



Los Angeles Community College District

COURSE OUTLINE

(Replaces PNCR and Course Outline)

Section I: BASIC COURSE INFORMATION

OUTLINE STATUS: Course Update 2005-2006

1. COLLEGE: Southwest

2. SUBJECT (DISCIPLINE) NAME¹: Mathematics

(40 characters, no abbreviations)

3. COURSE NUMBER: 236

4. COURSE TITLE: Calculus for Business and Social Sciences

5. UNITS: 5

6. CATALOG COURSE DESCRIPTION -- Provide a description of the course, including an overview of the topics covered:

This course covers techniques of limits, differentiation; maximum-minimum problems; curve sketching; implicit differentiation; techniques of integration and differential equations. Special emphasis is placed on business and economics applications related to system optimization, cost and revenue analysis, marginal analysis and consumer and producer surplus.

7. CLASS SCHEDULE COURSE DESCRIPTION -- Provide a brief description of the course, including an overview of the topics covered:

[Empty box for class schedule course description]

8. INITIAL COLLEGE COURSE APPROVAL DATE: before 1990
COLLEGE OUTLINE APPROVAL DATE: September 20, 2005

9. UPDATES (check all applicable boxes):

- Content Last Update:
Objectives Last Update:
College Specific Course Attributes/Data Elements Last Update:
Districtwide Course Attributes/Data Elements Last Update:
Other (describe) Last Update:

Course description; prerequisite validation

1 Underlined course attributes are the same for the course throughout the LACCD; all other course attributes are college specific.

10. CLASS HOURS:

	"Standard Hours" per Week (based on 18 weeks)	Total Hours per Term (hrs per week x 18)	Units
Lecture:	5	90	5
Lab/activity (w/ homework):			0
Lab/activity (w/o homework):			0
Total:	5	90	5

Note: The Carnegie Rule and Title 5, section 55002 sets forth the following minimum standards: 1 unit = 1 hour lecture per week, 2 hours homework per week; **OR** 2 hours per week of lab with homework; **OR** 3 hours of lab per week without homework. The hours per week are based on a standard 18-week calendar. Lecture also includes discussion and/or demonstration hours, laboratory includes activity and/or studio hours.

11. PREREQUISITES, COREQUISITES, ADVISORIES ON RECOMMENDED PREPARATION, and LIMITATION ON ENROLLMENT

Note: The LACCD's *Policy on Prerequisites, Corequisites and Advisories* requires that the curriculum committee take a separate action verifying that a course's prerequisite, corequisite or advisory is an "appropriate and rational measure of a student's readiness to enter the course or program" and that the prerequisite, corequisite or advisory meets the level of scrutiny delineated in the policy.

ENTRY SKILLS FOR COURSES WITH PREREQUISITES:

1. Solving linear and quadratic equations
2. Solving linear system of equations, inequalities and matrices
3. Rational and exponential expressions and applications
4. Solving exponential and logarithmic equations

Prerequisites: **Yes** (If Yes, complete information below)

Subject	Number	Course Title	Units	Validation Approval Date (official use only)
Mathematics	125	Intermediate Algebra	5	9/20/2005 (previously 2/17/98)

Corequisite: **None** (If Yes, complete information below)

Subject	Number	Course Title	Units	Validation Approval Date (official use only)

Advisories: **None** (If Yes, complete information below)

Subject	Number	Course Title	Units	Validation Approval Date (official use only)

12. REPETITIONS -- Number of times course may be repeated for credit (three maximum): 0 NONE (see: Section V, #9)

13. OTHER LIMITATIONS ON ENROLLMENT (see Title 5, Section 58106 and Board Rule 6803 for policy on allowable limitations. Other appropriate statutory or regulatory requirements may also apply):

None

Section II: COURSE CONTENT AND OBJECTIVES

1. COURSE CONTENT AND OBJECTIVES:

COURSE CONTENT AND SCOPE –Lecture: If applicable, outline the topics included in the lecture portion of the course (<i>outline reflects course description, all topics covered in class</i>).	Hours per topic	COURSE OBJECTIVES - Lecture (If applicable): Upon successful completion of this course, the student will be able to... (<i>Use action verbs – see Bloom’s Taxonomy below for “action verbs requiring cognitive outcomes.”</i>)
<ul style="list-style-type: none"> ○ Linear, Quadratic, Polynomial and Rational functions. Exponential and logarithmic functions ○ Introduction to limits. Limits and Continuity. The Derivative. Derivatives of products and quotients. Chain rule. ○ Marginal analysis in Business and Economics ○ Graphing and optimization. Absolute Maxima and Minima ○ Derivatives of logarithmic and Exp. Functions. Chain rule. Implicit differentiation. Related rates. ○ Integration by substitution. Differential equations, growth and decay. Definite integral. Fundamental theorem of calculus ○ Area between curves. Integration by parts. Integration using tables. ○ Differential equations. ○ Trigonometric functions. 	10 10 10 10 10 10 10 10	Upon successful completion of this course, the student will be able to : <ol style="list-style-type: none"> 1. Calculate limits and find intervals of continuity. 2. Find derivative of a function using secant lines and limits. 3. Calculate and interpret the first and second derivative in applied business models for functions of one or more variables. 4. Analyze and sketch business functions (cost, revenue, profit, supply-demand) using techniques of calculus. 5. Do curve sketching by using the first and second derivative test to find increasing and decreasing intervals, extrema points, points of inflection and concavity. 6. Use implicit differentiation. 7. Implement the rules of differentials in applying exponential and logarithmic functions emphasizing finance, population growth, decay and leaning model problems. 8. Use marginal analysis in the study of business functions. 9. Develop realistic mathematical models for business problems (maximizing area, revenue, profit, number of participants, volume and minimizing costs, materials, storage facilities, etc.) 10. Use integration and other given information to find total cost, revenue and profit function. 11. Apply the fundamental rule of calculus to find area. 12. Sketch and find consumer and producer surplus integral. 13. Use integral rules to do integration by substitution, integration by tables, and integration by parts.

		<p align="center"><u>Student Learning Outcomes</u></p> <p>As a result of this learning experience, a student can:</p> <ol style="list-style-type: none"> 1. Set up and solve word problems involving linear, quadratic, exponential, radical and logarithmic equations. 2. Calculate derivatives and solve logarithmic equations.
Total Lecture hours*	90	

<p>COURSE CONTENT AND SCOPE --</p> <p>Laboratory: If <u>applicable</u>, outline the topics included in the laboratory portion of the course (<i>outline reflects course description, all topics covered in class</i>).</p>	<p>Hours per Topic</p>	<p>COURSE OBJECTIVES - Laboratory (If applicable): Upon successful completion of this course, the student will be able to... (<i>Use action verbs – see Bloom’s Taxonomy below for “action verbs requiring cognitive outcomes.”</i>)²</p>
	0	
Total Lab hours*		

*Total lecture and laboratory hours (which include the final examination) must equal totals on page 1.

Bloom’s Taxonomy

SIMPLE SKILLS <<----->> COMPLEX SKILLS					
			Critical Thinking		
<u>Knowledge</u>	<u>Comprehension</u>	<u>Application</u>	<u>Analysis</u>	<u>Synthesis</u>	<u>Evaluation</u>
define repeat record list recall name relate underline	translate restate discuss describe recognize explain express identify locate report review tell	interpret apply employ use demonstrate dramatize practice illustrate operate schedule shop sketch	distinguish analyze differentiate appraise calculate experiment test compare contrast criticize diagram inspect debate inventory question relate solve examine categorize	compose plan propose design formulate arrange assemble collect construct create set up organize prepare	judge appraise evaluate rate compare value revise score select choose assess estimate measure

² In general “activity” courses or portions of courses are classified “laboratory.”

2. REQUIRED TEXTS:

Provide a representative list of textbooks and other required reading; include author, title and date of publication:

Barnett, A., Ziegler, R, Byleen, E.; Applied Calculus for Business, Economics, Life Sciences and Social Sciences; 8th Edition, 2005

3. SUPPLEMENTARY READINGS:

Reading assignments may include, but are not limited to the following:

Intermediate Algebra books and reference materials.

4. WRITING ASSIGNMENTS:

Title 5, section 55002 requires grades to be “based on demonstrated proficiency in subject matter and the ability to demonstrate that proficiency, at least in part, by means of essays or, in courses where the curriculum committee deems them to be appropriate, by problem solving exercises or skills demonstrations by students.” Writing assignments in this course may include, but are not limited to the following:

Describe mathematical ideas and processes sometimes by word, graph, and number.

5. REPRESENTATIVE OUTSIDE ASSIGNMENTS:

Out of class assignments may include, but are not limited to the following:

Reading economic indexes, watching for new trends and forecasting.

6. REPRESENTATIVE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING:

Title 5, section 55002(a) requires that a degree-applicable course have a level of rigor that includes “critical thinking and the understanding and application of concepts determined by the curriculum committee to be at college level”. Critical thinking may include, but is not limited to analysis, synthesis, and evaluation. Provide examples of assignments that demonstrate critical thinking.

Solving for real word problems in business and the social sciences

7. METHODS OF EVALUATION:

Title 5, section 55002 requires grades to be “based on demonstrated proficiency in subject matter and the ability to demonstrate that proficiency, at least in part, by means of essays, or, in courses where the curriculum committee deems them to be appropriate, by problem solving exercises or skills demonstrations by students.” Methods of evaluation may include, but are not limited to the following (please note that evaluation should measure the outcomes detailed “Course Objectives” at the beginning of Section II):

Chapter tests, homework, and final exam.

8. METHODS OF INSTRUCTION:

Methods of instruction may include, but are not limited to the following:

- Lecture
- Discussion
- Laboratory
- Activity
- Field Experience
- Independent Study
- Other (explain)

Computer aided instruction for out-of-class reinforcement

9. SUPPLIES:

List the supplies the student must provide.

Pen, pencil, scientific calculator, textbook.

10. COMPUTER COMPETENCY:

If applicable, explain how computer competency is included in the course.

Basic computer competency helps student use tutorial software to provide more practice and better ensure success.

11. INFORMATION COMPETENCY:

Information competency is the ability to find, evaluate use, and communicate information in all its various formats. It combines aspects of library literacy, research methods and technological literacy. Information competency includes consideration of the ethical and legal implications and requires the application of both critical thinking and communications skills. If applicable, explain how information competency is included in the course.

Locating and using available resources, students analyze information and find solutions

12. DIVERSITY:

If applicable, explain how diversity (e.g., cultural, gender, etc.) is included in the course.

Math is a universal language.

13. SCANS COMPETENCIES (required for all courses with vocational TOP Codes; recommended for all courses):

SCANS (**S**ecretary's **C**ommission on **N**ecessary **S**kills) are skills the Department of Labor identified, in consultation with business and industry leaders, which reflect the skills necessary for success in the workplace. Check the appropriate boxes to indicate the areas where students will develop the following skills (please note that all SCANS competencies do not apply to all courses):

RESOURCES

- Managing Time:** Selecting relevant goal-related activities, ranking them in order of importance, allocating time to activities, and understanding, preparing and following schedules.
- Managing Money:** Using or preparing budgets, including making cost and revenue forecasts; keeping detailed records to track budget performance, and making appropriate adjustments.
- Managing Material and Facility Resources:** Acquiring, storing, allocating, and distributing materials, supplies, parts, equipment, space or final products in order to make the best use of them.

INTERPERSONAL

- Participating as Member of a Team:** Working cooperatively with others and contributing to group's efforts with ideas, suggestions and effort.
- Teaching Others New Skills:** Helping others learn needed knowledge and skills.

- Exercising Leadership:** Communicating thoughts, feelings, and ideas to justify a position, encouraging, persuading, convincing or otherwise motivating an individual or group, including responsibly challenging existing procedures, policies or authority.
- Negotiating:** Working toward agreement that may involve exchanging specific resources or resolving divergent interests.
- Working with Cultural Diversity:** Working well with men and women and with people from a variety of ethnic, social, or educational backgrounds.

INFORMATION

- Acquiring and Evaluating Information:** Identifying a need for data, obtaining the data from existing sources or creating them, and evaluating their relevance and accuracy.
- Organizing and Maintaining Information:** Organizing, processing and maintaining written or computerized records and other forms of information in a systematic fashion.
- Interpreting and Communicating Information:** Selecting and analyzing information and communicating the results of others, using oral, written, graphic, pictorial, or multimedia methods.
- Using Computers to Process Information:** Employing computers to acquire, organize, analyze and communicate information.

SYSTEMS

- Understanding Systems:** Knowing how social, organizational and technological systems work and operating effectively with them.
- Monitoring and Correcting Performance:** Distinguishing trends, predicting impacts of actions on system operations, diagnosing deviations in the functioning of a system/organization, and taking necessary steps to correct performance.
- Improving or Designs Systems:** Making suggestions to modify existing systems in order to improve the quality of products or services and developing new or alternative systems.

TECHNOLOGY

- Selecting Technology:** Judging which sets of procedures, tools or machines, including computers and their programs, will produce the desired results.
- Applying Technology to Tasks:** Understanding overall intent and proper procedures for setting up and operating machines, including computers and their reprogramming systems.
- Maintaining and Troubleshooting Equipment:** Preventing, identifying, or solving problems with equipment, including computers and other technologies.

Section III: RELATIONSHIP TO COLLEGE PROGRAMS

1. **THIS COURSE WILL BE AN APPROVED REQUIREMENT FOR AN APPROVED ASSOCIATE DEGREE OR CERTIFICATE PROGRAM:** Yes

- a. If yes, the course will be a "restricted" elective portion of the "approved program" listed on the State Chancellor's Inventory of Approved Programs (approved programs can be found on the State Chancellor's Office website at <http://misweb.cccco.edu/esed/webproginv/prod/invmenu.htm>)

AA, Banking and Finance; Program ID 02861

NOTE: In order for a course to be approved as a requirement for an associate degree or certificate program, the program must be listed on the State Chancellor's Office *Inventory of Approved Programs* AND the course must be listed in the college catalog as either a requirement or an elective for the program. If course is not part of an approved program at the college adopting the course, it will be considered to be a "stand-alone" course, and is subject to the State Chancellor's approval criteria. The college must complete and submit the Chancellor's Office "APPLICATION FOR APPROVAL OF CREDIT" form. Certain courses are granted "blanket approval" by the State Chancellor's Office and do not require separate approval. See the Chancellor's Office *Program and Course Approval Handbook* for details. LACCD Skills **Certificates are not State approved programs** and are not listed on the Chancellor's Office *Inventory of Approved Programs*.

2. **GENERAL EDUCATION REQUIREMENTS FOR THE ASSOCIATE DEGREE STATUS:**

- a. Area requested: d(2) Communications and Analytical Thinking Approval date: before 1990

If applicable, provide an explanation of how the course meets the General Education parameters for one of the five general education areas – *Natural Sciences, Social and Behavioral Sciences, Humanities, Language and Rationality, Health and Physical Education* -- contained in Board Rule 6201.14 -General Education Requirements.
http://marlin.laccd.edu/district/BoardRules_AdmRegs/boardrules.htm

- a. 2nd Area requested: None Approval date:

If applicable, provide an explanation of how the course meets General Education parameters for an additional general education area – *Natural Sciences, Social and Behavioral Sciences, Humanities, Language and Rationality, Health and Physical Education* -- contained in Board Rule 6201.14 - General Education Requirements.
http://marlin.laccd.edu/district/BoardRules_AdmRegs/boardrules.htm

Section IV: ARTICULATION INFORMATION

(Complete in consultation with College Articulation Officer)

1. TRANSFER STATUS:

- | | |
|---|--|
| a. Transferable to the University of California: Yes | c. <u>Transferable to the California State University</u> : Yes |
| b. UC approval date: Before 1996 | d. College approval date: Before 1996 |

2. GENERAL EDUCATION FOR TRANSFER:

IGETC Certification:

- a. Area requested:
2: Mathematical Concepts Quantitative Reasoning
- b. Date requested: **1992**
- c. IGETC **approval** date: **1992**

If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in IGETC Certification Guidelines.

CSU Certification:

- a. Area requested:
B-4: Mathematical Quantative Reasoning
- b. Date requested: **Before 1996**
- c. CSU **approval** date: **Before 1996**

If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in CSU Certification Guidelines.

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- a. 2nd Area requested: **None**
- b. Date requested:
- c. IGETC **approval** date:

If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in IGETC Certification Guidelines.

- a. 2nd Area requested: **None**
- b. Date requested:
- c. CSU **approval** date:

If applicable, provide an explanation of how the course meets the appropriate General Education parameters, as defined in CSU Certification Guidelines.

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3. MAJOR REQUIREMENT FOR TRANSFER – Will this course be articulated to meet lower division major requirements? YES

List college/university and the majors:

College/University	Major(s)
Various	Business Administration

CAN NUMBER: **CAN SEQUENCE NUMBER:**
 CAN Approval -- Date requested: Date approved:

Section V: SUPPLEMENTAL COURSE INFORMATION

1. **DEPARTMENT/DIVISION NAME:** Mathematics
2. **DEPARTMENT/DIVISION CODE:** 8
3. **SUBJECT CODE** -- 3 characters, assigned by District Office: 589 (existing subject codes are available on the LACCD web site at <http://www.laccd.edu/curriculum/directory-programs-courses/index.htm>)
4. **SUBJECT ABBREVIATION** -- 7 characters, assigned by District Office: Math
5. **SPC CODE** -- 3 characters, assigned by District Office:
6. **ABBREVIATION FOR TRANSCRIPTS** -- 20 characters, assigned by District Office: MATH
7. **DEGREE CREDIT:** Indicate whether the course meet the "standards for approval" for degree credit course set forth in Title 5, section 55002(a)(2), which requires the course to have a degree of intensity, difficulty, and vocabulary that the curriculum committee has determined to be at the college level :
This courses is Degree Applicable
8. **CREDIT/NO CREDIT GRADING:** No
9. **REPETITIONS** -- Number of times course may be repeated for credit (three maximum): 0

How does the repetition of this course meet Title 5, section 58161 requirements? A course may be repeatable when, "course content differs each time it is offered, and that the student who repeats it is gaining an expanded educational experience for one of the following reasons: (A) Skills or proficiencies are enhanced by supervised repetition and practice within class periods; or (B) Active participatory experience in individual study or group assignments is the basic means by which learning objectives are obtained."

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10. **PRIOR TO TRANSFERABLE LEVEL** – This course attribute applies to *English, writing, ESL, reading* and *mathematics* courses ONLY. If applicable, indicate how many levels below the transferable level this course should be placed: Not applicable
 11. **CREDIT BASIC SKILLS** -- Title 5, section 55502(d) defines basic skills as "courses in reading, writing, computation, and English as a Second Language, which are designated as non-degree credit courses pursuant to Title 5, section 55002(b)." No If Yes, course must be non-degree applicable.
 12. **CROSS REFERENCE** -- Is this course listed as equivalent in content to existing College/District courses in another discipline? No

If Yes, list courses (documentation of cross-discipline agreement must be provided):

13. **COURSE SPECIFICALLY DESIGNED FOR STUDENTS WITH DISABILITIES** -- Title 5, section 56029 allows a course to be repeatable when continuing success of the students with disabilities is dependent on additional repetitions of a specific class. Is this course designated as an "approved special class" for students with disabilities? **No**

If yes, provide an explanation of how this course meets the requirements of Title 5, section 56029.

14. **COOPERATIVE EDUCATION STATUS** -- Title 5, section 55252 allows for two types of Cooperative Education: 1) General Work Experience Education -- i.e., supervised employment, which is intended to assist students in acquiring desirable work habits, attitudes and career awareness, which need not be related to the students' educational goals; or 2) Occupational Work Experience Education -- i.e., supervised employment, extending classroom based occupational learning at an on-the-job learning station, which is related to the students' educational or occupational goal. Is this course part of the college's approved cooperative work experience education program? **No**

15. **COURSE CLASSIFICATION:** **Liberal Arts Sciences**

Note: A course's Classification, TOP Code and SAM code must be aligned – e.g., Courses with an "Occupational" Course Classification must have an "Occupational" TOP Code **and** a SAM Code of A, B, C, or D; courses that do not have an "Occupational" Course Classification cannot have an Occupational TOP Code **and** must have an "E" SAM Code. Courses coded as "basic skills" in #11 should be coded "Adult and Secondary Basic Skills."

16. **TOP CODE – (6 digits XXXX.XX) 1701.00**

Course content should match discipline description in Taxonomy of Programs found at www.cccco.edu/cccco/esed/curric/curriculum.htm.

17. **SAM CODE (Student Accountability Model):** **E – Non-Occupational**

SAM Codes (see CCC Chancellor's Office *Student Accountability Model Operations Manual*, 1984) should be assigned as follows:

Priority "A" – Apprenticeship: Courses designed for an indentured apprentice must have the approval of the State of California, Department of Industrial Relations Department, Division of Apprenticeship Standards.

Priority "B" – Advanced Occupational: Courses taken by students in the advanced stages of their occupational programs. Courses should be offered in one specific occupational area only. Priority letter "B" should be assigned sparingly; in most cases, no more than two courses in any one program should be labeled "B." "B"-level courses must have Priority "C" prerequisites in the same program area.

Priority "C" – Clearly Occupational: Courses generally taken by students in the middle stages of their programs should have a difficulty level sufficient to detract "drop-ins." Courses may be offered in several occupational programs within a broad area. The "C" priority, however, should also be used for courses within a specific program area when the criteria for "B" classification are not met. A "C"-level course should provide the student with entry-level job skills.

Priority "D" – Possibly Occupational: "D" courses are those taken by students in the beginning stages of their occupational programs. The "D" priority can also be used for service (or survey) courses for other occupational programs.

Priority "E" – Non-occupational.

SECTION VI: APPROVAL STATUS

1. APPROVAL STATUS:

- | | | |
|--|--|-----------------------|
| a. <input type="checkbox"/> New Course | . Board Approval Date: | . Effective Semester: |
| b. <input type="checkbox"/> Addition of Existing District Course | . College Approval Date: | . Effective Semester: |
| c. <input type="checkbox"/> Course Change* | . College Approval Date: | . Effective Semester: |
| d. <input checked="" type="checkbox"/> Outline Update | . College Approval Date:
September 20, 2005 | |

* Changes to a course require the completion of a "Course Change Request" form and approval by the college's Curriculum Committee. In some cases districtwide approval is also required; see, Administrative Regulation E-65, section 3(c) for details.

SECTION VII: APPROVAL INFORMATION FOR NEW OR ADDED COURSES

(complete in consultation with Department Chair and the appropriate Academic Administrator)

N/A , Existing Course

1. ORIGINATOR:

2. DEPARTMENT:

3. IF THIS IS A NEW COURSE, INDICATE HOW THE COLLEGE PLANS TO MEET THE EXPENSE OF THIS COURSE:

- By additional funds. Describe:

- By deleting courses from the college catalog and course database. List specific courses to be deleted:

- By deleting sections of existing courses. List courses and number of sections to be deleted:

First year: Second year: Third year:

- By rotating sections of existing courses. List courses and number of sections to be rotated, as well as the semesters in which they will be offered:

4. IMPACT -- Will this course directly impact other course offerings and/or associate degree or certificate programs on campus?

No (If yes, briefly explain how)

5. METHOD OF SUPPORT -- Indicate how the college plans to support the proposed course:

Additional staff -- List additional staff needed:

Classroom -- List classroom type needed:

Equipment -- List new equipment needed and indicate funding source for any new equipment:

Supplies- List supplies and indicate dollar value:

Library/Learning Resources- The course initiator shall consult with the College Librarian and review the college library, book, periodical, and electronic resource collections relevant to this course. List additional titles and resources to be considered for purchase as funding permits:

6. APPROPRIATENESS TO MISSION—Describe how the objectives of the proposed course are consistent with the mission of the community colleges as established by the Legislature in the Education Code. The course should also be congruent with the mission statement of the local college and district.

7. NEED—Demonstrate the need for the course that meets the stated objectives, at this time, and in the region.

**LOS ANGELES COMMUNITY COLLEGE DISTRICT
COURSE STANDARDS AND CRITERIA**

Subject: **Mathematics** Number: **236** Course Title: **Calculus for Business and Social Sciences**

Using the Official Course Outline, please determine whether or not the above listed credit course meets the following standards and criteria required in Title V, Part VI of the California Administrative Code, and which has been designated as appropriate to the Associate Degree. Place a (X) in the appropriate box.

CRITERIA AND STANDARDS**Section 55002****RATING CRITERION****MET NOT MET**

Is recommended by the responsible college officials, and the academic senate or other appropriate faculty body as meeting the requirements of this subsection and has been approved by the local district governing board as a course meeting the needs of the students for admission.	X	
Is taught by a credentialed instructor in the discipline.	X	
Is offered as described <u>in an outline in official college files</u> . That the outline shall specify the unit value, scope, objectives, content in terms of a specific body of knowledge, appropriate reading and writing assignments, outside of class assignments, instructional methodology and methods of evaluation for determining whether the stated objectives have been met by students.	X	
Is taught in accordance with a set of instructional objectives common to all students.	X	
Provides for measurement of students performance in terms of the stated course objectives and culminates in a formal recorded grade based upon uniform standards in accordance with Section 55578 of Title 5, which is permanently recorded as an evaluation of student performance; bases grades on demonstrated proficiency in subject matter determined by multiple measurement for evaluation; and has examinations, including essays and/or, where appropriate, uses appropriate symbol systems and/or skills demonstrations by students.	X	
Grants units of credit based upon a specified relationship between the number of lecture and/or laboratory hours or performance criteria specified in the course outline; and requires a minimum of three hours of work per week including class time for each unit of credit, prorated for short-term, lab and activity courses.	X	
Treats subject matter with a scope and intensity which requires students to study independently outside of class time.	X	
Requires, when appropriate, entrance skills and consequent prerequisites for the course before students are enrolled	X	
Requires the ability to think critically and to understand and apply concepts in order to participate in the course.	X	
Requires learning skills and a vocabulary appropriate for a college course.	X	
Requires the use of college level educational materials.	X	

CONTENT REVIEW FOR PREREQUISITE VALIDATION

Target Course & Number, Title: MATH 236, CALCULUS FOR BUSINESS AND SOCIAL SCIENCES
(Course to which pre/corequisite/advisory applies)

Check
Applicable
Box

- Prerequisite: **Mathematics 125, Intermediate Algebra**
- Corequisite:
- Advisory:

Target Course Entry Skills: Calculus for Business and Social Sciences

(For prerequisites/corequisites, list specific skills and/or knowledge necessary for students to succeed in the target class. For advisories, list skills/knowledge, which will enrich or deepen the student's knowledge obtained from the course but without which the student may still succeed in the course. Attach additional sheet if necessary. NUMBER EACH SKILL.)

1. Solving linear and quadratic equations;
2. Solving linear system of equations and inequalities, matrices;
3. Rational and exponential expressions, applications;
4. Solving exponential and logarithmic equations.

B. Exit Skills Provided By Prerequisite/Corequisite/Advisory Course or Assessment:
Course & Number, Title (Math 125)

(List specific skills and/or knowledge that are the outcome of the prerequisite/corequisite/advisory course or assessment. For courses already in the curriculum, these should be present in the course objectives in the course outline. Attach additional sheet if necessary. NUMBER EACH SKILL.)

1. Set up and solve mathematical equations involving linear, quadratic, exponential, radical and logarithmic equations.
2. Set up and solve word problems involving linear, quadratic, exponential, radical and logarithmic equations.
3. Construct graphical tables and graphs of various functions.
4. Factor various linear, quadratic, exponential, radical and logarithmic equations.
5. Set up and construct graphs involving inequalities and absolute inequalities using appropriate properties of linear, quadratic, exponential, radical and logarithmic equations.

CONTENT REVIEW SKILLS MATRIX FOR PREREQUISITE VALIDATION*

*Validation requires at least one match of each entry skill with any exit skill(s).

**MATH 236, Calculus for Business and Social Sciences
Entering Skills of Target Course**

**MATH 125
Intermediate Algebra
Exit Skills of Prerequisite Course**

	1	2	3	4	5	6	7	8	9
1	X			X					
2	X	X	X						
3				X					
4	X			X					
5				X					
6									
7									
8									

(Include justification for assessments, health and safety, or non-course prerequisites)

PARTICIPANTS IN CONTENT REVIEW:

(Signatories should include instructors for both exit and entering skills courses.)

Name: Lernik Saakian Title: Instructor Initial: LS Date: 10/10/05

Name: _____ Title: _____ Initial: _____ Date: _____

Name: _____ Title: _____ Initial: _____ Date: _____

CERTIFIED BY:

Lernik Saakian 10/10/05

Initiator Date

James King 10/10/05

Department Chairperson Date

Linda Larson-Singer 10/10/05

Curriculum Chairperson Date

CERTIFICATION AND RECOMMENDATION

This course meets Title 5 requirements for Associate Degree applicable college credit towards an Associate of Arts Degree.

This course meets Title 5 requirements but does not satisfy the requirements for an Associate Degree applicable course.

We certify that the information and answers above properly represent this course.

Lernik Saakian

Originator

10/10/05

Date

James King

Department/Cluster Chairperson

10/10/05

Date

Linda Larson Singer

Articulation Officer

10/10/05

Date

Shelley Werts

Librarian

10/11/05

Date

Earnestine Thomas-Robertson

Dean (if applicable)

10/19/05

Date

Linda Larson-Singer

Curriculum Committee Chairperson

10/10/05

Date

Reggie Morris

Academic Senate President

10/18/05

Date

Leige Henderson

Vice President, Academic Affairs

10/20/05

Date

Audre Levy

College President

12/05/05

Date