

Computer Architecture

- **Course number and name:**
CC 311 – Computer Architecture
- **Credits and contact hours**
Credits Hours: 3Hrs
Contact Hours: In Lecture 2Hrs, In Tutorial 2Hrs
- **Instructor’s or course coordinator’s name**
Coordinator Name: Prof. Dr. Gamal Selim
- **Text book, title, author, and year**
 - Computer Organization & Design, The Hardware/Software interface, David A, Paterson & John I. Henssy, Second Ed., 2007
- **Specific course information**
 - a. **Catalog description**
Basic Computer Organization, Arithmetic Logic Unit, Control Unit, High Speed Arithmetic, The Memory Element, Memory Organization, Computer Input/Output Organization, Single and multi Cycle processing, Pipeline processing, Microprogramming and typical Computer Architectures.
 - b. **prerequisites or co-requisites**
Prerequisites: CC317
 - c. **Type of the course (required, elective, or selected elective course) in the program**
Required Course
- **Specific goals for the course**
 - a. **Specific outcomes of instruction**
After the completion of this course the students will be able to:

	Course Learning Outcomes	SO
1	Presenting the various digital components used in the Organization and design of digital computers.	C,J
2	Explain the detailed steps that a designer must go through in order to design an elementary basic computer.	B,C,E
3	Introduce the organization and architecture of the main units of a Digital computer.	C,J

Topics to be covered

- Introduction-overview of computer architecture
- Computer abstraction and technology
- The role of performance
- MIPS Assembly Language
- Instructions for making decisions and procedures calls
- Assembly modes
- The processor: Data path and control
- Single-Cycle Data path
- Pipelining
- Hazards and Dependencies in pipelining
- Cache memory
- Virtual memory
- Course project