

Beirut Arab University
Faculty of Science
Department of Mathematics and Computer Science

Information Technology
Comprehensive Exam Guidelines

Exam Time: 9:00 AM- 12 noon

Tuesday April 28th, 2015

The written exam comprises both general topics in information technology and specialized topics related to the theme of research selected by the student and approved by the exam committee, see the exam parts below. After the written exam, an oral exam date is assigned within two weeks of the written exam where the student presents a report in front of the advisors committee. The final decision is taken based on both the written and oral exams.

General Part:

The heart of modern **operating systems** is the management of both system and user processes. The topics covered in this regard are: process scheduling, CPU scheduling and main memory management.

Database management systems are a crucial component of modern information systems. The relational model is frequently applied in the modeling of databases. The topics covered in this regard are: conceptual modeling using entity relationship diagrams ERD and EERD, mapping the conceptual model to a physical relational model including the normalization process, relational algebra, relational calculus, and SQL.

Software Engineering aims to find answers to the many problems that software development projects meet when constructing large software systems. The selected topics covered in this regard are: software process models, requirements engineering, software design, testing and maintenance.

Recommended References:

- Operating System Concepts. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne
- Fundamentals of Database Systems. Ramez Elmasri and Shamkant B. Navathe, Pearson Addison-Wesley
- Software Engineering Principales and Practice. Hans Van Vilet, Wiley.

Specialized Part:

Prior to the written exam, the student should meet with the advisor committee assigned to him by the department to specify the prospective area of research in which he is intending to prepare his PhD thesis. The committee will offer the student a number of research papers related to the student's specialization. The specialized part of the written exam is designed to examine the student in these assigned research papers.