King Fahd University of Petroleum & Minerals

Computer Engineering Department

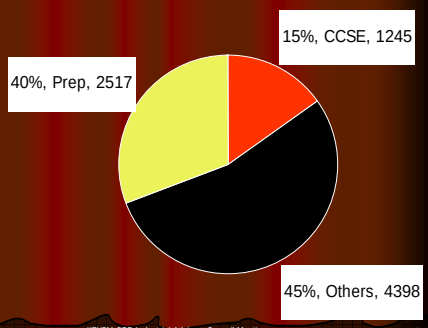
College of Computer Sciences and Engineering (CCSE)

Outline

- KFUPM & Computer Engineering (COE)
- **COE Programs**
- **What is COE ?**
- **BS Degree Requirements**
- **COE Facts & Figures**
- **Issues for discussion**

KFUPM Students

CCSE among others



College of Computer Sciences & Engineering

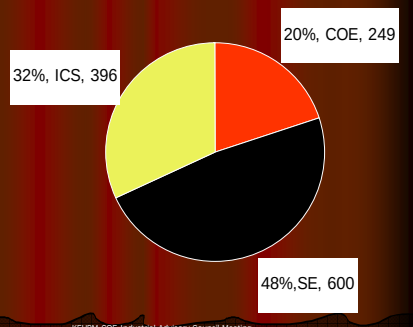
CCSE

ICS Information and Computer Science

COE Computer Engineering

SE Systems Engineering

CCSE College Students



COE

- Established in 1986
- Degrees:
  - Undergraduate (BS)
  - Graduate (2 MS, PhD)
- BS Degree (BS in Computer Engineering)
  - Undergraduate = 4 years + 1 Prep Year
  - on-campus program, full-time students
  - Two tracks based on student interest of industrial training: Coop or Summer
- GPA Graduation:
  - Minimum 2.00 / 4.00

Computer Engineering (COE) Programs

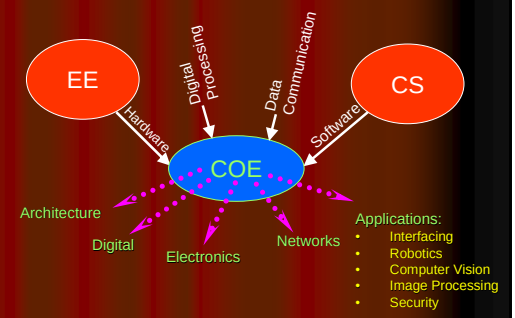
- BS in Computer Engineering
  - Coop (7 Months)
  - Summer training (2 Months) + Senior Design Project
- MS (Master of Science)
  - MS in Computer Engineering
  - MS in Networking (jointly ICS)
- PhD in Computer Science & Engineering (jointly ICS)

Educational Objectives of COE Program

The objectives of the **COE program** are to produce computer engineering graduates who are prepared to:

1. Practice their profession with *confidence* and *global competitiveness* and make intellectual contributions to it
2. Pursue a life-long career of *personal and professional growth* with superior work ethics and character, and
3. Pursue *advanced study* and *research* at the graduate level.

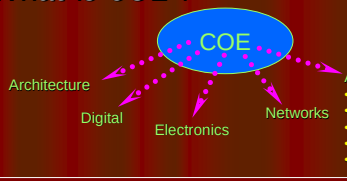
What is COE ?



All Computing & IT Engineering Concerns

♦ *design* ♦ *analysis* ♦ *modeling* ♦ *implementation*

What is COE ?

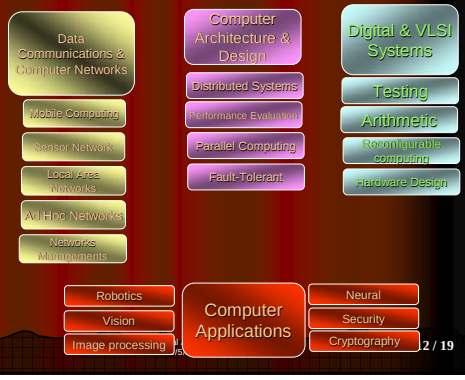


- COE Core Courses
  - Digital Logic Design
  - Computer Organization & Assembly Language
  - Microcomputer System Design
  - Computer Architecture
  - Principles of VLSI Design
  - Data and Computer Communications
  - Computer Networks

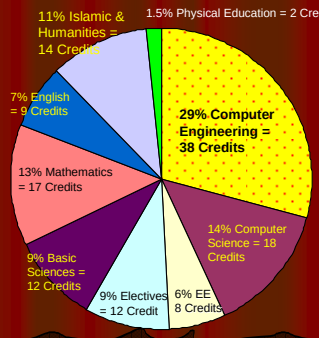
Requirements from Computer Science & Electrical Engineering

- Computer Science Requirements
  - Programming Fundamentals (JAVA)
  - Advanced Programming (JAVA)
  - Data Structures
  - Discrete Structures
  - Operating Systems
  - Database Systems (Core for Coop)
- Electrical Engineering Requirements
  - Circuits
  - Electronics

COE Electives: Three senior-level courses



BS in Computer Engineering

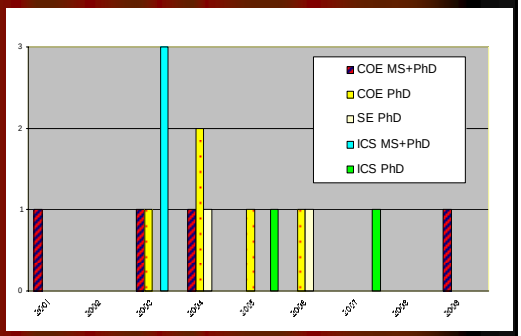


Total hours = 130 credits

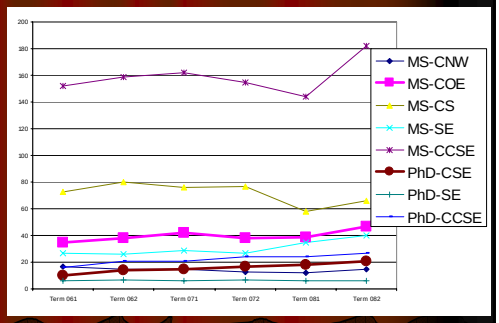
* *Note: Curriculum is currently being revised.*

Facts & Figures about COE

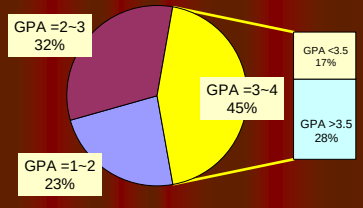
CCSE Graduate Students on Scholarship for MS & PhD in US/Canada



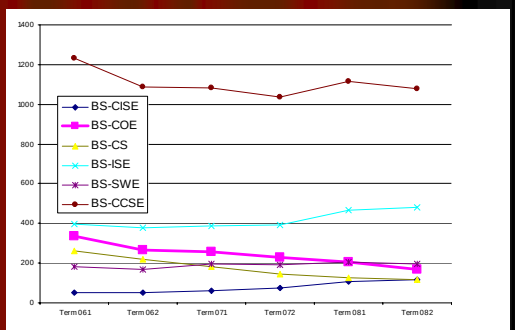
MS & PhD Number of Students



COE GPA in 2008



BS - Number of Students



Issues for discussion

- Decreasing # BS Students ?
  - Engineers Vs. Technicians ?
  - Perception of COE & industry
  - World Trend – COE
  - Thinking of Networking ?
- Elective Courses ?
- Needed Skills
  - Through PE courses!!
  - New ideas?

Thanks

What is COE?

COE concerned with:

♦design, ♦ analysis, ♦ modeling,
♦ implementation && ♦ utilization of:

1. *Digital Processing Systems,*
2. *Digital Communication & Networking Systems.*

Both the *software* and the *hardware* aspects of these systems are studied in a balanced and coherent manner.

COE according to IEEE/ACM

"COE embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. COE has traditionally occupied the territory that lies at the interface between CS and EE. It evolved over the past three decades as a separate, although intimately related discipline. COE is solidly grounded in theories and principles of computing, mathematic, science, and engineering and it applies these theories and principles to solve technical problems through the design of hardware, software, networks and processes. "

BS in Computer Engineering*

Computer Engineering	38 credit
Information & Computer Science	18 credits
Electrical Engineering	8 credit
Electives	12 credit
Basic Sciences	12 credit
Mathematics	17 credit
English	9 credit
Islamic Studies & Humanities	14 credit
Physical Education	2 credit
Total hours	*130 credit*

** Note: Curriculum is currently being revised.*

Major Areas in COE

1. Architecture
2. Digital
3. Electronics
4. Data Communications & Computer Networks.
5. Applications:
   - Interfacing
   - Robotics
   - Computer Vision
   - Image Processing
   - Security

COE Core Courses

- Digital Logic Design
- Computer Organization and Assembly Language
- Microcomputer System Design
- Computer Architecture
- Principles of VLSI Design
- Data and Computer Communications
- Computer Networks
- System Design Laboratory
- Seminar
- Summer Training (or Coop)
- Senior Design Project (Not for Coop track)

Faculty

- 20 PhD degree
  - 3 Professors
  - 4 Associate
  - 12 Assistant
  - 1 Adjunct
- 7 MS degree Lecturers
- Industrial Experience
- Awards (international + Local)
- Patents
- Journal Editorial Board
- Professional Societies

Teaching & Research Labs

1) Digital Logic Design Lab
2) Microprocessor Lab
3) Network & Communication Lab
4) Digital System Design Lab
5) Printed Circuit Board Lab
6) Robotics Lab
7) Senior Design Project Lab
8) FPGA & Design Automation Lab
9) Performance Engineering Lab
10) Graduate Research Lab