

Selected Topics in Computing

- **Course number and name:**

CC 550 – Selected Topics in Computing

- **Credits and contact hours**

Credits Hours: 3Hrs

Contact Hours: In Lecture 2Hrs, and In Tutorial 2Hrs

- **Instructor’s or course coordinator’s name**

Coordinator Name: Dr. Rowayda Sadek

- **Text book, title, author, and year**

- M. Ben-Ari, “Principles of Concurrent and Distributed Programming: Algorithms And Models”, prentice-hall, latest edition.
- Scott hauck, André Dehon, “Reconfigurable Computing: The Theory And Practice of FPGA-Based Computation”, Morgan Kaufmann, latest edition.

- **Specific course information**

- a. **Catalog description**

Fundamental concepts and issues related to the design and analysis of advanced computing which includes multithreaded, parallel, and distributed computing – Load balancing - task scheduling - fault-tolerance, coordination & agreement – distributed objects & remote invocation - distributed transactions & concurrency control - real-time systems - reconfigurable computing.

- b. **prerequisites or co-requisites**

Prerequisites: CC311- CC316

- 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	Understand advanced computing systems as embedded systems, reconfigurable computing and real-time systems.	C,K
2	Understand design issues, implementation techniques, and structure and use of tools to support the implementation of computer systems and complex systems software.	E,J

Topics to be covered

- Concurrent Programming concepts: an overview
- Techniques for parallelizing programs
- Synchronization algorithms for shared-memory systems
- Distributed Programming: an overview
- Fault-Tolerance in Distributed Systems
- Parallel Programming: Languages, Libraries, and Tools
- System Design for maintainability and power efficiency
- Embedded Systems
- Cloud Computing
- Polymorphic processors
- Real-time Systems
- Reconfigurable computing
- High performance Computing