



Master's and Professional Programs  
Viterbi School of Engineering  
**University of Southern California**



# USC VITERBI SCHOOL OF ENGINEERING

- **USC is a private institution, founded in 1880**
  - 37,000 students
- **8 Engineering Academic Departments**
  - AME, ASTD, BmE, CEE (Astani), ChEMaSC (Mork), CS, EE (Hsieh), ISE (Epstein)
- **Engineering Student population**
  - Approximately 2,000 B.S.; 3,300 M.S. (on-campus); 1,000 M.S. (DEN)



# MASTER'S AND PROFESSIONAL PROGRAMS

- **M.S. Degree Programs**
  - On-Campus and Off-Campus (DEN) Students
- **Graduate Certificate Programs**
- **Professional Programs (Non-Credit)**
  - Short Courses
  - Customized Courses
  - Seminars/Conferences

*Programs available on-campus, on-site or on-line*
- **Distance Education Network**



# DEN'S EVOLUTION

- 1972 Microwave Delivery
- 1997 Satellite Delivery
- 1999 E-Learning – digitized broadcast videos for archived viewing
- 2002 E-Learning Systems – Full MS Degrees Available
  - Built student e-Learning portal
  - Lectures delivered synchronously (live) or asynchronously (on-demand)
  - Elimination of geographic boundaries
  - Blended Delivery Mode supporting both on campus and online delivery and interactivity



# WHAT DOES DEN OFFER?

- DEN is *the delivery mechanism* for graduate engineering education online
- More than 80% of our Master's graduate courses are also available online
- DEN *does not offer undergraduate degrees* and in keeping with the Provost's memo on distance learning
- 33 M.S. degrees and 5 Graduate Certificates distributed across all Viterbi departments
- Non-Credit offerings through Professional Programs including Short Courses, Custom Courses, Conferences and Seminars, and Courses on Demand
- Teacher centric
  - *Flexible for different teaching styles*
  - *Different technologies used (Smart Board, computer, video, etc..)*
- Student centric
  - *Anytime learning*
  - *Group presentations*
  - *Online interaction*
- Dedicated Staffing, Dedicated Facilities



# CORPORATE PARTNERS

Flexible credit and non credit offerings for professional engineers as well as custom professional programs.

Over 1,200 students currently participate in Masters programs from all over the United States and across the world through our corporate partners or independently.

More than 200 companies including:

Aerojet	Lockheed Martin
Aerospace Corporation	Los Angeles DWP
Amgen, Inc.	Medtronic
BAE Systems	NASA
Boeing Company	Nokia
Boston Scientific	Northrop Grumman
Chevron	Occidental Petroleum
Cisco Systems	Pratt & Whitney
Delphi	Qualcomm
Ericsson	Raytheon
GE Energy	SAIC
General Dynamics	Schlumberger
Google, Inc.	Space Systems/Loral
Hamilton Sunstrand	Southern California Edison
Honeywell	Sun Microsystems
Intel	United Technologies Corp.
Jet Propulsion Laboratory	United States Armed Forces
Korean Air	Yahoo, Inc.



# GLOBAL PROGRAMS AND PARTNERSHIPS



- Over 20 individual students from 10 different countries including Germany, Argentina, Australia, Russia, North Pole, etc.
- An MOU with Korean Air  
Several Korean Air engineers have already graduated through this partnership
- An MOU with ITB – Institute of Technology Bandung, Indonesia  
Providing Graduate Certificate in Petroleum Engineering (Smart Oilfield Technologies)
- An MOU with Chevron,  
Resulting in their engineers taking classes in Angola, Argentina, and other locations throughout the world
- USC – Kuwait Oil Company Partnership  
Supporting PHD and Masters studies and collaboration

# DISTANCE LEARNING CLASSROOMS





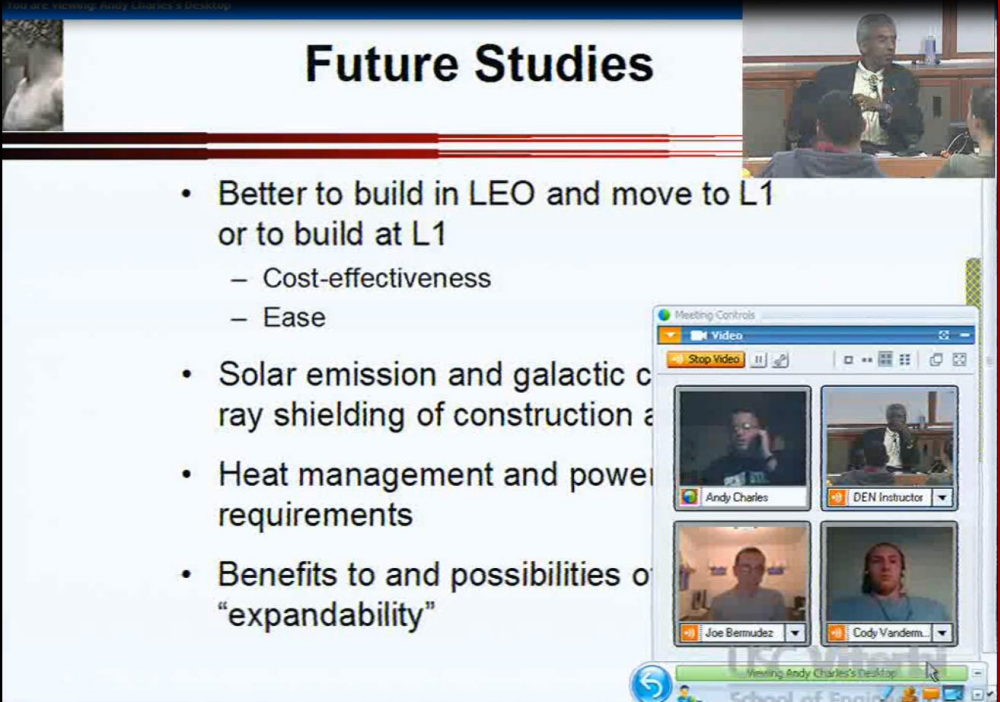
# DISTANCE EDUCATION NETWORK

- Over 140 master's courses are available online every fall and spring semester; approximately 50+ courses available in the summer semester
- High-speed Internet access (DSL/Cable minimum) for streaming videos and interactive collaboration tools
- All DEN courses are available on the Internet live and on-demand. High resolution lecture videos also available for download.
- Students can phone into studio classrooms with questions during class, or participate in chat or threaded discussions
- Lectures are archived and available for viewing for the entire semester



# REAL TIME INTERACTIVITY

Students off campus can interact with the classroom in real time through various web and video conferencing systems.



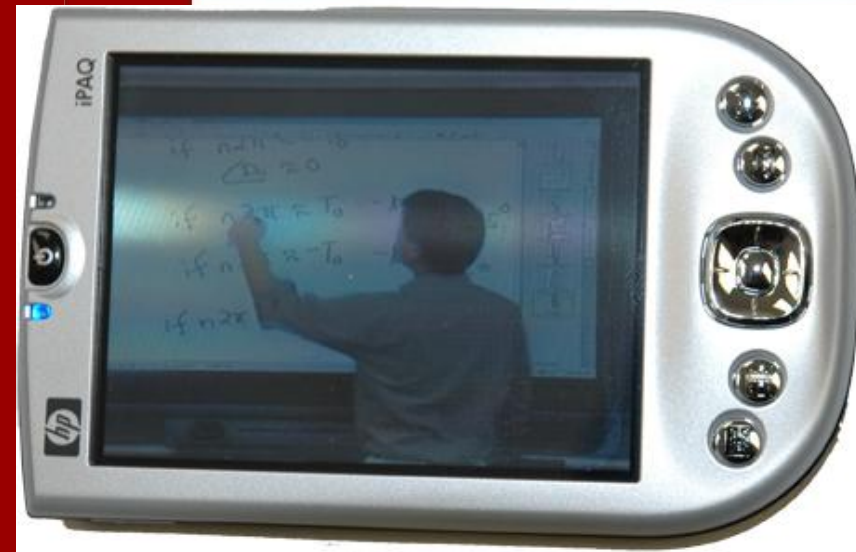
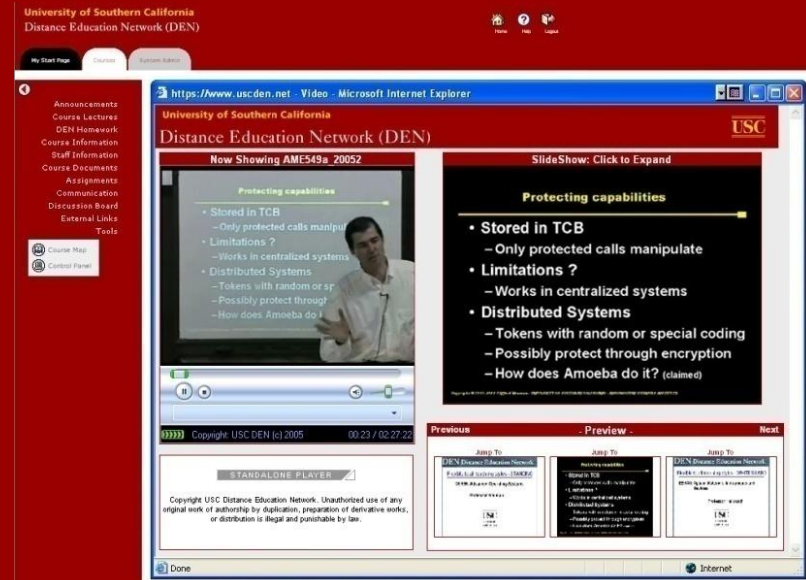
The screenshot shows a video conference window titled "Future Studies". The main content is a list of bullet points. In the top right corner, there is a small video feed of a man in a suit. In the bottom right corner, there is a "Meeting Controls" window with a "Video" section and four video thumbnails for participants: Andy Charles, DEN Instructor, Joe Bermudez, and Cody Vanderm... The main text is as follows:

- Better to build in LEO and move to L1 or to build at L1
  - Cost-effectiveness
  - Ease
- Solar emission and galactic cosmic ray shielding of construction
- Heat management and power requirements
- Benefits to and possibilities of "expandability"

Screen shot of a presentation provided by an off campus student to the classroom (ASTE 527 Fall 2009)

# ENHANCED E-LEARNING SYSTEMS

- Conventionally delivered course material are captured and transformed for delivery over the Internet
  - Lecture - streaming audio and video, downloadable high resolution video (Windows)
  - Written materials are digitized (.pdf, Power Point) so students can focus on the lecture instead of focusing on taking notes
  - Real Time Interactivity options



# CLASS COLLABORATION TOOLS

**Tools**

- [Announcements](#)
- [Calendar](#)
- [Tasks](#)
- [View Grades](#)
- [Send Email](#)
- [Address Book](#)
- [DEN Tools](#)
- [Google Tools](#)

**My Announcements**

- [DEN Terms of Service](#)

No course announcements have been posted in the last 7 days. [more.....](#)

**My Calendar**

- Gmail** – With 7GB of storage, built-in IM, innovative search, and IMAP capability, there's no need to worry about email quotas or spam.
- Google Calendar** – Easily organize schedules and share calendars with others.
- Google Docs** – Collaborate real time on documents, spreadsheets, and presentations, across campus or around the world.
- Google Sites** – Publish and share all types of information online, without any coding or technical language, for easy access from any browser.
- Google Video** – Securely and privately share videos with your school's faculty and students (10GB free).
- Extensibility APIs** – Easily integrate with your school's existing systems or third party solutions.
- Help and support** – Access to 24/7 online and phone support assistance.

**My Courses**

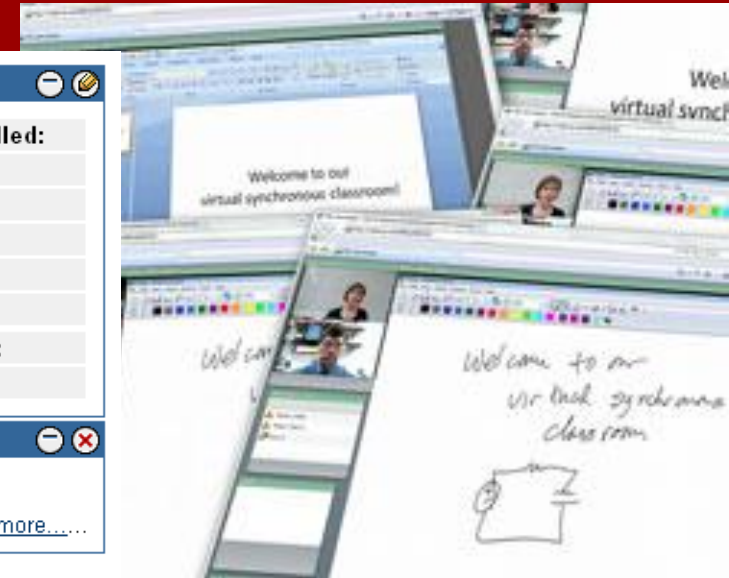
**Courses in which you are enrolled:**

- [AME420\\_20101](#)
- [AME451\\_20093](#)
- [DEN101\\_20093](#)
- [DEN102\\_20093](#)

**which you are a TA:**

- [20091](#)

e. [more.....](#)



Dedicated collaboration tools for students including discussion boards, chat, and web conferencing systems

# INSTRUCTIONAL SUPPORT SERVICES

- Course notes, handouts and homework – available online
  - Course notes written by the professor during class are posted alongside the e-learning video.
  - Handouts given during class are usually posted online prior to class.
  - Homework assignments are transmitted to and from DEN via e-mail and/or fax via custom cover sheet program

T1 illustrated

Sockets

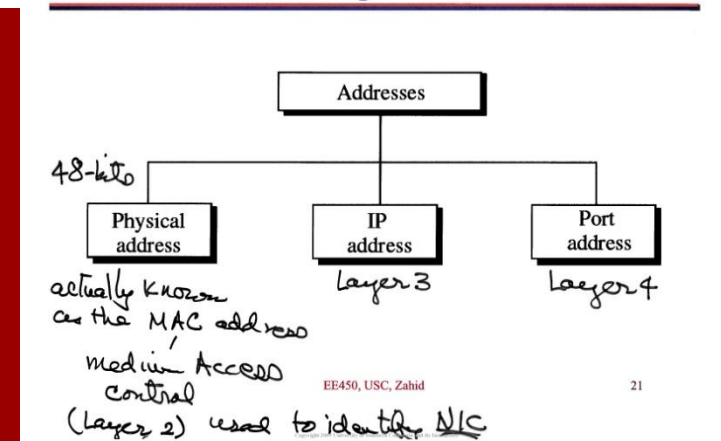
a socket is an abstraction through which applications get access to network and through which they can send/recv data.

Client Server

HTTP DNS TCP UDP IP Technology

HTTP WWW TCP UDP IP Tech

Client Soc



# ASYNCHRONOUS TOOLS

TOOL	PROs	CONs
Blackboard	Standard LMS tool; Stable support environment	High cost; Specific development platform
VSoE Developed Lecture Capture System	Highly customized; Cost effective; Automates many process	None
SmartEncode.com for Portable Encoding	Customizable; Professional encoding unit; Cost efficient; Includes software switching	Requires specific environment; Space allocation (requires additional equipment in room)
Qualtrics	Customizable Evaluation and Survey Tool (more than Blackboard Tool)	System is external to Blackboard (not integrated in existing system)

# SYNCHRONOUS TOOLS

TOOL	PROs	CONs
Blackboard	Several tools available for chat; Whiteboarding; Wikis; Virtual Classroom; Discussion Boards (all integrated)	Very specific suite of applications; Difficult to integrate other tools; “Either you like it or you don’t”
WebEx	Industry standard content sharing application; Firewall friendly; Easy to use; Phone Integration	High Cost Factor
Adobe Connect	User friendly communication; Content sharing application; Flash based; Cost effective	Certain firewall/flash issues; Separate phone integration option

# SYNCHRONOUS TOOLS

TOOL	PROs	CONs
Tandberg Video Conferencing Systems	High quality; Real time video; Audio and computer communication	High cost; Bandwidth considerations
Skype	Free; Person to Person; High quality audio and video; Well-known	Difficult for large groups to interact; Outside of LMS
Telephone Systems	Simple to use; Cost effective	Integration into classroom environment
Google Docs	Easy to use; Widely accepted	Requires Google account or University integration



# CONTACT INFORMATION

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