

VLSI Workshop Day 5

• Today's Topic: Research Topics

| | DAY 1 | DAY 2 | DAY 3 | DAY 4 | DAY 5 |
|-------|--|--|---|--|--|
| 9:00 | <i>common session</i> | <i>common session</i> | <i>common session</i> | <i>common session</i> | <i>common session</i> |
| 9:30 | Introduction; VLSI Curriculum; Course Content Overview | Course content: technology & device models | Teaching skills; effective lectures | DIS: Research in Education | DIS: Engaging in Research |
| 10:00 | | | | New tech. resources | Research: MEMS & Sensors |
| 10:30 | | | | | |
| 11:00 | Components of VLSI Course | Course content: CMOS logic, layout, sequential logic | Teaching resources; effective homework, exams, labs | Trends in VLSI | Research: Bio-medical Electronics |
| 11:30 | | | | VLSI Implementations of DSP | |
| 12:00 | | | | | |
| 12:30 | <i>lunch</i> | <i>lunch</i> | <i>lunch</i> | <i>lunch</i> | <i>lunch</i> |
| 1:00 | | | | | |
| 1:30 | <i>common session</i> | <i>common session</i> | <i>common session</i> | BOG: VLSI Course Content Lectures | <i>common session</i> |
| 2:00 | | | | | BOG: New Technology Lectures |
| 2:30 | Components of VLSI Course | Advanced/grad topics & courses | BOG: Session A | | |
| 3:00 | | DIS: What BOGs do you want? | DIS: Challenges to Teaching VLSI | BOG: Session B | DIS: BOG |
| 3:30 | DIS: Break Out Groups & Lectures | | <i>common session</i> | | |
| 4:00 | | | | | DIS: Summary & Action Items |
| 4:30 | | | | | |
| 5:00 | | | | | |
| | <u>Questionnaire</u> | <u>Course Lecture</u> | <u>Course Lecture</u> | <u>New Tech Lecture</u> | |

Day 5 Agenda

Morning

- Reminder: Present “new technology” this afternoon
- Questions from Day 4?
- Research: MEMS and Sensors
- Research: Bioelectrochemical System on Chip

Afternoon

- Break-out Group: Present new technology lectures
- Discussion: Summary & Take Home Lessons

Discussion: Engaging in Research

- What type of research can **you** engage in?
 - .
 - .
- What are your challenges to engaging in research?
 - .
 - .
- Solutions?
 - .
 - .

Research Topics

Time permitting, we can discuss my research in these areas:

- Low Power Design Techniques
- Analog/Mixed-Signal Design: Sensor readout circuits
- Micro-Electro-Mechanical Systems (MEMS) and Sensors
- Bioelectrochemical System on a Chip

Slides for all topics posted on workshop website

BOG: Present New Technology Lectures

- Form break-out groups now
- Present papers to your group
 - ~10 min presentation (someone keep track of time)
 - ~5 min discussion
 - discuss paper; don't evaluate presenter
- Meet back here for final Day 4 discussion
 - set time to meet _____
- Questions?

Workshop Summary

- VLSI Design course
 - curriculum
 - course components
 - sample course content
- Effective Teaching
 - how to speak; how to engage students
 - practice preparing examples/homework & presenting lectures
- Research
 - role in education; resources for information
 - several current research topics
- **Your job now**
 - transfer what you have learned into your lives

Discussion: Take Home Lessons

- What will **you** do to integrate the things you learned?
 - integrate new technology into education
 - involve students in research
 - more focus on effective student learning
 - develop new UG projects based on research interests
 - adapt US curriculum to India
 - integrate relevant objectives into lectures
 - provide course resources to students
 - expand lecture notes to suitable study material for students
 - explore teamwork in homework
 - link course topics to state-of-the-art developments
- How can you sustain your growth as a teacher?
 - keep informed of new technology
 - developing and attending workshops like this one
 - adapt effective teaching techniques to Indian culture
 - .