BML MUNJAL UNIVERSITY
FROM HERE TO THE WORLD

SCHOOL OF ENGINEERING & TECHNOLOGY

COURSE FILE

Program: CSE
Course Code: 1234567
Course Title: Seminar/Case Studies
Module Semester: 5th
Session: 2024-25

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1. Course Details

- Course Code: 1234567
- Course Title: Seminar/Case Studies
- **Module/Semester: 5th**
- Session: 2024-25

2. Vision, Mission of the University

Vision

BML Munjal University seeks to nurture ethical leaders who are skilled, knowledgeable and have the life skills required for leading their organizations to success. The university shall seek the advancement and dissemination of practically oriented knowledge benchmarked with the best global standards.

Mission

BML Munjal University aims to be a leading university for the quality and impact of its teaching, research and linkages with major stakeholders. The focus of the university is to find creative solutions to problems through application of knowledge. The university aims to create a talented community of students and faculty who excel in teaching, learning and research, in a creative and stimulating environment. The university will collaborate with other institutions for development of science, technology and arts in the global context.

3. Graduate Attributes

- Acquire and apply practical understanding of discipline knowledge.
- Demonstrate a sense of ethics and display excellence in both personal and professional life.
- Exhibit problem solving, critical thinking skills and investigative capability to address real world problems.
- Manifest leadership qualities and work effectively in teams across globally diverse environments.
- Be a lifelong learner with an entrepreneurial mindset to innovate in the constantly changing global scenario.
- Possess a strong sense of inquiry and design innovative solutions for positive societal impact.
- Be effective communicators and possess an empathetic outlook.

4. Vision, Mission of the School

Vision of School:

To be amongst the leading engineering schools of the country recognized globally for excellence in teaching and research with focus on experiential learning, innovation and entrepreneurship.

Mission of School:

* Providing high-quality learning experience to our students, preparing them to be global leaders, and contributing to the development of society through research, innovation, and entrepreneurship.
* Creating an inclusive and diverse learning environment that fosters creativity, critical thinking, and ethical values.

* Collaborating with industry, government, and other institutions to address complex societal challenges and promote sustainable development.

5. PEOs and POs & PSOs of the Program

Program Educational Objectives (PEO):

a) PEO 1: Identify real-life problems and develop creative and innovative hardware/software-based solutions.
b) PEO 2: Achieve professional development through self-learning to adapt to the technological changes in the ever changing field of computing.
c) PEO 3: Engage in life-long learning of computer engineering technologies, critical thinking and continuous ingenuity and apply them in real-life applications.
d) PEO 4: Accomplish leadership roles by imbibing ethics and professionalism with emphasis on sustainable development of the society.

Program Outcomes (PO):

e) PO1: Apply the foundational concepts of mathematics, science and computer engineering to find novel solutions for complex real-life engineering problems.
f) PO2: Identify, formulate, review literature and analyze complex computer engineering problems reaching substantiated conclusions and derive a coherent logic that can be implemented by computers.
g) PO3: Design analytical and computational models for solving complex engineering problems giving due consideration to issues related to public health and safety, cultural and societal constraints, and environmental concerns.
h) PO4: Use research-based knowledge, methods, tools and techniques for data collection, designing digital computing systems, analyzing and interpreting the results to provide substantiated conclusions.
i) PO5: Use appropriate tools to model complex computer engineering problems through identification of the limitations and creating solutions to predict the real-world phenomena.
j) PO6: Use appropriate contextual knowledge of computer engineering to review and assess societal, health, legal, cultural, safety and contemporary issues and rationalize the ensuing responsibilities towards the society.
k) PO7: Adopt computer engineering practices in congruence with societal need, understand the working practices and its impact on natural resources for sustainable development.
l) PO8: Use ethical principles to pursue excellence in developing computer engineering systems and behave appropriately to develop a reliable and trustworthy relationship with others.
m) PO9: Function effectively as a reliable and responsible individual, and as a member or leader in diverse computer engineering teams, and in multidisciplinary settings, thereby placing team goals ahead of individual interests.
n) PO10: Communicate effectively by capturing the desirable computer system requirements for preparation of specification documents, write clear and concise report such as laboratory files, research papers, thesis, and presentation materials.
o) PO11: Demonstrate knowledge of computer engineering and management principles for the completion of individual or group projects in multidisciplinary environments.
p) PO12: Recognize the evolving technological changes and engage as an independent and life-long learner in both computing and non-computing fields.

Program Specific Outcomes (PSO):

q) PSO1: Identify applicable tools and techniques related to data science practice such as data

collection, cleaning, analysis, modelling, evaluation and result interpretation and apply them for deriving hidden and meaningful patterns for appropriate actionable insights.

r) PSO2: Develop intelligent systems for various real-life domains like healthcare, transportation, finance etc. using Artificial Intelligence methodologies.

s) PSO3: Understand the foundational concepts and techniques to protect computing systems against constantly evolving cybersecurity threats and analyze security breaches and violations of cyber systems and networks to provide appropriate solutions.

t) PSO4: Design effective security systems to mitigate risks, threats and vulnerabilities for protecting the organizations against cyber threats.

6. Course Description and its objectives

The main objective of this course is to introduce students to different data structures and illustrate their effective use in solving technical and logical problems. The course comprehensively explores different problem-solving techniques and skills. Proficiency in problem-solving skills is a fundamental expectation for any competent developer, as these concepts are commonly assessed by reputable companies during the screening process for software developer positions. The primary emphasis will be on achieving a deep understanding of data structures, their implementation, practical applications through problem-solving scenarios, exploring various programming paradigms, algorithm analysis, and the practical application of different data structures and algorithms. This course explores the fundamental workings of algorithms and data structures, which lie at its core essence.

7. Course Outcomes and CO-PO Mapping

Course Outcomes:

CO1:

CO2:

CO3:

CO/PO Mapping:

Course Outcomes (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1			2	2	2											
CO2																
CO3		3	3	2												

8. Course Syllabus

Sr. No.	Content	CO	Sessions
1	Linear Search, Maximum in an Array, Sorting(Selection, Bubble and Insertion), Binary search, Kadane's Algo-O(N), Merge two sorted arrays, Rotate Array anti clock wise by k times, Unique Number-1, and tell about bitwise operators, Basics of strings, String methods, String builder, Mutable and Immutable concepts, 2D Arrays: Wave Print, Spiral Print, and Transpose	1	1
2	Recursion: Factorial, Fibonacci, isArraySorted, SumofArray, Print Numbers – 1) Increasing Order 2) Decreasing Order, MergeSort, Subsequence, Rat in Maze, N_Stairs, Subset Sum	2	1
3	Stack: stack implementation, Queue implementation, Linkedlist implementation(Add and Delete), Mid (Cycle detection hints), Reverse LinkedList, Merge two Sorted LinkedList, Intersection of two LinkedList, Binary Tree implementation and traversal of binary tree(PreOrder, InOrder and PostOrder), Diameter-O(N^2) and O(N) height, count number of node, Level-Order, Create Tree using Pre and Inorder, Create Tree using level-order, Binary Search Tree implementation, Addition and Deletion	2	1
4	BST to LinkedList, Balanced binary Tree, Valid BST, priority queue Collections, Kth Smallest, Meeting Room-2, Merge k Sorted List, Map and Set Collections (HashMap TreeMap and LinkedHashMap), SubArray using Map related Question	3	1
5	Dynamic Programming: Fib, min Steps to one, coin Changes, LCS, LIS, knapsack, Edit Distance, Graph basic, BFS, DFS, Dijkstra, MST(Prims), bipartite	1	1

9. Learning Resources

Text Books:

✓ Cracking the Coding Interview author(Gayle Laakmann McDowell)

✓ Coding Interview Questions author(Narasimha Karumanchi)

Reference Links:

- Data Structures and Algorithms Specialization
- NPTEL Data Structures And Algorithms, IIT Delhi

10. Weekly Timetable

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9:15-10:10	Seminar/Case Studies (1234567)				
10:15-11:10		Seminar/Case Studies (1234567)			
11:15-12:10			Seminar/Case Studies (1234567)		
12:15-13:10				Seminar/Case Studies (1234567)	
13:15-14:10					Seminar/Case Studies (1234567)
14:15-15:10				Seminar/Case Studies (1234567)	
15:15-16:10			Seminar/Case Studies (1234567)		
16:15-17:10		Seminar/Case Studies (1234567)			
17:15-18:10	Seminar/Case Studies (1234567)				

11. Registered Students List

Sr. No.	Roll No	Student Name	Unique Id
1	220C2030001	Aditya Goel	240334
2	220C2030002	Anisha Chhanpadia	240335
3	220C2030003	Dhruv Singla	240336
4	220C2030004	Dorjee Phinjo Sona	240337
5	220C2030005	EENA CHAUDHARY	240338
6	220C2030006	Eshaan Chandra	240339
7	220C2030007	Hardik Rustagi	240340
8	220C2030008	Harsh Gupta	240341
9	220C2030009	Jiya Gera	240342
10	220C2030010	Keshav Gupta	240343

19. Attendance Report

Sr. No.	Roll No	Student Name	Attendance Out of(100)
1	220C2030001	Aditya Goel	88
2	220C2030002	Anisha Chhanpadia	87
3	220C2030003	Dhruv Singla	93
4	220C2030004	Dorjee Phinjo Sona	88
5	220C2030005	EENA CHAUDHARY	77
6	220C2030006	Eshaan Chandra	88
7	220C2030007	Hardik Rustagi	99
8	220C2030008	Harsh Gupta	81
9	220C2030009	Jiya Gera	92
10	220C2030010	Keshav Gupta	93

18, 20 Detail of Marks in all components up to the End Semester

Sr. No.	Roll No	Student Name	Quiz(30) Out	project(30) Out	End Term(40) Out	Total Marks(100.0) Out
1	220C2030001	Aditya Goel	28	27	28	83
2	220C2030002	Anisha Chhanpadia	23	23	30	76
3	220C2030003	Dhruv Singla	25	22	33	80
4	220C2030004	Dorjee Phinjo Sona	24	30	20	74
5	220C2030005	EENA CHAUDHARY	21	24	20	65
6	220C2030006	Eshaan Chandra	26	29	26	81
7	220C2030007	Hardik Rustagi	24	27	20	71
8	220C2030008	Harsh Gupta	30	29	33	92
9	220C2030009	Jiya Gera	25	20	20	65
10	220C2030010	Keshav Gupta	25	20	40	85

12. CO Attainment Analysis

CO Attainment Summary

Course Outcomes	CO1	CO2	CO3
Weights	25.00%	36.50%	38.50%
No. of students scored greater than 3	9	8	5
Percentage of students scored greater than 3	90.00%	80.00%	50.00%
Attainment Level	3	2	1
Overall Course Attainment	**2.0000**		

CO Attainment Criteria:

- CO1: Level 3 (≥85%), Level 2 (≥55%), Level 1 (<55%)
- CO2: Level 3 (≥85%), Level 2 (≥55%), Level 1 (<55%)
- CO3: Level 3 (≥85%), Level 2 (≥55%), Level 1 (<55%)

Program Attainment

Program Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
Program Attainment	0.00	2.40	2.60	2.65	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Program outcome attainment is calculated as the weighted average of CO attainments based on the CO-PO mapping values.

Student-wise CO Achievement

NAME	CO1 Score	CO2 Score	CO3 Score
Aditya Goel	3	3	3
Anisha Chhanpadia	3	3	3
Dhruv Singla	3	3	3
Dorjee Phinjo Sona	3	3	2
EENA CHAUDHARY	2	2	2
Eshaan Chandra	3	3	2
Hardik Rustagi	3	3	2
Harsh Gupta	3	3	3
Jiya Gera	3	2	1
Keshav Gupta	3	3	3
Average	**2.90**	**2.80**	**2.40**

Total Rows: 10 | Total Columns: 4

CO Achievement Score Legend:
- Score 3: Full attainment
- Score 2: Partial attainment
- Score 1: No attainment

14. Actions taken for weak students

- we beat them

Pratyut

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Education

BML Munjal University, Gurgaon **November 2021 – September 2025**
Bachelor of Technology in Computer Science And Engineering *Current CGPA: 7.54/10*

City Montessori School, Lucknow **April 2017 – March 2021**
ISC/ICSE *Percentage: 94.75%/91.87%*

Relevant Coursework

- Attack and Defence
- Data Structures
- Computer Networks
- Database Management
- Security Audit
- OOP using C++
- Blockchain
- Operating System

Experience

IIT Bhilai **January 2025**
Intern *Bhilai, Chhattisgarh*

- Implemented parallel computing solutions utilizing **CPU/GPU multi-threading** in **C** to optimize detection of weak **2048-bit RSA** keys vulnerable to factorization attacks.
- Developed and optimized **C** code for concurrent processing across multiple cores, contributing to research methodology for identifying cryptographic vulnerabilities in **RSA** key generation and validation processes.

BML Munjal University **December 2022 – July 2024**
Software Developer *Kapriwas, Haryana*

- Spearheaded development of database management system using **EJS, Node/Express, MongoDB**, enabling **28%** paperwork reduction across 11 departments and Designed event report system using **Flutter, Node.js, MongoDB & JWT**, achieving **95%** faster report generation
- Led IQAC full-stack webpage development, reducing file search time by **86%** and implemented data quality measures, reducing workload by **60%**

Projects

Blockchain | *PYTHON* **Github**

- Developed a fully **decentralized blockchain** implementation for cryptocurrencies from scratch, utilizing the **latest cryptography protocols**.
- Employed **peer-to-peer technology** and networks to enhance communication efficiency, achieving a 4% improvement in mining time through **multi-threading on the CPU**.
- Applied robust error handling mechanisms, enabling automatic transitions.

BeeHive | *RUST, REACT* **Github**

- Developed and implemented a comprehensive **Windows Registry Hive analysis tool** using **Rust and React.js**, enabling efficient comparison and visualization of registry files through an intuitive interface for **forensic analysis**.
- Designed and implemented registry comparison functionality with optimized diff algorithms, enabling officers to efficiently analyze and identify changes between similar registry hives through an interactive dashboard interface.

Invisible Image Watermarking | *NODE.JS, HTML, CSS, EJS, PYTHON, JAVASCRIPT* **Github**

- Engineered a full-stack web-page using **Node.js, Express.js, HTML, CSS, EJS, Python, and JavaScript** to implement spatial and DCT watermarking for videos and images.
- Used **system commands** for execution of **Python scripts** for LSB and DCT watermarking through JavaScript, achieving a 67% increase in code efficiency and a 27% reduction in embedding time with automated client-side updates.

ACHIEVEMENTS

. 50+ Problem solved in LeetCode
. SIH college round qualifiers 2022
. ICPC regional qualifier
. Certified Microsoft Cybersecurity Analyst

Technical Skills

Languages: Python, Java, C++, HTML/CSS, JavaScript, Embedded C, Rust, GoLang, Dart, Bash
Developer Tools: VS Code, Excel, Android Studio, Git, VMWare, AWS, Azure, MongoDB, Postman
Technologies/Frameworks: Linux, Jenkins, GitHub, Flutter, Matplotlib, Seaborn, Numpy, Pandas, React, Express, puppeteer, FFmpeg, OpenCV, Nmap, Metasploit