

# المفردات المطلوبة في امتحان الماجستير اختصاص معلوماتية

## الجزء الأول (العام)

### A. SOFTWARE SYSTEMS AND METHODOLOGY

- - **Program control and structure:** Iteration and recursion, Procedures, functions, methods, and exception handlers, concurrency, communication, and synchronization
  - **Data organization:** Data structures and implementation techniques
  - **Software engineering:** Software development models, patterns, and Verification techniques
  - **Systems:** Compilers, operating systems, distributed systems, databases

### B. THEORY AND MATHEMATICAL BACKGROUND

- - **Algorithms and complexity:** Analysis of algorithms, Algorithmic design techniques (e.g., greedy, dynamic programming, divide and conquer), computational complexity, NP-completeness.
  - **Automata and language theory:** finite automata, Turing machines, formal languages and grammars (regular and context free).
  - **Discrete structures:** Mathematical logic, elementary combinatorics, discrete probability, recurrence relations, and number theory.

## الجزء الثاني (التخصصي) SECOND PART

### A. Artificial Intelligence

- - Data mining, Machine learning, Deep learning, Natural Language Processing, Computer vision, and other AI topics.

### B. Software Engineering

- Software modeling and analysis, Software architecture styles, Software design patterns, Software testing, Software development methodologies, Software quality attributes.

### C. Networking

- Computer Networking, Operating Systems, Cybersecurity, Cloud Computing, Data Communication, etc