**University of Asia Pacific (UAP)**

**Department of Computer Science and Engineering (CSE)**

**Course Outline**

**Program: Computer Science and Engineering (CSE)**

**Course Title: Algorithms Lab**

**Course Code: CSE 208**

**Google Classroom Code: v4s1uh7**

**Semester: Fall, 2019**

**Level: 2-2**

**Credit Hour: 3.00 (Credit -1.5)**

**Name & Designation of Teacher: Hasan Murad**

**Office/Room: Department of CSE, UAP**

**Class Hours: Wednesday**: 11:00a.m.-01:45 p.m.(A1),03:30p.m.-06:15 p.m.(B2), Thursday: 08.00a.m.-10.45a.m.(A2)

**Consultation Hours: Lab Time**

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**Mobile: 01826538099**

**Prerequisite** (if any)**: Any Programming Language and Data Structure**

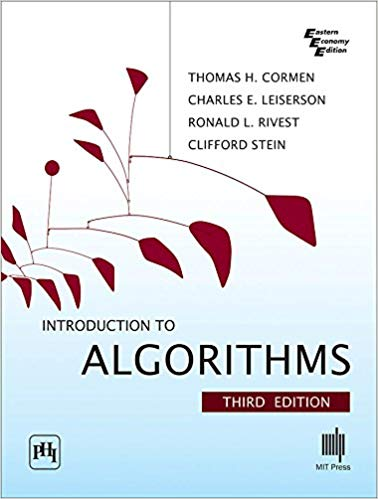
**Course Contents:**

1. **Analysis of Algorithms**
2. **Searching and Sorting**
3. **Greedy Algorithms**
4. **Dynamic Programming**
5. **Pattern Searching**
6. **Backtracking**
7. **Divide and Conquer**
8. **Bit Algorithms**
9. **Graph Algorithms**
10. **Branch and Bound**

**Lecture Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Lecture** | **Topic** | **Reading assignment** | **Work assignment** |
| Lecture 1 | Introduction to Algorithms Lab | None | None |
| Lecture 2 | Searching and Sorting | Problem statement | Submission |
| Lecture 3 | Divide and Conquer | Problem statement | Submission |
| Lecture 4 | Greedy Algorithms | Problem statement | Submission |
| Lecture 5 | Dynamic Programming | Problem statement | Submission |
| Lecture 6 | Dynamic Programming | Problem statement | Submission |
| Lecture 7 | Backtracking | Problem statement | Submission |
| Lecture 8 | Graph Algorithms | Problem statement | Submission |
| Lecture 9 | Graph Algorithms | Problem statement | Submission |
| Lecture 10 | Graph Algorithms | Problem statement | Submission |
| Lecture 11 | Branch and Bound | Problem statement | Submission |
| Lecture 12 | Bit Algorithms | Problem statement | Submission |
| Lecture 13 | Final discussion on Quiz | None | None |
| Lecture 14 | Quiz | None | None |

**Required Reference Book:**



**Grading System:** As per the approved grading scale of University of Asia Pacific (Appendix-2).

**Student’s responsibilities:** Students must come to the lab class prepared for the course material covered in the previous lab class(es).

They must submit their assignments on time.

No late or partial assignments will be acceptable. There will be no make-up quizzes.

**Appendix-1: Generic Skills**

|  |  |
| --- | --- |
| **No.** | **Generic Skills** |
|  |  |
| 1. | **Engineering Knowledge** |
| 2. | **Problem Analysis** |
| 3. | **Design/Development of Solutions** |
| 4. | **Investigation** |
| 5. | **Modern Tool Usage** |
| 6. | **The Engineer and Society** |
| 7. | **Environment and Sustainability** |
| 8. | **Ethics** |
| 9. | **Communication** |
| 10. | **Individual and Team Work** |
| 11. | **Life Long Learning** |
| 12. | **Project Management and Finance** |

**Generic Skills (Detailed):**

1. **Engineering Knowledge (T)** -Apply knowledge of mathematics, sciences, engineering fundamentals and manufacturing engineering to the solution of complex engineering problems;
2. **Problem Analysis (T)** – Identify, formulate, research relevant literature and analyze complex engineering problems, and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences;
3. **Design/Development of Solutions (A)** –Design solutions, exhibiting innovativeness, for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, economical, ethical, environmental and sustainability issues.
4. **Investigation (D)** Conduct investigation into complex problems, displaying creativeness, using research-based knowledge, and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions;
5. **Modern Tool Usage (A & D)** -Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering activities, with an understanding of the limitations;
6. **The Engineer and Society (ESSE)** -Apply reasoning based on contextual knowledge to assess societal, health, safety, legal, cultural, contemporary issues, and the consequent responsibilities relevant to professional engineering practices.
7. **Environment and Sustainability (ESSE)** -Understand the impact of professional engineering solutions in societal, global, and environmental contexts and demonstrate knowledge of and need for sustainable development;
8. **Ethics (ESSE)** –Apply professional ethics with Islamic values and commit to responsibilities and norms of professional engineering code of practices.
9. **Communication (S)** -Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions;
10. **Individual and Team Work (S)** -Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
11. **Life Long Learning (S)** -Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
12. **Project Management and Finance (S)** -Demonstrate knowledge and understanding of engineering management and financial principles and apply these to one’s own work, as a member and/or leader in a team, to manage projects in multidisciplinary settings, and identify opportunities of entrepreneurship.

**Appendix-2: Grading Policy**

|  |  |  |
| --- | --- | --- |
| **Numeric Grade** | **Letter Grade** | **Grade Point** |
|  |  |  |
| 80% and above | A+ | 4.00 |
| 75% to less than 80% | A | 3.75 |
| 70% to less than 75% | A- | 3.50 |
| 65% to less than 70% | B+ | 3.25 |
| 60% to less than 65% | B | 3.00 |
| 55% to less than 60% | B- | 2.75 |
| 50% to less than 55% | C+ | 2.50 |
| 45% to less than 50% | C | 2.25 |
| 40% to less than 45% | D | 2.00 |
| Less than 40% | F | 0.00 |