# Lahore University of Management Sciences

# CS 100 – Computational Problem Solving

Summer 2024

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| Instructor | Malik Jahan Khan |
| Room No. | SBASSE 9-G45A |
| Office Hours | 10:30AM – 11:30AM MTWR |
| Email | jahan@lums.edu.pk |
| Telephone | 3311 |
| Coordinator/TA | Mr. Anas Ahmad (Department Coordinator) / TBA. |
| TA Office Hours | To be communicated through LMS. |
| Course URL (if any) | lms.lums.edu.pk |
| Lecture | MTWR 9:30 AM - 10:30 AM |
| Lab | TR 11:30 AM - 2:30 PM |

| Course Teaching Methodology |
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| • **Teaching Methodology:** Synchronous. Students will be guided to supplementary reading material as well.<br>• **Lecture Details:** Although the teaching methodology is going to be synchronous, however, occasionally, there may be pre-recorded lectures. In addition, links to related reference material available online from different sources will be provided from time to time. |

| Class Discussion Forum |
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| • We will be using Slack for class discussion.<br>• These systems are highly catered to getting you help fast and efficiently from classmates, the TA, and myself.<br>• Rather than emailing questions to the teaching staff (TAs), I encourage you to post your questions on Slack. |

| COURSE DESCRIPTION |
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| This course provides a conceptual and practical introduction to programming. The focus is on finding solutions of problems and implementing them through programming rather than a particular choice of programming language. The programming tool used is 'C/C++'. This course will equip students with tools and techniques to analyze, solve, and implement a given problem programmatically. |

| COURSE PREREQUISITE(S) | |
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| • | None |

| Course Basics | | | | |
|---|---|---|---|---|
| Credit Hours | 3 | | | |
| Lecture(s) | Nbr of Lec(s) | 22-24 | Duration | 60 min each, four days a week |
| ~~Recitation~~/Lab | Nbr of Lec(s) | 11-12 | Duration | 3 hrs each, twice a week |
| Tutorial | Nbr of Lec(s) | As per need | Duration | As per need |

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| Course Distribution | |
|---|---|
| Core | Yes (for SBASSE students, CS majors, CS minors) |
| Elective | Yes, can be taken as an elective |
| Open for Student Category | Freshmen, Sophomore |
| Close for Student Category | None |

| Examination Detail | |
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| Midterm Exam | Yes/No: Yes<br>Duration: 60~90 mins<br>Preferred Date: End of 3rd week<br>Exam Specifications: Closed book, closed notes, no calculator, no cell phones. |
| Final Exam | Yes/No: Yes<br>Duration: 90~120 mins<br>Exam Specifications: Closed book, closed notes, no calculator, no cell phones. |

| PROGRAM EDUCATIONAL OBJECTIVES (PEOs) | |
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| PEO-01 | Demonstrate excellence in profession through in-depth knowledge and skills in the field of Computing. |
| PEO-02 | Engage in continuous professional development and exhibit quest for learning. |
| PEO-03 | Show professional integrity and commitment to societal responsibilities. |

| COURSE OBJECTIVES (COs) | |
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| CO-01 | To teach programming fundamentals to students. |
| CO-02 | To help students analyze and solve programming problems. |
| CO-03 | To prepare students in programming for later courses with programming intensive content. |

| | COURSE LEARNING OUTCOMES (CLOs) |
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| | At the successful completion of the course students will be able to: |

| CLO | Statement | Instrument | Bloom's Cognitive Level | Graduate Student Attributes Seoul Accord |
|---|---|---|---|---|
| 1. | ***use*** C++ syntax and control structures to ***code*** algorithmic solutions using standard coding conventions. | ICP, Quiz, Lab | C1<br>Remembering | PLO2<br>Enabling Knowledge |
| 2. | ***explain*** key concepts of algorithmic design in written form. | ICP, Quiz, Exam | C2<br>Understanding | PLO7<br>Communication |
| 3. | ***apply*** relevant standards and ethical considerations to writing computer programs. | Lab | C3<br>Applying | PLO9<br>Ethics / Responsibility |
| 4. | ***analyze*** the requirements for solving simple algorithmic problems. | ICP, Quiz, Exam | C4<br>Analyzing | PLO3<br>Problem Analysis / Critical Thinking and Analysis |
| 5. | ***evaluate*** the correctness of the proposed solution. | ICP, Quiz, Exam | C5<br>Evaluating | PLO4<br>Design/Development of Solutions |
| 6. | ***design*** and ***implement*** programs to solve simple algorithmic computing problems, based on the analysis of the requirements. | Lab | C6<br>Creating<br>P6<br>Organization | PLO4<br>Design/Development of Solutions |

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## Grading Breakup and Policy

| Assessment | Description | Weight (%) | CLO |
|---|---|---|---|
| **Quizzes** | There will be 10 to 12 quizzes. Quiz can be held in any class or lab and may be unannounced.<br>Two quizzes will be dropped.<br>No petitions will be accepted. | 20% | 1, 2, 4, 5 |
| **Labs** | There are 10 to 12 lab sessions. First lab will be conducted as a guided lab. Remaining labs will be evaluated.<br>Two labs will be dropped.<br>No petitions will be accepted. | 20% | 1, 3, 6 |
| **In-Class Problems (ICPs)** | ICPs are meant for deeper, interactive and collaborative understanding of the new concepts being covered in the class. There will be no ICPs in the first two classes. Most of the remaining classes will have ICPs.<br>Four ICPs will be dropped.<br>No petitions will be accepted. | 10% | 1, 2, 4, 5 |
| **Mid Term Exam** | One mid-term exam will be conducted.<br>Exam will not be dropped.<br>Petitions will be accepted only via OSA.<br>Mode:<br>In-class<br>Duration:<br>60~90 mins (May vary)<br>Preferred Date:<br>Expected in the 3rd week<br>Exam Specifications:<br>Closed book, Close notes, No calculator. No cell phones. | 20% | 2, 4, 5 |
| **Final Exam** | Final exam will cover whole course content.<br>Exam will not be dropped.<br>Petitions will be accepted only via OSA.<br>Duration:<br>90~120 mins (May vary)<br>Exam Specifications:<br>Closed book, Close notes, No calculator. No cell phones. | 30% | 2, 4, 5 |

- You are required to do labs alone. Any kind of collaboration is strictly prohibited.
- Your labs, assignments, and projects may be checked for plagiarism via MOSS (https://theory.stanford.edu/~aiken/moss/).
- In case any work is found plagiarized you may be awarded a zero. In addition, your case of cheating will be reported to the Disciplinary Committee.

## Makeup Policy

- No petitions will be accepted for quizzes, labs, and project.
- Petitions will be accepted only for Mid and Final exams provided these are approved by the OSA.
- Please refer to Student Handbook 2022-23, page 41, article 24, titled “Makeup Policy for Graded Instruments”.
  *“In the case of an instrument with multiple sub instruments, such as quizzes, the instructor may apply best (N-X) policy”.*
  *https://sbasse.lums.edu.pk/sites/default/files/inline-files/Undergraduate%20Student%20Handbook%202022-2023.pdf*