Computer Architecture
- 22966 -

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Technology Disruption

Horizons of technology disruption

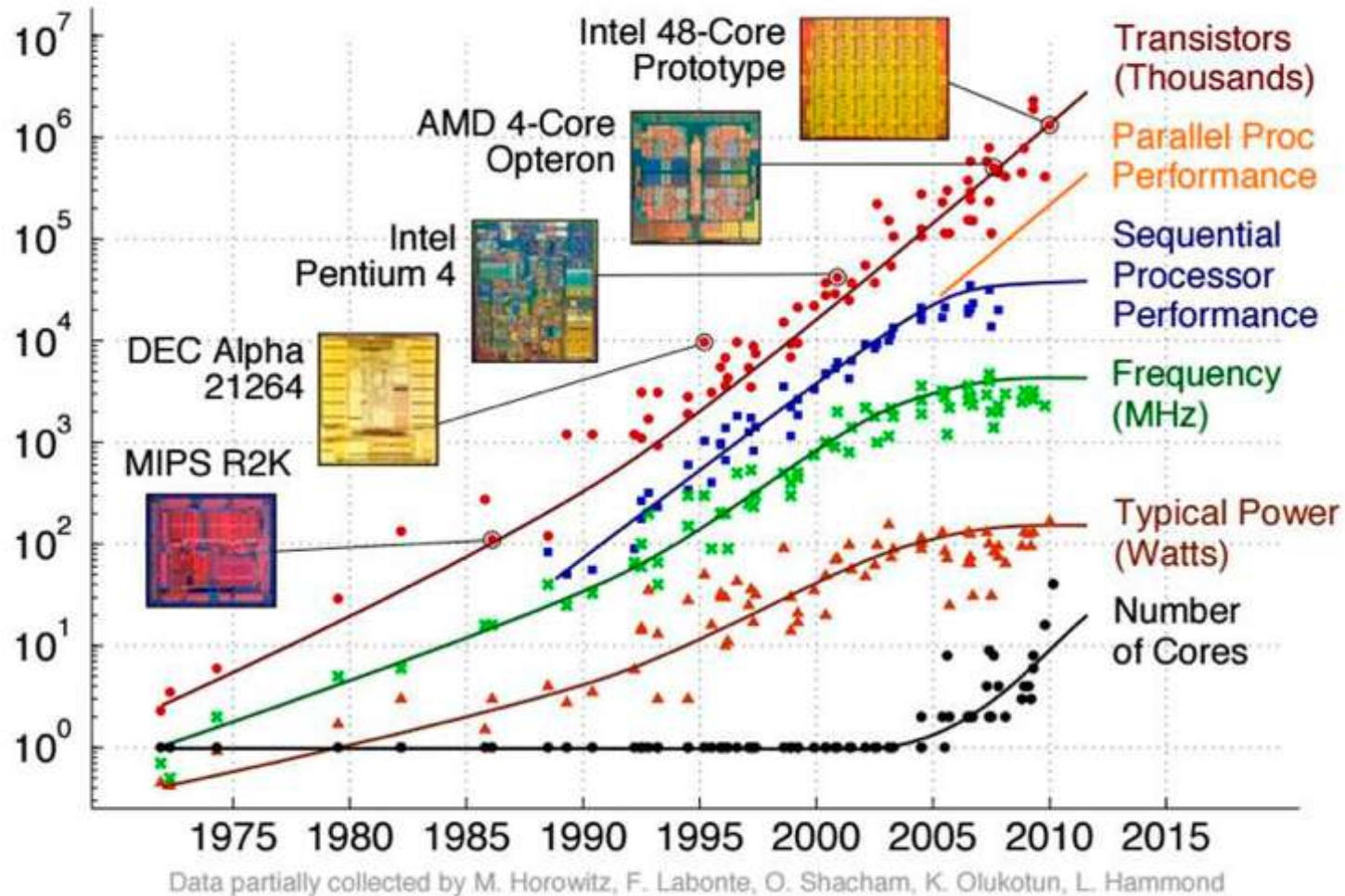From: http://asiandatascience.com/horizons-of-technology-disruption/
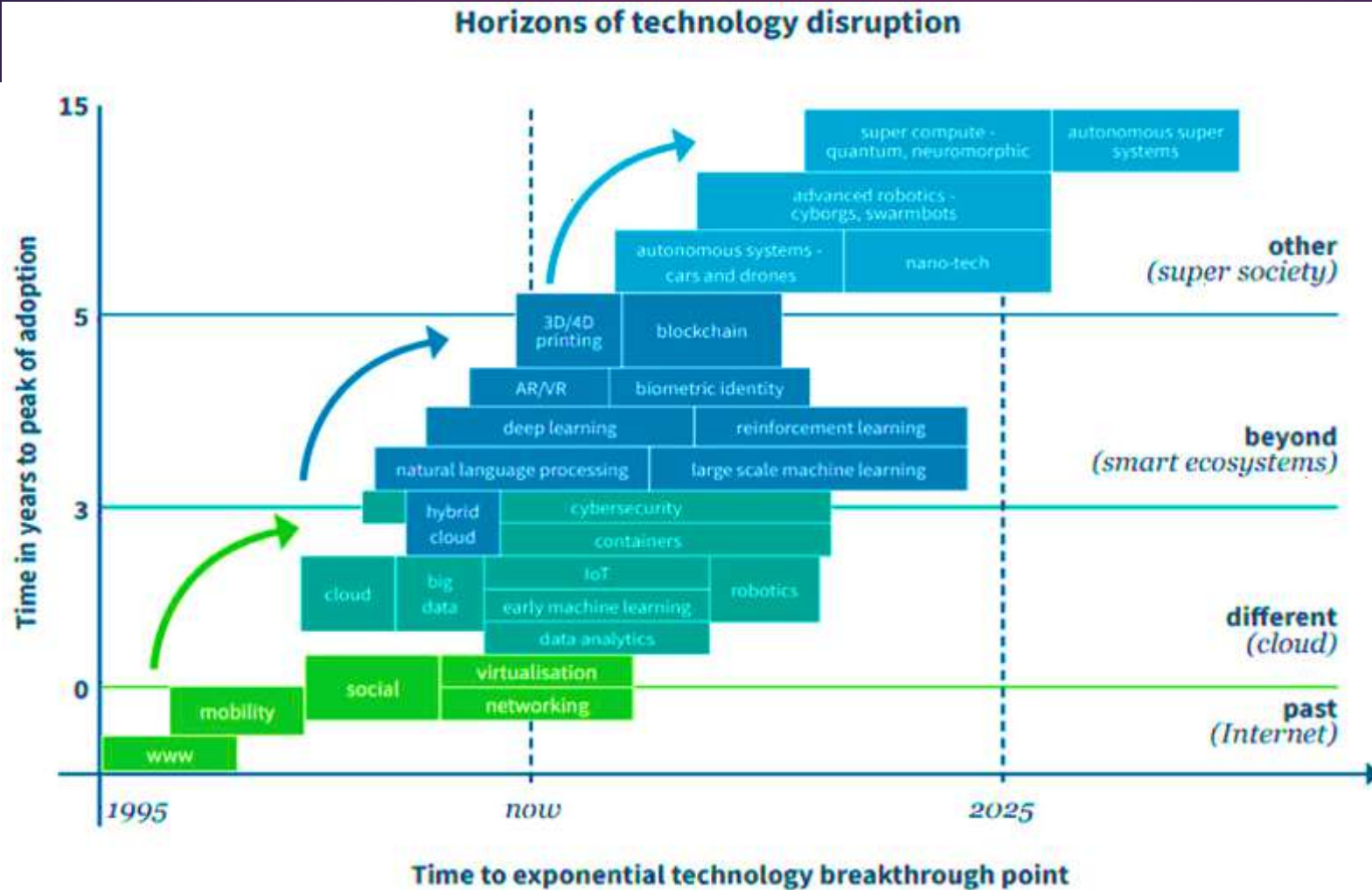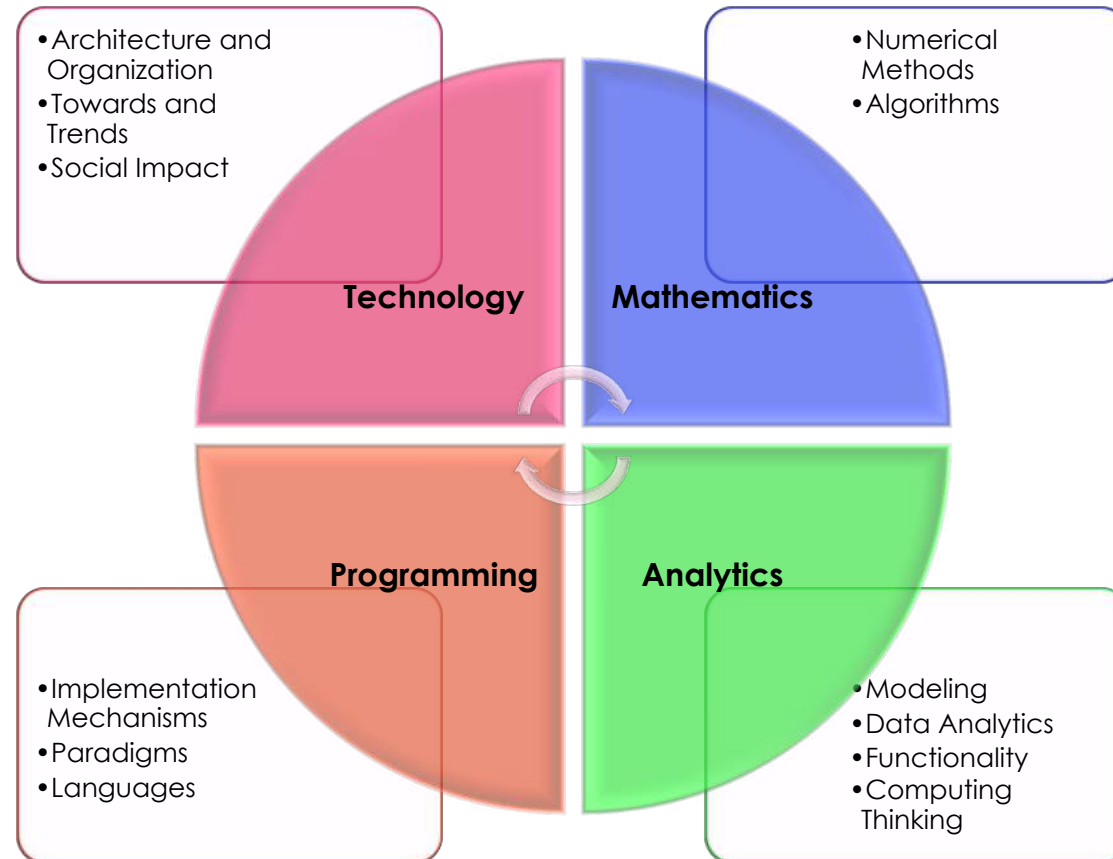
Computer Disruption
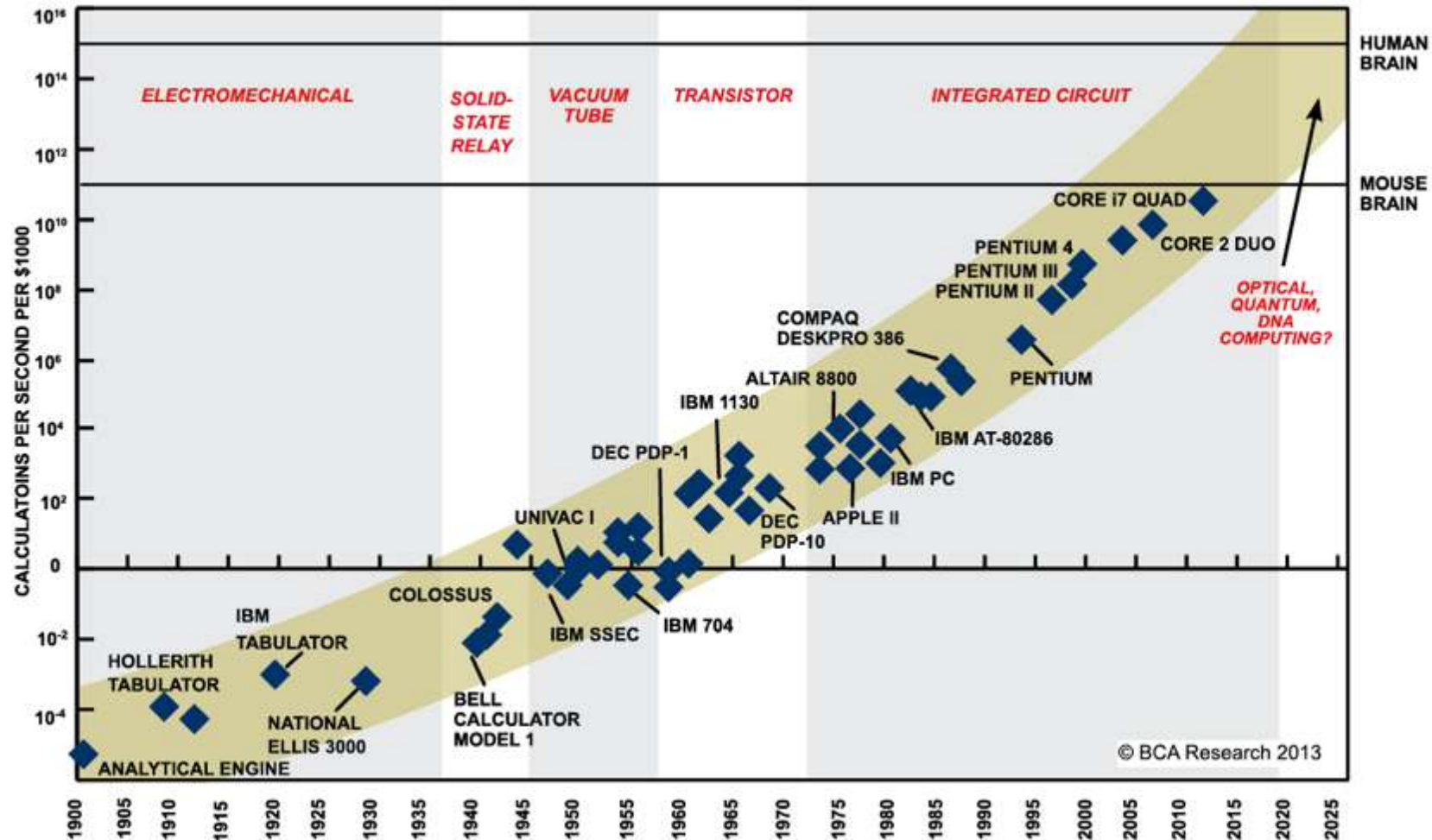
SOURCE: RAY KURZWEIL, "THE SINGULARITY IS NEAR: WHEN HUMANS TRANSCEND BIOLOGY", P.67, *THE VIKING PRESS*, 2006. DATAPOINTS BETWEEN 2000 AND 2012 REPRESENT BCA ESTIMATES.

Computer (Moore?) Disruption

Data partially collected by M. Horowitz, F. Labonte, O. Shacham, K. Olukotun, L. Hammond

Since 2005 we are in a Post Moore Era

Computer Knowledge

- Architecture and Organization
- Towards and Trends
- Social Impact

Technology

- Numerical Methods
- Algorithms

Mathematics

- Implementation Mechanisms
- Paradigms
- Languages

Programming

- Modeling
- Data Analytics
- Functionality
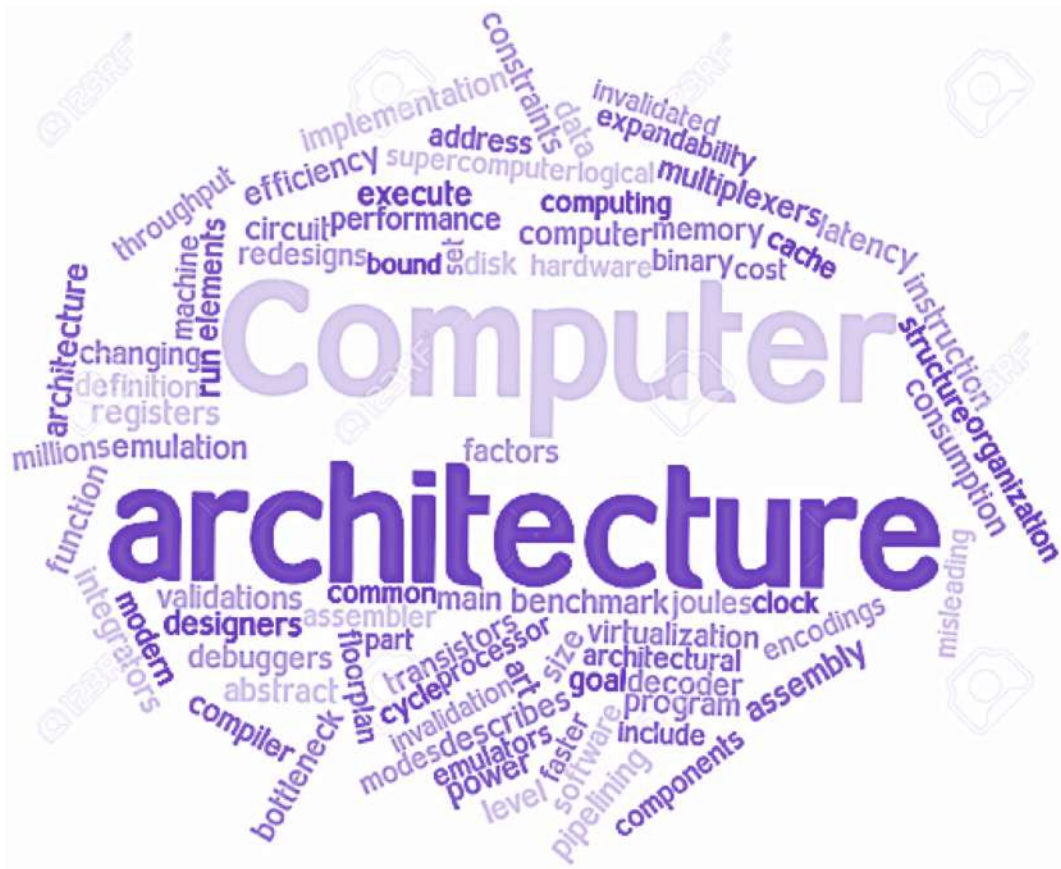- Computing Thinking

Analytics

Computer Architecture

functionality, organization and implementation of computer systems (Observing capabilities, performance, linking with programming models, trends and environmental

About the Course

- Theoretical Magisterial Sessions
  - Conducted by C. J. Barrios Hernández, PhD.
- Theoretical - Practical Sessions
  - Conduced by SC3UIS and CAGE Team
  - Special Seminars
  - Invited People of Research Centers or Industries
- Webminars and Video Talks
  - TED or others…

Goals

This is a course of Computer Architecture addressed to Systems Engineering, Informatics and Computer Science Students.

- Being able to locate oneself in the State of Art of Computer Architecture (from our point of view)
  - Handle terminology and technical specs.
  - Promote Self-Learning.
  - Understand the link between knowledge, technology and performance.
- Understand (without fear) computer technology.

About Teaching and Instruction

- **Carlos Jaime Barrios Hernández, PhD. cbarrios@uis.edu.co @carlosjaimebh**
  - Director of High Performance and Scientific Computing Centre SC3UIS (www.sc3.uis.edu.co) and CAGE Research Group Director
  - Assistant Professor EISI/UIS (http://cormoran.uis.edu.co)
    - Systems Engineering UIS, Bucaramanga, Colombia (2002), Master in Mat. Applied, Systems and Informatics UJF-Grenoble I, Grenoble, France (2005), Computer Science and Informatics Doctor, UNSA, Nice-Sophia Antipolis, France (2009), PostDoctoral Research, I3S/CNRS, Sophia Antipolis,Francia (2010).
    - Researcher in Advanced, High Performance and Scientific Computing (LIG, I3S/CNRS, INRIA (France), GPPD/UFRGS (Brazil), SC3UIS (Colombia)) and International Instructor in HPC and SC (ICTP/UNESCO (Italy), SCCAMP).
    - Chair of the Advanced Computing System for Latin America and Caribbean (SCALAC)
    - NVIDIA Deep Learning Institute Instructor
  - **SC3 and CAGE Team (More Information in www.sc3.uis.edu.co)**
    Contact: EISI Block : LP 226 and SC3 Space 4to Floor CENTIC
    Please, Send an email before for rendez-vous

Course Highlights

- **58 Hours Program**
- **Theoretical – Practical Course**
- Theoretical Sessions (LP 104) (Starts at 07:10)
- Theoretical – Practical Sessions (CENTIC) (Starts at XX:15.)
  - **Please Punctuality!**
- All course information is in:
  http://wiki.sc3.uis.edu.co/index.php/Arquitectura_de_computadores

Content

1. Historic Development and Perspectives
2. Arithmetic of Computers
3. Computer Abstractions and Technology
4. Machine Programming and Linking
5. Processors and Memory
6. Storage and I/O
7. Multicores and Multiprocessing
8. Graphics and Visualization
9. Hot Topics and Trends

Evaluation

- **Written Evaluations (60%) (20% Each) -70 Minutes**
  - 1 Individual
  - 2 in Partnership
- **Practical Labs (15%)**
- **First Note @homeLab (5%) - Individual**
- **Project (20%) – 3 or 4 Participants**
  - **Article (10%)**
  - **Oral Presentation (10%)**
- **All Updates are in the site of the course (Available Next week).**
  http://wiki.sc3.uis.edu.co/index.php/Arquitectura_de_computadores

Important Dates

- See in the site : www.sc3.uis.edu.co for updates
  - Wiki
    - Courses
      - Computer Architecture
  - **Proposed Dates**
    - First Note @homeLab: **October 17/2019**
    - Evaluation 1: October 31/2019
    - Evaluation 2: December 5/2019
    - Final Work:
      - Paper Deadline: January 16/2020
      - Oral Presentation: January 23/2020
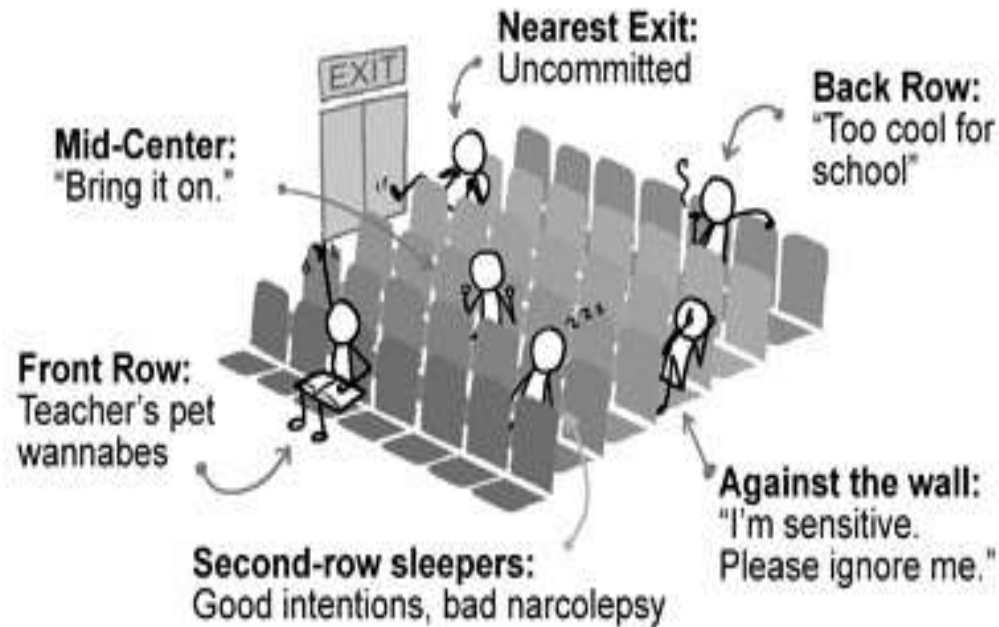   - Final Evaluation: **January 30/2020**

Important Notes

- All Available materials in English (International Technical/Scientific English)
- Bibliography and other resources are available in the site of the course. **This material is used for the exams**.
- Attention to Students : Tuesday From 9:30 to 11:50 LP226 (**Please, Send an email before for rendez-vous**)
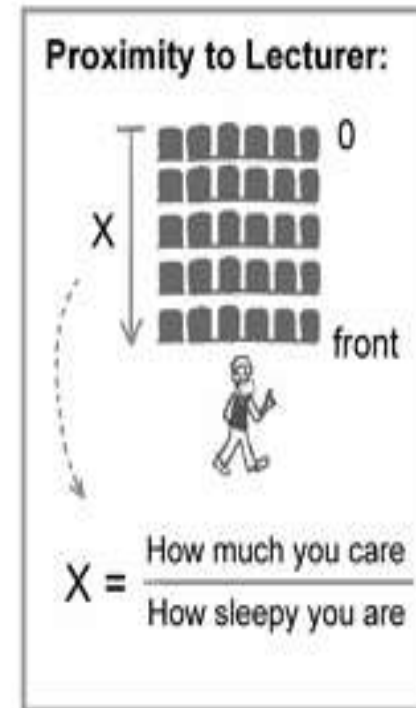- **By default, the communication is via email from cormoran utility or email direct (cbarrios@uis.edu.co)**

Questions?