

CHAPMAN UNIVERSITY
University Honors Program
One University Drive
Orange, CA 92866

COURSE SYLLABUS

HON 332

Fall 2010

The Birth of Calculus: History of an Idea

Catalog Description:

Prerequisite, Math 104, and acceptance to the University Honors Program, or consent of instructor. Calculus is the greatest achievement of western civilization, but students study it within the confines of the mathematical curriculum, and thus regard it as a technical tool for the solution of mathematical problems. This course will focus on its intellectual significance, and its historical developments. (Offered as needed.) 3 credits.

Course Objectives:

1. Develop an understanding for the intellectual significance of calculus and of mathematical ideas in general.
2. Develop an appreciation for historical aspects of the development of science
3. Learn how to solve many of the typical calculus problems with tools that were in use before the development of calculus.

Content:

Students will learn the fundamental ideas of calculus, and will be able to solve many of the typical problems of calculus without the use of formal calculus techniques. For example, they will learn to calculate volumes of solids of rotation by using the centroid technique of Pappus, by stacking up smaller cylinders (and using formulas relating the sum of the powers of the first integers), or the Cavalieri principle. They will learn how to calculate tangent to curves using ideas of Fermat (essential precursor to current technique using limits), of Descartes (who computed tangents by finding the normals to osculating circles), or of Robervals (who computed tangents by describing curves as the resultants of simultaneous motions).

Current Required Texts:

Instructor will distribute materials

Instructional Strategies:

Seminar style class

Methods of Evaluation :

Mostly class interaction, homework, and a midterm test.

Chapman University Academic Integrity Policy:

The course syllabus should include the following statement:

Chapman University is a community of scholars which emphasizes the mutual responsibility of all members to seek knowledge honestly and in good faith. Students are responsible for doing their own work, and academic dishonesty of any kind will not be tolerated anywhere in the university

Students with Disabilities Policy:

The course syllabus should include the following statement:

In compliance with ADA guidelines, students who have any condition, either permanent or temporary, that might affect their ability to perform in this class are encouraged to inform the instructor at the beginning of the term. The University, through the Center for Academic Success, will work with the appropriate faculty member who is asked to provide the accommodations for a student in determining what accommodations are suitable based on the documentation and the individual student needs. The granting of any accommodation will not be retroactive and cannot jeopardize the academic standards or integrity of the course.

Prepared by:

Daniele Struppa, Spring 2010

Last revised:

Daniele Struppa, December 2010