

NEWPORT-MESA UNIFIED SCHOOL DISTRICT Course Description

AP CALCULUS AB

Content covered in this course is described in the Course of Study. Based upon student needs, teachers select appropriate materials from the Instructional Materials List. Classroom presentations of course content are determined by the instructor and described under Teacher Activities. A more detailed outline of this course can be obtained from the instructor.

Overview:

This course is a college level calculus course culminating in the administration of the Advanced Placement Exam in May. Since this course is driven by the College Board's AP Exam and the College Board does make minor changes each year in the material the course should cover, it is crucial that each AP Calculus teacher review the College Board course description each year. The AP coordinator at each high school will have the College Board Course Descriptions available each spring for the following year. By reviewing the College Board materials the teacher will know how best to prepare the students for the AP Exam. This course description, therefore, serves only as a general guideline for the course. AP Calculus students have completed trigonometry and possibly pre-calculus. They are highly skilled and motivated students who have the time, inspiration and background to dedicate many long hours to the advanced course. When students finish this course and pass the AP Exam they will have credit for the first semester in the 2 year college level calculus sequence.

When planning the course outline and timeline for the year, the AP Calculus teacher will want to leave several weeks available for review before the Exam is given in early May. Also there is a critical consideration of how to use the calculator in this course. As this document is being written (3/93) the College Board plans to give scientific calculator-active AP Exams in '93 and '94. By '95 they tell us that the exam will be graphing calculator-active. The teacher must verify the calculator requirements each year to insure that the students have practice using exactly the type of calculator they will use for the exam.

Course of Study Objectives:

1. The student will identify properties of functions and their graphs such as domains and ranges, odd and even, zeroes, symmetry and asymptotes.

1.1 SUGGESTED STUDENT ACTIVITY:

- Taking notes
- Explaining solutions to problems

- Investigations
- Giving reports
- Cooperative learning
- Graphing

1.2 INSTRUCTIONAL MATERIALS USED:

- Calculators
- Graph paper

1.3 TEACHER ACTIVITIES:

- Lecture
- Asking questions
- Guiding investigations
- Coaching problem solving

2. The student will find limits of a function and determine continuity of a function at a point.**2.1 SUGGESTED STUDENT ACTIVITY:**

- Taking notes
- Explaining solutions to problems
- Investigations
- Giving reports
- Cooperative learning
- Graphing

2.2 INSTRUCTIONAL MATERIALS USED:

- Calculators
- Graph paper

2.3 TEACHER ACTIVITIES:

- Lecture
- Asking questions
- Guiding investigations
- Coaching problem solving

3. The student will find the derivative of explicit, implicit, composite, inverse and logarithmic functions.**3.1 SUGGESTED STUDENT ACTIVITY:**

- Taking notes
- Explaining solutions to problems
- Investigations
- Giving reports
- Cooperative learning
- Graphing

3.2 INSTRUCTIONAL MATERIALS USED:

- Calculators
- Graph paper

3.3 TEACHER ACTIVITIES:

- Lecture
- Asking questions
- Guiding investigations
- Coaching problem solving

4. The student will use derivative to find related rates, to find minimums and maximums and to graph functions.**4.1 SUGGESTED STUDENT ACTIVITY:**

- Taking notes
- Explaining solutions to problems

- Investigations
- Giving reports
- Cooperative learning
- Graphing

4.2 INSTRUCTIONAL MATERIALS USED:

- Calculators
- Graph paper

4.3 TEACHER ACTIVITIES:

- Lecture
- Asking questions
- Guiding investigations
- Coaching problem solving

5. The students will integrate simple functions and will apply integration techniques such as u-substitution and integration by parts.

5.1 SUGGESTED STUDENT ACTIVITY:

- Taking notes
- Explaining solutions to problems
- Investigations
- Giving reports
- Cooperative learning
- Graphing

5.2 INSTRUCTIONAL MATERIALS USED:

- Calculators
- Graph paper

5.3 TEACHER ACTIVITIES:

- Lecture
- Asking questions
- Guiding investigations
- Coaching problem solving

6. The students will apply integration to solve problems involving, linear motion and volumes of revolution.

6.1 SUGGESTED STUDENT ACTIVITY:

- Taking notes
- Explaining solutions to problems
- Investigations
- Giving reports
- Cooperative learning
- Graphing

6.2 INSTRUCTIONAL MATERIALS USED:

- Calculators
- Graph paper

6.3 TEACHER ACTIVITIES:

- Lecture
- Asking questions
- Guiding investigations
- Coaching problem solving

INSTRUCTIONAL MATERIALS:

TEXTBOOKS

District-adopted textbook

SUPPLEMENTARY MATERIALS

Past AP Exams—important resource for review

Teacher-generated materials

Refer to 13.01 for calculator use statement

AUDIO-VISUAL MATERIALS

Refer to page 13.02