Teaching Differential Equations Online
The Challenges and Changes

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Joint Mathematics Meeting, 2009
Outline

1 Introduction

2 An Effective Online Course
   • Success & Challenges & Changes

3 Conclusions
The Assignment: Joint 2+2 Initiative

- Develop Sharable Online DE Courses for the UNC System
- No Text
- No Software
- Accessibility Issues
What’s included to make an online course "effective"?

- Learner Support & Resources
- Online Organization & Design
- Instructional Design & Delivery
- Assessment & Evaluation
- Innovative Teaching with Technology
- Faculty Use of Student Feedback

Rubric for Online Instruction -
http://www.csuchico.edu/celt/roi/eoi_campus.shtml
Course contains extensive information about being an online learner

- We did this poorly at week 2
- Changes: One of the first assignments would be to read "What Makes a Successful Online Student?"

http://www.ion.uillinois.edu/resources/tutorials/pedagogy/StudentProfile.asp
Online Organization & Design

Accessibility issues are addressed throughout the course

- Section 508 - requires electronics & information technology to be accessible to people with disabilities
- Required to use MathType to get the online reader to work (but doesn’t work on Macs)
Course provides multiple activities that help students develop critical thinking and problem-solving skills

Success
- PPlane
- Group Project
- Tests/Quizzes

Challenges
- Discussion Questions

http://math.rice.edu/~dfield/dfpp.html
### Instructional Design & Delivery

**Course offers ample opportunities for interaction and communication student to student, student to instructor**

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<thead>
<tr>
<th>Success</th>
<th>Challenges</th>
<th>Changes</th>
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<tbody>
<tr>
<td>provided discussion boards</td>
<td>few postings language barrier</td>
<td>better DQ initiate more 1-1</td>
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### Assessment & Evaluation of Student Learning

Ongoing multiple assessment strategies are used to measure content knowledge, attitudes and skills.

<table>
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<tr>
<td>Test/Quizzes</td>
<td>Anonymous surveys throughout</td>
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<tr>
<td>Discussion Questions</td>
<td></td>
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<tr>
<td>Project</td>
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Assessment & Evaluation of Student Learning

Regular Feedback about student performance is provided in a timely manner throughout the course.

<table>
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<th>Challenges</th>
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<td>late assignments</td>
<td>individually provide solutions</td>
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Innovative Teaching with Technology

Course uses a variety of technology tools to appropriately facilitate communication and learning

<table>
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<tr>
<td>typing math online</td>
<td>online white board</td>
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<tr>
<td>math vocabulary</td>
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Communicating math online is hard!
Online courses are more time consuming than I ever imagined!
I will be trying this again