

Computer Design and Performance Evaluation

- **Course number and name:**
CC 523 – Computer Design and Performance Evaluation
- **Credits and contact hours**
Credits Hours: 3Hrs
Contact Hours: In Lecture 2Hrs, and In Tutorial 4Hrs
- **Instructor’s or course coordinator’s name**
Coordinator Name: Prof. Dr. Attala Hashad
- **Text book, title, author, and year**
 - Logic and Computer Design Fundamentals, M.Mano, C.R.Kime, Second edition, Prentice Hall, 2001
 - Mano, M.M. Computer System Architecture, 3rd Ed. Englewood Cliffs, NY: Prentice Hall 1993
 - Patterson, D.A., and Hennessy,J.L., Computer Organization and Design: The Hardware/Software Interface, 2nd Ed. San Francisco, CA: Morgan Kaufmann, 1998
- **Specific course information**
 - a. **Catalog description**
Instruction Set Architecture - Application Specific Architecture - Queuing theory - Markov processes - Computer system performance evaluation - Operational analysis techniques.
 - b. **prerequisites or co-requisites**
Prerequisites: CC311
 - c. **Types of Course (required, elective, or selected elective course) in the program**
Elective 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	Apply the principles of high performance components design, build and test of special-purpose processors.	B,H,I,J
2	Introduce the concepts of evaluating the performance of such processors.	B
3	Extract and modify the weak points in the design.	B,D,J
4	Select the appropriate design components in certain applications.	B,H

Topics to be covered

- Introduction to ISA-based Computer Design, Sequencing and Control
- Hardwired and Micro-Programmed Control
- Single-Cycle Hardwired Control and Multiple-Cycle Micro-Programmed Control
- Pipelined Control and Performance Evaluation
- Instruction Set Architecture and Addressing Evaluation
- Central Processing Unit Design
- High Performance CPU Concepts
- Design Parameters; Area, Time and Cost
- Operational Analysis
- M/G/I Queuing model
- Discrete-Time Markov Chains
- Benchmark System Evaluation