

Course Code: URBL-2401		Course Title: Bengali Language and Literature	
Credits:2 CH		Contacts:2 CH Per Week	
Course Assessments	CIE: Continuous Internal Evaluation	Attendance	10 Marks
		Class test/ Assignment/ Quizzes	10 Marks
		Mid-term	30Marks
	SEE: Semester End Examination		50 Marks

Course Content:

Chapter	Content	Number of Lectures	CLOs
	Midterm Exam : 30 Marks ভাষা ও নিমিতি: 20 <ol style="list-style-type: none"> বাংলা ভাষার উদ্ভব ও বিকাশ বাংলা বর্ণ ও ধ্বনি পরিচয় প্রতিবেদন বা বক্তব্য লেখন বাংলা সাহিত্য: 10 ছোটগল্প : (ক) পোস্টমাস্টার (রবীন্দ্রনাথ ঠাকুর) (খ) পুইমাচা (বিভূতিভূষণ বন্দ্যোপাধ্যায়) (গ) নয়নচারা (সৈয়দ ওয়ালীউল্লাহ)	12	
01 fvlv	<ol style="list-style-type: none"> বাংলা ভাষার উদ্ভব ও বিকাশ বাংলা বর্ণ ও ধ্বনি পরিচয় বাংলা বানানের নিয়ম যতিচিহ্ন 	4	CLO1 CLO2
02 নিমিতি	<ol style="list-style-type: none"> বঙ্গানুবাদ/স্কুদে গল্প লেখা প্রতিবেদন বা বক্তব্য লেখন পত্র লিখন সংক্ষিপ্ত আলোচনা 	4	CLO1 CLO6
03 কবিতা	(ক) বঙ্গভাষা (মাইকেল মধুসূদন দত্ত) (খ) আজ সৃষ্টি সুখের উল্লাসে (কাজী নজরুল ইসলাম) (গ) তোমাকে পাওয়ার জন্য হে স্বাধীনতা (শামসুর রাহমান)	8	ঈখড৪ ঈখড৫
	Final Exam :50 Marks ভাষা ও নিমিতি: 30 <ol style="list-style-type: none"> বাংলা বানানের নিয়ম যতিচিহ্ন বঙ্গানুবাদ/স্কুদে গল্প লেখা পত্র লিখন সংক্ষিপ্ত আলোচনা (ক.একুশে ফেব্রুয়ারি ;খ.মুক্তিযুদ্ধ; গ.বাংলার লোকসংস্কৃতি;ঘ. মানবতা ও নৈতিকতা;ঙ.আধুনিক তথ্যপ্রযুক্তি) 	1৮	



	<p>বাংলা সাহিত্য : 20</p> <p>কবিতা : (ক) বঙ্গভাষা (মাইকেল মধুসূদন দত্ত)</p> <p>(খ) আজ সৃষ্টি সুখের উল্লাসে (কাজী নজরুল ইসলাম)</p> <p>(গ) তোমাকে পাওয়ার জন্য হে স্বাধীনতা (শামসুর রাহমান)</p> <p>প্রবন্ধ : (ক) সভ্যতার সংকট (রবীন্দ্রনাথ ঠাকুর)</p> <p>(খ) যৌবনে দাও রাজটিকা (প্রমথ চৌধুরী)</p> <p>নাটক : কবর (মুনীর চৌধুরী)</p>		
04 ছোটগল্প	<p>(ক) পোস্টমাস্টার (রবীন্দ্রনাথ ঠাকুর)</p> <p>(খ) পুঁইমাচা (বিভূতিভূষণ বন্দ্যোপাধ্যায়)</p> <p>(গ) নয়নচারা (সৈয়দ ওয়ালীউল্লাহ)</p>	৬	ঈখঙ৩ ঈখঙ৪ ঈখঙ৫
05-প্রবন্ধ	<p>(ক) সভ্যতার সংকট (রবীন্দ্রনাথ ঠাকুর)</p> <p>(খ) যৌবনে দাও রাজটিকা (প্রমথ চৌধুরী)</p>	৬	ঈখঙ৪
06-নাটক	কবর (মুনীর চৌধুরী)	6	CLO4

Learning Materials:

Text Book

বাংলা ভাষা ও সাহিত্য (রফিকুল ইসলাম ও সৌমিত্র শেখর)

4 th Semester		
ISCED Code	Course Code	Course Title
0411	ACC-2401	Financial and Managerial Accounting
Credit Hours: 2	Contact Hours: 2	Type: Non-Engineering Skill
Prerequisite:	none	
Co-requisite:	none	

Course Assessments	CIE: Continuous Internal Evaluation	Attendance	10 Marks
		Class test/ Assignment/ Quizzes	10 Marks
		Mid-term	30Marks
	SEE: Semester End Examination		50 Marks

Objectives:

Course Content:

Segment	Contents	Duration	CLOs
Section-A (Midterm Exam: 30 Marks)			
1	Preliminaries: Introduction to Accounting, History and development of accounting thought, types of accounting, Accounting Principles & ethics, Accounting Equation & Transaction Analysis.	04	CLO1
2	Introduction to Financial Statements: Recording Business Transactions, the Accounts & their types.	04	CLO2
3	Double-Entry Book keeping System; Invoice, discount from purchase price, purchase return and allowances, Sale of inventory, sales discount, sales returns and allowances; Journals, ledger & Trial balance.	04	CLO2
Section-B (SEE: 50 Marks)			
4	Correcting errors in the trial balance: The Adjusting and Closing Procedure: The adjusting process, Accrual versus cash basis Accounting, Preparation of Adjusted trial balance and financial statements, closing entries & reversing entries.	04	CLO2
5	Using accounting information in decision-making. Accounting in practice, Worksheet. Purchase book, sales book, cashbook, petty cashbook, etc. Control accounts and subsidiary accounts. Bank reconciliation statement.	05	CLO3
6	Cost In General: Cost in general: objectives & classifications; Costing Journals; Job order costing, Process costing & Overhead costing, cost sheet; Cost of goods sold statement.	03	CLO3
7	Marginal & Relevant costing: Marginal costing tools and techniques, cost-volume-profit analysis.	03	CLO4

8	Guidelines for Decision-Making: Budget, Capital budgeting; planning, evaluation & control of capital expenditures.	03	CLO4
		30	

Books :

Text Book :

1. Charles T. Horngren & Walter T. Harrison (2nd Edition): Accounting.
2. Adolph Matz & Milton F. Usry: Cost Accounting- Planning And control

4 th Semester		
ISCED Code	Course Code	Course Title
0541	MATH-2407	Course Title: Mathematics IV (Complex Variable, Fourier Analysis and Laplace transform)
Credit Hours: 3	Contact Hours: 3	Type: C
Prerequisite: MATH-III		
Co-requisite:		

Course Assessments	CIE: Continuous Internal Evaluation	Attendance	10 Marks
		Class test/ Assignment/ quiz	10 Marks
		Mid-term	30Marks
	SEE: Semester End Examination		50 Marks

Course Content:

Segments	Content	Duration	CLOs
	Section-A (Midterm Exam: 30 Marks)		
1	Complex Valued Functions: Complex Number, Demoivre's Theorem, Complex mapping, Linear Transformation: translation, magnification and rotation, Non-linear transformations: inversion, bilinear. Set theory: Function, Relation etc	05	CLO1
2	Complex Differentiation: Differentiation of a complex function, Analytic function, Singularities, the Cauchy-Riemann Equations, harmonic functions	07	CLO2
3	Complex Integration: Complex Path Integrals, closed contour, Cauchy's Theorem, The Residue Theorem, Poles	06	CLO2

	Section-B (SEE: 50 Marks) Group: A (20 Marks)		
4	Fourier Series: Physical Significance of Fourier series, Periodic Signal, Trigonometric form and Complex form of Fourier series, Fourier Integral, Frequency Spectrum, Piecewise Continuous waveforms, Even symmetry, Odd symmetry, Half-wave symmetry, Phase Spectrum, , Sketch different types of Periodic Signals, Application of Fourier Series	06	CLO3
5	Convolution: Harmonic analysis, convolution theorem, convolution sum, convolution Integral	05	CLO4

Group: B (30 Marks)			
6	Laplace transforms: Unit Step Function, Impulse Function, Ramp Function, Sketch Waveform, Derive Laplace transform from Fourier transform ,the Laplace transforms of different functions, The First Shift Theorem, Multiplication Theorem, Division Theorem,, Laplace transforms of unit step functions, Inverse Laplace transforms	08	CLO3
7	Fourier Transform: A-periodic Signal, Fourier transforms, Inverse Fourier Transform, Solution of IVP by Laplace Transforms	05	CLO3
8	Fourier Analysis using MATLAB	03	CLO5

Text Books

Syllabus: B. Sc. Engineering in CSE – Autumn 2022



Serial No	Name of authors	Title of the Book	Edition	Publisher's Name	Year
01	Stroud K. A	Advanced Engineering Mathematics	Fourth Edition	Palgrave Macmillan press Ltd, London	2003
02	Murray R. Spiegel	Theory and problems of Complex Variables	Complex variables SI (METRIC) edition	SOS	1981
03	Merle C Potter	Advanced Engineering Mathematics	3 rd edition	Oxford University Press	2005

4th Semester		
ISCED Code	Course Code	Course Title
0613	CSE-2421	Computer Algorithms
Credit Hours: 3	Contact Hours: 3	Type: Core, Engineering
Prerequisite: CSE-2321 (Data structures)		
Co-requisite: CSE-2422 (Computer Algorithms Lab)		

Course Assessments	CIE: Continuous Internal Evaluation	Attendance	10 Marks
		Class test/ Assignment/ Quizzes	10 Marks
		Mid-term	30Marks
	SEE: Semester End Examination		50 Marks

Course Content:

Segment	Contents	Duration	CLOs
Section-A (Midterm Exam: 30 Marks)			
1	Algorithm and Data structure: Introduction to algorithm; Properties of good algorithm; Correctness proof and techniques for time and space complexity analysis of algorithms (using insertion-sort as an example); Application areas of algorithm; Growth of functions and asymptotic notations	5 lecture hours	CLO1 CLO2 CLO3 CLO4
2	Divide and Conquer approach Sorting and Heaps: Divide and Conquer approach; Asymptotic bound of recursive algorithm by solving recurrence, substitution method, recursion tree method, master method; Maximum subarray problem; Merge-sort and complexity analysis; Quick-sort, Randomized Quick-sort and complexity analysis; Heap, Heap construction algorithm, Heap-sort, Priority queue, complexity analysis of related algorithms; Sorting in Linear Time, Lower bound of sorting, Counting sort, Radix sort.	5 lecture hours	CLO1 CLO2 CLO3 CLO4 CLO5
3	Dynamic Programming: Dynamic programming, Elements of dynamic programming, Memoization, Matrix-chain multiplication and longest common subsequence problems as examples, Complexity analysis of the algorithms.	5 lecture hours	CLO1 CLO2 CLO3 CLO4 CLO5

Section-B (SEE: 50 Marks)			
4	Greedy Algorithms and String Matching Algorithms: Greedy algorithms, Activity selection problem, Elements of greedy strategy, Huffman codes and its application; String Matching Algorithms, Naive string-matching algorithm, Rabin-Karp algorithm; Complexity analysis of the algorithms	5 lecture hours	CLO1 CLO2 CLO3 CLO4 CLO5
5	Graphs Basic & Traversal Techniques: Representation of Graphs, Breadth First Search, Depth First Search, Algorithm of BFS and DFS, Application of BFS and DFS, Minimum Spanning Tree, Kruskal's and Prim's Algorithm, Complexity analysis of the algorithms	5 lecture hours	CLO1 CLO2 CLO3 CLO4

Syllabus: B. Sc. Engineering in CSE – Autumn 2022



6	Shortest Path Algorithms: Single-source shortest path, Dijkstra's Algorithm, Bellman-Ford's Algorithm; All-pairs shortest path, Floyd-Warshall's Algorithm; Complexity analysis of the algorithms	5 lecture hours	CLO1 CLO2 CLO3 CLO4
7	Computational Geometry & Number Theory: Computational Geometry, Line Segment Properties, Convex Hull, Graham Scan Algorithm of Convex Hull, Number Theory, GCD, Modular Arithmetic, Prime Number generation, Complexity analysis of the algorithms	5 lecture hours	CLO1 CLO2 CLO3 CLO4
8	Theory of NP-Completeness and Coping with Hardness: Theory of NP-Completeness, P, NP, NP-Complete and NP-Hard Problems; Backtracking, N-Queen Problem; Branch and Bound; Approximation algorithms	5 lecture hours	CLO1 CLO2 CLO3 CLO4 CLO5
		40	

Books :

Text Books:

1. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, Introduction to Algorithms, 3rd Edition, MIT Press, 2009, ISBN-13: 978-0262033848
2. Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, Fundamentals of Computer Algorithms, 1st Edition, Orient Black Swan, 2008, ISBN-13: 978-8173716126

4th Semester		
ISCED Code	Course Code	Course Title
0613	CSE-2422	Computer Algorithms Lab
Credit Hours: 1	Contact Hours: 2	Type: Core, Engineering
Prerequisite: CSE-2322 (Data Structures Lab)		
Co-requisite: CSE-2421 (Computer Algorithms)		

Course Assessments	CIE: Continuous Internal Evaluation	Attendance	10 Marks
		Class test/ Assignment/ Quizzes	10 Marks
		Mid-term	30Marks
	SEE: Semester End Examination		50 Marks

Activity Plan:

Week	Activities	Topics	CLOs
1	Lab work	1. Implementation of Insertion-sort 2. Implementation of Merge-sort	CLO1 CLO2
2	Lab work	3. Implementation of Quick-sort with its randomized	CLO1 CLO2
3	Lab work	4. Implementation of Heap and Heap-sort 5. Implementation of Priority queue using binary heap	CLO1 CLO2
4	Lab work	6. Implementation of Counting sort 7. Implementation of Radix sort	CLO1 CLO2
5	Lab work	8. Solving Matrix-chain multiplication problem 9. Solving longest common subsequence problem	CLO1 CLO2
6	Lab work	10. Solving problem with the technique of memorization 11. Solving selected competitive programming problem that requires dynamic programming	CLO1 CLO2
7	Lab work	12. Solving activity selection problem 13. Implement Huffman tree and generating prefix	CLO1 CLO2
8	Lab work	14. Implementation of Naive string-matching algorithm 15. Implementation of Rabin-Karp algorithm	CLO1 CLO2
9	Lab work	16. Implementation of Breadth First Search 17. Implementation of Depth First Search	CLO1 CLO2
10	Lab work	18. Implementation of Kruskal's Algorithm for finding minimum spanning tree 19. Implementation of Prim's Algorithm for finding minimum spanning tree	CLO1 CLO2
11	Lab work	20. Implementation of Dijkstra's algorithm for solving single-source shortest path problem 21. Implementation of Bellman-Ford's algorithm for solving single-source shortest path problem	CLO1 CLO2

12	Lab work	22. Implementation of Floyd-Warshall's algorithm for solving all-pairs shortest path problem	CLO1 CLO2
13	Lab work	23. Determining whether two line segment intersect 24. Determining convex hull of a set of points using Graham's scan algorithm	CLO1 CLO2

Syllabus: B. Sc. Engineering in CSE – Autumn 2022



Week	Activities	Topics	CLOs
14	Lab work	25. Implementation of extended Euclid's algorithm for finding GCD 26. Implementation of different prime number generation algorithms 27. Solving N-Queen Problem 28. Solving different backtracking problems	CLO1 CLO2
15	Programming Contest	29. Testing the problem solving skills of students by giving them problems	CLO3

4 th Semester		
ISCED Code	Course Code	Course Title
0612	CSE-2423	Database Management System
Credit Hours: 3	Contact Hours: 3	Type: Core, Engineering
Prerequisite: CSE-2424 (Database Management System Lab)		
Co-requisite: CSE-2424 (Database Management System Lab)		

Course Content:

Segment	Contents	Duration	CLOs
Section-A (Midterm Exam: 30 Marks)			
1	Introduction: Database, data, database management system, Database system versus file system, Data model, Database language, Database user administration, Database system structure, Storage manager, Overview of Physical storage medium.	02	CLO1
2	Entity-Relationship Model: Entity sets, Relationship sets, Mapping Cardinalities, Keys, Attributes, Entity relationship diagram, Weak entity sets, Specialization, Generalization, Structure of Relational databases, Database Schema.	06	CLO3
3	The Relational Algebra and SQL: Selection, projection, Union, Set difference, Cartesian-product, Rename, Set-intersection, Natural-join, Division, Assignment, projection, Aggregate functions, Deletion, Insertion, Updating, Views, Nested sub-queries, Set membership, Set comparison.	04	CLO2
Section-B (SEE: 50 Marks)			
4	Integrity, Security and Relational Database Design: Domain constraint, Integrity, Assertions, Triggers, Authorization, Authentication, Security, Privileges, Roles, and Audit trails, Encryption-Decryption Algorithm, Decomposition etc.	04	CLO2
5	Functional Dependency and Normalization: Functional Dependencies, Closure of a set of Functional dependencies. Un-normal Form (UNF), First Normal Form (1NF), Second Normal Form (2NF), Third Normal Form (3NF), Boyce and Code Normal Form (BCNF).	04	CLO2
6	Indexing and Hashing: Ordered indices, Hash indices, Hash function, Primary index, Secondary index, Dense, sparse, Multilevel indices, B+ tree index files, Handling Bucket Overflows, Overflow Chaining, Closed Hashing, Open Hashing, Linear probing, Hash indices, Dynamic Hashing.	04	CLO2
7	Transaction: ACID Properties, Transaction state diagram, Implementation of Atomicity and Durability, Shadow copy technique, Concurrent Execution, Serializability, Recoverability, Recoverable schedule, Cascade-less Schedules, Implementation in Isolation, Testing of Serializability.	04	CLO2

8	Concurrency control, Recovery System and Distribute databases: Lock-Based Protocols, granting of locks, Two-phase locking protocol, Graph based protocol, Tree protocol, Timestamp based protocols,	02	CLO2
---	--	----	-------------

Syllabus: B. Sc. Engineering in CSE – Autumn 2022



	Deadlock detection and recovery. Failure classification, Storage types, Checkpoints. Distributed data, Replication and Fragmentation.		
		30	

Books:

Text Book:

1. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, "Database System Concept", 6th Edition McGraw-Hill, 2011, ISBN : 978-0-07-352332-3
2. Ramez Elmasri, Shamkant B. Navathe Fundamentals of database systems, 6th Pearson Education, 2011, ISBN : 10: 987-0-136-08620-9

4- Semester		
ISCED Code	Course Code	Course Title
0612	CSE-2424	Database Management System Lab
Credit Hours: 1.5	Contact Hours: 3	Type: Core, Engineering
Prerequisite: CSE-2423 (Database Management System)		
Co-requisite: CSE-2423 (Database Management System)		

Course Assessments	CIE: Continuous Internal Evaluation	Attendance	10 Marks
		Class test/ Assignment/ Quizzes	10 Marks
		Mid-term	30Marks
	SEE: Semester End Examination		50 Marks

Objectives:

1. familiarize with database languages such as SQL and PL/SQL
2. Ability to apply structured query language for data searching and develop different types of database applications
3. Apply different concept to Database management system such as Integrity, Security, Normalization, Indexing, Transaction, Recovery system, Distributed system.

Lecture Plan:

Week	Activities	Topics	CLOs
1	Lecture	Topic: <ul style="list-style-type: none"> Introduction to SQL, Relational Database Management System. Oracle12: Object Relational Database Management System, SQL statements, about PL/SQL and its environments. 	CLO1
2	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problem from text book practice section. Topic: Writing Basic SQL statements, Capabilities of SQL SELECT Statements, Restricting and sorting data. 	CLO1
3	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problem from text book practice section. Topic: Single-Row-Functions 	CLO1
4	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problem from text book practice section. Topic: Displaying Data from multiple tables 	CLO1
5	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problem from text book practice section. Topic: Aggregating data using Group Functions. 	CLO1
6	Lab test 1		
7	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problems from text book practice section. Topic: Sub queries, Multiple-Column Sub queries 	CLO1
8	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problem from text book practice section Topic: Manipulating Data, Creating and Managing Tables including constraints. 	CLO2
9	Problem solving	<ul style="list-style-type: none"> Instant Database Creation on some unknown domain 	CLO2
10	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problem from text book practice section Topic: Other Database Objects, Controlling User Access. 	CLO3
11	Lecture	Topic: <ul style="list-style-type: none"> PL/SQL, Declaring Variables, writing Executable Statements. Working with Composite Data types. 	CLO1
12	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problem from text book practice section Topic: Interacting with the Oracle Server, Writing Control Structures. 	CLO3
13	Lab test 2		

Week	Activities	Topics	CLOs
14	Lecture, Problem solving	<ul style="list-style-type: none"> Solving problem from text book practice section Topic: Writing Explicit Cursors, 	CLO1
15	Lecture, Problem solving	<ul style="list-style-type: none"> Revised Class 	CLO1, CLO2, CLO3

Books:

Text Book :	
1.	Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concept, 6th Edition McGraw-Hill, 2011, ISBN : 978-0-07-352332-3
2.	Ramez Elmasri, Shamkant B. Navathe, Fundamentals of database systems, 6th Pearson Education, 2011, ISBN : 10: 987-0-136-08620-9



ISCED: 0613

Course Code: CSE-2427

Course Title: Theory of Computation

Credit Hours: 3

Contact Hours: 3 lectures hours per week

Type: Core, Engineering

Prerequisite: CSE-1223 (Discrete Mathematics), CSE-2421 (Computer Algorithms)

Co-requisite: CSE-2422 (Computer Algorithms Lab)

Course Assessments	CIE: Continuous Internal Evaluation	Attendance	10 Marks
		Class test/ Assignment/ Quizzes	10 Marks
		Mid-term	30Marks
	SEE: Semester End Examination		50 Marks

This course covers the theoretical computer science areas of formal languages and automata, computability and complexity.

Course Objective:

At successful completion of the course, students should:

1. Learn several formal mathematical models of computation along with their relationships with formal languages.
2. Distinguish different computing languages and classify their respective types.
3. Recognize and comprehend formal reasoning about languages.
4. Understand that there are limitations on what computers can do, and learn examples of unsolvable problems.
5. Show a competent understanding of the basic concepts of complexity theory. They will learn that certain problems do not admit efficient algorithms, and identify such problems.

Experiment Names:

Regular Languages, finite automaton, Examples of finite automata, Designing finite automata, Equivalence of NFAs and DFAs, The regular operations - Closure under the regular operations. Regular Expressions. Equivalence with finite automata. Non-regular Languages - The pumping lemma for regular languages.

Context-Free Languages: Formal definition of a context-free grammar - Examples of context-free grammars. Ambiguity - Chomsky normal form. Pushdown Automata, Formal definition of a pushdown automaton - Examples of pushdown automata, Equivalence with context-free grammars.

Computability Theory: the Church-Turing Thesis. Turing machine, Nondeterministic Turing machines, Hilbert's problems.

Decidability: Decidable languages, The halting problem – the diagonalization method..

Complexity Theory: The Classes P, NP, Examples of problems in these classes. The P versus NP question. NP-Completeness, Polynomial time reducibility, The Cook-Levin Theorem. Examples of

Syllabus: B. Sc. Engineering in CSE – Autumn 2022

NP-Complete Problems: The vertex cover problem - The Hamiltonian path problem - The subset sum problem. Approximation algorithm, Probabilistic Algorithms.

Text Books:

1. Michael Sipser: Introduction to the theory of computation.
2. Hopcroft Motwani Ullman: Introduction to Automata Theory Languages and Computation."



2nd Semester		
ISCED Code	Course Code	Course Title
0613	CSE-2430	Competitive Programming 2
Credit Hours: 1	Contact Hours: 2	Type: Core, Engineering
Prerequisite: CSE-1230 (Competitive Programming 1)		
Co-requisite: None		

Course Assessments	CIE: Continuous Internal Evaluation	Attendance	10 Marks
		Class test/ Assignment/ Quizzes	10 Marks
		Mid-term	30Marks
	SEE: Semester End Examination		50 Marks

Objectives:

The main objectives of this course are:

- To help the students to enhance their analysing skills.
- To make them familiar with solving competitive problems using different algorithms.
- Foster creativity and innovation.

Lecture Plan:

Week	Activities	Topics	CLOs
1	Lecture, Problem solving	Introduction	CLO1
2	Lecture, Problem solving	Getting familiar with Online Judges	CLO1

Syllabus: B. Sc. Engineering in CSE – Autumn 2022

Week	Activities	Topics	CLOs
3	Lecture, Problem solving	Time and Space Complexity Analysis	CLO1
4	Lecture, Problem solving	Solving Data Structure related problems	CLO1
5	Lecture, Problem solving	Solving and analyzing Data Structure related problems using STL	CLO2
6	Lecture, Problem solving	Several STL containers and algorithms	CLO1
7	Lecture, Problem solving	Greedy Techniques	CLO1

8	Lecture, Problem solving	Divide and Conquer Paradigm related problem solving	CLO1
9	Lecture, Problem solving	Dynamic Programming Paradigm related problems I	CLO1
10	Lecture, Problem solving	Dynamic Programming Paradigm related problems II	CLO2
11	Lecture, Problem solving	Graph Searching	CLO1
12	Lecture, Problem solving	Several Graph Algorithm related problems	CLO2
13	Lecture, Problem solving	Number Theory	CLO1
14	Lecture, Problem solving	Computational Geometry	CLO1
15	Lecture, Problem solving	String Searching related problems	CLO2

Books :

Text Books:

#	Name of Authors	Title of Book	Edition	Publisher's Name	Year	ISBN
1.	Steven Halim and Felix Halim	Competitive Programming 3	3rd Edition	Lulu.com	2013	