| **UNITED INTERNATIONAL UNIVERSITY**  Department of Computer Science and Engineering (CSE)  **Course Syllabus** | | | | | | | | | |
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| **1** | **Course Title** | Algorithms Laboratory | | | | | | | |
| **2** | **Course Code** | CSI 228 | | | | | | | |
| **3** | **Trimester and Year** | Spring 2023 | | | | | | | |
| **4** | **Pre-requisites** | CSI 217: Data Structure, CSI 219: Discrete Mathematics | | | | | | | |
| **5** | **Credit Hours** | 1.00 | | | | | | | |
| **6** | **Section** | C | | | | | | | |
| **7** | **Class Hours** | Sunday: 11:01 AM – 01:30 PM | | | | | | | |
| **8** | **Class Room** | Lab 4 | | | | | | | |
| **9** | **Instructor’s Name** | Mahbub Hossain Raton | | | | | | | |
| **10** | **Email** | mahbub[@cse.uiu.ac.bd](mailto:khushnur@cse.uiu.ac.bd) | | | | | | | |
| **11** | **Office** | 319B | | | | | | | |
| **12** | **Counselling Hours** |  | Sunday | | | 10:00 AM – 11:00 AM |  | | |
| Sat and Tue | | | 10:00 AM – 11:30 AM |
|  | | | | | | | |
| **13** | **Text Book** | Introduction to Algorithms (3rd edition) by Cormen, Leiserson, Rivest and Stein | | | | | | | |
| **14** | **Course Contents (approved by UGC)** | Laboratory works based on CSI 227. | | | | | | | |
| **15** | **Course Outcomes (COs)** |  | | | | | | | |
|  | **COs** | **Description** | | | | |  |
| CO1 | Implement correct algorithms to handle large datasets efficiently. | | | | |
| CO2 | Analyze worst-case running times of algorithms using asymptotic  analysis. | | | | |
| CO3 | Describe different algorithm paradigms and explain when algorithmic design situations call for them. Recite algorithms that employ these paradigms. Synthesize such algorithms. Derive and  solve problems describing the performance of the algorithms. | | | | |
| **16** | **Teaching Methods** | Lecture, Case Studies. | | | | | | | |
| **17** | **CO with Assessment Methods** |  | | | | | | | |
|  | **CO** | | **Assessment Method** | | **(%)** |  | |
| - | | Attendance | | 10 |



|  |  | | | | |  | CO1, CO3 | | | Class Performance | | | | | | 35% | |  | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Presentation | | | | | | 10% | |
| CO1 | | | Assignments | | | | | | 25% | |
| CO2, CO3 | | | Final Quiz | | | | | | 20% | |
| **18** | **Mapping of COs and Program outcomes** | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | | | | | | |
|  | **COs** | **Program Outcomes(POs)** | | | | | | | | | | | | | | | | | | |  |
| **PO1** | **PO2** | | | | **PO3** | **PO4** | | **PO5** | **PO6** | **PO7** | | **PO8** | | **PO9** | **PO10** | **PO11** | **PO12** | |
| **CO1** |  |  | | | | C |  | |  |  |  | |  | |  |  |  |  | |
| **CO2** |  | C | | | |  |  | |  |  |  | |  | |  |  |  |  | |
| **CO3** |  |  | | | | C |  | |  |  |  | |  | |  |  |  |  | |
| **19** | **Lab Outline** | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | | | | | | |
|  | | **Class** | | **Topics/Assignments** | | | | | | | | | **COs** | | **Lab Outcomes/Activities** | | | | |  | |
| Lab1 | | Practice 1: Review of Recursive  Functions | | | | | | | | | CO1 | | Lecture, Graded practice | | | | |
| Lab2 | | Exam 1: Review of Recursive Functions | | | | | | | | | CO1 | | Exam | | | | |
| Lab3 | | Practice 2: Divide-and-Conquer | | | | | | | | | CO1,  CO3 | | Lecture, Graded practice | | | | |
| Lab4 | | Exam 2: Divide-and-Conquer  Assignment 1 | | | | | | | | | CO1,  CO3 | | Exam;  Lecture | | | | |
| Lab5 | | Practice 3: Greedy Algorithms | | | | | | | | | CO1, CO3 | | Lecture, Graded practice | | | | |
| Lab6 | | Assignment 2: Greedy Algorithms; Practice 4: Dynamic Programming | | | | | | | | | CO1, CO3 | | Lecture, Graded practice | | | | |
| MIDTERM WEEK | | | | | | | | | | | | | | | | | |
| Lab7 | | Exam 3: Dynamic Programming | | | | | | | | | CO1,  CO3 | | Exam | | | | |
| Lab8 | | Practice 5: Disjoint-Sets Forests | | | | | | | | | CO1,  CO3 | | Lecture, Graded practice | | | | |
| Lab9 | | Exam 4: Disjoint-Sets Forests;  Minimum Spanning Trees | | | | | | | | | CO1,  CO3 | | Exam | | | | |
| Lab10 | | Practice 6: Single-Source Shortest Paths | | | | | | | | | CO1,  CO3 | | Lecture, Graded practice | | | | |
| Lab11 | | Exam 5: Single-Source Shortest Paths  Assignment 3 | | | | | | | | | CO1,  CO3 | | Exam | | | | |
| Lab12 | | Practice 7: String Matching | | | | | | | | | CO1,  CO3 | | Lecture, Graded practice | | | | |