

UWF Delivers Mathematics Graduate Program Fully Online with Elluminate

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While some say that mathematics courses do not lend themselves to online instruction, nothing could be further from the truth at The University of West Florida. In fact, the Department of Mathematics and Statistics now offers the only fully online masters program in mathematical science available in Florida.

The University of West Florida is located in the Florida panhandle where potential graduate students are spread over large geographic areas. The cost and time of driving to the Pensacola campus makes distance learning a necessity for many students. There is also a population of high school mathematics teachers with heavy workloads that prohibit them from pursuing additional training in mathematics unless it is offered as a distance learning program. Unfortunately in mathematical sciences it is not straightforward to offer graduate courses as fully online courses. The nature of mathematical sciences dictates that students hear the instructors explain the concepts and ideas. It is equally important that students are able to get immediate feedback to their questions during lectures.

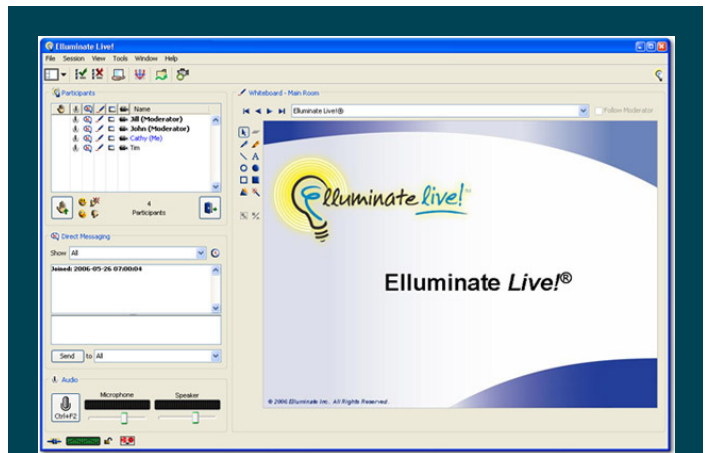
To better serve the local community and increase enrollment, UWF's Department of Mathematics and Statistics piloted its first Elluminate-based graduate course in Summer 2008 with the help of Information Technology Services. The department addressed the unique needs of mathematical sciences with a blended learning program that uses the Desire2Learn environment combined with the synchronous Elluminate Live! virtual classroom. Elluminate enabled online students to fully participate in the same class with students sitting in a traditional brick-and-mortar classroom. Merging the online and traditional classes offered several advantages. From an administrative perspective, class scheduling stayed the same as it would be for a traditional Master's program that is only taught face-to-face.

In Fall 2008, after careful study and assessment of the initial course, three graduate courses in mathematical sciences were offered using Elluminate to deliver lectures in real time to distance learning students, while simultaneously teaching face-to-face students from a classroom. This was followed in Spring 2009 with four graduate courses and three in the Summer 2009. Now, the entire Master's program is offered via Elluminate.

Desire2Learn, while a useful platform for instructors and students to exchange ideas and hold discussions, is insufficient for mathematical sciences courses to provide distance students with the same learning opportunities as traditional face-to-face students. Distance students in mathematical sciences need real-time access to ongoing class discussions and lectures. Another factor affecting distance students is the need to feel they belong to the class and that they are not "distant". The limited exchange of feedback in eLearning postings and discus-

sion forums may not provide distance students with the interactive learning experience and feeling of belonging that they usually would get in a traditional face-to-face class. The bonding and the support between mathematical science students is an important factor in the ability of students to overcome what may appear as difficult hurdles. The traditional approach to online teaching does not work for mathematical sciences graduate courses, and it is not surprising that the proportion of departments of mathematical sciences that offer fully online Master's programs is quite low in the USA. In fact, such programs could not be found using Google.

Students were surveyed one month into the blended course and again at the end of the Fall 2008 semester. The students overwhelmingly liked the convenience and flexibility of the program. The department compared 56 online students who took graduate courses via Elluminate with 100 students who attended the same courses in the traditional, face-to-face classroom. Based on the data, that there is no statistical evidence that distance learning students perform differently than face-to-face students.



Elluminate Online Classroom

Elluminate is built for live, multi-media, many-to-many collaboration. The tools available in Elluminate provide limitless possibilities for instructors. **Application sharing**, **web tours**, and **multimedia** allow instructors to provide visual demonstrations of classroom topics. **Breakout rooms** provide the opportunity for students who live far away to work together in small groups. **Quizzes** and **class polling** let instructors gauge student understanding during class. **Direct messaging**, **full duplex audio**, and **video from webcams** enable live communication. A **whiteboard** for on-screen annotation and PowerPoint delivers content in a manner typically associated with a traditional classroom setting.