

Contributed Papers

Friday, October 31, 2003

INFUSING APPLIED CALCULUS WITH TECHNOLOGY AND PROJECTS

John Nardo, *Oglethorpe University*

FRI - C1
Pine Valley
10:00 AM

Anyone who has taught Applied Calculus understands the difficulty of reaching Business and Economics students with the main ideas of three semesters of Calculus in one semester. This presentation will focus on how to integrate graphing calculator technology and projects into this course in order to enhance student success.

Calculus

DEVELOPING ASSESSMENT ITEMS USING WEBCT IN COLLEGE ALGEBRA

Margo Alexander, *Georgia State University*

FRI - C2
Pine Valley
10:20 AM

Strategies for developing assessment items using WebCT in a College Algebra course are presented. This presentation will demonstrate how to develop short answer, multiple choice, matching, and essay types of questions from Bloom's taxonomy and the content standards.

Pedagogy/Research/Assessment

STUDYNET, THE UNIVERSITY OF HERTFORDSHIRE MANAGED LEARNING ENVIRONMENT

Stephen Kane, *University of Hertfordshire*

FRI - C3
Pine Valley
10:40 AM

The University of Hertfordshire has developed a web-based teaching and learning environment with over 22,000 user accounts. All students and staff have their own protected accounts and personal portals that can be tailored to their own needs. StudyNet has made a significant difference to the way in which we deliver the mathematics curriculum.

Pedagogy/Research/Assessment

SOUNDS OF MUSIC : MODELING SOUND WAVES WITH MATHEMATICA

Crista Coles, *Elon University*

FRI - C4
Pine Valley
11:00 AM

We will look at modeling sound waves using Mathematica in conjunction with the TI-CBL. Students from many different mathematical backgrounds can enjoy this application. We will discuss data collection and the Mathematica sound package as well as projects involving sinusoidal models with damping and models using Fourier series analysis.

Internet/Distance Learning/Web-Assisted Instruction

EXPLORING PARABOLIC MIRRORS WITH TI-89/92+/VOYAGER

Vlajko Kocic, *Xavier University of Louisiana*

FRI - C5
Pine Valley
11:20 AM

Several graphing calculator activities dealing with exploration of the reflection from parabolic mirrors will be presented.

Before Calculus

TEACHING AND ASSESSING INTERMEDIATE ALGEBRA STUDENTS ONLINE USING WebCT

Alicia Giovinazzo, *Nova Southeastern University*

FRI - C6
Pine Valley
11:40 AM

This paper illustrates technologies available for the delivery of mathematics courses online. The demonstrations will focus on the use of a WebCT platform in the teaching and assessing of college students in an Intermediate Algebra online course. The quality of instruction and integrity of tests will be the focal points.

Internet/Distance Learning/Web-Assisted Instruction

INTERACTIVE VIDEO IN ONLINE INSTRUCTION

Joel D. Haywood, Barry Monk, *Macon State College*

FRI - C7
Pine Valley
12:00 PM

This talk discusses the use of interactive video as a primary method of instruction for online courses and as a supplemental method for classroom courses.

Internet/Distance Learning/Web-Assisted Instruction

INTEGRATING HAND-HELD DEVICES WITH DESKTOP COMPUTERS IN PRE- AND IN-SERVICE COURSES

Stephen Hegedus, *University of Massachusetts - Dartmouth*

FRI - C8
Pine Valley
12:20 PM

We explore exciting new activities using CBR motion detectors and calculator MathWorlds. Individual motions are imported to the TI-83+ and aggregated for public display on a teacher's computer using TI-Navigator. We discuss the implications for teaching parametric structures such as $Y = A \sin(BX + D) + E$.

Internet/Distance Learning/Web-Assisted Instruction

Contributed Papers

Friday, October 31, 2003

POTENTIAL PITFALLS FOR STUDENTS USING ONLINE MATH UTILITIES

John T. Holm, *Wright State University*

FRI - C9
Pine Valley
12:40 PM

The installation of computers in a university mathematics learning center provided access to math applications on the Internet for the center's users and staff. Although the online math utilities generally supported the teaching and learning of mathematics in powerful ways, the utilities sometimes demonstrated limitations that thwarted students.

Internet/Distance Learning/Web-Assisted Instruction

USING ALEKS (ASSESSMENT AND LEARNING IN KNOWLEDGE SPACES): WHAT WORKS AND WHAT DOESN'T

Tony Mansell, Tracy Watson, *University of Arkansas at Little Rock*

FRI - C10
Pine Valley
1:00 PM

ALEKS is a software system that delivers mathematics instructional content via the internet. Students mastering the ALEKS syllabus through intermediate algebra appear to obtain a thorough array of basic algebra skills. This paper discusses strategies used at the University of Arkansas at Little Rock, and suggests ways to successfully implement ALEKS.

Internet/Distance Learning/Web-Assisted Instruction

THE WIRELESS NETWORK IN THE MATHEMATICS CLASSROOM: ONE YEAR LATER

Tyge Rugenstein, Elizabeth Schott, Kerry Fields, *United States Military Academy*

FRI - C11
Pine Valley
1:20 PM

At the start of the 2003 academic year, the United States Military Academy completed a one-year pilot program testing, and has since implemented, a wireless network in all classrooms. This paper will discuss lessons learned establishing the wireless environment and in utilization of this technology in teaching undergraduate mathematics.

Internet/Distance Learning/Web-Assisted Instruction

USING ELECTRONIC BLACKBOARD DISCUSSION IN MATHEMATICS TEACHER TRAINING

Renan Sezer, *LaGuardia Community College*

FRI - C12
Pine Valley
1:40 PM

Electronic Blackboard enhances teaching "Mathematics for Elementary School Teachers." The discussions encourage students to develop their own perspectives on some of the controversial issues in mathematics education. Also, the Blackboard environment offers a medium where students can explore and can share information about teacher certification requirements.

Internet/Distance Learning/Web-Assisted Instruction

USING WebWorK TO DELIVER INTERNET-BASED HOMEWORK IN MATHEMATICS CLASSES AT RADFORD UNIVERSITY

Neil Sigmon, Coreen Mett, *Radford University*

FRI - C13
Pine Valley
2:00 PM

WebWorK is a highly successful program designed to deliver Internet-based mathematics homework to students. Part of this success is based on the easy accessibility and instant feedback that WebWorK produces. This talk will describe the current use of WebWorK at Radford University; specifically in college algebra classes designed for general education students.

Internet/Distance Learning/Web-Assisted Instruction

A TECHNOLOGY-ENHANCED HYPERBOLIC GEOMETRY COURSE FOR PRE-SERVICE AND IN-SERVICE HIGH SCHOOL TEACHERS

Timothy Comar, *Benedictine University*

FRI - C14
Pine Valley
2:20 PM

We describe a technology-driven hyperbolic geometry course for pre-service and in-service high school teachers. Familiarity with hyperbolic geometry can deepen a teacher's understanding of Euclidean geometry and of relationships between various areas of mathematics. By using Derive as the primary environment, the students explore geometric phenomena and related mathematical concepts.

Multimedia

INCREASING STUDENT PARTICIPATION VIA ONLINE COMMUNICATION IN UNDERGRADUATE MATHEMATICS COURSES

Timothy Comar, *Benedictine University*

FRI - C15
Pine Valley
2:40 PM

This presentation will show how to use the course management system, WebCT, in calculus and linear algebra courses. The main purposes for using WebCT are to increase student participation, streamline class discussion, encourage students to read the text, and promote an environment for students to resolve their own questions collaboratively.

Multimedia

Contributed Papers

Friday, October 31, 2003

AN ACTIVE APPROACH TO MATHEMATICAL MODELING USING SPREADSHEETS

Deane Arganbright, *University of Tennessee at Martin*

FRI - C16
Pine Valley
3:00 PM

The session presents an innovative approach to mathematical modeling where the spreadsheet creation process develops the underlying mathematics. This enables students to pursue an active study of diverse and engaging topics, many of which are otherwise inaccessible without advanced mathematics. New applications with eye-catching Excel graphics are illustrated interactively.

Multimedia

CREATING ANIMATED TEXT FOR WEB PAGES USING DIFFERENCE EQUATIONS AND JAVASCRIPT

Paul R. Bouthellier, *University of Pittsburgh-Titusville*

FRI - C17
Pine Valley
3:20 PM

Difference equations are derived which allow the individual letters in text strings to form animated patterns on web pages. The animations will be keyed to user actions or preprogrammed instructions. Programming will be done in JavaScript.

Multimedia

MODELING GEOMETRIC OBJECTS USING JAVA

Paul R. Bouthellier, *University of Pittsburgh-Titusville*

FRI - C18
Pine Valley
3:40 PM

The Java programming language contains 2-dimensional graphical elements for lines, rectangles, ellipses, arcs, and polygons. Using these elements, 2 objects will be modeled by breaking them into simpler graphical elements, deriving their corresponding equations, and creating the Java applications and applets.

Multimedia

INTERACTIVE WEB-BASED CALCULUS PROJECTS AT HOLLINS UNIVERSITY: AREA OF U.S. STATES AND ROLLER COASTERS

Julie Clark, Trish Hammer *Hollins University*

FRI - C19
Pine Valley
4:00 PM

We showcase two new interactive web-based calculus projects that combine Java applets and downloadable Maple worksheets. Calculus I students use live online images to measure the "thrill" of real roller coasters and then design an original coaster. Calculus II students use live online state maps to collect border data and approximate the area.

Multimedia

GOING IN CIRCLES WITH SKETCHPAD

Carol Marinas, *Barry University*

FRI - C20
Pine Valley
4:20 PM

An interactive demonstration using Sketchpad to develop relationships between angles and arcs in circles.

Before Calculus

C21 Cancelled

Saturday, November 1, 2003

ONLINE MATH COURSES FOR THE BEGINNING STUDENT

Barry Monk, Mary Dwyer Wolfe, and Steve Davis, *Macon State College*

SAT - C22
Pine Valley
8:20 AM

With online courses, online notes and reading assignments may be sufficient for the seasoned learner, but less experienced students require more. Discussed in this presentation are the experiences in developing videos and other online resources that serve as an effective substitute for the components found in a traditional classroom.