Course Outline

Basic Information

Faculty	Satyaki Das, (Room PC-315)
Office Hour	**Sunday:** 9:15 am – 10:00am (Permanent Campus: Room: PC-315) **Tuesday:** 9:15 am – 10:00am (Permanent Campus: Room: PC-315) **Monday:** 11:30 am – 12:40pm & 2:30 pm – 4:30 pm (Permanent Campus: Room: PC-315) **Wednesday:** 11:30 am – 12:40pm & 2:30 pm – 4:30 pm (Permanent Campus: Room: PC-315) **Thursday:** 9:30 am – 12:30 pm (Permanent Campus: Room: PC-315) Note: Also available by Email Appointment at other times satyaki.das@ulab.edu.bd
Contact Details	**Room:** PC315 satyaki.das@ulab.edu.bd
Course Pre-requisites	CSE 207
Department offering the course	Computer Science and Engineering
Course Title	Algorithms Lab
Course Type	Core Course

Course Code	CSE306	Credit	1	Term	Fall 2020		
Number of Lectures	0	Number of Tutorials	0	Number of Practical	24	Total	24

Course Details

1. Course Description

This is a laboratory course based on its theory counterpart which is an introductory undergraduate course on the design and analysis of algorithms.

2. Course Objective

1. To **emphasize** on efficient algorithm designing, solving practical problems through algorithmic techniques and data structures to be used in the implementations of algorithms.
2. To **expose** the students to a variety of techniques that have practical applications, while conducting detailed analysis of the requirements required by the algorithms.

3. Intended learning outcomes of the course (ILOs)

SKILLS	Apply programming skills and data structures to implement algorithms.
	Develop and implement algorithmic solutions to real-life problems.

4. Mapping of Course LO and PLO:

Learning Outcome (LO) of the Course	Program Learning Outcome (PLO)											
	1	2	3	4	5	6	7	8	9	10	11	12
ILO 1	MJ		MJ						MJ	MN		
ILO 2	MJ			MN					MJ	MJ		

5. Contents

ILO	Topic	Teaching Strategy	Assessment Strategy	Number of Sessions
1	Insertion Sort, Growth of Functions	Lecture Exercise	Assignment Q/A, Test	5
1, 2	Divide-and-Conquer: Merge Sort and Quick Sort	Lecture Exercise	Assignment Q/A, Test, Project	4
1, 2	Greedy Algorithm	Lecture Exercise	Assignment Q/A, Test, Project	5
1, 2	Dynamic Programming	Lecture	Assignment Q/A, Test, Project	5
1, 2	Graph Algorithms	Lecture Exercise	Assignment Q/A, Test	5
			Total	24

6. Alignment of topics of the courses with CLOs

This is already included as ILO

7. A. Assessment Schedule

Assessment 1	Assignment	Session	24
Assessment 2	Project	Session	TBA
Assessment 3	Final	Session	As per ULAB schedule

B. Weights of Assessments

Assessments	%
Final Term Examination	30
Attendance and Class Participation	10
Continuous Evaluation	40
Project	20
Total	100

C. Grading Policy

Policy	Letter Grade	Grade Point
95% and above	A+	4.00
85% to below 94%	A	4.00
80% to below 84%	A-	3.80
75% to below 79%	B+	3.30
70% to below 74%	B	3.00
65% to below 69%	B-	2.80
60% to below 64%	C+	2.50
55% to below 59%	C	2.20
50% to below 54%	D	1.50
below 50%	F	0.00
--	I	0.00
--	W	0.00
--	AW	0.00

8. Make-up Procedures

ULAB guidelines will be followed for the makeup of the Midterm and Final Examination.

9. List of References

Online Resources	Will be suggested during lecture

Facilities Required for Teaching and Learning

Multimedia projector, white board and marker, internet connection, computers with MS office suites and appropriate IDE.

Course Policies and Procedures

- Failing to attend more than 5 classes will result in an automatic fail
- Students are advised to keep the cell phones into silent mode
- Cheating and plagiarism are strictly prohibited
- There will be No makeup exams
- ULAB regulations will be followed in conducting exams and evaluating answer scripts and grading

Appendix-1: Program Learning Outcome (PLO)

No.	PLO
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**

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 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.

Course Coordinator/ Teacher

Date: 27.10.2020

Head of the Department

Date: