On Continuing Education Through Distance Learning

M.M. Morcos, D.L. Soldan
Department of Electrical and Computer Engineering
Kansas State University

E. Stauffer, M. Sinn
Division of Continuing Education
Kansas State University

M. Dorcey
Engineering Extension
Kansas State University

INTRODUCTION

Distance learning serves students who are separated geographically from their instructors for a major portion of the learning enterprise. Kansas State University distance learning courses are offered through a combination of the following mediated delivery systems: printed course materials, audiotapes, videotapes, television, desktop video, teleconferences (audio and video) and World Wide Web. Courses may include face-to-face sessions in addition to mediated delivery. Distance learning courses also sometimes include a few on-campus class sessions or audio teleconferences, message boards, listservs, or live chat rooms for discussion, review, and testing. KSU offers both credit courses and non-credit programs via distance learning methods.

OFF-CAMPUS GRADUATE PROGRAMS

The College of Engineering and the Division of Continuing Education at Kansas State University offer several off-campus graduate engineering courses for credit each semester. Graduate level courses which can be taken leading to the Master's degree in several engineering disciplines are offered. These courses are the same as regular on-campus offerings but are presented through various media such as videotapes or compressed-video lectures face-to-face at off-campus sites. Off-campus graduate programs are offered by several departments in the College of Engineering. Qualified students in Kansas and all parts of the United States can get an engineering Master's degree, no matter where they live.

Courses can be taken for graduate credit leading to an advanced degree, or can be taken without formal degree candidacy. Courses can also be taken on an audit basis, to apply toward continuing education requirements for engineers. Table 1 shows the number of full-time equivalent (FTE) student credit hours generated through Kansas State University courses offered through the Division of Continuing Education by the College of Engineering [1].

Table 1
Full-Time Equivalent Student Credit Hours for Courses Offered from 1990 to 1997

FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
35	55	60	70	205	195	220	185

DELIVERY TECHNIQUES

Compressed Video

Graduate programs in engineering have been offered to off-campus students for many years[2, 3, 4]. Most of the successful programs have been concentrated in metropolitan areas with large numbers of engineering companies or at military installations. Current technology and demographics present new challenges and opportunities in reaching many engineers who work for small companies and need to continue their education while on the job[5].
Seven years ago Kansas State University became one of the founding members of the Kansas City Educational Network (KCEDNET), whose objective was to provide educational products to employees of Kansas City area businesses with educational opportunities in the workplace. While many educational opportunities existed in the metropolitan area most required attendance at the campus of the providing institution. Additionally, no graduate level programs in engineering disciplines were available. KCEDNET was formed to address these issues.

The central objective of Kansas State University's participation in KCEDNET was to offer graduate level programs in engineering and computer science. The MSEE program was the first official KCEDNET graduate program. Classes started off being offered via live television with two-way audio. The originating university provided a compressed video signal via standard telephone lines to the broadcast facility which, in turn, broadcast the signal to several receive sites. In the spring of 1996, the compressed video broadcasts were discontinued and students were mailed videotapes individually. A media fee to cover production and mailing costs was charged to each student.

Desktop Video

Kansas State University is taking distance learning one step closer to face-to-face realism with the new desktop video equipment. This method could bring big changes to the way engineering professors teach some of their outreach courses. Desktop video uses computers equipped with small cameras and high speed telephone lines called integrated services digital network (ISDN) to provide two-way, live video and full duplex audio communication between a number of points. Dubbed TELENET2 in Kansas, the system can currently link 13 other sites around Kansas simultaneously.

Historically, TELENET was an audio network that carried mostly education courses. Since 1996, with the change to the Picture Tel LIVE PCS 50, Windows-based desktop videoconferencing equipment, electrical engineering professors are showing interest in the desktop video approach. Two professors in the Department of Electrical and Computer Engineering are using the system for a National Science Foundation grant project they are participating in with the University of Missouri-Rolla and the University of Arkansas [6, 7]. The project entails professors at all three universities alternating teaching duties through the use of electronics.

World Wide Web

The World Wide Web is rapidly becoming another standard tool of teachers. A recent press release published by KSU's University News listed more than 150 courses that use the Web in some form for their courses, and two lectures in the series presented by the university provost during the past fall touched on or directly addressed the issue of using the World Wide Web as a teaching tool.

Use of the Web varies, depending on the needs of the course and the style of the instructor. Some professors use *newsgroups* in conjunction with lecture and project notes archived on their Web site video tapes. In most instances, professors are not yet teaching entire courses on the Web, but rather using the Web as an easily accessible resource for students. Using the Web moves routine information out of the classroom to leave time for discussion. In this way, students could have access to a variety of information instructors had developed for their courses prior to coming to lecture.

An extension of this advantage, some instructors found that it enabled them to easily direct students to related material on a subject through the use of hyperlinks, thereby incorporating others' work into teaching materials without violating copyrights. And hyperlinking someone else's Web site to yours does not require permission.

The Internet may also help overcome one of the major problems with distance learning: a lack of identity among the students with the institution. The Web is used as a way to recover some of the personal contact lost in much of distance learning. Through the use of listservs, chat rooms, message boards and other means of communication, students work closely together, especially in solving technical questions.

The Division of Continuing Education at KSU has come a long way in the development of web-based courses. The Division now offers a number of services to instructors to aid in the creation of web-based instructional materials. Web course templates have been developed that allow the instructors to drop in their syllabus, course assignments, and lecture material. Video and audio clips, three-dimensional viewing capabilities, and other features make the courses interesting and fun to take. Again, the use of *chat rooms* for the course allows real-time communication between students and teachers and message boards provide asynchronous communication from any web browsers.

The Division also provides on-line registration for courses and non-credit programs through a new Netscape Commerce Server. This secure web server allows safe business transactions over the Internet. Registrants can register for programs using their credit card without the worry that the transaction might be less than secure.

The Web can be an asset to both teacher and student, but there are some caveats to be aware of in contemplating the use of the Web as a teaching tool. Courses put on the Web are never finished. Web pages need continual updating and maintenance, and generating course material for Web sites can be a major undertaking.

And the process is not that simple. Converting a course to the World Wide Web is not just a matter of translating course teaching notes to HTML. Faculty have to provide a course overview, list assignments and the course schedule, right at the beginning. There are also issues of student and faculty comfort levels and access to equipment and support that must be considered. So, in spite of their enthusiasm for the Web, educators experimenting with it make it clear that the future of teaching is not totally in electronic forms.

VIDEOTAPED COURSES

A number of courses, including the distance learning engineering Master's degrees, use videotaped formats. Students listen to and watch taped lectures, complete reading and writing assignments, take tests, and perform other activities outlined in the course syllabus. Tests are supervised at the student's location by a proctor designated by the student and approved by the instructor. The engineering Master's programs consist of videotaped courses which are tapes of the current on-campus courses. Tapes and homework assignments are mailed after every class to distance students. The students correspond with their instructors via e-mail or telephone, and are able to communicate with fellow students through listservs, chat rooms, and message boards set up by the instructor or the Division of Continuing Education.

STUDENT SERVICES

Kansas State University offers a variety of student services for distance learning students. The services are designed to make the student's educational experience a positive one by offering, as much as possible, the same services as on-campus students have.

Library Services

The Division of Continuing Education (DCE), working closely with staff in KSU Libraries, has developed a unique service for students enrolled through the Division of Continuing Education. No matter where KSU students live or what hours they work, they have access to the materials and services of KSU Libraries.

A Library Facilitator will carry out research tasks and will check out and duplicate materials for currently enrolled off-campus students. Services available include access to bibliographic indices, book check-out, photocopying of journal articles, ERIC documents, government

documents, and other documents contained on microfiche or microfilm. Most requests can be processed within five working days of receipt.

Help Desk

DCE wants every student taking a course that requires technology to have a positive experience so a special Technical Support Help Desk service is provided. The Help Desk currently provides phone support between 8 a.m. and 5 p.m., Monday through Friday. After hours, students may leave a voice mail message and will be contacted the following morning. The service helps with the installation and technical assistance of the software needed for a class, connecting with the DCE web site, technical course-related questions, or problems with listservs, bulletin board or chatrooms.

Student Handbook

A DCE Student Handbook is available to all students who enroll in a Continuing Education course. The book explains the types of courses offered, the types of programs and degrees available, procedures for applying to K-State and enrolling in a course, and various policies. It also gives information on obtaining textbooks, financial assistance, student services, testing procedures, and a section on "Where to Go for Answers"

NON-CREDIT PROGRAMS

Several conferences and non-credit engineering programs are available for training, certification or recertification. For the first time, the World Wide Web is being utilized by several departments in the College of Engineering to present professional development short-courses.

CONCLUSIONS

The barrier that stands between off-campus people and the educational resources they need is a result of too much distance and too few people. Strategies for overcoming this barrier must blend both modern and traditional possibilities to accommodate educational needs of people who cannot leave their jobs to complete their education.

Distance Learning serves students who are separated geographically from their instructors for a major portion of the learning enterprise. Some courses are currently offered via TELENET 2 using computer video conferencing, while other courses are being developed utilizing the World Wide Web as the delivery mechanism. The Web can be an asset to both teacher and student, but there are some caveats to be aware of in contemplating the use of the Web as a teaching tool. Courses put on the Web are never finished; Web pages need continual updating and maintenance, and generating course material for Web sites can be a major undertaking.

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MEDHAT M. MORCOS

Dr. Morcos is Professor of Electrical and Computer Engineering at Kansas State University. He received the Ph.D. degree from the University of Waterloo, Ontario, Canada. He has been involved in teaching distance courses for the last five years. Morcos is a member of the IEEE Education Society and IEEE Power Engineering Society. His current research includes power electronics, power systems and high voltage engineering.

DAVID L. SOLDAN

Dr. Soldan is Professor and Head of Electrical and Computer Engineering at Kansas State University. He has been active in delivering graduate courses to off-campus locations since 1986. Dave is a member of the IEEE Education Society, IEEE Computer Society, the Frontiers in Education Steering Committee, and several other professional organizations. He served as Co-Program Chair for FIE'95 and FIE '98.

ELLEN M. STAUFFER

Ellen Stauffer is Program Coordinator for the Division of Continuing Education at Kansas State University. She coordinates both credit and non-credit programs and courses for the College of Engineering. Ellen received the B.A. degree in Mathematics from Baylor University and M.S. in Education from Kansas State University. She has served as Chair of the Division of Continuing Education Web Site Task Force for the past two years.

MELINDA L. SINN

Melinda Sinn is Public Information Coordinator for the Division of Continuing Education at Kansas State University. She oversees all the marketing and promotion for distance learning courses. She received the B.S. and M.S. degrees in Home Economics and Mass Communications from Kansas State University. Sinn is involved in developing electronic marketing strategies for the various new mediated delivery courses.

MICHAEL J. DORCEY

Michael Dorcey received the B.A. degree in history from Creighton University in 1978. He is Editor in Engineering Extension, where he serves the writing, editing and desktop and Web publishing of his department and those of the dean of engineering at Kansas State University. Mike is the Advisor of the Kansas State Engineer staff, a publication produced by engineering students. He has written many articles on distance learning.