



# Computer Engineering and Digital Engineering Programs

# What is Computer Engineering (CPE)?

- Study of how computers work, how to improve them, and how to make them do the things you want efficiently, with focus on the theory.

# What is Digital Engineering (DE)?

- Study of how computers work and how to make them do the things you want efficiently, with focus on business applications.

# Examples of the problems CPE and DE graduates will be able to solve

- Use computers to
  - Find the shortest route from SIIT to your home.
  - Find the best price for your products to get the most profit.
  - Determine the best way to connect power lines throughout a city.
  - Model the flood and find the best way to redirect the water.

# CPE and DE Comparisons

- CPE covers more deeply into theory.
  - These can be applied to any applications.
- DE focuses more specifically on business applications.
  - And less on theory.
- Basic computer-related courses are studied by both CPE and DE students.
  - Taught by the same professors, too.

# Different mandatory courses

## CPE

- Fundamentals of Data Communications
- Computer Networks and Internetworking
- Basic Electrical Engineering (and labs)
- Theory of Computation
- Microcontrollers and Applications
- Software Engineering

## DE

- Introduction to Data Communications
- Computer Network Architectures and Protocols
- Digital Business Experience
- Entrepreneurship for Digital Business
- Two additional Free Elective

# Options for CPE

## Option I: Artificial Intelligence

- Machine Learning and Pattern Recognition
- Natural Language Processing and Information Retrieval
- Computer Vision
- Knowledge Representation and Reasoning

## Option II: Cloud Computing and Cyber Security

- Cloud Computing
- Internet of Things
- Cyber Crimes and Digital Forensics
- Network Security

# Options for DE

## Option I: Application Software Development

- Location-based Services and Digital Mapping
- Business Application Development
- Applied Machine Learning and AI
- Cloud-based Application Development

## Option II: Data Science

- Big Data Analytic
- Statistics and Data Modeling
- Data Visualization
- Data Mining and Machine Learning



# Facilities in CPE/IT

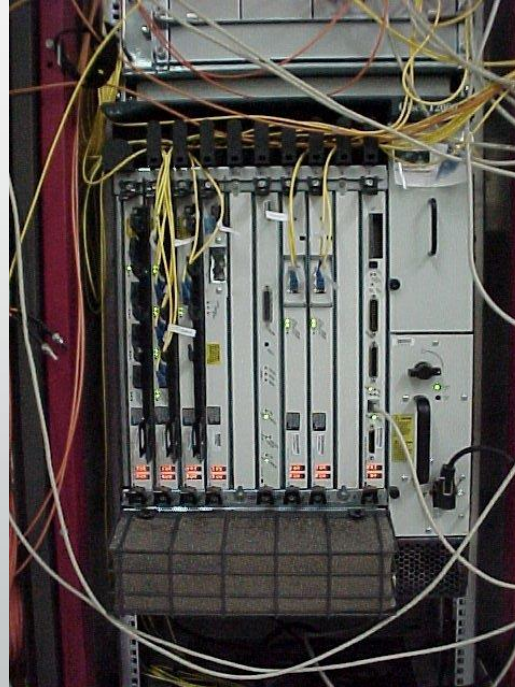
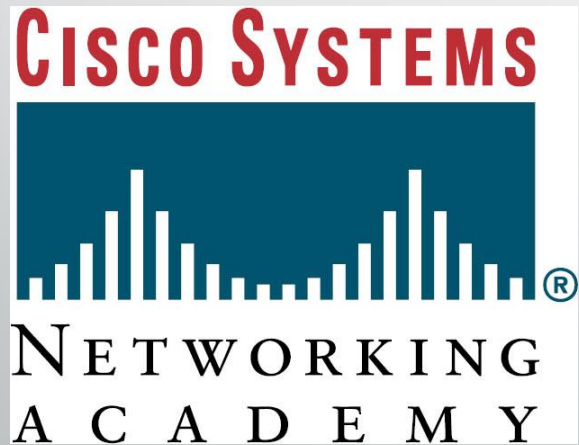
*40 Macintosh Machines*



# Linux Machines



# Computer and Network Laboratory





# Career Paths for DE and CPE graduates

- Designing and implementing software.
  - Software engineers, programmers, IT consultants etc.
- Planning and managing organizational technology infrastructure.
  - System analysts, IT experts, etc.
- Analyzing data for business use
  - Data engineers

# Career Paths (Ph.D.)

- Devising new ways to use computers.
- Developing effective ways to solve computing problems.