

## SYLLABUS

GI 624

AP INSTITUTE: CALCULUS BC

DATE: Spring 2005

- I. Catalog Description: This institute assists secondary school mathematics teachers in offering an Advanced Placement Calculus course in their schools. The institute is taught over a one or two-week period for a total of 45 hours. (3)
- II. Prerequisites: Mathematics teacher certificate.
- III. Objectives of Course:
1. To review the concepts and methods of calculus and analytic geometry.
  2. To explore the implications of calculus reform for AP Calculus-BC course.
  3. To understand the current status of technology and the AP Calculus examination.
  4. To develop a syllabus for the AP Calculus-BC course they will be teaching.
  5. To integrate appropriate technology into their AP Calculus syllabus.
  6. To model the teaching of concepts and methods in the AP Calculus-BC syllabus.
  7. To examine some of the non-routine and abstract applications of calculus.
  8. To examine the effect of TIMSS on the teaching of Calculus.
- IV. Expectations of Students: Participants are expected to attend classes, participate in classroom discussions and presentation activities, and complete homework assignments.
- V. Course Outline:
- The workshop will cover the topics in the Advanced Placement Calculus BC course.
1. Functions in Parametric, Polar, and Vector forms; Graphs and Limits
  2. Derivatives: their computation and applications
  3. Integrals: interpretation, applications, and numerical approximations
  4. Polynomial Approximation and Series
  5. Series of constants: concepts and convergence-tests; Taylor series
  6. Review of all topics in GI-623 (AP- Calculus-AB course syllabus)
- VI. Textbook: (1) *Advanced Placement Course Description: Mathematics (Calculus AB and BC)*, The College Board, May 2004, and (2) *Calculus, 5e Edition* by James Stewart, Brooks Cole, 2003
- VII. Basis of Student Evaluation:
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| 25 % | Participation in classroom discussion                      |
| 25 % | Presentations of selected topics                           |
| 25 % | Reviews of current literature regarding calculus education |
| 25 % | Syllabus for the AP Calculus course they will be teaching  |