**Course Specification**

(**CS 241 Operating Systems-1** )

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| *University:* | Helwan University |
| *Faculty:* | Faculty of Computers & Information |
| *Department:* | ***Computer science*** |

**1. Course Data**

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| --- | --- |
| **Code:** | **CS 241**  |
| **Course title:** | Operating Systems-1 |
| **Level:** | 2 |
| **Specialization:** | Computer Science |
| **Credit hours:** | 3 hours |
| **Number of learning units (hours):**  | (3) theoretical 2) practical |

**2. Course Objective**

Types of operating systems. Operating Systems structures: system components and services, virtual machines. Process management: CPU scheduling: Scheduling concepts, performance criteria, scheduling algorithm. Memory organization and management for single user and multi-user system. Secondary storage management, Disk scheduling, virtual memory.

**3. Intended Learning Outcomes:**

* **Knowledge and Understanding:**

A11. Recognize Operating Systems Designs.

A12. Demonstrate the basics of Computer Components.

* **Intellectual Skills**

 B3. Develop Analytical Skills.

* **Professional and Practical Skills**

 C2. Choose the appropriate Operating system.

C8. Investigate and use of Information Technology skills.

C12. Apply principles of effective information management.

C15. Detect safety aspects.

**D- General and Transferable Skills**

**4. Course contents**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic** | **No. of hours** | **Lecture** | **Tutorial/ Practical** |
| Introduction | 3 | 1 | 1 |
| Operating System Structures | 3 | 1 | 1 |
| Processes | 3 | 1 | 1 |
| Threads | 3 | 1 | 1 |
| CPU Scheduling | 3 | 1 | 1 |
| Process Synchronization | 3 | 1 | 1 |
| Deadlocks | 3 | 1 | 1 |
| Main Memory | 3 | 1 | 1 |
| Virtual Memory | 3 | 1 | 1 |
| File-System Interface | 3 | 1 | 1 |
| File-System Implementation | 3 | 1 | 1 |
| Mass-Storage Structure | 3 | 1 | 1 |
| I/O Systems | 3 | 1 | 1 |

**Mapping contents to ILOs**

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| --- | --- |
| Topic | Intended Learning Outcomes (ILOs) |
| Knowledge and understanding | Intellectual Skills | Professional and practical skills | General and Transferable skills |
| Introduction |  | B3 | C15 |  |
| Operating System Structures | A11 | B3 | C15 |  |
| Processes |  |  | C2,C8 |  |
| Threads | A11 |  | C2,C8 |  |
| CPU Scheduling | A11 | B3 | C12 |  |
| Process Synchronization | A11 | B3 | C2 |  |
| Deadlocks | A11,A12 | B3 | C8 |  |
| Main Memory | A11,A12 |  | C8 |  |
| Virtual Memory | A11 | B3 | C8 |  |
| File-System Interface | A12 | B3 | C8 |  |
| File-System Implementation | A12 | B3 | C8 |  |
| Mass-Storage Structure | A12 |  | C8 |  |
| I/O Systems | A12 |  | C12 |  |

**5. Teaching and Learning Methods**

Class Lectures

 Highly lab-based courses

**6. Teaching and Learning Methods for students with limited capability**

 Using data show

 e-learning management tools

**7. Students Evaluation**

**a) Used Methods**

Lab exam

Assignments

Lab work

Programming projects

**b) Time**

Assessment 1: Test 1 Week 4

Assessment 2: Test 2 Week 7

Assessment 3: Midterm Exam Week 10

Assessment 4: Practical Exam Week 14

Assessment 5: final written exam Week 16

**c) Grades Distribution**

Mid-term Examination 20 %

Final-Year Examination 50 %

Semester Work 20 %

Practical Exam 10%

 Total 100%

Any formative only assessments

**List of Books and References**

**a) Notes**

Course Notes

- Handouts

**b) Mandatory Books**

 **Title:** Operating System Concepts, *Seventh Edition*

 **Author(s):** [AviHYPERLINK "http://www.cs.yale.edu/homes/avi" HYPERLINK "http://www.cs.yale.edu/homes/avi"Silberschatz](http://www.cs.yale.edu/homes/avi) , [Peter Baer Galvin](http://www.petergalvin.info/), and [Greg Gagne](http://people.westminstercollege.edu/faculty/ggagne)

 **Publisher:** John Wiley & Sons, Inc

 **ISBN:** 0-471-69466-5

**c) Suggested Books**

**d) Other publications**

**Course Coordinator:**  A.Prof. Dr. Mohamed Hagag

**Chairman of the Department:** Prof. dr. Iraqy Khalifa