Harrington
Rector y Presidente Interino
Senado Académico
Recinto Universitario de Mayagüez

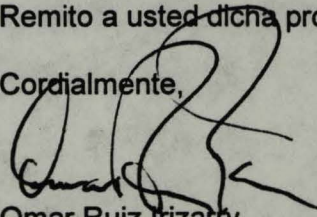
Estimado señor Presidente:

El Departamento de Matemáticas de la Facultad de Artes y Ciencias, nos ha enviado la propuesta que se acompaña con relación al Programa de Intervención de Precálculo, la cual incluye los siguientes puntos:

1. Requerir a todos los estudiantes que obtengan una puntuación de 650 o menos en la parte de matemáticas del examen de ingreso a colegio, que tomen un examen diagnóstico a ser preparado por el Departamento de Matemáticas del Recinto. Aquellos que obtengan una puntuación menor de 50% en dicho examen, se verán obligados a asistir al Laboratorio de Intervención de precálculo, por lo menos durante un semestre antes de poderse matricular en el curso de precálculo.
2. Todos los estudiantes que obtengan entre 50 y 65 por ciento en el examen diagnóstico serán advertidos que están en riesgo de fracasar el curso de precálculo y podrán voluntariamente retirarse del curso y asistir al Laboratorio de Intervención de precálculo.
3. Los estudiantes que obtengan 65 por ciento o más en el examen diagnóstico pasarán directamente a tomar precálculo sin notificación alguna.

Remito a usted dicha propuesta para consideración del Senado Académico.

Cordialmente,


Omar Ruiz Trizarry
Decano Interino



The Precalculus Intervention System

Submitted to the Office of Academic Affairs
By Deborah Moore
March 19, 1998

The University of Puerto Rico at Mayagüez serviced 71 sections of Precalculus I (50 of MATE 3171, 16 of MATE 3173, 4 of MATE 3043, 1 of MATE 3005)* for the fall semester of 1997. These classes accounted for a student population of 2,242. Many students entered this class under-prepared. Typically less than half of the students enrolled in Precalculus I pass the course with a grade of A, B, or C. In fact many must repeat the course several times before passing it.

Consider, for example, the 53 freshmen who entered the university in the fall semester of 1991 with College Entrance Examination Board (CEEB) Mathematics Achievement scores between 1 and 500. In order to produce 20 grades of C or better with this group, the course was taken 129 times. (Note: Even with 129 attempts, some students in this group had still not been successful.) This averages out to each student taking the course 6.5 times before he/she successfully completed it. The table below gives the average number of times the course need be taken for a student to pass.

TABLE 1. *Repetitions of Precalculus*

CEEB MATHEMATICS ACHIEVEMENT SCORE	1991	1992	1993
1-500	6.5	7.5	7.8
501-525	4.5	4.1	7
526-550	3.1	3.2	6.1
551-575	3	2.9	4.8
576-600	2.4	2.5	3.5
601-625	1.9	2	2.4
626-650	1.6	1.5	2.1
651-675	1.4	1.2	1.5
676-700	1.2	1.2	1.3
701-800	1	1.1	1.2

The Precalculus Intervention System was implemented this academic year beginning in the summer of 1997 to help deal with the typically high attrition rate for Precalculus I. The Office of Academic Affairs with the cooperation of the College of Arts and Sciences and the Department of Mathematics initiated this effort.

As a part of the Precalculus Intervention System, two diagnostic examinations were given during the summer to all incoming freshmen (one at the beginning of the

* Note that as of this semester MATE 3043 is no longer a separate course for mathematics majors. They now take the MATE 3173 course. Also note that the MATE 3005 course had a population of only 17 students. So for the statistics provided below, only MATE 3171 and MATE 3173 were used.

summer and one during Freshman Orientation Week). Students were informed of their scores on the same day that they took the first examination. The results were given in six areas: Numbers & the Properties, Arithmetic, Ratio & Proportion, Algebra, Geometry, and Graphing. Free workshops were offered over these topics during the summer (see Table 2 below). Materials over these topics were also made available for checkout in the Library during the summer.

Table 2. *Summer Workshop Attendance*

Summer Workshop Topics	Students Attending
Numbers and Their Properties	331
Arithmetic	219
Ratio and Proportion	342
Algebra	325
Geometry	282
Graphing	242

Students were informed of any deficiencies they had and were given the opportunity to study in those weak areas. At the end of the summer during their Orientation Week, students took a similar diagnostic examination. Again they were given the results in the six areas. At this point, students who scored less than 80% on that exam were warned that they might possibly fail Precalculus I. They were asked to consider dropping the course and enrolling in the 0-credit PI class for the fall semester to

Table 3. *Precalculus Intervention Laboratory Attendance*

Week	Students enrolled in 0-credit class	Others coming in for help	Total Laboratory Attendance
Sept 7-13	224	60	284
Sept 15-19	201	96	297
Sept 22-26	224	68	292
Sept 29-Oct 3	238	141	379
Oct 6-10	231	171	402
Oct 13-17	217	179	396
Oct 20-24	226	75	301
Oct 27-31	216	103	319
Nov 3-7	176	73	249
Nov 10-14	180	55	235
Nov 17-21	154	175	329
Nov 24-26	103	50	153
Dec 1-5	128	90	218
Dec 8-12	-	270	270

strengthen their mathematics skills. This again was a voluntary program. Approximately 230 students decided to enroll in the Laboratory during the fall with many other students who are enrolled in Precalculus I coming in for tutoring when it was needed. In all the laboratory had an average weekly attendance of 295 students (see Table 3).

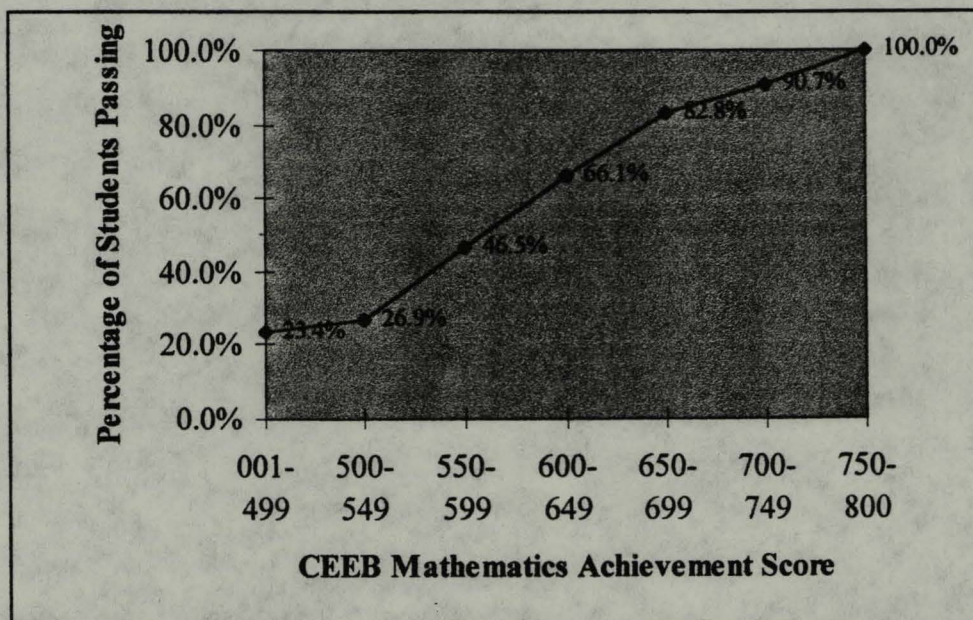
While the average passing rate for Precalculus in the fall had been 48%, Table 4 shows that the percentage of students passing this course with a grade of A, B or C is much higher with the Precalculus Intervention System.

Table 4. *Fall Passing Rates for Precalculus*

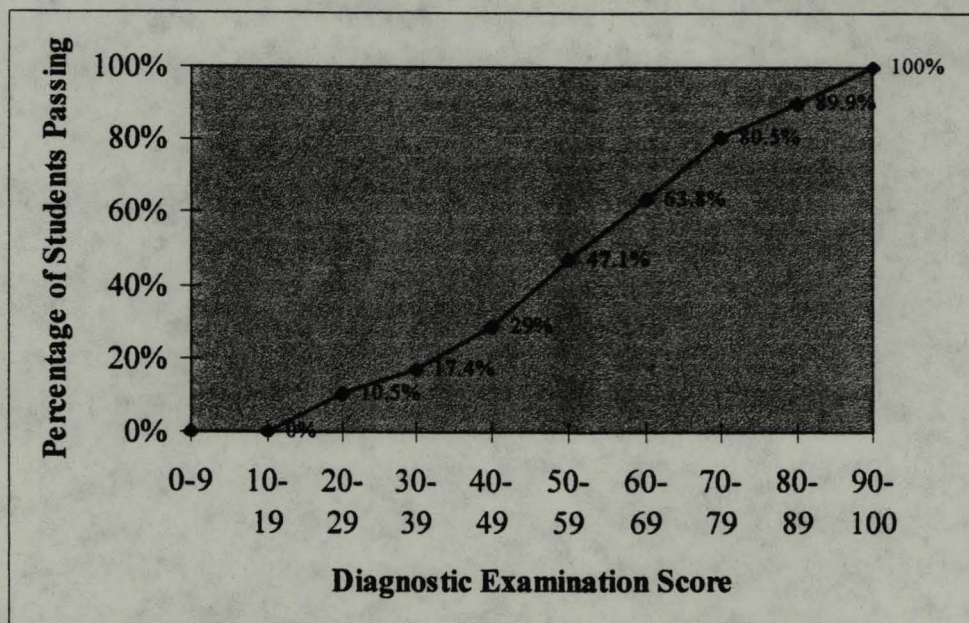
	Pass Rate	Fail Rate	Withdrawal Rate
Averages for Fall 93, Fall 94, Fall 95, Fall 96	48%	24%	28%
Fall 1997 with Precalculus Intervention System	59%	18%	23%

Both the CEEB Mathematics Achievement Score and the Diagnostic Examination used as a part of the Precalculus Intervention System are good indicators of success. Graphs A and B demonstrate the students who attain higher scores on the CEEB Mathematics Achievement section or on the Diagnostic Examination are more likely to pass Precalculus I.

GRAPH A. *Students Passing Precalculus vs. CEEB Mathematics Achievement Score*



GRAPH B. *Students Passing Precalculus vs. Diagnostic Examination Score*



The Mathematics Department unanimously voted last semester to use the Diagnostic Examination as a prerequisite for Precalculus I. This department has requested that students be required to obtain a minimal score on the Diagnostic Examination before entering this course. This department is also working on creating a single sequence for Precalculus. Rather than offering both MATE 3171 and MATE 3173, the department is taking the best practices from each course to create a single Precalculus course sequence. (Note this was just done for the Calculus sequence last semester.) The separate courses are not as equal as they should be. This is evidenced in Table 5 below.

TABLE %. *Average CEEB Mathematics Achievement Scores for MATE 3171/3173*

Grade received in class	MATE 3171	MATE 3173
A	647	690
B	626	668
C	597	648
D	569	643
F	555	613
W	541	611

In light of this, we would like to offer the following proposal.