March 10, 2005

UNIVERSITY of NORTH TEXAS

CECS

Computer Education & Cognitive Systems

"Technology education for today and tomorrow..."

The Computer Education and Cognitive Systems (CECS) Program at the University of North Texas prepares educators, researchers, and technology personnel to effectively select and implement emerging technologies to satisfy the information processing needs of the schools and businesses they will serve. Additionally, the CECS Program promotes excellence in teaching and learning, focuses on an appreciation for the technological, cultural and intellectual nature of knowledge while supporting lifelong learning and individual development with technology tools.

Introduction

CECS is a multifaceted program focused at three levels of education: an Undergraduate Minor, a Masters Degree with two areas of emphasis, and a Doctoral Degree. Each aspect of the program has specific goals and audiences, but the common theme is the development of the learner's technology skills and research capacity. Learners select appropriate forms of technology for specific instructional tasks and engage in learning through distance delivery paradigms or traditional face-to-face instruction; they gain an appreciation for the technical nature of knowledge as they advance scholarship, discover and use emerging technologies, foster excellence in teaching with technology, and apply research principles and best practices to develop new knowledge for practical implementations.

This document contains the philosophy of the CECS Program as well as its vision and mission statement. It also provides a historical perspective of the program, its faculty, staff, students, and academic degrees. Lastly, this comprehensive document visually describes student enrollment, course offerings, and future goals of the program as part of its current academic plan.

Contents

1 Vision Statement

Computer and Information technologies continue to change the face of education internationally, nationally, regionally, and statewide. The program in Computer Education and Cognitive Systems is nationally and internationally known for preparing future educators and technology professionals to advance knowledge of technology tools and their applications. Faculty members within the program plan to continue this leadership role through scholarship, grant acquisition, teaching, and service activities.

CECS Graduates play key roles in a wide variety of educational and business settings (Principals of Schools, Technology Coordinators, Web Designers and Developers, Technical Consultants, Assistant and Associate Professors, Instructional Designers, and Researchers). Their roles and their impact on Educational Computing will continue to evolve and expand over the next decade. The vision of the CECS Program is to provide students with knowledge and experience that adds value to computer education and information technologies and products through research, development of applications and application of current tools to solving educational problems.

The program strives to create and maintain a community of scholars that enables all members of a diverse faculty to contribute their unique strengths. It is the program's vision that through collaborative efforts both on and off campus, the program will thrive in conducting research, teaching, and service.

Effective research and teaching by each faculty member is a fundamental requirement for maintaining the program's regional and national recognition. The program is committed to playing a significant role in the continued investigation of the fundamental questions of this field through scholarly inquiry. As computer and information technology and subsequent theory in our field changes, the program will discover and employ the best uses of these advances in our teaching and learning processes in order to bring quality education to our students through both distributed learning and on-campus experiences.

The success of this vision will assure that the program continues to play a vital role in developing and adding scholars, educators, and professionals to our field.

2 Mission Statement and Goals

The program in Computer Education and Cognitive Systems prepares graduates for dynamic roles in Educational Computing. The program's mission is to provide resources, research, and service for education and leadership to the computer education community and to prepare scholars, educators, and professionals of the highest quality to serve the state, the region, and the national/international community.

Towards our mission to increase the program's national and international recognition, the program faculty is targeting the following initiatives:

1. To create and disseminate new knowledge, with special emphases on:
    - Research & Development in emerging technologies, and
    - Scholarly production on technology's role in teaching & learning.

2. To develop faculty, researchers, and K-12 educators who are master technology innovators as well as reflective practitioners and scholars.

The program will continue to support the following goals:

- Prepare students as scholars, educators, and professionals who can demonstrate excellence in Computer Education in a technology- and information-driven environment.

- Contribute to professional, academic, and public knowledge through publication, consulting, service, and leadership.

- Provide quality distributed learning opportunities while maintaining high-quality on-campus experiences.

- Increase national recognition as a leading program in Computer Education and Cognitive Systems that prepares scholars for careers in academic, educational, and corporate, environments through a rigorous, collaborative, and technology infused curricula.

3 Faculty Prospectus

The program in CECS is designed to prepare professionals to develop instructional materials using a variety of technology vehicles and to deliver them to students and clients at all age levels, child to adult. The faculty believe that the use of technology will continue to expand and this use will become increasingly more complex rather then less complex. In order for professional developers and teachers to understand the use of technology and effective implementation, much more needs to be known about the process, including the potentials for interaction with the students.

Additionally, the faculty are convinced that the use of the Internet as a vehicle for delivery of instructional and informational materials will continue to expand in all phases of society. Therefore, the faculty in CECS anticipate more interest and need for research and application of technology to all phases of education throughout society.

While this program is not the only technology in education program in the country it is unique in that students integrate various technologies with human capabilities in an interdisciplinary approach to cognition and technology integration. It is in this combination that we feel we can best prepare classroom teachers and other instructional delivery agents best. We already have a strong regional reputation and a growing national reputation with the Texas Center for Educational Technology. This center is self-sustaining and provides an excellent service to the educational process throughout the state. In addition, the Institute for the Integration of Technology into Teaching and Learning (IITTL), the second self-sustaining center within CECS, has developed strong liaisons through joint activities with other programs with the College of Education and has developed a national/international reputation for research in technology integration.

The CECS faculty feel that our strengths remain in our ability to research and teach about effective strategies to deliver instructional material. To that end we have invested heavily in Internet based delivery systems and investigating the variables of this delivery that enhance or limited learning. We have three points of focus for continued research: (1) classroom technology integration, using emerging technologies; (2) interactive virtual interactive environments; (3) cognitive processes for Internet environments.

We feel there will continue to be funding sources available for research and delivery of products in these three areas. Since computer access for many organizations is beyond their resources the increase of handheld delivery capability has the potential of making technology available to everyone. Similarly, the instructional advantages of interaction in online instructional activities is as important as traditional instructional environments and building virtual environments that provide this interaction will have great value for all future online delivery systems.

Graduate students involved in any and all of these initiatives will be well positioned to take leadership roles in universities and government agencies that will increasingly be asked to provide effective instructional systems for a variety of needs.

3.1 Faculty

James L. Poirot, Ph.D., Texas Tech University
Computer-based education, artificial intelligence, computer-assisted instruction. Dr. Poirot is founder of the Texas Computer Education Association.

Cathleen Norris, Ph.D., University of North Texas
Computer-based education, human factors, teacher productivity. Dr. Norris is the Ph.D. Program Coordinator.

Gerald A. Knezek, Ph.D., University of Hawaii
Computer-based education, telecommunications and informatics, research design, educational psychology. Dr. Knezek is a founder of the American Research Educational Association SIG on Technology as an Agent of Change in Teaching and Learning (TACTL).

Jon I. Young, Ph.D., Brigham Young University
Instructional and cognitive psychology, instructional design.

Terry L. Holcomb, Ed.D., Indiana University
Media administration and change-management. Dr. Holcomb serves on the editorial board of Tech. Trends, and is on the board of the Texas Association for Educational Technology.

Demetria Ennis-Cole, Ph.D., Kansas State University
Computer education instruction and administration, systems development, Neural networks, Internet and Human Development. Dr. Ennis-Cole is the undergraduate program coordinator.

Mark Mortensen, Ph.D., University of North Texas
Computer applications, distance education, analog and digital media technologies. Dr. Mortensen is the Masters Degree Program Coordinator.

Greg Jones, Ph.D., University of Texas at Austin
Distributed Learning, telecommunications and informatics, computer networks and services, wireless communications, interactive multimedia, virtual learning environments, 3D graphics.

3.2 Associate Faculty

Dana Arrowood, Ph.D., University of North Texas
Rhonda Christensen, Ph.D., University of North Texas
Lemoyne Dunn, Ph.D., University of North Texas
Martha Peet, Ph.D., University of North Texas
Keith Restin, Ph.D., Oklahoma State University
Cliff Whitworth, Ph.D., University of North Texas

3.3 Staff

Cindy Trussell, Administrative Assistant, Ph.D. Program Contact
Susan Khoury, Administrative Services Officer

4 Program in Computer Education and Cognitive Systems a 25 Year Review

The University of North Texas has been recognized worldwide for its faculty, programs of study, and students in the area of Computer Education. The following is a brief summary of major accomplishments of the program and of its faculty demonstrating a broad-based recognition by peers, agencies, and corporations. Each entry includes a brief description of the effort and/or event. Additional details can be provided upon request.

This list does not include individual faculty publications, although hundreds of such publications have been attained. However, individual activities and/or awards that speak to a national recognition for the program are provided. In addition to providing websites that are helpful in measuring the significance of the listed entry, descriptions of organizations or events that speak to its significance are attached.

Initially, faculty members now in the CECS program were not in the same academic unit. Drs. Poirot, Norris and Knezek were in the Department of Computer Science in the College of Arts and Sciences. Drs. Young and Holcomb were in the College of Education. Drs. Ennis-Cole and Jones joined the program after it was established within the College of Education. Several other faculty members have joined and subsequently left the program. However, the concentrated effort of key faculty has continued over an extended period of time to bring recognition to UNT.

4.1 International

1. **ISTE Founding Board member** (Poirot).
   From 1981-1982, Jim Poirot was on the first Board of the International Society for Technology in Education (ISTE), first known as the National Council for Computers in Education. ISTE is now the premier society for professionals interested in technological applications in education. It is the largest professional organization for technology in education in the world. To view detail information about ISTE, visit http://www.iste.org/about/
2. **Fulbright Scholar** (Knezek).
   Dr. Gerald Knezek was chosen as a Fulbright Scholar to Japan for the 1993-94. Cross-cultural research conducted at the Tokyo Institute of Technology initiated a decade of publications about the impact of technology on teaching and learning.
3. **Co-President, International Society for Technology in Education** (Norris).
   During 2002-2003, Cathie Norris led ISTE through the first year it was home for the National Educational Computing Conference.
4. **Executive Director of the Caribbean Computer Educator Association** (Poirot).
   Jim Poirot worked for years (1995-2002) with a group of educators in the Caribbean. Four international conferences were held to initiate and facilitate technology integration in the third world countries of the Caribbean.
5. **Computer Laureate Award** (Norris).
   Cathie Norris was awarded this outstanding 2003 honor by the Computerworld Honors Program.

6. **Making it Happen in Education Award** (Norris and Poirot).
   An award given by top educational companies including Technology and Learning Magazine and Turner Learning recognizes leaders in the profession. Norris received the award in 2002 and Poirot was recognized in 2005. Previous award winners were Linda Roberts from the U. S. Dept. of Education and Education Secretary Richard Riley.
7. **JSPS Scholar** (Jones)
   Dr. Greg Jones was chosen as a Japan Society for the Promotion of Science Scholar and studied at Japan's National Institute of Multimedia Education in 2001.
8. **International Presentations in over 20 countries**
   Each member of the CECS program have presented at international venues throughout the world, including the following countries: Australia, Austria, Brazil, Bulgaria, Canada, China, Curacao, Denmark, England, Finland, France, Germany, Greece, Italy, Jamaica, Mexico, Netherlands, Netherland Antilles, New Zealand, St. Martin, South Africa, Sweden, Switzerland, Taiwan, Thailand, Trinidad, and the Ukraine.

   In addition to those countries listed above, one of the program members has excelled in the international arena. The following citations identify those countries and/or associations that have recognized Cathie Norris in the field of hand-held devices. These are all invited keynote addresses.
   "Meeting the Challenges of Online Testing; Reliability, Scalability and Security,(2001) L'Aquila, Italy.
   "K-12 & Technology in the Post-PC Era: Proposing A Research Agenda To Realize the Potential". (2001) Copenhagen, Denmark.
   "Palm-Sized Devices Are the PC of Choice for Education" (2002) Berlin, Germany.
   "This Time Can Technology Have an Impact? A Talk in 20 Rhetorical Questions". (2002) Växjö University, Växjö, Sweden
   "The Impact of Technology on K-12: Past, Present, and Future" (2003) Athens, Greece.
   "From Desktop To Handheld: A Learner-Centered Design Approach To Developing Software That Scaffolds Learning Across Platforms". (2003) Pisa, Italy.

4.2 National

1. **Host for three NECC conferences** (Poirot, Norris).
   UNT is the only university in the country that has hosted three National Educational Computing Conferences. Drs. Poirot and Norris were Conference Chairs for NECC '81, NECC '88 and NECC '92. See the following site for further information on NECC. Additionally, TCET and UNT were co-hosts for NECC '2003. NECC is the premier educational computing conference in the world, with over 17,000 attendees and hundreds of exhibitors representing approximately 50 nations. See http://center.uoregon.edu/ISTE/NECC2005/

2. **President of the National Educational Computing Conference Steering Committee** (Poirot).
   Jim Poirot was Chair of the Steering Committee of NECC from 1989-1991. In 1991 Poirot led efforts to form an association to sponsor NECC. The National Educational Computing Association (NECA) was an association of 10 professional associations that represented more than 12,000 members. The associations:
   Association for Computing Machinery (ACM)
   Association for Computers and the Humanities (ACH)
   EDUCOM
   Educational Computing in Minority Institutions (ECMI)
   ISTE
   Consortium for Computing in Small Colleges (CCSC)
   Institute of Electrical and Electronics Engineers Computer Society (IEEE-CS)
   Society for Computer Simulations (SCS)
   Association of Small Computer Users in Education (ASCUE)
   Association for Educational Communications and Technology (AECT)
3. **President of the National Educational Computing Association (NECA)**
   Jim Poirot was the first president of NECA in 1992-93.
4. **President of the National Educational Computing Association** (Norris).
   Cathie Norris was the president of NECA from 1994-2001.
5. **Co-Chair of the ISTE / NECA Transition Team** (Norris).
   Cathie Norris led this group consisting of representatives from both organizations to negotiate the merger of the two organizations during the 2001-2002 timeframe.
6. **Steering Committee Member of the 2000 National Conference for Preparing Tomorrow's Teachers to Use Technology (PT3)** (Poirot).
   Jim Poirot served on this U. S. Department of Education project.
7. **American Educational Research Association Technology as an Agent of Change in Teaching and Learning (TACTL) SIG charter member and President** (Knezek).
   Dr. Knezek is recognized for his leadership and research efforts within AERA, including his 1991 Distinguished Paper Award. He was a founder of the TACTL SIG in 2001.
8. **SITE founding VP of Research** (Knezek).
   In addition to his leadership efforts in SITE, Dr. Knezek received the 1997 SITE Best Quantitative Research Studies Award and the 2003 Outstanding Paper Award. AACE SITE is a nationally recognized conference in the area of educational technology. See http://www.acce.org
9. **Conference Chairman of the Ernest Boyer Technology Summit** (Poirot).
   Jim Poirot served on this PBS effort in 1997 and hosted a Summit at UNT.
10. **U. S. Department of Energy Super Collider Grant Program** (Poirot).
    TCET and UNT organized and directed the longest running and last project funded by the Super Collider project.
11. **Preparing Tomorrow's Teachers to Use Technology (PT3)** (Poirot and Knezek).
    Drs. Poirot and Knezek were Principal Investigators of these two multi-million dollar grants from the U. S. Dept. of Education. UNT was the only university receiving both a Catalyst Grant and an Implementation Grant in PT3.

12. **South Central Regional Technology Education Collaborative (RTEC) Partner** (Poirot).
    UNT is a major partner in this five-year U. S. Dept. of Education Grant and is the Higher Education Partner serving the states of Texas, New Mexico, Oklahoma, Arkansas and Louisiana.
13. **Regional Training Agency (RTA) for the Intel Teach to the Future Project** (Poirot).
    This multi-national project has brought international exposure to UNT. With over 400,000 participants in the project worldwide, UNT is responsible for over 20,000 of this number. UNT has been recognized by Intel and its evaluation contractor as one of the top five RTAs in the world.

4.3 State

1. **Texas Center for Educational Technology (TCET)** (Poirot, Holcomb, Knezek, Norris, Young).
    In 1989, UNT was awarded funds to establish TCET on its campus. Legislatively funded for three years, TCET came to UNT as a result of a competitive grant award, winning over proposals from Texas A&M, UT-Austin, Texas Tech, and others. Since its inception, TCET has been the most successfully funded center at UNT.
2. **Texas Computer Education Association (TCEA)** (Poirot).
    Jim Poirot is recognized as the founder of one of the top three state-level associations in educational technology. Founded in 1978, TCEA now attracts over 10,000 participants at its annual conference held in Austin, Texas.
3. **President of Texas Academy of Science** (Poirot).
    Jim Poirot was elected as president of this statewide association for 1979-80.
4. **Telecommunications Infrastructure Fund (TIF) Grants** (Poirot).
    UNT received more staff development monies than any other university in Texas. The TIF state agency awarded UNT/TCET more than 4.5 million dollars for these efforts from 2001-2003.

4.4 Federal, State and Corporate Grants

The CECS program has had a strong history of enhancing its research and reputation through grant funding. The following is a partial list of agencies, companies, and/or foundations that have provided funds to support the educational technology efforts within the CECS program through faculty effort or through two of the most productive research centers on campus TCET (Poirot) and IITTL (Knezek). From 1999-2005, over 20 million dollars in funding was obtained.

	1999		
Poirot, James	Texas Coordinating Board	Eisenhower	$80,000
	Statewide PT3	U. S. Dept. of Education	$64,000
	PT3 Catalyst	U. S. Dept. of Education	$621,000
	Intel Teach to the Future	Intel Foundation	$152,000
	National Center for PT3	U. S. Dept. of Education	$185,000
	Master Teacher Development	Gates Foundation	$85,600
	2000		
Poirot, James	PT3 Catalyst	U. S. Dept. of Education	$621,000
	Statewide PT3	U. S. Dept. of Education	$64,000
	Intel Teach to the Future	Intel Foundation	$152,000
	National Center for PT3	U. S. Dept. of Education	$185,000
	PT3 Catalyst	U. S. Dept. of Education	$621,000
Knezek, Gerald	Millennium II: Preparing Tomorrow's	U. S. Dept. of Education	$250,897
	Millennium Project: Pathways for Pre	U. S. Dept. of Education	$211,334
	Refining Best Practice	Allen ISD	$102,586
	2001		
Christensen Rhonda R	Intel Teach to the Future	Intel	$4,000
Knezek, Gerald	Refining Best Practice	Allen ISD	$67,034
	Millennium II: Preparing Tomorrow's	U. S. Dept. of Education	$250,897
	Refining Best Teaching	Allen ISD	$210,020
IITTL (Woods PI)	Bringing Up Girls in Science (BUGS)	National Science Foundation	$283,757
Norris, Cathleen	Creating A Corpus of	U of Michigan	$25,795
	KDI: Creating a Corpus	U of Michigan - Regents	$25,795
Poirot, James	Intel Teach to the Future	Intel	$500
	Statewide PT3	U. S. Dept. of Education	$64,000
	National Center for PT3	U. S. Dept. of Education	$185,000
	PT3 Catalyst	U. S. Dept. of Education	$621,000
	National Center PT3	ISTE	$218,732
	Master Teacher Development	Gates Foundation	$85,600
	Technology Applications	Adobe	$4,358,000
	Technology Applications (Material)	Element K	$82,000
	Technology Applications (Software	Macromedia	$1,385,800
	SCRTEC	SEDL	$200,000
	Intel Teach to the Future	Intel Foundation	$118,855
	Intel Teach to the Future in Texas	TIF	$563,240
	Texas Leadership Seminars	Institute of Computing Tech.	$73,600
	2002		
Knezek, Gerald	Millennium II: Preparing	U. S. Dept. of Education	$178,651
	Millennium II: Preparing	U. S. Dept. of Education	$21,000
	Evaluation of KIDS grant	Allen ISD	$199,988
IITTL (Wood PI)	Bringing Up Girls in Science (BUGS)	National Science Foundation	$314,515
Poirot, James	Teachers Technology	U. S. Dept. of Education	$658,708
	Intel Teach to the Future in Texas	TIF	$785,677
	Teachers Leadership Seminars	Institute of Computing Tech.	$77,200
	Evaluation of TASA	TASA	$40,000
	Senior Technology Applications	TIF	$2,200,000

		National Center PT3	ISTE	$195,111
		Impacting Schools	TBEC	$80,000
		Intel Teach to the Future	Intel	$118,855
		SCRTEC	SEDL	$200,000
		Technology Leadership followup	Institute of Computing Tech.	$36,880
		Multimedia Portfolio: KIDS Chal	Allen ISD	$25,000
		Technology Leadership followup	Institute of Computing Tech.	$55,903
	2003			
Knezek, Gerald		Analysis of Preservice Technology In	U of Maine	$10,000
		Evaluation of the Key Instructional D	Allen ISD	$128,113
IITTL (Wood PI)		Bringing Up Girls in Science (BUGS)	National Science Foundation	$301,729
Poirot, James		Intel Teach to Future in Texas	TIF	$651,085
		Teacher Leadership Follow - Up Sem	Institute of Computing Tech.	$4,250
		ConnectED Texas	TIF	$500,000
		SCRTEC	SEDL	$200,000
		Evaluation of the Technology Leader	TASA	$40,000
		Teach to the Future: 2002-2005	Intel	$100,000
	2004			
Knezek, Gerald		TITE*N	U of Nevada	$158,367
		Assessment of Irving Laptop	Irving	$15,000
		Analysis of Maine Laptop	U of Maine	$7,500
		TITE*N	U of Nevada	$323,844
Poirot, James		Evaluation of the Technology Leader	TASA	$40,000
		SCRTEC	SEDL	$198,700
		Intel Teach to the Future	Intel	$75,000
		DeKalb PD	DeKalb ISD	$2,100
		DeKalb Survey	DeKalb ISD	$500
		Target 2	ESC XV	$11,000
		Golden Apple PD	Golden Apple	$5,000
		Target Evaluation	ESC 20	$20,000
		Target Evaluation	ESC 13	$35,000
		Target Evaluation	ESC 15	$11,000
		SCRTEC	SEDL	$169,419
		Query Creation	LearnStar	$10,000
	2005			
Poirot, James		Supporting Teaching with Anytime	Western Illinois	$73,464
		Literacy for Special Populations	Verizon	$56,000
Jones, Greg		3D Environments for Math Curriculun	Univ of Montana / NASA	$25,000
			Total	**$20,578,601**

5 Current Status of the Program

The program offers a Masters of Science Degree in Computer Education and Cognitive Systems and a PhD in Educational Computing. The Masters Degree has been offered since the founding of the program. The doctorate in Educational Computing was begun in 2001.

5.1 Masters Degree

The program offers a Masters Degree in Computer Education and Cognitive Systems with an emphasis in either Teaching & Learning with Technology or Instructional System Technology.

Teaching and Learning with Technology
The Masters Degree emphasis on Teaching and Learning with Technology (T&LT) prepares students to gain knowledge of educational theory and develop technology skills in the areas of desktop publishing, effective Internet use, multimedia in education, and video technology. Students use their technology skills to develop professional products that support their personal and professional goals. They also use their technology skills to develop high-quality lessons and educational materials that engage, challenge, and support K-12 student learning.

Students identify, develop, and integrate Texas Essential Knowledge and Skills for Technology Applications in the areas of desktop publishing, multimedia, the Internet, and video technology as many prepare for Texas Technology Applications Certification in EC-8 and EC-12. This program is vastly different from an undergraduate certification program in that it focuses on theory, assessment, action-oriented research, and requires successful completion of a capstone course.

This program is accredited by the National Council for Accreditation of Teacher Education; it relates to UNT's Mission in the following ways: it allows students to gain technical competencies (i.e., proficiency in software systems and applications) and hardware use (computer networks and laboratories, scanners, handhelds, and audio/video production equipment) to promote learning and appreciate the technical nature of knowledge; it utilizes instructional principles to advance scholarship; it prepares students to continually discover appropriate classroom uses for emerging technologies; it fosters excellence in teaching with appropriate technology; it supports culturally diverse student-centered research and creativity; and it helps students develop their own knowledge structures and apply them in practice.

The expected outcomes for students include:

1. Graduates with an M.S. in CECS Teaching & Learning with Technology will have demonstrated the ability to select and use appropriate forms of technology (desktop publishing, effective Internet use, Multimedia in education, and video technology) to enhance teaching and learning.

2. Graduates with an M.S. in CECS Teaching & Learning with Technology will have demonstrated the ability to plan and deliver technology-based lessons and units using technology competencies described in state (Texas Essential Knowledge and Skills for Technology) and national (International Society for Technology in Education) standards.
3. Graduates with an M.S. in CECS Teaching & Learning with Technology will have demonstrated the ability to ethically secure and use electronic and print resources following intellectual property laws (Copyright, Fair Use Exemptions, Trade, & Patent).

Instructional Systems Technology

The CECS Masters Degree with an emphasis on Instructional Systems Technology prepares corporate, higher education, and military professionals to analyze, design, implement, and evaluate instructional systems and materials. IST is not associated with teacher certification; its mission is to create competent designers of courseware, websites, media productions, and specialized instructional aids. Students work collaboratively and individually as participants and practitioners to identify and solve educational problems; they use a variety of technology to assist them in the construction of instructional systems that are delivered in a variety of ways: traditional face-to-face classroom settings, computer-based learning environments, distributed learning paradigms, computer-mediated communication, and telecommunications.

This program relates to UNT's Mission by allowing students to effectively gain technical competencies and appreciate the technical nature of knowledge; utilize instructional principles to advance scholarship; prepares students to create high-quality instructional materials and tools; help students discover educational applications for emerging technologies in corporate and military settings; and allows students to create products and services designed for adult learners.

The expected outcomes for students include:

1. Graduates with an M.S. in CECS Instructional Systems Technology will have demonstrated the ability to create instructional systems for adult learners based on knowledge of human information processing.
2. Graduates with an M.S. in CECS Instructional Systems Technology will have demonstrated the ability to describe the principles, theories, applications, and current trends in Educational Technology and predict the impact of these theories and trends on newer technologies.
3. Graduates with an M.S. in CECS Instructional Systems Technology will have demonstrated the ability to ethically secure and use electronic and print resources following intellectual property laws (Copyright, Fair Use Exemptions, Trade, & Patent).

The six student learning outcomes previously identified link with the University's Mission by encouraging students to develop instructional goals and use appropriate technology to create and monitor their classroom practices, nurture and develop the capacity of their students, appreciate technological knowledge, enhance the use of information technologies, and foster innovation and excellence in technology teaching and learning.

5.2 Doctoral Degree

The program offers a doctorate in Educational Computing. The doctorate focuses on defining, understanding, and expanding the synergy of technology and learning/instructional systems theory. This program emphasizes the application of advanced technologies including computers and information technology to educational environments in the public and private sectors. The core of the program is the application of technologies within the learning process.

The goals of the doctorate are as follow:

1. To produce scholars and practitioners who are able to promote learning through the application of computer and information technology. These include:
    a. Conduct research on the effective application of technology to a variety of educational and training environments.
    b. Design and manage technology-based delivery systems.
    c. Provide consultation to teachers and other instructional professionals on the most effective educational intervention strategies.
    d. Conduct research to determine the strengths and weaknesses of new technology.
    e. Create new strategies for the implementation of technology into educational environments.
    f. Investigate the appropriateness of emerging technology in order to determine its useful application to a variety of educational and training environments.
    g. Design for implementation new technology-based delivery systems.
    h. Provide consultation to instructional professionals on the most effective educational intervention strategies.

2. To continue to increase national recognition as a leading program in Computer Education and Cognitive Systems which prepares scholars for careers in educational, corporate, and academic environments through a rigorous, collaborative, and technology infused curricula.

The expected outcomes for doctoral students include:

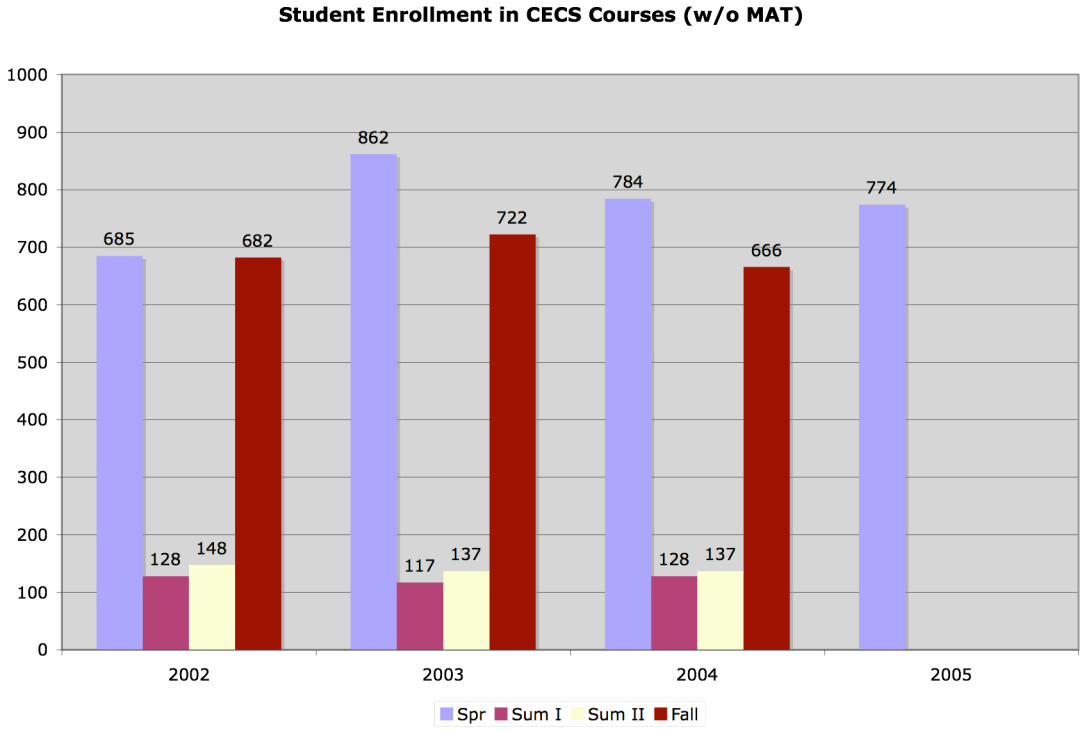
1. Graduates of the program will understand the relationship between human learning, technology intervention, and instructional practices.
2. Graduates will have experience in both laboratory and field-based research, internships and practicum, presenting papers at professional conferences, and disseminating research through the traditional professional journals, through the Internet and other electronic media.

The CECS doctoral degree is consistent with the stated goals of the university and its commitment to advance the use of computer and information technology and appropriate applications throughout the state in public and private institutions.

6 Student Information

6.1 Student Enrollment in CECS Courses

The following figure shows total student enrollment in CECS courses between Spring 2002 and Spring 2005. This enrollment does not include Masters Across Technology (MAT) enrollment that began in 2002 that are entirely online cohort-based courses (see below). The data is presented in Appendix B and C. A breakdown of student credit hour (SCH) based on enrollment will be covered later in this document.



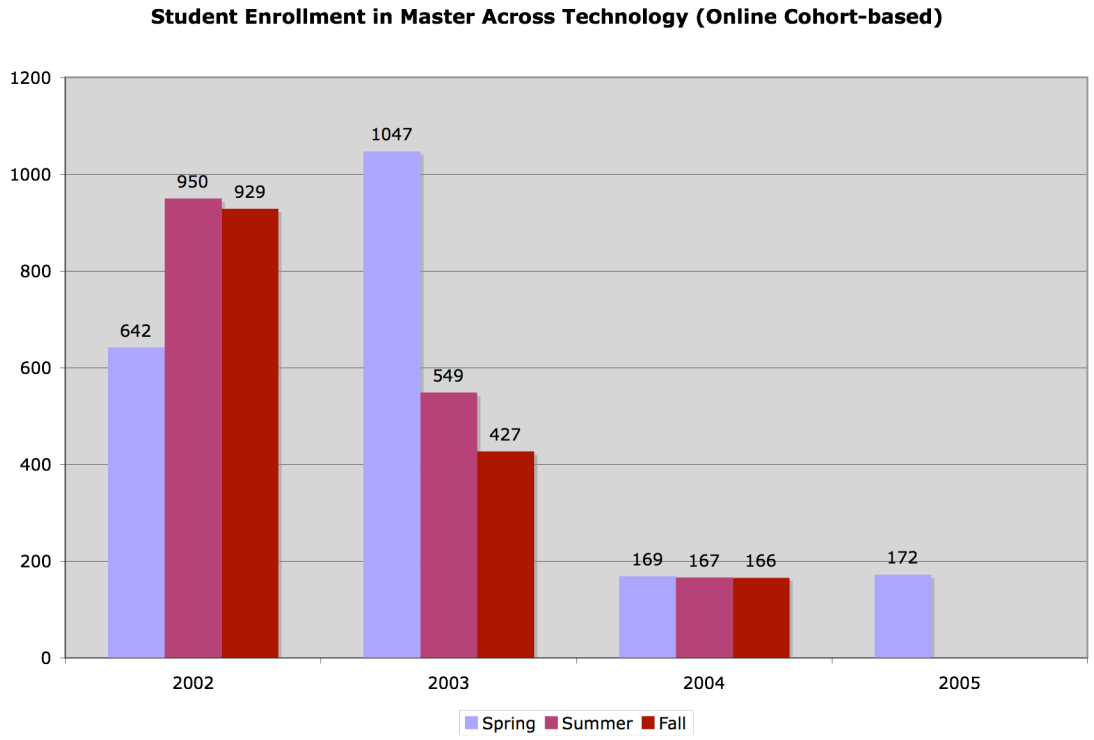
6.2 Masters Across Technology

The Masters Across Technology (MAT) initiative was begun in 2002 by the Texas Center for Educational Technology, a center within the CECS program. MAT seeks to provide professional educators an innovative online cohort-based method for earning the University of North Texas (UNT) Computer Education and Cognitive Systems (CECS) Master's degree, Teaching and Learning with Technology (http://www.tcet.unt.edu/projects/mat). This program supported and expanded efforts begun through a Telecommunications Infrastructure Fund project created to provide Technology Applications certification opportunities to Texas teachers.

At the time of the TIF-funded program, CECS courses were in high demand to meet new certification requirements for the State of Texas. Large initial enrollments have moderated due to financial issues. School districts are presently cutting funds and many teachers have expressed interest in the program but have not enrolled due to concerns about employment and personal budget issues. As an example, over a two-day period at the 2005 TCEA conference, more than 100 teachers expressed interest in the MAT program.

The program currently offers instruction meeting three levels of possible Technology Applications certificates (8-12, EC-12, and Master Technology Teacher) as well as the Teaching and Learning with Technology degree. A discussion on improving recruitment for MAT will be discussed later in this document.

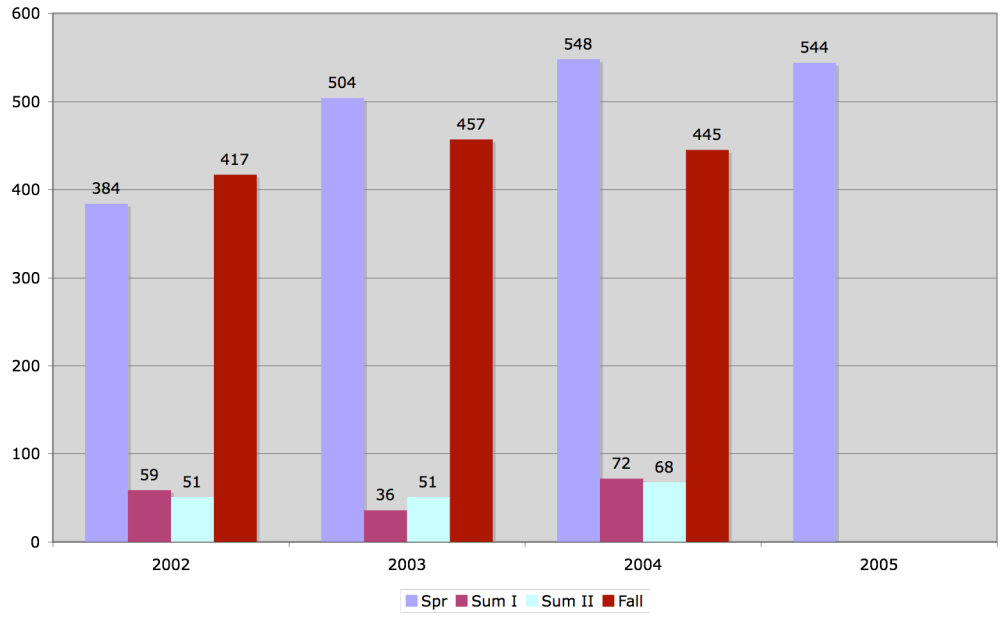
The following figure shows MAT enrollment between Spring 2002 and Spring 2005. These students are in addition to the students in the CECS masters program listed above.



6.3 Undergraduate Courses

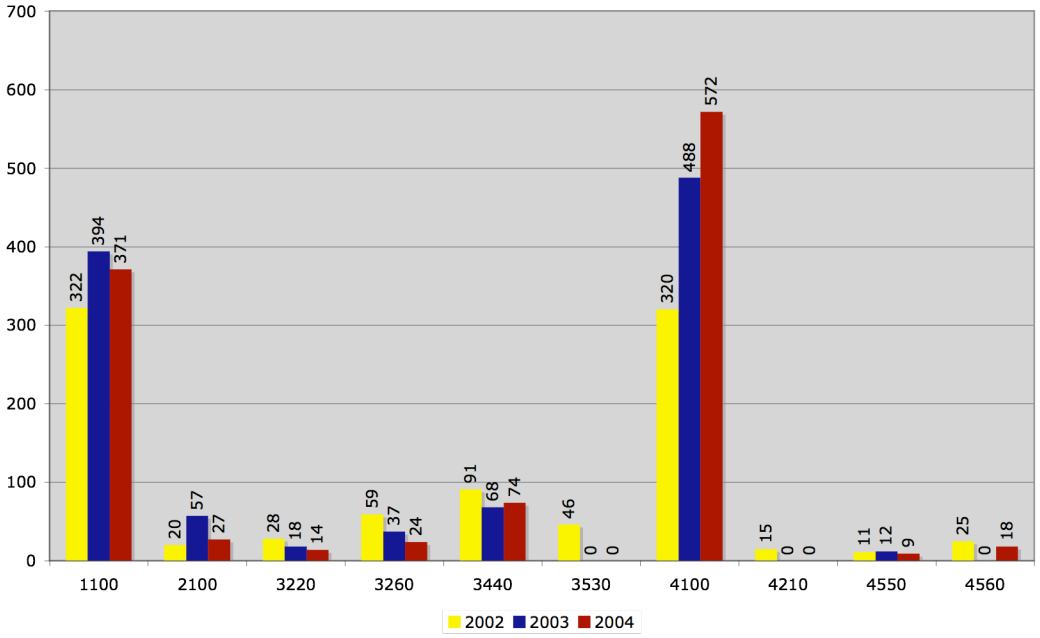
CECS does not offer an undergraduate degree, but offers several service courses for the college and university. Undergraduate enrollment in these courses has been on the increase since before 2002.

Student Enrollment in Undergraduate CECS Courses 2002-2005

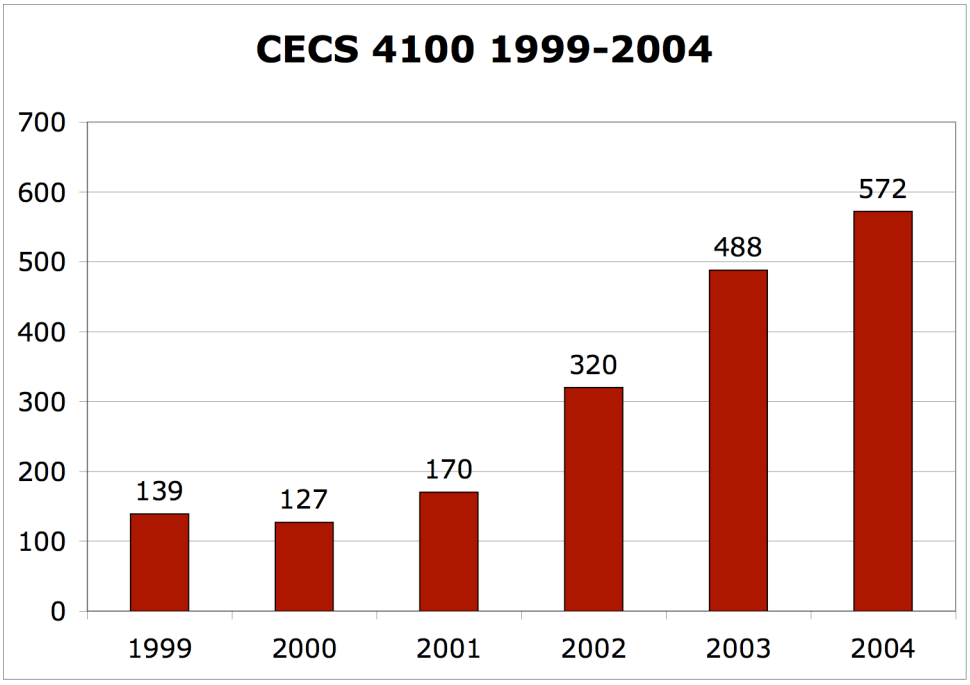


The majority of undergraduates take CECS 4100 and CECS 1100 as seen in the next figure that shows total student enrollment by course for years 2002, 2003, and 2004. Several of the undergrad courses are offered as meets with CECS master's courses, such as 4550 and 4560. This allows the program to increase SCH in conjunction with existing masters courses.

Total Undergraduate Student Enrollment by Year by Course

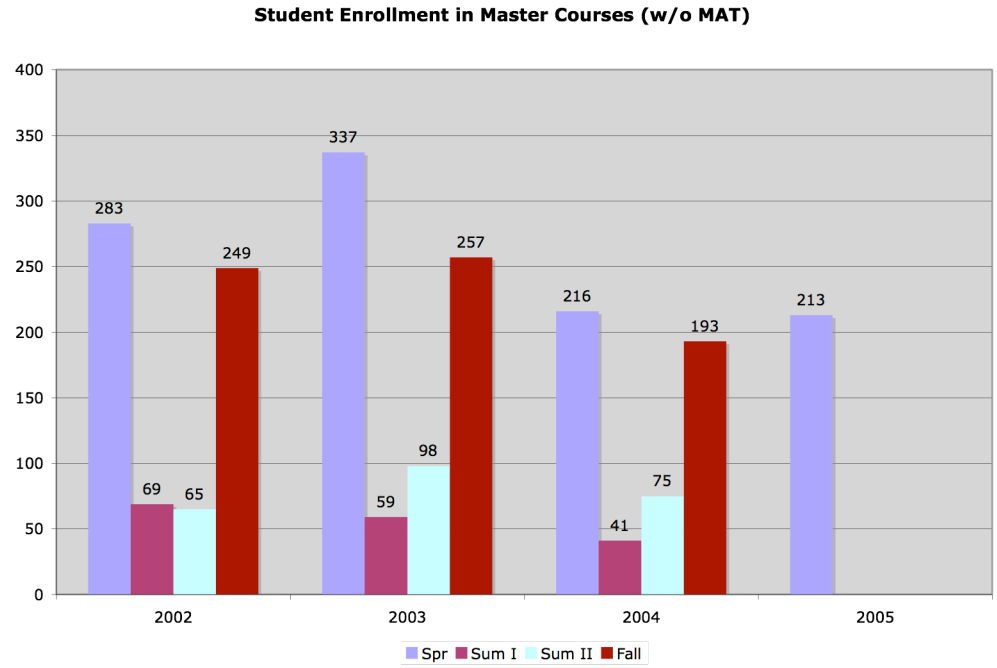


CECS 4100 has shown sustained growth since 1999 (4x) as displayed in the following figure. Additional resources will be provided in the coming years to sustain and support this course growth (see requested resources). The CECS Program will pursue implementation of a new role for this course as the foundation of a technology integration minor within CECS. This would expand and strengthen the current service role tie with Teacher Education that flourished under Preparing Tomorrow's Teachers to Use Technology (PT3) federal support. CECS 4100 is currently required for all K-8 teacher certification candidates in the College of Education. Expansion to a technology integration minor would permit more extensive preparation of a portion of current teacher preparation candidates, without violating the limitation on the number of 'education' courses that can be included in an Elementary Education degree plan.

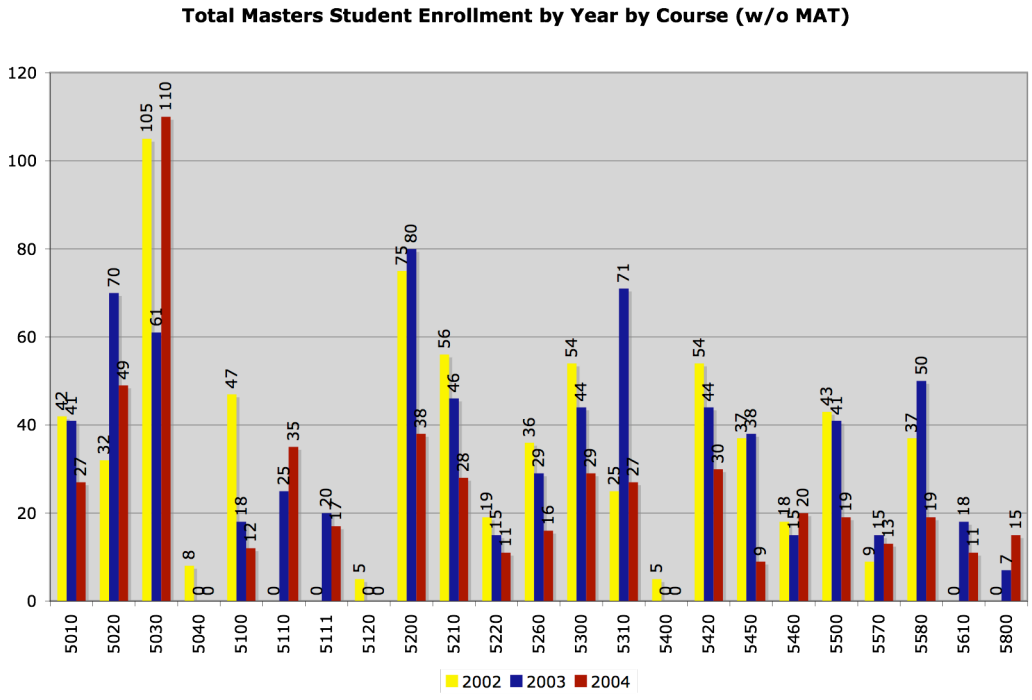


6.4 Masters Courses

Enrollment in CECS masters courses have fluctuated slightly over the past two years. The following illustrate course enrollments (enrollment for MAT is discussed below). As will be discussed in the future resources section, the masters coordinator believes that growth in the masters course enrollments can be increased by reestablishing marketing efforts.



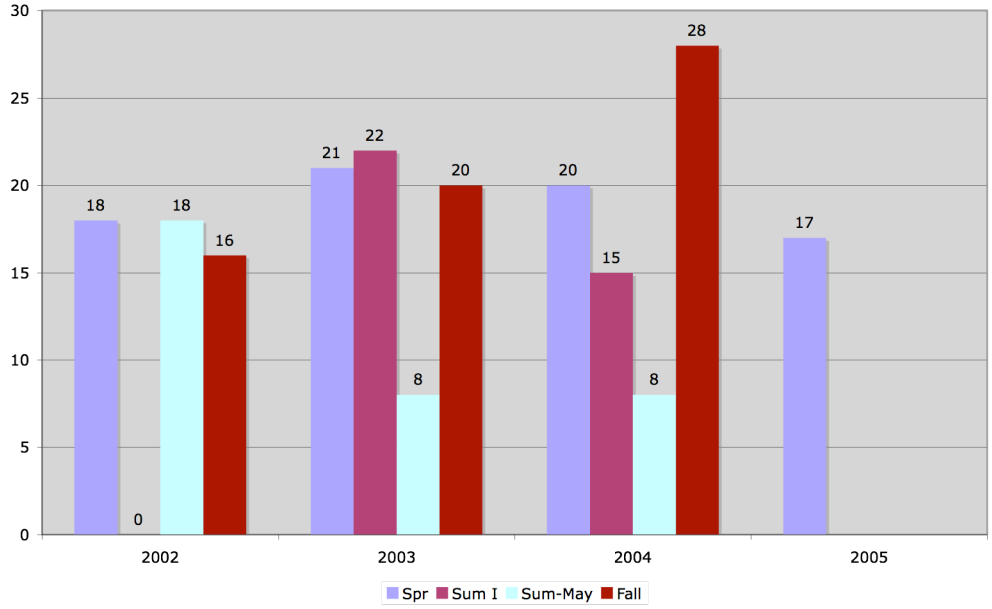
The following figure shows the average student enrollment between 2002 and 2005 for CECS master courses (not including MAT). As expected, the core courses have higher average enrollments.



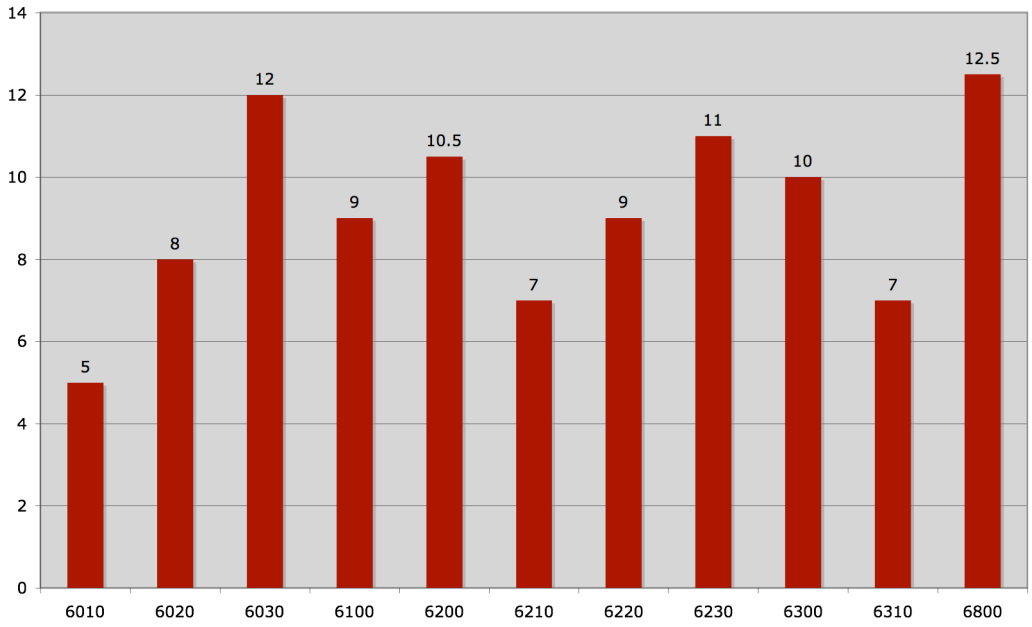
6.5 Doctoral Courses

The doctorate in educational computing was begun 2000 with the first class entering in 2001. It has shown consistent increases in enrollment. Currently the program is supporting 38 doctoral students. Eleven of these students have completed course work and have successfully passed into candidacy. Four of the doctoral students are international students. As will be discussed in the final section of the document, further increases in enrollment for the doctorate program will only be possible with replacing lost faculty positions and attracting new faculty that can actively participate with doctoral studies.

Student Enrollment in CECS Educational Computing Courses



Average Doctoral CECS Student Enrollment by Course 2002-2005

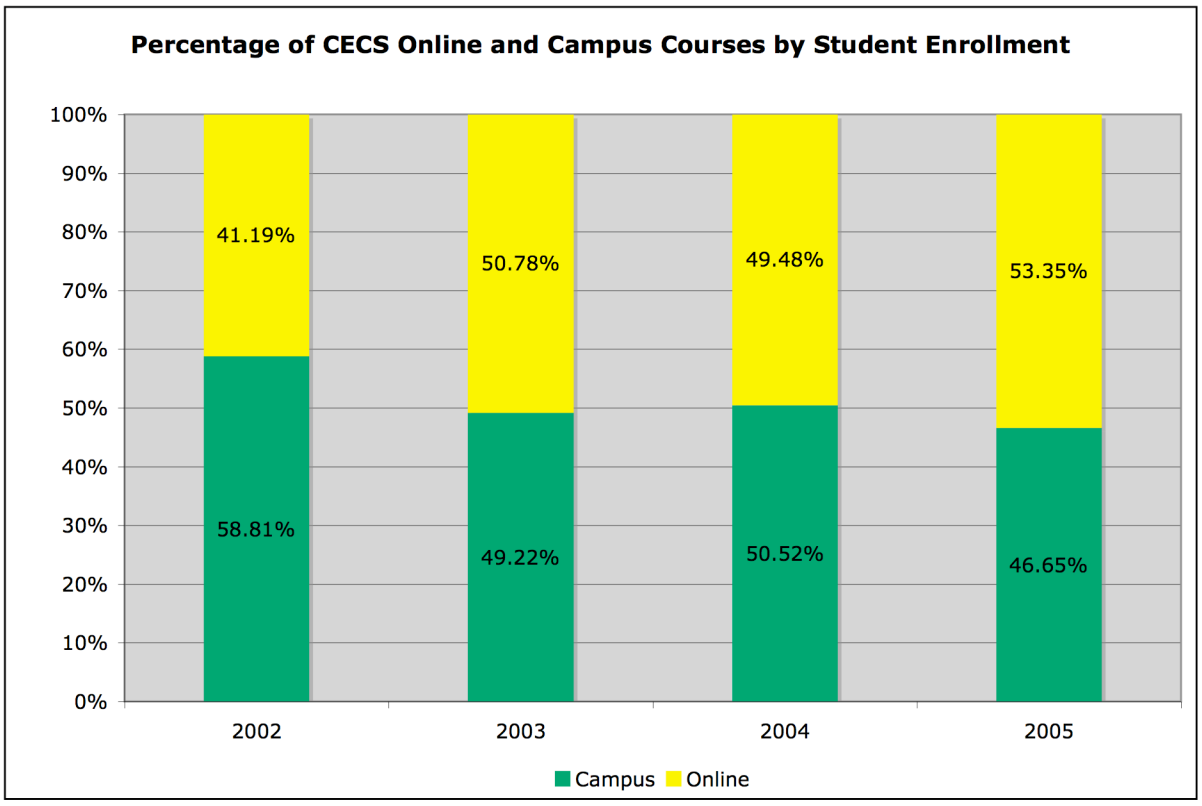


6.6 Online Courses

The CECS program has been a pioneer in the use of distributed learning technologies for course delivery. The program has been providing distributed courses since 1985 via the TAGER (Texas Association of Graduate Education and Research) system and later the use of Internet-based and other distance/distributed methods. The program does not simply deliver courses with technology, but is a recognized leader regionally and nationally on technology use and integration for online courses. The program offers both INET (internet only) and hybrid/blended courses. Blended learning describes a course in which a mixture of face-to-face and online instruction is used over the course of the semester. Currently blended courses make up between 1/3 and 1/4 of the programs online course offerings each semester.

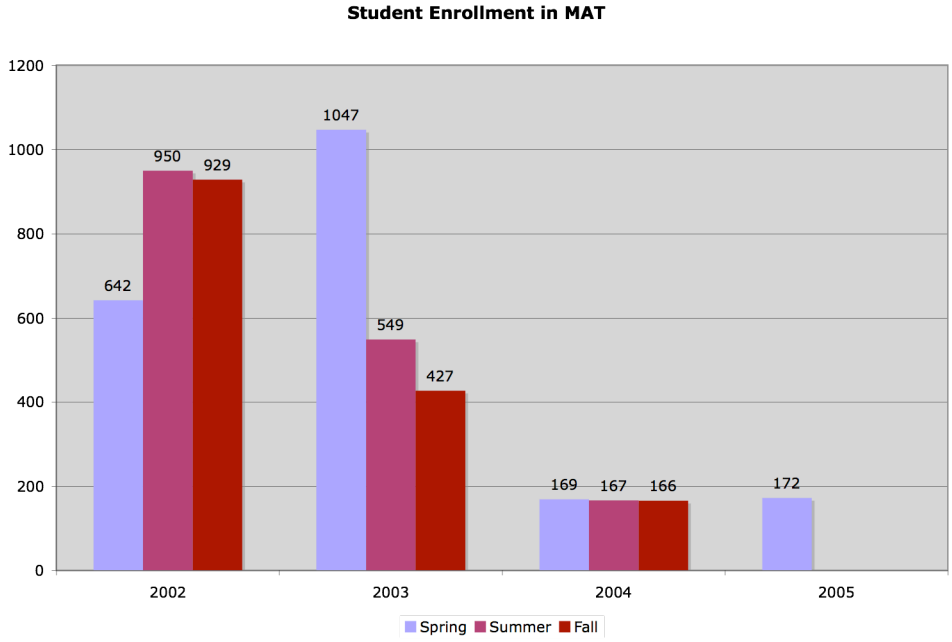
Approximately 1700 student enrollees each year take CECS courses (not including MAT) via distributed learning. The UNT Center for Distributed Learning's analysis of 2004 online courses reported that the student completion rate for CECS courses was approximately 90%[1]. As mentioned in the report, the national trend is for online courses to fall 10-20% below campus courses. Completion rate for CECS online courses is nearly the same as CECS courses held on campus.

The following figure shows the ratio between online and campus courses by percentage of student enrollment. This does not include MAT courses that are totally online courses. As can be seen, the enrollment by course type has been trending slowly towards online delivery. Ratio of sections by campus and online courses follow the same trend.



[1] The report counted incompletes and failing students the same, so this percentage is most likely slightly higher.

As shown in the figure below and previously mentioned in this document, MAT had extensive online student enrollment between 2002 and 2005. In this document we break MAT out separately from the traditional CECS student population in order to give a clearer picture of trends and size of the program as a whole.



Online CECS courses will continue to increase in the near future as the educational computing degree is taken online in the next two years. However, as new technologies become available, the program is hopeful that online courses can be taught with the same interaction and clarity as face-to-face courses without the need for high-bandwidth user connections yielding the same student and instructor satisfaction and interactions.

7 Research Centers

The CECS program houses two research and development centers.

> The **Texas Center for Educational Technology** was founded in 1989. Legislatively funded for three years, TCET came to UNT as a result of a competitive grant award, winning over proposals from Texas A&M, UT-Austin, Texas Tech, and others. Since its inception, TCET has been the most successfully funded center at UNT. (http://www.tcet.unt.edu)
>
> The **Institute for the Integration of Technology into Teaching and Learning** was founded in 1999 to promote the infusion of information technologies into daily teaching/learning practices. IITTL compliments TCET by working at the classroom technology integration level. It has generated numerous national and international papers and has also been highly successful in obtaining grants. (http://www.iittl.unt.edu)

Both centers are in **congruence with university priorities**, as described in greater detail in the following section.

> The University Planning Council and Chancellor adopted ten planning initiatives[2]. Those which are believed to be directly addressed by CECS research centers are boldfaced:
>
> 1. **Strengthen support for high quality teaching and learning.**
> 2. **Position UNT as the "University of Choice" in the region and beyond.**
> 3. **Support activities to increase retention and graduation rates for both undergraduate and graduate students.**
> 4. **Strengthen support for research and creative activities.**
> 5. **Increase external funding to the university.**
> 6. **Integrate research and creative opportunities into programs to strengthen undergraduate and graduate education.**
> 7. **Use technology and equipment and provide support staff necessary for a high quality learning environment and efficient and effective university operations.**
> 8. **Communicate the strengths of the university.**
> 9. **Nurture a spirit of community and unity throughout the university.**
> 10. Evaluate and streamline processes and procedures to be more friendly and efficient, and reduce unnecessary duplication.

[2] University Strategic Planning Goal, Values, Distinguishing Characteristics and Planning Initiatives. (http://www.unt.edu/policy/UNT_Policy/Download/Volume3_WD/13.11.doc)

7.1 Texas Center for Educational Technology

The Texas Center for Educational Technology serves as an academic support and integral component of the CECS program, of its CECS faculty, students and programs. The mission and goals of TCET are as follows:

Mission: The Texas Center for Educational Technology will facilitate and conduct research; develop and evaluate collaboratives between industry, education, and educational communities; and serve as a focal point within the State of Texas and beyond in order that instructional technology can be created and adapted for integration into the educational programs of our state and nation.

Goals:

- Construct, pilot, assist, and collaborate in the development of the 21st century educational models, incorporating appropriate technologies and facilitating stakeholder involvement.
- Facilitate collaborative efforts with all stakeholders to improve educational programs via technology.
- Serve as a research-based center that disseminates educational technology information to the community, school, and classroom levels.
- Conduct field-based research and evaluation on the effectiveness and impact of educational technologies.
- Promote the mission of TCET to state, national, and international levels through personal and electronic linkages.

7.2 Institute for the Integration of Technology into Teaching and Learning (IITTL)

The Institute for the Integration of Technology into Teaching and Learning serves as an integral component of the CECS program, of its CECS faculty, students and programs. The mission and goals of IITTL are as follows:

Mission: The purpose of the Institute for the Integration of Technology into Teaching and Learning is to promote the infusion of information technologies into daily teaching/learning practices within the University of North Texas (UNT) College of Education (COE), and in the classrooms of COE students.

Goals:

- Model best practices for infusing technology into preservice/inservice teacher preparation programs through exemplary activities in UNT College of Education classes.

- Develop an action research feedback loop from the K-12 classrooms of UNT clientele, to COE preservice/inservice education courses and scholarly practices.

- Secure resources to support collaborative development of UNT teacher education faculty and their students as technology-infusing learners and professionals.

- Conduct research on the integration of technology into teaching and learning, both in the UNT/COE preservice/inservice teacher education arena, and in the classrooms of K-12 students.

8 CECS Program Academic Plan

Program Steps Leading to a College of Education Academic Plan

The following information outlines the programs academic plan over the next four years. It aligns with the University's and College's Academic Plans. The faculty in the program has obtained regional, national, and international recognition as scholars and as discussed earlier, the program has a national reputation within the computer education field. This academic plan sets goals and directions to enhance and thus further elevate the programs' status nationally and continue to support the programs goals of excellence in research, grants, and instruction.

8.1 Program Initiatives

As discussed in the programs' mission statement (above), the program faculty will be targeting the following initiatives over the next four years:

1. To create and disseminate new knowledge, with special emphases on:
    - Research & development in emerging technologies, and
    - Scholarly production on technology's role in teaching & learning.

2. To development faculty, researchers, and K-12 educators who are master technology innovators well as reflective practitioners and scholars.

8.2 Program Four-Year Goals

The following goals of the program will help CECS further increase its national reputation and will help position the program for national recognition by ISTE.

1. Continue to publish and present research.
    a. Continue to present at major national and international conferences (AERA, NECC, WCCE, etc).
    b. Continue to have faculty members give keynote presentations at national and international conferences.
    c. Continue to have faculty members give workshops at national and international conferences.
    d. Continue to publish in national and international referred journals.
    e. Continue to have citations from faculty publications in the Social Sciences Citation Index.

2. Continue to obtain national grants (NSF, US Dept of Education, etc).
    a. As discussed in the narrative, the program, through its research centers (TCET, IITTL), has been very successful obtaining grants. The program expects that this can be continued with the correct support from the Department and College.

3. Faculty.
    a. Create Associate and Affiliate Faculty positions to support continued growth of program and provide a foundation to build professional and collegial relationships. This mechanism will allow the program to have outstanding faculty members from outside UNT join the CECS program for special course offerings and further enhance our prestige nationally.
    b. Work towards supporting a yearly visiting professor position in order to bring selected scholars to work with the program to enhance research, mentor students, and raise national recognition.

4. Students.
    a. Increase enrollment through reestablishment of marketing aimed at in-state and out-of-state students.
    b. Work towards finding new funding support for Texas teachers to take courses via MAT.
    c. Implement new enhanced doctorate that will support an online EDD.
    d. Work towards supporting a post-doc position to bring in a national candidate to work with the program each year.
    e. Increase the number of students in the program presenting at national conferences.
    f. Develop a mechanism to support doctoral students to travel to national conferences (AERA, NECC, etc) to help develop their scholarship and begin to form professional relationships.

8.4 Academic Degrees

The program will maintain its current degrees over the next four years

MS Computer Education and Cognitive Systems
Concentrations
- Teaching and Learning with Technology
- Instructional Systems Technology

MS in Computer Education and Cognitive Systems is the only program in the southwest that offers students the opportunity to learn about technology applications from the learner's perspective. Students study how humans learn and then how technology can assist the process in a variety of educational and learning environments.

PhD Educational Computing

PhD in Computer Education is the only program in the southwest that provides doctoral students with experience in conducting research on the implementation of computer technology in all types of learning environments.

The program is planning on adding the following degree in 2006

EdD Educational Computing

The program is planning on adding the following degree in 2007

Undergraduate Minor in Technology Integration

The program will maintain its current certificates

Technology Applications K-12
Technology Applications 8-12
Technology Applications Master Teacher

The CECS Department offers Technology Application Certification throughout the state via its distance delivered coursework. Previous external funding placed UNT in a leadership role in this area with over five million dollars expended over a four-year period.

The program at this time does not anticipate adding or dropping certificates.

Faculty roles in keeping degrees and certificates current, relevant, and accessible.

Masters

Drs. Mortensen and Young will annually monitor the field of study and assess student interests and needs. This annual review will drive any changes required in course offerings.
Dr. Mortensen will lead advising/degree plan.
Dr. Young will articulate with other programs to promote CECS courses.

PhD

Drs. Norris and Knezek will annually monitor the field of study and assess student interests and needs. This annual review will drive any changes required in course offerings.
Dr. Norris will direct ECMP program.
Dr. Knezek will articulate with Information Sciences and other programs concerning ECMP.
Faculty: As the new online doctorate degree begins, the program faculty will work together to create new student cadres.

Service Courses

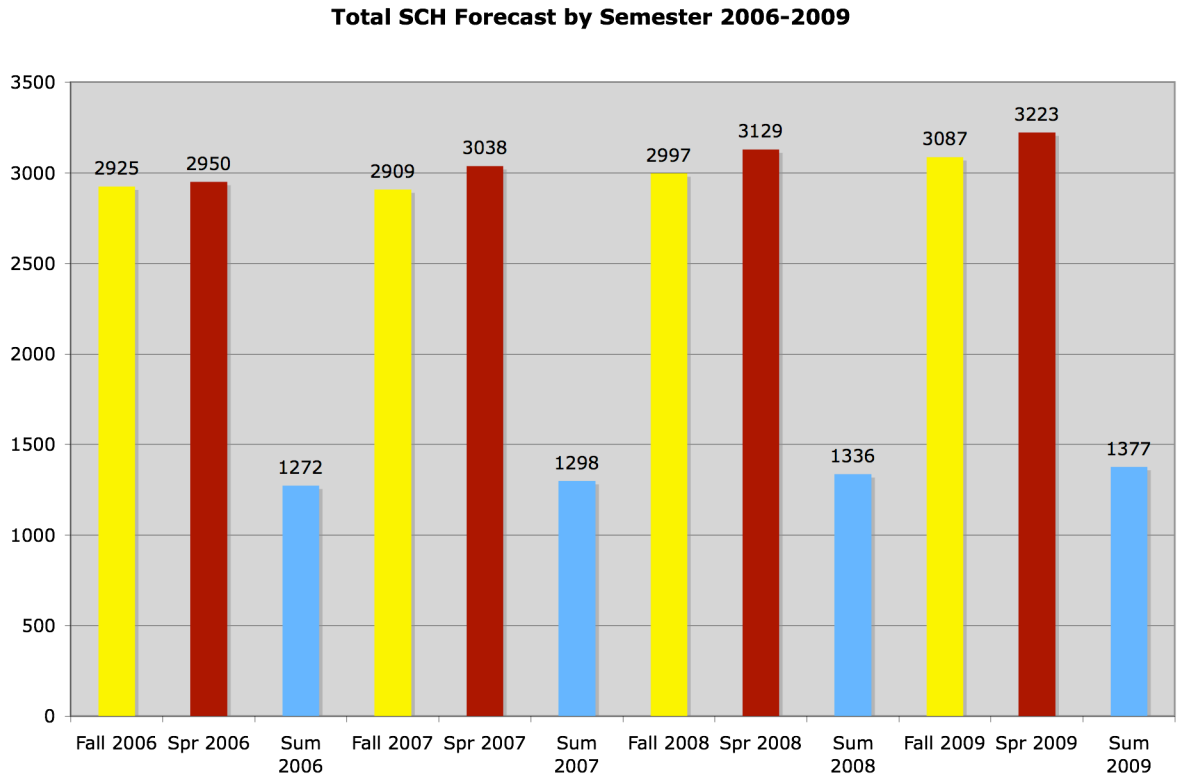
Drs. Ennis-Cole and Knezek will annually monitor the field of study and assess student interests and needs. This annual review will drive any changes required in service course offerings.
Dr. Ennis-Cole will lead Undergraduate Curriculum.
Dr. Knezek will articulate service courses to other programs in the college and on campus, such as CECS 4100 to Teacher Education.

Certificates

Dr. Poirot will annually monitor the field of study and assess student interests and needs. This annual review will drive any changes required in certificate offerings.
Dr. Poirot will lead in State/National Certifications that the program can offer.

8.4 Semester Credit Hours (SCH)

The following figure forecasts total growth in semester credit hours over the next four years for the program at 3% per year.



Explanation of Anticipated Increase

The program anticipates continued growth over the next four years through:

- Renewed effort in promoting the program to potential regional and national students,
- Expanding the PhD and developing the EdD program for students at a distance.
- Creating new certificate cadres outside the DFW Metroplex,
- The program's increasing national reputation as a center of excellence in our field.

Anticipated Resources needed to achieve SCH forecast

2006

Tenure Track Faculty Position (Replacement)
Visiting Assistant Professor Position
Three new Associate Faculty Positions
Enhanced value for TE&A through CECS 4100 coordinator position
Support to improve existing online courses
Support to create new online courses
Continued technology infrastructure investment
Dissertation mentoring credit via chapter-based courses
Program staff position

2007

Tenure Track Faculty Position (Replacement)
New Associate Faculty Position
Support to improve existing online courses
Support to create new online courses
Continued Technology Infrastructure Investment
Dissertation mentoring credit via chapter-based courses
Professional development for Associate Faculty

2008

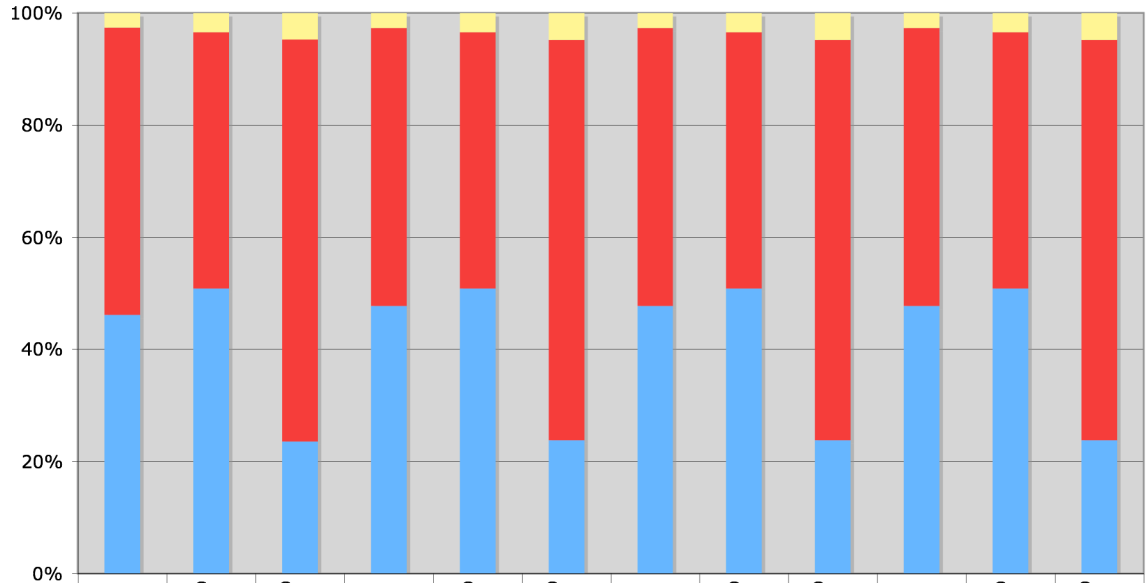
New Tenure Track Faculty Position
New Associate Faculty Position
Support to improve existing online courses
Support to create new online courses
Continued technology infrastructure investment
Dissertation mentoring credit via chapter-based courses
Professional Development for Associate Faculty

2009

New Tenure Track Faculty Position
Support to improve existing online courses
Support to create new online courses
Continued technology infrastructure investment
Dissertation mentoring credit via chapter-based courses

The following figure shows the breakout of SCH forecasted totals based on type of degree or certificate. Masters courses dominate the summer semesters, because teachers out for the summer enroll in courses.

SCH by Semester by Course Level 2006-2009



	Fall 2006	Spr 2006	Sum 2006	Fall 2007	Spr 2007	Sum 2007	Fall 2008	Spr 2008	Sum 2008	Fall 2009	Spr 2009	Sum 2009
PhD	75	100	60	77	103	62	80	106	64	82	109	66
Masters	1500	1350	912	1442	1390	927	1485	1432	954	1530	1475	983
Service	1350	1500	300	1390	1545	309	1432	1591	318	1475	1639	328

8.5 Academic Areas that will be Nationally Recognized

While the program has a national and international reputation, the program is not recognized by a national independent body.

The program is currently working towards being ranked by a nationally recognized organization. We expect that the PhD in Educational Computing could be recognized in 2007 followed by the Masters degree by 2008.

The following steps are being planned to move the program forward on this goal:

2007

Arrange for annual evaluation of program by professional association
Provide support for 10% of the doctoral students
Research or Instructional positions
50% of doctoral students will average one reviewed presentation at national/international meeting of professional association.

2008

Attract 10% of doctoral students from out of state

2009

20% of doctoral graduates will obtain position at universities

Annually

Average two publications in peer review journals
Average three reviewed presentations at national/international meetings
Keynotes and/or invited addresses at national or international meetings
Average funding level of $250,000 or more for the program

Every Three Years

Average one national awarded grant

8.6 Faculty Scholarship, Research, and External Funding Goals

It is the goal of the program to show clear, identifiable continued effort in the areas of scholarship, research, external funding, and student support.

It is the goal of the program in the area of scholarship to be published in top tier academic research/professional journals, along with peer-reviewed and invited keynote presentations at leading academic/professional national/international meetings.

It is the goal of the program in the area of research to show clear progress in the areas of faculty research that support the programs four year research initiatives: 1) Advance and contribute to leading-edge research and scholarship on emerging technologies, 2) Research the impact of technology on teaching and learning, and 3) Develop faculty, researchers, and K-12 educators who are master technology innovators well as reflective practitioners and scholars.

It is the goal of the program in the area of external funding to continue to work on external funding that enhances the prestige and reputation of the program while support the program, faculty, and students.

It is the goal of the program in the area student support to support our student in ways that enhance their learning and mentoring and increases the programs national recognition in the coming years as these graduates move into carries in academia, K-12 education, or professional endeavors.

The following goals are outlined as a measure for success over the next four years for current faculty. These goals will be reviewed annually and updated to reflect changes in faculty and research agendas.

Jim Poirot

Annually (2006-2009)

Scholarship	2 presentations and/or papers Executive Director TCET
Research	Distance delivery of Instruction and Technology in Education
External Funding	1 Million ($500k from State Agencies, $500k from foundations and Corporations)
Student Support	$50,000 to support 5 doctoral candidates

Cathie Norris

Annually (2006-2009)

Scholarship	24 presentations and/or papers
Research	Research and development of personal, hand-held, mobile learning technologies
External Funding	$35,000 from federal sources
Student Support	

Gerald Knezek

Annually (2006-2009)

Scholarship	2 articles and 3 presentations; 1 dissertation and/or research/jr faculty articles mentored. Director ITTL
Research	Assessing the impact of technology in the classroom
External Funding	$250,000 from Federal and State Agencies, Corporation/Foundations Grants/Contracts
Student Support	$10,000 to support undergraduate and graduate students.

Jon Young

Annually (2006-2009)

Scholarship	2 articles and 1 presentation
Research	Assessment of the impact of technology on cognitive processes
External Funding	
Student Support	

Demetria Ennis-Cole

Annually (2006-2009)

Scholarship	4 articles and/or presentations
Research	Educational reform and the impact of distance learning pedagogies
External Funding	
Student Support	

Greg Jones

Annually (2006-2009)

Scholarship	2 articles and 3 presentations
Research	Distributed learning instruction and technology in education and 3D visualization systems.
External Funding	$25,000 in grants
Student Support	Money to support a undergraduate and/or graduate student

8.7 Workload Expectations for Program Faculty

Several assumptions underlie the expectations for tenure-track faculty workloads in the CECS Program:

1. Faculty will continue to serve on a 9-month contract and are not obligated for summer duties without additional compensation.
2. Although faculty are 'exempt' (from overtime) employees, the Program's expectation is that their work duties should be achievable within a 40-hour work week.
3. AAUP guidelines for faculty consulting (one day per week under faculty control) will continue to be honored by the CECS Program.
4. Workloads will vary among individual faculty, in accordance with workload allocations among teaching, research and service listed on the university workload form.
5. Workload reassignments are awarded according to a publicly acknowledged standard, the specifications for which are available to all.

Recommended workload balances among teaching, research, and service depend upon the level of the faculty member (Assistant, Associate, or Full Professor) and extent of program coordination, grant direction, or other program-related duties. The following workload guidelines apply:

1. Full-time lecturers
   Full-time lecturers have traditionally been expected to teach 4 courses per long semester and have had no research/scholarship or service duties. The implication is that each course is a .25FTE (10 hours/week) workload.
2. Tenure-Track Assistant Professors.
   All CECS Program faculty seeking tenure will be expected to maintain a strong research/scholarship focus. Because they are on a 'research' track, a two-course teaching load per long semester will be the expected. A typical Assistant Professor will maintain a workload balance that is 40% teaching, 40% research/scholarship, and 20% service. The 2-course per semester teaching load implies a total workload of 20 teaching hours + 16 research/scholarship hours (.4 x 40) + 8 service hours (.2 x 40) = 44 hours per week for a typical Assistant Professor.

   Rationale: Since 1991, tenure-track faculty have been expected to teach 3 courses per long semester in the Dept. of Technology & Cognition. This implies either; a) each course is allocated .135 FTE or 5.4 hours per week for non-tenured assistant professors (vs. 10 hours per week for lecturers), or b) assistant professor workload is 30 hours/week for teaching + 16 hours (.4 x 40 hours) per week for research + 8 hours (.2 x 40 hours) per week for service = 54 hours per week total workload. A 2-course per semester teaching load (20 hours) would imply a total workload of 20 + 16 + 8 = 44 hours per week for a typical Assistant Professor.

3. 'Research' Track Tenured Faculty.
   Teaching load among tenured CECS Program faculty who wish to remain on 'research' track will be two-courses per long semester. For a tenured faculty member who has a workload allocation of 50% research, 30% teaching and 20% service, a 2-course per semester teaching load (20 hours) would imply a total workload of 20 teaching hours + 20 research/scholarship hours (.5 x 40) + 8 service hours = 48 hours total workload per week.

   Rationale: Workload designations on the university form varied widely among tenured faculty. Under the former 3-course per semester requirement, a faculty member who is 50% research, 30% teaching and 20% service has either: a) each course valued at .10 FTE (4 hours per week vs. 10 for lecturers), or b) total workload for tenured faculty is 30 hours for teaching (3 x 10 hours/course) + 20 hours for research/scholarship (.5 x 40 hours) + 8 hours for service (.2 x 40) = 58 hours per week. A 2-course per semester teaching load (20 hours) would imply a total workload of 20 (teaching) + 20 (research) + 8 (service) = 48 hours per week for a typical Assoc./Full Professor on a 'research' track.

4. Non-Research Tenured Faculty.
   Faculty who have achieved tenure may elect to devote more of their career to teaching and/or grant solicitation. The standard workload for faculty in this category would be 3 courses per semester. Research faculty who have not achieved the required number of refereed articles (as verified by their update) over the past three years[3], will automatically be moved to this category for one year. Tenure track assistant professors do not have the option to elect non-research status. That is, they are expected to be research faculty.

5. CECS Program Director proposed course reassignments are1 per long semester. The implication is Program Director workload for managing the program is 10 hours per week during the long semester. This amount added to teaching 2 courses per semester (20 hours) + 20% normal service (8 hours) + 20% research/scholarship (8 hours) is 46 hours per week. Responsibility for coordination of the program during the summer is not specified in this plan.

   Rationale: Department Chairpersons in Technology & Cognition have historically received two course reassignments each long semester and 3 course reassignments each summer. The implied teaching load is 10 hours per week (1 course) each long semester and each summer, according to the baseline standard listed in item 1 above. The CECS Program Director will normally have a 2-course teaching load each long semester.

[3] For research faculty, expectations regarding numbers of articles maybe be adjusted upward over time (with a 3-year lead before implementation) or downward. However, the expectation will initially be set at 1.33 per year (4 articles over past 3 years). Co-authored articles are permitted but the total number (if co-authored with another tenured/tenure track program faculty) must equal 1.3 per year per research faculty participating in the pool.

6. Principal Investigator Adjustments. Recommended workload reallocations for grant recipients (Principal Investigators/Project Directors) are: 1 course release per year per $100,000 in external funds. The limit on this is one release per semester and 2 releases per year, per $100K of external funds (eg. $250K or $500K per year provides one release in fall and 1 in spring semester).
7. Coordinator compensation for tenure track faculty (Doctoral Program, Masters Program, Undergraduate Program) is recommended to be $2500 in summer stipend per year.

8.8 Proposed New Faculty Structure for the Program

The program is proposing to a new faculty structure to assist the program long term in meetings the goals outlined in this academic plan.

In addition to tenure-track full-time faculty, the program will be adding two new roles: Associate Faculty and Affiliate Faculty. Both are non-tenure track positions that provide key support to the program.

These positions will allow full-time faculty to better focus on goals that relate to increasing the prestige and attaining national recognition of the program.

This structure will also foster better collegial interaction by creating longer-term relationships than adjuncts and lecturer positions.

Associate Faculty

The purpose of the Associate Faculty Member (AFM) is to provide support to the CECS program through Instruction and UNT Professional Service. Professional Service would be in a "High Need" area of the CECS program as defined by the program faculty. The position is a non-tenure track position, but can be renewed on an annual basis. Possible summer employment is contingent upon program need. The AFM would report to the CECS Program director, who in turns reports to the CECS faculty member.

AFM candidates would have a terminal degree in a closely related field of Computer Education, experience in a specific "high need" area in the CECS program, and experience in graduate level instruction in the field.

AFM's would teach a total of 6 CECS courses, at least half of which are at the graduate level. The AFM would also dedicate 25% of his or her time to meeting the "high need" area identified in their contract. The AFM is expected to participate fully in the operation of the CECS program and will be considered as an important component of the CECS faculty.

AFM positions may be split into two 50% positions if all work expectations are met. For example, one 50% AFM may teach only one course per semester

and perform the Professional Service, as long as the other 50% AFM teaches two courses per semester.

The following identifies some of the professional service areas that are in need of support in order for the program to grow at projected rates:

Online Coordinator: Tasks to be performed include online graduate student recruitment; online graduate student advising and degree plan support; support for the implementation of the online doctorate degree; course scheduling of online offerings; management and operational needs for the online program.

On-Campus Coordinator: Tasks to be performed include class schedule coordination; on-campus student support for all student levels (undergraduate, masters and doctorate); course scheduling of on-campus offerings; management and operational needs for the online program, support of ECMP doctoral student group.

Affiliate Faculty

The purpose of the Affiliate Faculty Member is to allow the program to bring in outstanding scholars from other areas and universities and provide a ways for the program and college to recognize them for participating in the CECS program. This recognition translates directly into increasing the prestige of the program nationally. This position will be especially important in the CECS online degrees, where a guest professor could hold a course online for the program.

8.9 Proposed Improvement to Doctoral Program, A Continuum of Classes

With the upcoming online doctoral studies and anticipated increases in current doctoral students, the program is examining ways to better facilitate course and dissertation phases such that faculty are not overwhelmed with current program responsibilities and fluxuations in doctoral mentoring and instruction.

It is proposed that doctoral students in the CECS program will participate in a series of courses during their dissertation process such that faculty members can distribute this load and receive appropriate course credit and release, instead of the current system where dissertation mentoring and work is done on top of existing semester workloads of instruction, research, and grant work.

Once a dissertation proposal is accepted, a student would start the dissertation continuum.

1. The first class would produce chapters 1 and 2: 1 is a brief introduction, 2 is the literature review.
2. The second class would produce chapter 3: research design and methodology. Students would set up their data acquisition process as part of this class.
3. The third class would produce chapter 4. This is after data has been gathered. Chapter 4 is about analysis of data and findings.
4. The fourth class would be for writing chapter five: summary, conclusions, and recommendations.

Since our program only requires 12 hours, these would be the four classes. However, the goal is to move toward requiring 15 hours where the fifth class would be: Dissertation Defense Preparation. This would cover making the whole dissertation coherent, making it flow, plus getting ready for the defense.

Role of Senior Faculty

The four Full Professors in the CECS Program collectively have more than 80 years of experience at UNT. All have been chairing doctoral dissertations for more than a decade. All have served in department chair, program coordinator, or professional association officer roles. These faculty represent the wisdom of the program.

Restructuring will be attempted within the CECS Program to give each of these senior faculty vertical 'caretaker' roles encompassing several courses, several middle level and junior faculty, and a grant or federal contract. Local authority for managing funds generated will also accompany these duties. As senior faculty retire, it is envisioned that one of the middle level faculty in the group will naturally emerge to take the retiring person's place.

8.10 Resources Requested for Fall 2005 and Spring 2006

The CECS program is requesting the following resources for the Fall of 2005

- 1 Visiting Asst/Assoc Professor
- 1 Asst/Assoc Tenure Track Faculty line to be advertised
- Three Associate Faculty Members (discussed above)
- Course Release for Program Director
- Program Staff Position
- CECS 4100 coordinator
- Dissertation mentoring credit via chapter-based courses
- Graduate Research Lab Manager

The program is requesting the following resources for the Spring of 2006

- Post-Doctoral Research Position
- College support to move program forward towards National Recognition by ISTE
- College support to begin implementation of new EDD offering.
- Support to improve selected online courses
- Continued technology infrastructure investment

Requests for 2007 through 2009 are outlined earlier in the document.

Appendix A – Courses/Description

1100. Computer Applications. 3 hours.
Introduction to computer usage. Integrated approach to software tools such as word processing, data-base management, spreadsheet, communications and graphics applications.

2100. Surviving the Information Age. 3 hours.
A collegiate guide to Internet resources and information procurement. Topics include: connecting to UNT resources, peripheral selection and use, tips for purchasing and using application software, an overview of graphics software, applications of the Internet, HTML code, methods of establishing an Internet connection, netcasting, voice and video conferencing, PC-based troubleshooting techniques, electronic research, and information processing using Internet. Prerequisite(s): CECS 1100, or equivalent.

3220. Computer Graphics in Education and Training. 3 hours.
Application of computer graphics to the preparation of multimedia and web-based materials. Includes principles of graphics communication, concepts in computer graphics, graphics input systems, graphics manipulation software, and graphics output systems. Prerequisite(s): CECS 1100.

3260. Web Authoring. 3 hours.
Creation of web-based materials incorporating text, graphics, and multimedia elements. Emphasis on use of standards-based technologies for creating content for web-based delivery. Prerequisite(s): CECS 2510 and 3220.

3440. Technology and the Teacher. 3 hours.
Introduction to class presentation and teacher productivity systems, including graphic, audio, video and computer-based materials. Laserdiscs, videotapes, LCD systems and computer software for the classroom. Prerequisite(s): CECS 1100.

3530. Data Communications. 3 hours.
Foundational skills in data communications. Covers the basics of computer networking, including terms and concepts, contemporary network services, transmission media, and protocols. Students learn how protocols are used in networking implementations from many vendors, especially those most common in today's LANs and WANs. Prerequisite(s): CECS 2510.

4100. Computers in the Classroom. 3 hours.
Computers in education; computer topics covered in introductory and secondary school courses. Motivation and objectives in computer education; some programming language. Instructional uses of the computer, topics in curriculum integration. Prerequisite(s): CECS 1100.

4210. Digital Multimedia in Education and Training. 3 hours.
Production of multimedia materials using digital video and audio production techniques. Project management teams, instructional design, editing techniques, digitizing, using a video camera, and production/post-production techniques are covered. Prerequisite(s): CECS 3220.

4550. Network Systems Administration. 3 hours.
Study of file and print network services in a directory services environment. Topics include server configuration, user management, resource allocation, risk management, and disaster recovery. Prerequisite(s): CECS 3530.

4560. Internet Services Administration. 3 hours.
Design and implementation of Internet information services including FTP, NNTP, World Wide Web, and streaming media. Conferencing using H.323 and T.120 standards-based systems. Students both design and build various information services using representative software tools and hardware platforms.

4800-4810. Studies in Education. 1-3 hours each.
Organized classes for program needs. Prerequisite(s): consent of department. Limited-offering basis. May be repeated for credit.

4830. Practicum, Field Problem, or Internship. 3 hours. (1;0;6)
Supervised professional activities in computer education. May be repeated for credit.

4900-4910. Special Problems. 1-3 hours each.
Prerequisite(s): consent of department. May be repeated for credit.

5010. Computer Education Tools. 3 hours.
Application of computer software tools in education. Study of computer application packages and their utilization in the classroom.

5020. Computers in Education. 3 hours.
Analysis of computer use in education and applications programming in education. Topics include software and hardware evaluation, planning computer education curricula and facilities. Prerequisite(s): CECS 5010 (may be taken concurrently).

5030. Introduction to Internet. 3 hours.
Introduction to Internet technology. Using the Internet for research and professional productivity. Prerequisite(s): CECS 5020.

5040. Productivity Tools. 3 hours.
Advanced features of technology-based productivity tools to support instruction, enhance student learning, and create professional materials and resources. The course emphasizes the integration of word processing, database use, spreadsheets, communication tools, and other devices. Prerequisite(s): CECS 5010 or equivalent. Required of all graduate CECS majors in the teaching and learning with technology program option.

5100. Educational Computer Languages. 3 hours.
An in-depth study of an Object-Oriented Programming Language. Requires "hands-on" programming independent of classroom instruction. Topics include variables, simple and complex data structures, object-oriented design, debugging, interface design plus creating and using objects. Educational implications of object-oriented programming. Prerequisite(s): CECS 5020 or consent of department.

5110. Multimedia in Technology Applications. 3 hours.
Study and analysis of the use of the computer to deliver instruction. Topics include design, development, and review techniques for CAI, current trends in CAI technology and lesson development with an authoring language. Prerequisite(s): CECS 5020.

5111. Introduction to Video Technology. 3 hours.
Basic skills in the production of audio and video materials for multi-media and other digital presentation media. Study of both analog and digital production techniques, nature of audio and video signals, and how those signals are optimized in both the analog and digital domains. Other topics include camera techniques, shot composition, scene construction and visual continuity, audio techniques, script preparation, optimization of finished product and distribution mediums. Prerequisite(s): CECS 5010 or equivalent.

5120. Authoring Systems. 3 hours.
Creation of comprehensive computer-based instructional systems that integrate presentation of materials with the monitoring of student performance and modification of the instructional system based on both internal and external factors. The class will focus on the use of current authoring system tools to develop representative systems. Prerequisite(s): CECS 5020.

5130. Educational Software Development. 3 hours.
Application of software engineering principles to the development of educational software using high-quality human/computer interaction as the primary design criterion. Each student completes a major educational software development project during the course. Prerequisite(s): CECS 5100, 5110 or 5120, and 5210.

5200. New Technologies of Instruction. 3 hours.
Selection, utilization and evaluation of media technology, and techniques used in the instructional programs of education and industry. Includes hands-on digital audio and visual processes.

5210. Instructional Systems Design. 3 hours.
The design of instructional systems is examined through research reports on the theoretical assumptions of learning and analysis of learning systems as they apply to the development of educational and instructional training programs.

5220. Implementing Instructional Systems Technology. 3 hours.
Design and implementation of materials for education and training. Digital audio and video techniques for the production of multimedia products. Implementation strategies for successful production and utilization. Prerequisite(s): CECS 5200.

5230. Production Management of Instructional Modules. 3 hours.
Systems approach to the production and delivery of multimedia modules for education and training. Content includes project specification, budgeting and management skills. Utilization of digital and analog processes to complete advanced video or computer-based/multimedia unit. Prerequisite(s): CECS 5220 or 6210.

5260. Computer Graphics for Mediated Communications. 3 hours.
Application of computer graphics to the preparation and presentation of mediated materials. Includes principles of graphics communication, concepts in computer graphics, graphics input systems, graphics manipulation software and graphics output systems. Prerequisite(s): CECS 5030.

5300. Cognitive Processing. 3 hours.
The study and analysis of models of cognitive systems including acquiring, manipulating, storing, interpreting and using information; special emphasis on the unique interactions between human information processing and computer-based processing as they apply to the instructional environment.

5310. Human-Computer Interaction. 3 hours.
Study of the human as an information processor. Computer interface design that takes into consideration human capabilities and limitations. Educational implications of system input/output facilities. Impact upon instructional system design. Prerequisite(s): CECS 5020 and 5200 or consent of department.

5320. Artificial Intelligence in Education. 3 hours.
Study of artificial intelligence applications in education. Introduction to logic programming, intelligent computer-assisted instruction and intelligent tutoring systems.

Prerequisite(s): CECS 5100 and either 5300 or 5310.

5330. Intelligent Tutoring Systems. 3 hours.
Study of issues and options related to the development and application of intelligent tutoring systems; design and implementation of instructional segments utilizing techniques conveyed during the course. Prerequisite(s): CECS 5110 and 5320.

5400. Educational Telecommunications. 3 hours.
Development of educational telecommunications in the United States; theories and practices. Prerequisite(s): CECS 5010.

5420. Web Authoring. 3 hours.
Course to aid education and training professionals in creating Web-based materials and application utilizing Internet resources. Integration of text, graphics, and multimedia elements in a web environment. Prerequisite(s): CECS 5030.

5440. Wireless Communications. 3 hours.
Survey of wireless telecommunications systems and techniques including low-cost radio and satellite technologies potentially useful to educators. Prerequisite(s): CECS 5400.

5450. Building Internet Information Services. 3 hours.
Design and implementation of Internet information services including FTP, conferencing, and the World Wide Web. Students design and build various information services using software tools and hardware platforms representative of those used in education and training. Prerequisite(s): CECS 5030.

5460. Computer Networks for Educational Environments. 3 hours.
Study of computer networks used in support of education and training. Includes topics in network topologies, wiring, administration, risk management and disaster recovery. Special emphasis is placed on the application of network technologies to K-12 educational environments, higher education and the training environments of business, industry and the military. Prerequisite(s): CECS 5030.

5500. Computer Applications for Curriculum and Instruction. 3 hours.
Designed for both elementary and secondary teachers; skills and methods necessary to implement computer applications within the curriculum. Methods for managing the computer in the classroom; courseware implementation; utilization of word processing, databases, spreadsheets and telecommunications within the curriculum. Methods of teaching computer programming. Prerequisite(s): CECS 5020. Course Materials

5510. Technology-Based Training Systems. 3 hours.
An overview of the management and utilization of technology based training practices in corporate settings. The selection, development, organization and delivery of training to adult learners is tied to instructional development systems. Special attention is given to the role of instructional technologists and the skills, responsibilities, and job requirements of the position.

5550. Computer Applications for Educational Administration. 3 hours.
Study and analysis of the use of technology in the administration of education with emphasis on using microcomputer applications to facilitate administrative activities; planning for the incorporation of technology into district/campuswide instructional programs; and promoting education via the use of technology. Prerequisite(s): CECS 5010 or 5011.

5570. Ethical, Legal and Professional Issues in Computing. 3 hours.
Focus on research literature and current issues dealing with ethical and legal issues within

the computing profession. Includes units on intellectual property, moral philosophy, gender and minority issues affecting computer education.

5580. Readings Seminar in Computer Education and Cognitive Systems. 3 hours.
Broad reading in a defined area of technology interaction. Requires the critical evaluation of sources with particular emphasis on methodology and application to educational environments. CECS majors must take this course during the last 6 hours. Prerequisite(s): consent of department.

5610. Analysis of Research in Educational Technology. 3 hours.
Interpretation, analysis and synthesis of current research in educational technology for the purpose of integrating research methodology and application to educational environments. Prerequisite(s): consent of department.

5800-5810. Studies in Education. 3 hours each.
Organized classes specifically designed to accommodate the needs of students and the demands of program development that are not met by the regular offerings. Prerequisite(s): consent of department. Limited-offering basis; may be repeated for credit.

5900-5910. Special Problems. 1-3 hours each.
Independent study and research. Prerequisite(s): consent of department and instructor. May be repeated for credit.

5960. Education Institute. 1-6 hours.
For students accepted as participants in special institute courses. Prerequisite(s): consent of department.

6000 Philosophy of Computing in Education
An examination of the philosophical underpinnings of use of computers in education: why we are interested in this technology; what we hope to accomplish; intended and unintended changes that will occur by its use.

6010 Theory of Instructional Technology
To examine and understand the underlying philosophical approaches to learning and the paradigms which guide instructional design. To describe how the use of computing and other technologies are enabled within each paradigm.

6020 Advanced Instructional Design: Models and Strategies
This course will provide students with advanced instructional design and development skills as well as the conceptual underpinnings for various instructional design models. The course will also familiarize students with a number of different design models that can be used in corporate and/or educational settings.

6030 Emerging Technologies and Education
Investigation of the challenges and opportunities of implement emerging technologies in educational environments. Emphasis on understanding their use to meet educational needs and goals.

6050 Internship
Supervised professional activities in the profession. Students will spend a pre determined number of hours working with an appropriate site in education or business. During class meeting students will review practicum experiences and analyze issues associated with a career in the profession.

6100 Theory and Practice of Distance Education

Study of theory and practice of distance education and its application to the planning, development, utilization and evaluation of distance educations systems in educational environments. Various distance education systems will be investigated.

6200 Message Design in Education

Principles linking instructional conditions and learning outcomes. Relationship between learning theour and instructional practices in technology delivered instruction. Topics include motivation, perception, cognition, and attitude change

6220 Theory of Educational Technology Implementation

Examination of classic and contemporary research to develop an understanding of the issues of successful technology implementation and the implications in educational environments.

6230 Advanced Educational Production Design

Advanced design and implementation of educational multimedia and hypermedia products utilizing strategies from message design, human factors research, learning theory and other thereotical and critical approaches. This is a project-based course emphasizing analysis design, development, implementation and evaluation.

6310 Creating Technology-based Learning Environments

Study of the design and development of technology infused learning environments. Provides an understanding of how constructivist designed instruction keeps students active, constructive, collaborative, intentional, complex, contextual, conversational, and reflective.

6400 Educational Technology Systems Design and Management

Study and analysis of facility design, organizational patterns, administrative strategies, and alternative structures for achieving and evaluating media-based instructional and production components. Includes selection, procurement and control of hardware and software inventories. Management tools including protection of intellectual property, security issues and budgeting strategies are discussed.

6500 Developing Educational Funding Opportunities

The ideal grant is a match between the needs of an organization and the desires of a funding agency. Students in this class will examine grants from both viewpoints and build on that knowledge to write effective grant proposals. In addition to investigating some of the logistics of grant-writing, this course examines the relationship between a granting agency and its grant recipient.

6510 Analysis of Research in Educational Computing

Students will analyze current research in educational computing as a tool for understanding the unique characteristics of technology based research activities in educational environments. Special consideration will be given to strategies for separating influences in research designs that incorporate technology as tools and as variables in the design. Students will also identify potential dissertation research topics and prepare preliminary reports that will be critiqued in class in preparation for doing the dissertation.

6900 Independent Study

6950 Dissertation

Appendix B – Courses by Semester showing Enrollment and Section

Year	Semester	Course	#Secs	Stus
2002	Fall	1100	3	128
2002	Spring	1100	5	146
2002	Sum I	1100	1	22
2002	Sum II	1100	1	23
2003	Fall	1100	2	159
2003	Spring	1100	4	208
2003	Sum I	1100	1	25
2004	Fall	1100	2	150
2004	Spring	1100	4	214
2004	Sum I	1100	1	15
2004	Sum II	1100	1	14
2005	Spring	1100	6	192
2002	Fall	2100	1	21
2003	Fall	2100	1	20
2003	Spring	2100	1	28
2004	Spring	2100	1	29
2005	Spring	2100	2	27
2002	Fall	3220	1	10
2002	Spring	3220	1	18
2003	Spring	3220	1	18
2004	Fall	3220	1	14
2005	Spring	3220	1	17
2002	Fall	3260	1	21
2002	Spring	3260	2	36
2002	Sum II	3260	1	2
2003	Fall	3260	1	18
2003	Spring	3260	1	19
2004	Spring	3260	1	21
2004	Sum II	3260	1	3
2005	Spring	3260	1	24
2002	Fall	3440	2	24
2002	Spring	3440	2	41
2002	Sum II	3440	1	26
2003	Fall	3440	1	22
2003	Spring	3440	1	26
2003	Sum II	3440	1	20
2004	Fall	3440	1	29
2004	Spring	3440	1	33
2004	Sum II	3440	1	12
2005	Spring	3440	1	21
2002	Fall	3530	1	19
2002	Spring	3530	1	11
2003	Fall	3530	1	16
2002	Fall	4100	7	155
2002	Spring	4100	6	129
2002	Sum I	4100	1	37
2003	Fall	4100	9	210
2003	Spring	4100	9	187
2003	Sum I	4100	1	11
2003	Sum II	4100	1	31
2004	Fall	4100	10	246
2004	Spring	4100	10	233
2004	Sum I	4100	3	54
2004	Sum II	4100	2	39
2005	Spring	4100	11	244
2002	Fall	4210	1	15
2005	Spring	4210	1	12
2002	Fall	4550	1	11
2003	Fall	4550	1	12
2004	Fall	4550	1	6
2004	Sum I	4550	1	3
2002	Fall	4560	1	13
2002	Spring	4560	1	3
2003	Spring	4560	1	9
2004	Spring	4560	1	18
2005	Spring	4560	1	7
2003	Spring	4800	1	9
2002	Spring	5010	1	42
2003	Spring	5010	2	41
2004	Spring	5010	2	27
2005	Spring	5010	1	32
2002	Fall	5020	1	6
2002	Spring	5020	1	26
2003	Fall	5020	2	44
2003	Spring	5020	1	26
2004	Fall	5020	1	27
2004	Spring	5020	1	22
2005	Spring	5020	1	18
2002	Fall	5030	2	33
2002	Spring	5030	1	42
2002	Sum II	5030	2	31
2003	Fall	5030	2	35
2003	Spring	5030	1	26
2004	Fall	5030	1	41
2004	Spring	5030	1	30
2004	Sum I	5030	1	7
2004	Sum II	5030	1	32
2005	Spring	5030	1	26
2002	Fall	5040	1	8
2002	Fall	5100	1	22
2002	Spring	5100	1	17
2003	Fall	5100	2	18
2004	Fall	5100	1	12
2003	Fall	5110	1	14
2003	Spring	5110	1	11
2004	Fall	5110	1	12
2004	Spring	5110	1	10
2005	Spring	5110	1	13
2003	Fall	5111	1	9
2003	Spring	5111	1	11
2004	Fall	5111	1	8
2004	Spring	5111	1	9
2005	Spring	5111	1	6

2002	Spring	5120	1	5
2002	Fall	5200	2	25
2002	Spring	5200	1	21
2002	Sum II	5200	1	29
2003	Fall	5200	1	12
2003	Spring	5200	1	18
2003	Sum II	5200	2	50
2004	Fall	5200	1	12
2004	Spring	5200	1	14
2004	Sum II	5200	1	12
2005	Spring	5200	1	16
2002	Fall	5210	2	56
2003	Fall	5210	3	46
2004	Fall	5210	1	28
2002	Fall	5220	1	19
2003	Fall	5220	1	15
2004	Fall	5220	1	11
2002	Fall	5260	1	31
2002	Sum-May	5260	1	5
2003	Fall	5260	1	17
2003	Sum-May	5260	1	12
2004	Fall	5260	1	10
2004	Sum-May	5260	1	6
2002	Spring	5300	2	38
2002	Sum I	5300	2	23
2003	Spring	5300	2	25
2003	Sum I	5300	1	19
2004	Spring	5300	2	24
2004	Sum I	5300	1	5
2005	Spring	5300	1	21
2002	Spring	5310	1	25
2003	Spring	5310	3	76
2004	Spring	5310	2	27
2005	Spring	5310	1	8
2005	Spring	5310	1	19
2002	Fall	5400	1	5
2002	Fall	5420	2	7
2002	Spring	5420	1	27
2002	Sum II	5420	2	16
2003	Spring	5420	1	23
2003	Sum II	5420	1	21
2004	Fall	5420	1	10
2004	Spring	5420	1	10
2004	Sum II	5420	1	10
2005	Spring	5420	1	10
2002	Spring	5450	1	22
2002	Sum II	5450	1	15
2003	Spring	5450	1	22
2003	Spring	5450	1	6
2003	Sum II	5450	1	8
2004	Spring	5450	1	9
2005	Spring	5450	1	7
2002	Fall	5460	1	18
2003	Fall	5460	1	15
2004	Fall	5460	1	13
2004	Sum I	5460	1	7
2002	Fall	5500	1	6
2002	Sum I	5500	2	31
2002	Sum II	5500	1	6
2003	Fall	5500	1	11
2003	Sum I	5500	1	30
2004	Fall	5500	1	6
2004	Sum I	5500	1	13
2002	Spring	5570	1	9
2003	Spring	5570	1	15
2004	Spring	5570	1	13
2005	Spring	5570	1	13
2002	Fall	5580	1	13
2002	Spring	5580	1	9
2002	Sum I	5580	1	15
2003	Fall	5580	2	21
2003	Spring	5580	1	19
2003	Sum I	5580	1	10
2004	Fall	5580	1	3
2004	Spring	5580	1	10
2004	Sum II	5580	1	6
2005	Spring	5580	1	15
2003	Spring	5610	1	18
2004	Spring	5610	1	11
2005	Spring	5610	1	9
2003	Sum II	5800	1	7
2004	Sum I	5800	3	9
2004	Sum II	5960	1	9
2004	Fall	6010	1	5
2005	Spring	6020	1	8
2004	Fall	6030	2	23
2002	Spring	6100	1	9
2003	Spring	6100	1	7
2004	Spring	6100	1	11
2003	Sum I	6200	1	15
2004	Sum I	6200	1	6
2002	Fall	6210	1	6
2003	Fall	6210	1	8
2005	Spring	6220	1	9
2002	Fall	6300	1	10
2003	Sum I	6310	1	7
2002	Spring	6800	1	9
2002	Sum-May	6800	2	18
2003	Spring	6800	2	14
2003	Sum-May	6800	1	8
2004	Spring	6800	1	9
2004	Sum I	6800	1	9
2004	Sum-May	6800	1	8

Appendix C - Course Offerings

The CECS program offers numerous courses that meet the needs of undergraduate service, and courses for both masters and doctoral degrees. Appendix A contains a current list of courses with descriptions. The following table shows the number of sections by course by semester offered by the program (does not contain MAT). This information is important in understanding the needs of the program faculty, associate faculty, and instructors teaching courses.

		2002	2003	2004	2005
1100	Fall		2	2	
	Spring	5	4	4	6
	Sum I	1	1	1	
	Sum II	1		1	
2100	Fall	1	1		
	Spring		1	1	2
3220	Fall	1		1	
	Spring	1	1		1
3260	Fall	1	1		
	Spring	2	1	1	1
	Sum II	1		1	
3440	Fall	2	1	1	
	Spring	2	1	1	1
	Sum II	1	1	1	
3530	Fall	1	1		
	Spring	1			
4100	Fall	7	9	10	
	Spring	6	9	10	11
	Sum I	1	1	3	
	Sum II		1	2	
4210	Fall	1			
	Spring				1
4550	Fall	1	1	1	
	Sum I			1	
4560	Fall	1			
	Spring	1	1	1	1
4800	Spring		1		
5010	Spring	1	2	2	1
5020	Fall	1	2	1	
	Spring	1	1	1	1
5030	Fall	2	2	1	
	Spring	1	1	1	1
	Sum I			1	
	Sum II	2		1	
5040	Fall	1			
5100	Fall	1	2	1	
	Spring	1			
5110	Fall		1	1	
	Spring		1	1	1
5111	Fall		1	1	
	Spring		1	1	1
5120	Spring	1			
5200	Fall	2	1	1	
	Spring	1	1	1	1
	Sum II	1	2	1	
5210	Fall	2	3	1	
5220	Fall	1	1	1	
5260	Fall	1	1	1	
	Sum-May	1	1	1	
5300	Spring	2	2	2	1
	Sum I	2	1	1	
5310	Spring	1	3	2	2
5400	Fall	1			
5420	Fall	2		1	
	Spring	1	1	1	1
	Sum II	2	1	1	
5450	Spring	1	2	1	1
	Sum II	1	1		
5460	Fall	1	1	1	
	Sum I			1	
5500	Fall	1	1	1	
	Sum I	2	1	1	
	Sum II	1			
5570	Spring	1	1	1	1
5580	Fall	1	2	1	
	Spring	1	1	1	1
	Sum I	1	1		
	Sum II			1	
5610	Spring		1	1	1
5800	Sum I			3	
	Sum II		1		
5960	Sum II			1	
6010	Fall			1	
6020	Spring				1
6030	Fall			2	
6100	Spring	1	1	1	
6200	Sum I		1	1	
6210	Fall	1	1		
6220	Spring				1
6300	Fall	1			
6310	Sum I		1		
6800	Spring	1	2	1	
	Sum I			1	
	Sum-May	2	1	1	