

# Future Education Focus Areas for the ERC

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# ERC Industrial Short Courses



- **Chemical Mechanical Planarization**
  - 1999 and 2000 - international
  - 2002 to date- CMP – On-Demand Webcast:  
[www.semizone.com](http://www.semizone.com)
- **On Site Courses at Individual Companies by PIs**

# Surveys on Industry's Continuing Education Needs

- ERC IAB Survey 2001(our members)
- 2001 Survey of Phoenix area semiconductor managers and engineers (broader-based)
- 2004 survey – can complete during this teleconference

# Key Educational Needs of Industry

- Technical Communication
- Teamwork
- Business Knowledge
- Global Understanding
- Knowledge of “Hot” Topics (*e.g.*, optoelectronics, molecular electronics, MEMS)

# Top Technical Choices

- FEOL wafer cleaning
- Copper plating and Copper Damascene
- Advanced CMP
- Low K dielectrics
- Water Recycle and Reuse
- Treatment issues related to FAB wastewater streams
- BEOL process flow
- ESH Business Drivers
- VD/PVD metal and oxide films

# Course Format

- Distance via web
- Short courses – regionally located

# On –line Certificate Program

## Program in Microelectronics

### Manufacturing

- Focus on convenient, flexible, delivery methods
- Ability to time-shift classes/learning to student's schedule most critical (university semester structure is acceptable)
- Educational “business” success factors:
  - Customer service orientation key differentiation
  - Competitive Cost-for-Value
  - Niche technical areas blended with practical skills
  - Technically current, relevant, leading edge
  - State-of-the-art distance learning pedagogy

# Customer Service Recommendations

- “Under-promise and Over-deliver – make it easy, slick. Do it right.”
- Logistics:
  - Ease of entry (application/admission)
  - Ease of enrollment (registration)
  - Ease of payment
  - Responsive advising
  - Responsive Tech Support



# Hands on Training for Engineers and Technicians

- Use opportunity to teach technicians through hands-on instruction at University facilities?
  - Water purification
  - Fabrication processes?
  - Waste treatment

# What are the Next Steps for the ERC's Continuing Education Program?

- Does industry need the ERC to supply continuing ed courses?
- Is the time right now? Is industry funding training?
- Is the ERC the right supplier?
- Faculty instructors? Or combination of faculty and industrial instructors?