prometheus
Case Studies Series
Colleges of Engineering

Two Top-Ten Colleges of Engineering Employ Prometheus for Online Programs and for Enhancing Traditional Courses

Both the University of Texas at Austin (UT) and the University of Michigan (UM) have Colleges of Engineering that are rated in the top ten in the country by *U.S. News*. Another similarity between these two prestigious Colleges of Engineering is that both use Prometheus in a variety of ways to enhance their teaching and learning.

UT Center Helps Faculty Improve Effectiveness

In June of 2000, Prometheus was introduced to UT's College of Engineering through its Faculty Innovation Center (FIC), a team of instructional designers, multi-media experts and systems analysts who work closely with UT's engineering faculty to improving teaching effectiveness.

As of June 2001, approximately 80 engineering faculty were using Prometheus, primarily to augment their traditional courses with online resources. More engineering faculty are expected to come on board in upcoming semesters. The goal, according to FIC Manager Kathy Schmidt, is to eventually have the majority of the College of Engineering's 250 faculty members incorporate Prometheus into the College's traditional face-to-face classes, as well as its online classes.

More than Technology Enhanced Face-to-Face Courses

In addition to enhancing traditional courses, Prometheus is the course tool behind UT's popular 48-week noncredit Software Project Management Certificate Program (SWPM). The SWPM Program recently moved to a completely online environment powered by Prometheus technology. SWPM, which is rapidly gaining international recognition, is taught by expert practitioners to their colleagues from the software industry.

Another class being delivered online using Prometheus is a popular for-

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"Prometheus was the answer to providing an immediate course management tool that was scalable as opposed to building a course tool in-house."

- Kathy Schmidt, University of Texas at Austin
Faculty Innovation Center Manager

GW's School of Engineering and Applied Sciences Seeing Benefits of Using Prometheus

In this newsletter, we have high lighted how Prometheus is being utilized by colleges of engineering at the University of Texas at Austin and the University of Michigan.

However, The George Washington University (GW) created Prometheus from the ground up and is currently the largest user of Prometheus in the country. One of the foremost examples of Prometheus usage in colleges of engineering is GW's School of Engineering and Applied Sciences (SEAS), where Prometheus usage continues to climb.

"I am very pleased with my first-time use of Prometheus this semester," says Dianne Martin, computer science professor with SEAS.

Martin's traditionally taught graduate computer science course on multimedia is being considerably enhanced by Prometheus. She says Prometheus allows her to easily upload slides, articles, multimedia examples and URL's for her students to read prior to physically attending class.

"Even more important for this class, the system allows the students to upload their multimedia assignments so that I can view them from my office computer," says Martin. "In the past, students had to turn in zip disks or CD's which were a nuisance to deal with. It has also eliminated a large amount of photocopying of notes and materials for students. Students who miss class can always find whatever they missed, eliminating the need to bring notes from previous classes each week. During class we can display examples and student projects for peer review.

"Overall, the (Prometheus) system is easy to use, quite secure, very efficient to update, and available for me to access from home, office, or on the road. So far it has exhibited a high level of reliability. I give it a solid A rating!"

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Colleges of Engineering Employ Prometheus

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credit course at UT on GIS in Water Resources. This course, taught by Professor David Maidment, an internationally recognized specialist in surface water hydrology and the application of geographic information systems to hydrology, covers the principles and operation of geographic information systems.

Most recently, FIC utilized Prometheus to create the College of Engineering's new learning portal, UTwired, to further support the use of technology in the engineering curriculum.

Meeting ABET Standards

In the meantime, FIC is working diligently at incorporating Accreditation Board for Engineering and Technology (ABET) standards into all of its Prometheus-driven classes. "ABET standards are very important in our college," says Schmidt. "We are modifying syllabi so that they follow ABET criteria, and we are exploring more ways of integrating ABET standards into the Prometheus course tools."

Scalability

"Prometheus was the answer to providing an immediate course management tool that was scaleable as opposed to building a course tool in-house, adds Schmidt. "We had started to develop a home-grown course tool, but I was very worried about the scalability. My staff is young, and I don't know how long they will stay. You don't want to create something and then not be able to fully support it. Prometheus was very appealing. Our systems analysts actually liked this course tool instead of criticizing it."

Powering Highly Regarded Automotive Graduate Programs at UM

At the University of Michigan College of Engineering, Prometheus has been in use for about one year and is the technology used for two graduate degree programs offered completely online: A Master of Engineering in Automotive Engineering and a Master of Engineering in Manufacturing.

The Center for Professional Development (CPD) at UM develops, delivers and supports the courses online for the College of Engineering. Winter 2001 was the first time that the "complete" Automotive and Manufacturing degree programs were offered online.

> *"The Prometheus team has focused very clearly on the market like ours as users and have been very responsive with upgrades and working on things that we have suggested."*
>
> - Ed Borbely, University of Michigan
> Director of Center for Professional Development

Expanding Online Horizons with Prometheus

According to CPD Director Ed Borbely, four additional graduate degree programs - in wireless integrated microsystems, plastics engineering, pharmaceutical engineering and financial engineering - are slated to go completely online, supported by the Prometheus platform, within the next 18 months. Additionally, plans are currently in effect to convert two traditional, on-campus noncredit certificate programs - an Accelerated Six Sigma Certificate and a Lean Manufacturing Certificate - to online delivery with Prometheus.

The Automotive degree program is driven by the need for technical leaders in the automotive industry. It's ideally suited to working engineers who desire broader graduate experience but cannot be away from work full-time. The Manufacturing degree is offered in collaboration with General Motor's Technical Education Program, and it features world-renowned faculty teaching skills across both engineering and business disciplines.

An International Audience

Both programs are attracting students from all over the world, primarily from North America, but also from Mexico, Luxembourg and China, says Borbely. "Some of our students are at Ford or General Motors locations where they might be taking one of our courses based on a competency they want to pick up and drop into another degree program."

Between the two programs, 15 courses were offered online last semester, and 50 faculty who participate in the UM engineering online programs are currently using Prometheus. Outside of the online environment, CPD has not promoted Prometheus as a teaching tool for traditional classes, since the College of Engineering funds their own home-grown course management system, says Borbely.

Word of Mouth Brings More Users

However, Borbely added that about 30 additional faculty who do not teach online have started to use Prometheus to enhance their traditional classes. "We've only given instructor accounts to faculty (outside of the online program) who have heard about Prometheus through word of mouth and have asked us. They use it for all their courses. It is popular in that sense. The word of mouth has spread, and this is without no real support from us."

Overall Borbely added that UM engineering faculty have reacted "very positively, due to the fact that they have control [of creating their courses]. The ease of use, the intuitive nature of Prometheus, is a big plus."

UT Software Quality Institute Converts to Hybrid Program

When the Faculty Innovation Center (FIC) at the University of Texas (UT) at Austin, College of Engineering adopted Prometheus as its course tool, one of the first departments seeking to merge new technology into their course offerings was UT's Software Quality Institute (SQI). In particular, SQI wanted to convert its popular face-to-face, 48-week Software Project Management Certificate Program (SWPM) to the online environment.

"The online mode will enable us to expand. . . We've been getting inquiries from all over the world."

- Linda Shafer, University of Texas at Austin
Program Manager, Software Quality Insitute

Serving the Local Community and Beyond

By going online, SQI could better serve the busy Austin software specialist community with the necessary flexibility of online learning, plus it would give SQI the opportunity to start offering its program both nationwide and internationally.

In September 2000, SQI offered a hybrid on-campus/online, one-day pilot course called the Software Project Management Refresher. The traditional classroom refresher course was videotaped and simultaneously streamed online.

SQI invited previous graduates of the program to revisit the campus for the refresher and also enlisted several students to take the refresher online from remote locations to test the streaming media.

"The refresher reduced the mystery surrounding the set-up procedures for us. The video capture and live streaming of the lecture has worked well from this very first try," says Project Manager Linda Shafer. One month later, SQI introduced the entire program in the new hybrid mode, utilizing the Prometheus platform with all its course tools, including streaming media of the program's on-campus lectures.

This first-time run of the entire program did not interrupt the face-to-face classes except for adding a filming crew and a class instructor/mentor to work with students who used the online mode when they could not attend class. There was no drastic change or loss of quality brought into the popular face-to-face classes, and UT has learned a great deal about providing the program online. The program will soon be offered to SQI's newest international client, Schlumberger Oilfield Services and SchlumberferSema.

Learning Lessons

Shafer says that one lesson learned is that the SWPM video lectures need to be shortened. Typically the face-to-face classes consist of two 75-minute lectures. "We found that it's very difficult for students to sit down and watch three hours of streaming video," says Shafer. Hence, SQI is encouraging instructors to modularize their material into 15-minute lectures augmented by question-and-answer periods and/or student exercises.

"We're also working on teaching our instructors more about the constructivist method of learning - setting objectives for what the student should walk away knowing," adds Shafer. "One of our strengths is that the instructors are practitioners and their experiences always bring these classes to life. On the other hand, these practitioners don't necessarily have platform skills, so we are doing a little bit more training of the trainers, not only to teach general platform skills, but specifically how to present in this online environment, which mostly has to do with smaller and smaller modules."

Facilitating Student Interaction

In addition to all the typical course tools, Prometheus will also help facilitate team projects, which are an important element of the SWPM program. "If we have students from all over the world, we will not be able to have them stand up and give presentations," says Shafer. "We'll have them do it virtually."

"We are going to ask students to prepare a lesson within Prometheus and come [into the virtual and face-to-face clas]) and be prepared to discuss what they have studied, so there will be more student interaction [both onsite and online]."

Through the Prometheus Groups function, collaborative learning teams can communicate with each other via email, chat or threaded discussions, as well as exchange files, in a designated group-specific environment within the Prometheus platform. Additionally, Prometheus's tracking feature allows faculty to assess the depth of student interaction within such groups.

Being located in a state capital as well as a growing city has brought a mixture of students into the UT program from local state agencies with large IT shops, as well as from small start-ups and large corporations such as Dell, Motorola and Cisco.

"The online mode will enable us to expand," says Shafer. "Through our Web site, we've been getting inquiries from all over the world, [including] a lot from India and the Philippines. We're going international, and that's one of the reasons why we are so interested in getting this online version right the first time through Prometheus."

UM Graduate Degree Programs Go Completely Online

The Center for Professional Development (CPD) at the University of Michigan (UM) College of Engineering has provided a variety of traditional distance education classes for more than thirty years.

Over this time, CPD's IT staff has built customized databases that cater primarily to the administration of their own operations. However, as distance education became more technology enhanced, the prospect of incorporating course-content delivery capabilities administratively into CPD's operational databases was a new challenge.

Finding the Right Software

In early 1999, CPD had to make a decision to build in a software package that would make their computer system more than just a data broker, says Max Zain, manager of MEonline. "We needed something that would let the students and faculty handle what they needed on their own without us being the bottleneck. We needed an easy-to-use and very flexible software package."

Zain says CPD started looking at "quite a few" of the popular course management system providers, "but we could not come to a conclusion until about a year later when we heard about Prometheus."

What drew CPD to Prometheus? "It satisfied all the bases we were looking for," says Zain. "It's web-based; it's a tiered system, database back-ended and easily customizable. So we quickly decided that Prometheus was what we wanted to bring in."

Creating a Custom Interface

Once that decision was made, Zain says, events happened quickly. In July and August 2000 CPD installed Prometheus, trained internal staff and created MEonline, their new web-based courseware application, powered by Prometheus, but with their own custom interface.

"I like the separation of storage through the tiered architecture; the database backend structure, the middle ColdFusion and the Web-server front-end make it easy to do anything; even administrating the system is very easy."

- Max Zain, Manager of MEonline, University of Michigan

Piloting Change

By Fall 2000, CPD piloted two graduate-level courses with Prometheus using a hybrid distance education/face-to-face model: Automotive Engineering and Mechanism Design. Historically, the on-campus lectures for these classes were videotaped and shipped to automotive industry work sites in North America and Latin America. The sites had a minimum of four students who typically viewed the tapes together in a collaborative environment.

Now, with Prometheus, CPD could stream the lectures and give students the option of viewing them on their own terms. "Based on Prometheus's ability to support streaming video, we started capturing video in real time and dumping it into the two courses," says Zain. "For course handouts, we scanned them and uploaded them for the professor. So it was really light-weight for the professors. All they needed to do was let students know their homework would be online."

Springboard to Success

These two pilot courses were the springboard for allowing UM to update the programs in both Master of Engineering in Automotive Engineering and Master of Engineering in Manufacturing to modern versions with web-based components.

By Winter 2001 "every course we offered via traditional distance learning [in the two degree programs] we also offered using video streaming and the other features of Prometheus to enhance what is happening on campus and extend this enhanced product to people wherever they are," says CPD Director Ed Borbely.

"Streaming video became one of the popular things even for our on-campus students," says Zain. "Students were excited about it because they could view lectures they might have missed before taking their exams."

Faculty are also seeing the benefits. "They like the fact that it has a similar interface no matter what they want to do," says Zain. "They also like student tracking."

Zain and his staff are also pleased. "I like the separation of storage through the tiered architecture; the database backend structure, the middle ColdFusion and the Web-server front-end make it easy to do anything; even administrating the system is very easy," he says. "We also like the fact that we can fully customize it and extend it; we're fully bent on utilizing this feature."

Addtionally Zain says he's "very excited about the new files tree structure for posting files. The new navigation and hierarchical view of your files is much better in Version 5. We like that."

Borbely adds that on-campus and online students will more readily collaborate on group projects through Prometheus's "Groups" and "Projects" functions. "Having people from [off-campus] automotive companies collaborate with our master's degree on-campus students will really add a lot to these degree programs."

For a complete list of Prometheus features, visit www.prometheus.com or call toll-free 1-866-296-5107 email: info@prometheus.com