Course File (CSC2030) Sem: 4th



### **SCHOOL OF ENGINEERING & TECHNOLOGY**

### **COURSE FILE**

Program: Computer Science Engineering Course Code: CSC2030 Course Title: Course File Module Semester: 4th

Session: 2023-24

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| 15     | Reflections from the Mid-term semester feedback received, and interventions made to enhance the student learning and continuous improvement in teaching and learning strategies.                                  |

| 16 | Interventions made for slow performers and advanced learners, highlighting initiatives taken for student improvements (retest, resubmissions etc.)                                                                                  |
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### 1. Course Details

Course Code: CSC2030Course Title: Course FileModule/Semester: 4th

• Session: 2023-24

### 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):

PEO 1: Identify real-life problems and develop creative and innovative hardware/software-based solutions.

PEO 2: Achieve professional development through self-learning to adapt to the technological changes in the ever changing field of computing.

PEO 3: Engage in life-long learning of computer engineering technologies, critical thinking and continuous ingenuity and apply them in real-life applications.

PEO 4: Accomplish leadership roles by imbibing ethics and professionalism with emphasis on sustainable development of the society.

#### Program Outcomes (PO):

PO1: Apply the foundational concepts of mathematics, science and computer engineering to find novel solutions for complex real-life engineering problems.

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.

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.

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.

PO5: Use appropriate tools to model complex computer engineering problems through identification of the limitations and creating solutions to predict the real-world phenomena.

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.

PO7: Adopt computer engineering practices in congruence with societal need, understand the working practices and its impact on natural resources for sustainable development.

PO8: Use ethical principles to pursue excellence in developing computer engineering systems and behave appropriately to develop a reliable and trustworthy relationship with others.

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.

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.

PO11: Demonstrate knowledge of computer engineering and management principles for the completion of individual or group projects in multidisciplinary environments.

PO12: Recognize the evolving technological changes and engage as an independent and life-long learner

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in both computing and non-computing fields.

Program Specific Outcomes (PSO):

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.

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

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.

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

# **6. Course Description and its objectives**

dsfsdf

# 7. Course Outcomes and CO-PO Mapping

### **Course Outcomes:**

CO1: fdsf

### CO/PO Mapping:

| Co | ourse          | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|----|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
| _  | utcomes<br>CO) |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |
| C  | 01             |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |

# 8. Course Syllabus

| Sr. No. | Content                 | СО | Sessions |
|---------|-------------------------|----|----------|
| 1       | Topic Name with Details | 1  | 1        |

# 9. Learning Resources

### **Text Books:**

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### Reference Links:

• <u>dsfds</u>

# **10. Weekly Timetable**

| Time        | Monday | Tuesday                  | Wednesday | Thursday                 | Friday |
|-------------|--------|--------------------------|-----------|--------------------------|--------|
| 9:15-10:10  |        |                          |           |                          |        |
| 10:15-11:10 |        |                          |           |                          |        |
| 11:15-12:10 |        | Course File<br>(CSC2030) |           |                          |        |
| 12:15-13:10 |        |                          |           |                          |        |
| 13:15-14:10 |        |                          |           |                          |        |
| 14:15-15:10 |        |                          |           | Course File<br>(CSC2030) |        |
| 15:15-16:10 |        |                          |           |                          |        |
| 16:15-17:10 |        |                          |           |                          |        |
| 17:15-18:10 |        | Course File<br>(CSC2030) |           | Course File<br>(CSC2030) |        |

# **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    |  |
| 11      | 220C2030011             | Luvisha Verma       | 240345    |  |
| 12      | 220C2030012             | Mehal Raghav        | 240346    |  |
| 13      | 220C2030013             | Neha Raju Shinde    |           |  |
| 14      | 220C2030014             | Priya Chadda        | 240348    |  |
| 15      | 220C2030015             | Purnendu Vashishtha | 240349    |  |
| 16      | 220C2030016             | Sagar Bista         | 240350    |  |
| 17      | 220C2030017             | Shoryaveer Singh    | 240351    |  |
| 18      | 220C2030018             | Yash Garg           | 240352    |  |
| 19      | 220C2030019             | Sanchi Narang       | 240870    |  |
| 20      | 220C2030020             | Cheshtha Narang     | 240871    |  |
| 21      | 220C2030021             | Nishtha Arora       | 240909    |  |
| 22      | 220C2030022             | Astha Jaiswal       | 240794    |  |
| 23      | 220C2030023             | Kshitij Khera       | 240333    |  |
| 24      | 220C2030024             | Hitansh Goel        | 240943    |  |
| 25      | 220C2030025 Sneha Singh |                     |           |  |

# 19. Attendance Report

| Sr. No. | Roll No     | Student Name        | Attendance  |
|---------|-------------|---------------------|-------------|
|         |             |                     | Out of(100) |
| 1       | 220C2030001 | Aditya Goel         | 75.00       |
| 2       | 220C2030002 | Anisha Chhanpadia   | 85.19       |
| 3       | 220C2030003 | Dhruv Singla        | 71.43       |
| 4       | 220C2030004 | Dorjee Phinjo Sona  | 89.29       |
| 5       | 220C2030005 | EENA CHAUDHARY      | 100.00      |
| 6       | 220C2030006 | Eshaan Chandra      | 85.71       |
| 7       | 220C2030007 | Hardik Rustagi      | 78.57       |
| 8       | 220C2030008 | Harsh Gupta         | 82.14       |
| 9       | 220C2030009 | Jiya Gera           | 92.86       |
| 10      | 220C2030010 | Keshav Gupta        | 75.00       |
| 11      | 220C2030011 | Luvisha Verma       | 92.86       |
| 12      | 220C2030012 | Mehal Raghav        | 81.48       |
| 13      | 220C2030013 | Neha Raju Shinde    | 89.29       |
| 14      | 220C2030014 | Priya Chadda        | 85.19       |
| 15      | 220C2030015 | Purnendu Vashishtha | 96.43       |
| 16      | 220C2030016 | Sagar Bista         | 96.43       |
| 17      | 220C2030017 | Shoryaveer Singh    | 60.71       |
| 18      | 220C2030018 | Yash Garg           | 71.43       |
| 19      | 220C2030019 | Sanchi Narang       | 96.43       |
| 20      | 220C2030020 | Cheshtha Narang     | 96.43       |
| 21      | 220C2030021 | Nishtha Arora       | 100.00      |
| 22      | 220C2030022 | Astha Jaiswal       | 42.86       |
| 23      | 220C2030023 | Kshitij Khera       | 78.57       |
| 24      | 220C2030024 | Hitansh Goel        | 82.14       |
| 25      | 220C2030025 | Sneha Singh         | 82.14       |

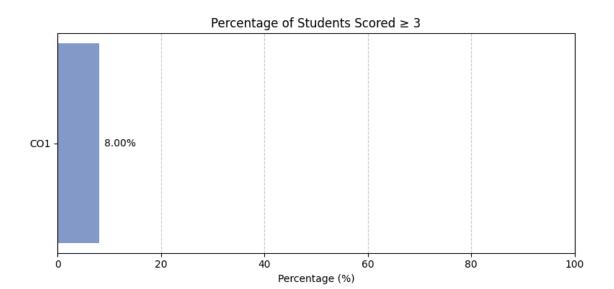
# 18, 20 Detail of Marks in all components up to the End Semester

| Sr. | Roll No     | Student Name        | Assignment | End term    | Group        | Individual    | Mid  | Role | Total        |
|-----|-------------|---------------------|------------|-------------|--------------|---------------|------|------|--------------|
| No. |             |                     | Out        | examination | Presentation | Class         | Term | Play | Marks(100.0) |
|     |             |                     |            | Out         | Out          | Participation | Exam | Out  | Out          |
|     |             |                     | _          |             |              | Out           | Out  |      |              |
| 1   | 220C2030001 | Aditya Goel         | 8.5        | 0.0         | 9.0          | 0.0           | 6.5  | 8.0  | 32.00        |
| 2   | 220C2030002 | Anisha Chhanpadia   | 8.5        | 21.0        | 9.0          | 9.0           | 10.5 | 8.0  | 66.00        |
| 3   | 220C2030003 | Dhruv Singla        | 8.5        | 24.0        | 9.0          | 1.0           | 6.0  | 8.0  | 56.50        |
| 4   | 220C2030004 | Dorjee Phinjo Sona  | 8.5        | 18.5        | 9.0          | 7.0           | 3.0  | 8.0  | 54.00        |
| 5   | 220C2030005 | EENA CHAUDHARY      | 9.0        | 29.0        | 9.0          | 8.5           | 8.0  | 8.0  | 71.50        |
| 6   | 220C2030006 | Eshaan Chandra      | 7.5        | 26.0        | 8.5          | 6.0           | 8.0  | 7.5  | 63.50        |
| 7   | 220C2030007 | Hardik Rustagi      | 9.0        | 21.0        | 8.5          | 7.5           | 4.5  | 7.5  | 58.00        |
| 8   | 220C2030008 | Harsh Gupta         | 8.0        | 20.0        | 7.5          | 0.0           | 7.5  | 8.0  | 51.00        |
| 9   | 220C2030009 | Jiya Gera           | 8.5        | 26.5        | 8.5          | 7.5           | 8.5  | 8.0  | 67.50        |
| 10  | 220C2030010 | Keshav Gupta        | 7.5        | 5.0         | 8.5          | 0.0           | 4.0  | 8.0  | 33.00        |
| 11  | 220C2030011 | Luvisha Verma       | 8.0        | 20.0        | 7.5          | 9.5           | 7.5  | 7.0  | 59.50        |
| 12  | 220C2030012 | Mehal Raghav        | 8.0        | 30.0        | 7.5          | 3.0           | 4.0  | 7.0  | 59.50        |
| 13  | 220C2030013 | Neha Raju Shinde    | 8.5        | 20.5        | 8.5          | 6.0           | 6.0  | 7.5  | 57.00        |
| 14  | 220C2030014 | Priya Chadda        | 9.0        | 34.0        | 8.5          | 6.5           | 16.0 | 8.0  | 82.00        |
| 15  | 220C2030015 | Purnendu Vashishtha | 8.0        | 11.5        | 8.0          | 6.5           | 8.0  | 7.0  | 49.00        |
| 16  | 220C2030016 | Sagar Bista         | 9.5        | 23.0        | 8.0          | 7.5           | 12.0 | 7.0  | 67.00        |
| 17  | 220C2030017 | Shoryaveer Singh    | 8.0        | 21.5        | 0.0          | 1.0           | 2.5  | 7.0  | 40.00        |
| 18  | 220C2030018 | Yash Garg           | 8.0        | 5.0         | 7.0          | 0.0           | 2.5  | 8.0  | 30.50        |
| 19  | 220C2030019 | Sanchi Narang       | 9.5        | 35.0        | 8.0          | 9.5           | 17.0 | 8.0  | 87.00        |
| 20  | 220C2030020 | Cheshtha Narang     | 7.5        | 33.0        | 9.0          | 9.5           | 8.0  | 8.0  | 75.00        |
| 21  | 220C2030021 | Nishtha Arora       | 8.5        | 18.5        | 7.5          | 8.5           | 17.5 | 8.0  | 68.50        |
| 22  | 220C2030022 | Astha Jaiswal       | 0.0        | 0.0         | 0.0          | 0.0           | 0.0  | 0.0  | 0.00         |
| 23  | 220C2030023 | Kshitij Khera       | 9.5        | 15.5        | 7.5          | 4.5           | 8.5  | 7.0  | 52.50        |
| 24  | 220C2030024 | Hitansh Goel        | 8.0        | 11.5        | 7.5          | 4.0           | 3.5  | 8.0  | 42.50        |
| 25  | 220C2030025 | Sneha Singh         | 8.0        | 26.5        | 8.0          | 5.5           | 9.5  | 8.0  | 65.50        |

# **12. CO Attainment Analysis**

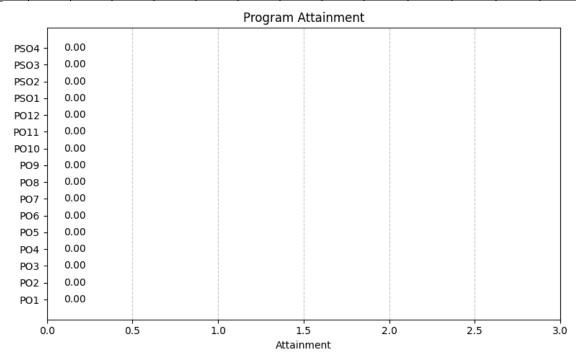
## **CO Attainment Summary**

| Course Outcomes                              | CO1     |
|----------------------------------------------|---------|
| Weights                                      | 100.00% |
| No. of students scored greater than 3        | 2       |
| Percentage of students scored greater than 3 | 8.00%   |
| Attainment Level                             | 1       |
| Overall Course Attainment                    | 1.0000  |



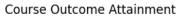
## **Program Attainment**

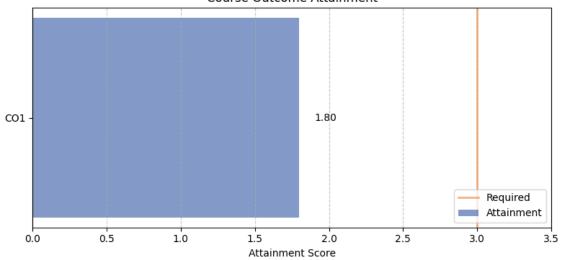
| Program<br>Outcomes | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7  | PO8  | PO9  | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Program             | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Attainment          |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |



### **Student-wise CO Achievement**

| NAME                | CO1 Score |
|---------------------|-----------|
| Aditya Goel         | 1         |
| Anisha Chhanpadia   | 2         |
| Dhruv Singla        | 2         |
| Dorjee Phinjo Sona  | 2         |
| EENA CHAUDHARY      | 2         |
| Eshaan Chandra      | 2         |
| Hardik Rustagi      | 2         |
| Harsh Gupta         | 2         |
| Jiya Gera           | 2         |
| Keshav Gupta        | 1         |
| Luvisha Verma       | 2         |
| Mehal Raghav        | 2         |
| Neha Raju Shinde    | 2         |
| Priya Chadda        | 3         |
| Purnendu Vashishtha | 1         |
| Sagar Bista         | 2         |
| Shoryaveer Singh    | 1         |
| Yash Garg           | 1         |
| Sanchi Narang       | 3         |
| Cheshtha Narang     | 2         |
| Nishtha Arora       | 2         |
| Astha Jaiswal       | 1         |
| Kshitij Khera       | 2         |
| Hitansh Goel        | 1         |
| Sneha Singh         | 2         |
| Average             | 1.80      |





# **13. Student Learning Categories**

## **Learner Categories Summary**

| Learner Category  | Number of Students |
|-------------------|--------------------|
| Advanced Learners | 2                  |
| Medium Learners   | 16                 |
| Slow Learners     | 7                  |

## **Student Learning Classification**

| Student Name        | Category         | CO1 |
|---------------------|------------------|-----|
| Priya Chadda        | Advanced Learner | 3   |
| Sanchi Narang       | Advanced Learner | 3   |
| Anisha Chhanpadia   | Medium Learner   | 2   |
| Dhruv Singla        | Medium Learner   | 2   |
| Dorjee Phinjo Sona  | Medium Learner   | 2   |
| EENA CHAUDHARY      | Medium Learner   | 2   |
| Eshaan Chandra      | Medium Learner   | 2   |
| Hardik Rustagi      | Medium Learner   | 2   |
| Harsh Gupta         | Medium Learner   | 2   |
| Jiya Gera           | Medium Learner   | 2   |
| Luvisha Verma       | Medium Learner   | 2   |
| Mehal Raghav        | Medium Learner   | 2   |
| Neha Raju Shinde    | Medium Learner   | 2   |
| Sagar Bista         | Medium Learner   | 2   |
| Cheshtha Narang     | Medium Learner   | 2   |
| Nishtha Arora       | Medium Learner   | 2   |
| Kshitij Khera       | Medium Learner   | 2   |
| Sneha Singh         | Medium Learner   | 2   |
| Aditya Goel         | Slow Learner     | 1   |
| Keshav Gupta        | Slow Learner     | 1   |
| Purnendu Vashishtha | Slow Learner     | 1   |
| Shoryaveer Singh    | Slow Learner     | 1   |
| Yash Garg           | Slow Learner     | 1   |
| Astha Jaiswal       | Slow Learner     | 1   |
| Hitansh Goel        | Slow Learner     | 1   |

## 14. Actions taken for weak students

- dsfdsfdsfd
- dsffds

### **15. Student Feedback**

**Quantitative Feedback:** 

Average Rating: 3.00/5

**Qualitative Feedback:** 

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Course File (CSC2030) Sem: 4th

# **16. Faculty Course Review**

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Seminar/Case Studies (ABC1404) Sem: 5th



### **SCHOOL OF ENGINEERING & TECHNOLOGY**

### **COURSE FILE**

Program: Electronics and Computer Engineering Course Code: ABC1404 Course Title: Seminar/Case Studies Module Semester: 5th Session: 2024-25

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| 2.     | Vision, Mission of the University                                                                                                                                                                                 |
| 3.     | Graduate Attributes of the BMU Students                                                                                                                                                                           |
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| 24 | End Semester Question papers with sample solutions                                                                                                                                                                                  |
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| 26 | Faculty Course Review (if any, like Use of Innovative Pedagogies; Technology; Experiential Learning; Integration with the Vision and Mission of the University; Feedback; Course Outcome attainment for the next run of the course) |
| 27 | Any other additional information                                                                                                                                                                                                    |

## 1. Course Details

• Course Code: ABC1404

• 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 of the Program

Program Educational Objectives (PEO):

PEO 1 – Domain knowledge:

Exhibit strong knowledge of the management discipline in a global context.

PEO 2 – Informed Decision Making:

Demonstrate higher order critical thinking and problem-solving capabilities with an entrepreneurial mindset.

PEO 3 – Managerial Skills:

Be effective managers with good communication skills, high levels of emotional intelligence, and innovative thinking.

PEO 4 – Exhibit Leadership:

Possess ethical leadership qualities for effective management decisions.

Program Outcomes (PO):

PO 1 – Apply Business knowledge:

Gain in depth understanding of various management disciplines and apply the concepts for business decision making.

PO 2 – Diverse Perspective:

Integrate diversity and multidisciplinary perspectives in business decisions making.

PO 3 - Cognitive Skills:

Utilize quantitative and qualitative methods to investigate and solve complex business problems by planning and conducting research for Investigation with critical thinking and problem-solving skills.

PO 4 –Innovation and Entrepreneurship:

Apply relevant and creative frameworks across multiple disciplines to create innovative and entrepreneurial solutions.

PO5 – Lead empathetic and ethical leadership:

Demonstrate social responsibility, teamwork, life skills to lead organizations ethically.

PO6 – Effective Communication for Impact:

Communicate effectively across all levels and society at large.

### 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   | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 |
|----------|-----|-----|-----|-----|-----|-----|
| Outcomes |     |     |     |     |     |     |
| (CO)     |     |     |     |     |     |     |
| CO1      |     |     | 2   | 2   | 2   |     |
| CO2      |     |     |     |     |     |     |
| CO3      |     | 3   | 3   | 2   |     |     |

# 8. Course Syllabus

| Sr. No. | Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | СО | 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                                                                                                                                               | 1  | 1        |
|         | Print, and Transpose                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |          |
| 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<br>Changes, LCS, LIS, knapsack, Edit Distance, Graph basic,<br>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**

| Day    | Start Time | End Time | Duration<br>(hrs) |
|--------|------------|----------|-------------------|
| Monday | 9:00 AM    | 10:00 AM | 1                 |
| Monday | 9:00 AM    | 10:00 AM | 1                 |

### **Weekly Overview**

| Monday                                 | Tuesday  | Wednesday | Thursday | Friday   | Saturday | Sunday   |
|----------------------------------------|----------|-----------|----------|----------|----------|----------|
| 9:00 AM - 10:00<br>AM<br>ABC1404 (1hr) | No class | No class  | No class | No class | No class | No class |
| 9:00 AM - 10:00<br>AM<br>ABC1404 (1hr) |          |           |          |          |          |          |

# 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    |
| 11      | 220C2030011 | Luvisha Verma       | 240345    |
| 12      | 220C2030012 | Mehal Raghav        | 240346    |
| 13      | 220C2030013 | Neha Raju Shinde    | 240347    |
| 14      | 220C2030014 | Priya Chadda        | 240348    |
| 15      | 220C2030015 | Purnendu Vashishtha | 240349    |
| 16      | 220C2030016 | Sagar Bista         | 240350    |
| 17      | 220C2030017 | Shoryaveer Singh    | 240351    |
| 18      | 220C2030018 | Yash Garg           | 240352    |
| 19      | 220C2030019 | Sanchi Narang       | 240870    |
| 20      | 220C2030020 | Cheshtha Narang     | 240871    |
| 21      | 220C2030021 | Nishtha Arora       | 240909    |
| 22      | 220C2030022 | Astha Jaiswal       | 240794    |
| 23      | 220C2030023 | Kshitij Khera       | 240333    |
| 24      | 220C2030024 | Hitansh Goel        | 240943    |
| 25      | 220C2030025 | Sneha Singh         | 240963    |

# **19. Attendance Report**

| Sr. No. | Roll No     | Student Name        | Attendance  |
|---------|-------------|---------------------|-------------|
|         |             |                     | Out of(100) |
| 1       | 220C2030001 | Aditya Goel         | 75.00       |
| 2       | 220C2030002 | Anisha Chhanpadia   | 85.19       |
| 3       | 220C2030003 | Dhruv Singla        | 71.43       |
| 4       | 220C2030004 | Dorjee Phinjo Sona  | 89.29       |
| 5       | 220C2030005 | EENA CHAUDHARY      | 100.00      |
| 6       | 220C2030006 | Eshaan Chandra      | 85.71       |
| 7       | 220C2030007 | Hardik Rustagi      | 78.57       |
| 8       | 220C2030008 | Harsh Gupta         | 82.14       |
| 9       | 220C2030009 | Jiya Gera           | 92.86       |
| 10      | 220C2030010 | Keshav Gupta        | 75.00       |
| 11      | 220C2030011 | Luvisha Verma       | 92.86       |
| 12      | 220C2030012 | Mehal Raghav        | 81.48       |
| 13      | 220C2030013 | Neha Raju Shinde    | 89.29       |
| 14      | 220C2030014 | Priya Chadda        | 85.19       |
| 15      | 220C2030015 | Purnendu Vashishtha | 96.43       |
| 16      | 220C2030016 | Sagar Bista         | 96.43       |
| 17      | 220C2030017 | Shoryaveer Singh    | 60.71       |
| 18      | 220C2030018 | Yash Garg           | 71.43       |
| 19      | 220C2030019 | Sanchi Narang       | 96.43       |
| 20      | 220C2030020 | Cheshtha Narang     | 96.43       |
| 21      | 220C2030021 | Nishtha Arora       | 100.00      |
| 22      | 220C2030022 | Astha Jaiswal       | 42.86       |
| 23      | 220C2030023 | Kshitij Khera       | 78.57       |
| 24      | 220C2030024 | Hitansh Goel        | 82.14       |
| 25      | 220C2030025 | Sneha Singh         | 82.14       |

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

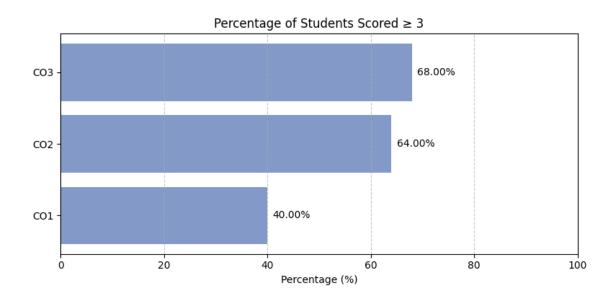
| Sr. | Roll No     | Student Name        | Assignment | End term    | Group        | Individual    | Mid  | Role | Total        |
|-----|-------------|---------------------|------------|-------------|--------------|---------------|------|------|--------------|
| No. |             |                     | Out        | examination | Presentation | Class         | Term | Play | Marks(100.0) |
|     |             |                     |            | Out         | Out          | Participation | Exam | Out  | Out          |
|     |             |                     |            |             |              | Out           | Out  |      |              |
| 1   | 220C2030001 | Aditya Goel         | 8.5        | 0.0         | 9.0          | 0.0           | 6.5  | 8.0  | 32.00        |
| 2   | 220C2030002 | Anisha Chhanpadia   | 8.5        | 21.0        | 9.0          | 9.0           | 10.5 | 8.0  | 66.00        |
| 3   | 220C2030003 | Dhruv Singla        | 8.5        | 24.0        | 9.0          | 1.0           | 6.0  | 8.0  | 56.50        |
| 4   | 220C2030004 | Dorjee Phinjo Sona  | 8.5        | 18.5        | 9.0          | 7.0           | 3.0  | 8.0  | 54.00        |
| 5   | 220C2030005 | EENA CHAUDHARY      | 9.0        | 29.0        | 9.0          | 8.5           | 8.0  | 8.0  | 71.50        |
| 6   | 220C2030006 | Eshaan Chandra      | 7.5        | 26.0        | 8.5          | 6.0           | 8.0  | 7.5  | 63.50        |
| 7   | 220C2030007 | Hardik Rustagi      | 9.0        | 21.0        | 8.5          | 7.5           | 4.5  | 7.5  | 58.00        |
| 8   | 220C2030008 | Harsh Gupta         | 8.0        | 20.0        | 7.5          | 0.0           | 7.5  | 8.0  | 51.00        |
| 9   | 220C2030009 | Jiya Gera           | 8.5        | 26.5        | 8.5          | 7.5           | 8.5  | 8.0  | 67.50        |
| 10  | 220C2030010 | Keshav Gupta        | 7.5        | 5.0         | 8.5          | 0.0           | 4.0  | 8.0  | 33.00        |
| 11  | 220C2030011 | Luvisha Verma       | 8.0        | 20.0        | 7.5          | 9.5           | 7.5  | 7.0  | 59.50        |
| 12  | 220C2030012 | Mehal Raghav        | 8.0        | 30.0        | 7.5          | 3.0           | 4.0  | 7.0  | 59.50        |
| 13  | 220C2030013 | Neha Raju Shinde    | 8.5        | 20.5        | 8.5          | 6.0           | 6.0  | 7.5  | 57.00        |
| 14  | 220C2030014 | Priya Chadda        | 9.0        | 34.0        | 8.5          | 6.5           | 16.0 | 8.0  | 82.00        |
| 15  | 220C2030015 | Purnendu Vashishtha | 8.0        | 11.5        | 8.0          | 6.5           | 8.0  | 7.0  | 49.00        |
| 16  | 220C2030016 | Sagar Bista         | 9.5        | 23.0        | 8.0          | 7.5           | 12.0 | 7.0  | 67.00        |
| 17  | 220C2030017 | Shoryaveer Singh    | 8.0        | 21.5        | 0.0          | 1.0           | 2.5  | 7.0  | 40.00        |
| 18  | 220C2030018 | Yash Garg           | 8.0        | 5.0         | 7.0          | 0.0           | 2.5  | 8.0  | 30.50        |
| 19  | 220C2030019 | Sanchi Narang       | 9.5        | 35.0        | 8.0          | 9.5           | 17.0 | 8.0  | 87.00        |
| 20  | 220C2030020 | Cheshtha Narang     | 7.5        | 33.0        | 9.0          | 9.5           | 8.0  | 8.0  | 75.00        |
| 21  | 220C2030021 | Nishtha Arora       | 8.5        | 18.5        | 7.5          | 8.5           | 17.5 | 8.0  | 68.50        |
| 22  | 220C2030022 | Astha Jaiswal       | 0.0        | 0.0         | 0.0          | 0.0           | 0.0  | 0.0  | 0.00         |
| 23  | 220C2030023 | Kshitij Khera       | 9.5        | 15.5        | 7.5          | 4.5           | 8.5  | 7.0  | 52.50        |
| 24  | 220C2030024 | Hitansh Goel        | 8.0        | 11.5        | 7.5          | 4.0           | 3.5  | 8.0  | 42.50        |
| 25  | 220C2030025 | Sneha Singh         | 8.0        | 26.5        | 8.0          | 5.5           | 9.5  | 8.0  | 65.50        |

## **12. CO Attainment Analysis**

## **CO Attainment Summary**

| Course Outcomes                | CO1    | CO2    | CO3    |
|--------------------------------|--------|--------|--------|
| Weights                        | 55.00% | 21.00% | 24.00% |
| No. of students scored greater | 10     | 16     | 17     |
| than 3                         |        |        |        |
| Percentage of students scored  | 40.00% | 64.00% | 68.00% |
| greater than 3                 |        |        |        |
| Attainment Level               | 2      | 2      | 3      |
| Overall Course Attainment      |        | 2.3333 |        |

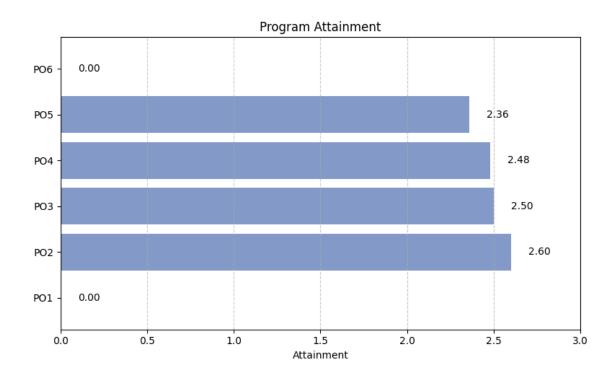
Percentage of Students Scored ≥ 3



## **Program Attainment**

| Program<br>Outcomes   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  |
|-----------------------|------|------|------|------|------|------|
| Program<br>Attainment | 0.00 | 2.60 | 2.50 | 2.48 | 2.36 | 0.00 |

**Program Attainment Chart** 



## **Student-wise CO Achievement**

| NAME                | CO1 Score | CO2 Score | CO3 Score |
|---------------------|-----------|-----------|-----------|
| Aditya Goel         | 2         | 1         | 1         |
| Anisha Chhanpadia   | 3         | 3         | 3         |
| Dhruv Singla        | 2         | 3         | 3         |
| Dorjee Phinjo Sona  | 2         | 3         | 3         |
| EENA CHAUDHARY      | 3         | 3         | 3         |
| Eshaan Chandra      | 3         | 3         | 3         |
| Hardik Rustagi      | 2         | 3         | 3         |
| Harsh Gupta         | 2         | 2         | 2         |
| Jiya Gera           | 3         | 3         | 3         |
| Keshav Gupta        | 2         | 2         | 2         |
| Luvisha Verma       | 2         | 3         | 3         |
| Mehal Raghav        | 2         | 3         | 3         |
| Neha Raju Shinde    | 2         | 3         | 3         |
| Priya Chadda        | 3         | 3         | 3         |
| Purnendu Vashishtha | 2         | 2         | 2         |
| Sagar Bista         | 3         | 3         | 3         |
| Shoryaveer Singh    | 2         | 2         | 2         |
| Yash Garg           | 2         | 1         | 2         |
| Sanchi Narang       | 3         | 3         | 3         |
| Cheshtha Narang     | 3         | 3         | 3         |
| Nishtha Arora       | 3         | 3         | 3         |
| Astha Jaiswal       | 1         | 1         | 1         |
| Kshitij Khera       | 2         | 2         | 3         |
| Hitansh Goel        | 2         | 2         | 2         |
| Sneha Singh         | 3         | 3         | 3         |
| Average             | 2.36      | 2.52      | 2.60      |

### **Course Outcome Attainment**



## **13. Student Learning Categories**

## **Learner Categories Summary**

| Learner Category  | Number of Students |
|-------------------|--------------------|
| Advanced Learners | 10                 |
| Medium Learners   | 14                 |
| Slow Learners     | 1                  |

## **Student Learning Classification**

| Student Name        | Category         | CO1 | CO2 | CO3 |
|---------------------|------------------|-----|-----|-----|
| Anisha Chhanpadia   | Advanced Learner | 3   | 3   | 3   |
| EENA CHAUDHARY      | Advanced Learner | 3   | 3   | 3   |
| Eshaan Chandra      | Advanced Learner | 3   | 3   | 3   |
| Jiya Gera           | Advanced Learner | 3   | 3   | 3   |
| Priya Chadda        | Advanced Learner | 3   | 3   | 3   |
| Sagar Bista         | Advanced Learner | 3   | 3   | 3   |
| Sanchi Narang       | Advanced Learner | 3   | 3   | 3   |
| Cheshtha Narang     | Advanced Learner | 3   | 3   | 3   |
| Nishtha Arora       | Advanced Learner | 3   | 3   | 3   |
| Sneha Singh         | Advanced Learner | 3   | 3   | 3   |
| Aditya Goel         | Medium Learner   | 2   | 1   | 1   |
| Dhruv Singla        | Medium Learner   | 2   | 3   | 3   |
| Dorjee Phinjo Sona  | Medium Learner   | 2   | 3   | 3   |
| Hardik Rustagi      | Medium Learner   | 2   | 3   | 3   |
| Harsh Gupta         | Medium Learner   | 2   | 2   | 2   |
| Keshav Gupta        | Medium Learner   | 2   | 2   | 2   |
| Luvisha Verma       | Medium Learner   | 2   | 3   | 3   |
| Mehal Raghav        | Medium Learner   | 2   | 3   | 3   |
| Neha Raju Shinde    | Medium Learner   | 2   | 3   | 3   |
| Purnendu Vashishtha | Medium Learner   | 2   | 2   | 2   |
| Shoryaveer Singh    | Medium Learner   | 2   | 2   | 2   |
| Yash Garg           | Medium Learner   | 2   | 1   | 2   |
| Kshitij Khera       | Medium Learner   | 2   | 2   | 3   |
| Hitansh Goel        | Medium Learner   | 2   | 2   | 2   |
| Astha Jaiswal       | Slow Learner     | 1   | 1   | 1   |

## 14. Actions taken for weak students

• we beat them

## **15. Student Feedback**

**Quantitative Feedback:** 

Average Rating: 4.37/5

**Qualitative Feedback:** 

course was good

## **16. Faculty Course Review**

lol this field never was suppose to even work how did it work good question!!!!!

Seminar/Case Studies (ABC1404) Sem: 5th



### **SCHOOL OF ENGINEERING & TECHNOLOGY**

## **COURSE FILE**

Program: Electronics and Computer Engineering Course Code: ABC1404 Course Title: Seminar/Case Studies Module Semester: 5th Session: 2024-25

## <u>Index</u>

| S. No. | Topics                                                                                                                                                                                                            |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.     | Course Details: Course-Code; Course Title; Semester/Term/Module; Year                                                                                                                                             |
| 2.     | Vision, Mission of the University                                                                                                                                                                                 |
| 3.     | Graduate Attributes of the BMU Students                                                                                                                                                                           |
| 4.     | Vision, Mission of the School                                                                                                                                                                                     |
| 5.     | PEOs and POs & PSOs of the Program                                                                                                                                                                                |
| 6      | Course Description and its objectives                                                                                                                                                                             |
| 7      | Course Outcomes and CO-PO Mapping                                                                                                                                                                                 |
| 8      | Course Syllabus: (including Course Content with Module-wise teaching hours allocated; Readings, Activities, Teaching Strategy, and Module mapped to COs, Text Book(s), Reference Books, Other learning resources) |
| 9      | Detailed Session wise Plan                                                                                                                                                                                        |
| 10     | Weekly Timetable                                                                                                                                                                                                  |
| 11     | Registered Students List                                                                                                                                                                                          |
| 12     | Details of Internal Assessments; weightages, due dates, mapping to CO                                                                                                                                             |
| 13     | Mid Semester Question papers with sample solutions                                                                                                                                                                |
| 14     | Sample Evaluated Internal Submissions and Identification of weak students.                                                                                                                                        |
| 15     | Reflections from the Mid-term semester feedback received, and interventions made to enhance the student learning and continuous improvement in teaching and learning strategies.                                  |

| 16 | Interventions made for slow performers and advanced learners, highlighting initiatives taken for student improvements (retest, resubmissions etc.)                                                                                  |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17 | End Semester Question papers with sample solutions                                                                                                                                                                                  |
| 18 | Detail of Marks in all components up to the End Semester                                                                                                                                                                            |
| 19 | Attendance Report                                                                                                                                                                                                                   |
| 20 | Final record of Results (including the grades)                                                                                                                                                                                      |
| 21 | Analyzing Direct Feedback received on Course Outcomes                                                                                                                                                                               |
| 22 | CO Attainment Measurement Analysis                                                                                                                                                                                                  |
| 23 | Interventions made for slow performers and advanced learners, highlighting initiatives taken for student improvements (retest, resubmissions etc.)                                                                                  |
| 24 | End Semester Question papers with sample solutions                                                                                                                                                                                  |
| 25 | Feedback (class committee or otherwise) and corrective actions (if any)                                                                                                                                                             |
| 26 | Faculty Course Review (if any, like Use of Innovative Pedagogies; Technology; Experiential Learning; Integration with the Vision and Mission of the University; Feedback; Course Outcome attainment for the next run of the course) |
| 27 | Any other additional information                                                                                                                                                                                                    |

## 1. Course Details

• Course Code: ABC1404

• 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 of the Program

Program Educational Objectives (PEO):

PEO 1 – Domain knowledge:

Exhibit strong knowledge of the management discipline in a global context.

PEO 2 – Informed Decision Making:

Demonstrate higher order critical thinking and problem-solving capabilities with an entrepreneurial mindset.

PEO 3 – Managerial Skills:

Be effective managers with good communication skills, high levels of emotional intelligence, and innovative thinking.

PEO 4 – Exhibit Leadership:

Possess ethical leadership qualities for effective management decisions.

Program Outcomes (PO):

PO 1 – Apply Business knowledge:

Gain in depth understanding of various management disciplines and apply the concepts for business decision making.

PO 2 – Diverse Perspective:

Integrate diversity and multidisciplinary perspectives in business decisions making.

PO 3 - Cognitive Skills:

Utilize quantitative and qualitative methods to investigate and solve complex business problems by planning and conducting research for Investigation with critical thinking and problem-solving skills.

PO 4 –Innovation and Entrepreneurship:

Apply relevant and creative frameworks across multiple disciplines to create innovative and entrepreneurial solutions.

PO5 – Lead empathetic and ethical leadership:

Demonstrate social responsibility, teamwork, life skills to lead organizations ethically.

PO6 – Effective Communication for Impact:

Communicate effectively across all levels and society at large.

### 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   | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 |
|----------|-----|-----|-----|-----|-----|-----|
| Outcomes |     |     |     |     |     |     |
| (CO)     |     |     |     |     |     |     |
| CO1      |     |     | 2   | 2   | 2   |     |
| CO2      |     |     |     |     |     |     |
| CO3      |     | 3   | 3   | 2   |     |     |

# 8. Course Syllabus

| Sr. No. | Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | СО | 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                                                                                                                                               | 1  | 1        |
|         | Print, and Transpose                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |          |
| 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<br>Changes, LCS, LIS, knapsack, Edit Distance, Graph basic,<br>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**

| Day    | Start Time | End Time | Duration<br>(hrs) |
|--------|------------|----------|-------------------|
| Monday | 9:00 AM    | 10:00 AM | 1                 |
| Monday | 9:00 AM    | 10:00 AM | 1                 |

### **Weekly Overview**

| Monday                                 | Tuesday  | Wednesday | Thursday | Friday   | Saturday | Sunday   |
|----------------------------------------|----------|-----------|----------|----------|----------|----------|
| 9:00 AM - 10:00<br>AM<br>ABC1404 (1hr) | No class | No class  | No class | No class | No class | No class |
| 9:00 AM - 10:00<br>AM<br>ABC1404 (1hr) |          |           |          |          |          |          |

# 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    |
| 11      | 220C2030011 | Luvisha Verma       | 240345    |
| 12      | 220C2030012 | Mehal Raghav        | 240346    |
| 13      | 220C2030013 | Neha Raju Shinde    | 240347    |
| 14      | 220C2030014 | Priya Chadda        | 240348    |
| 15      | 220C2030015 | Purnendu Vashishtha | 240349    |
| 16      | 220C2030016 | Sagar Bista         | 240350    |
| 17      | 220C2030017 | Shoryaveer Singh    | 240351    |
| 18      | 220C2030018 | Yash Garg           | 240352    |
| 19      | 220C2030019 | Sanchi Narang       | 240870    |
| 20      | 220C2030020 | Cheshtha Narang     | 240871    |
| 21      | 220C2030021 | Nishtha Arora       | 240909    |
| 22      | 220C2030022 | Astha Jaiswal       | 240794    |
| 23      | 220C2030023 | Kshitij Khera       | 240333    |
| 24      | 220C2030024 | Hitansh Goel        | 240943    |
| 25      | 220C2030025 | Sneha Singh         | 240963    |

# **19. Attendance Report**

| Sr. No. | Roll No     | Student Name        | Attendance  |
|---------|-------------|---------------------|-------------|
|         |             |                     | Out of(100) |
| 1       | 220C2030001 | Aditya Goel         | 75.00       |
| 2       | 220C2030002 | Anisha Chhanpadia   | 85.19       |
| 3       | 220C2030003 | Dhruv Singla        | 71.43       |
| 4       | 220C2030004 | Dorjee Phinjo Sona  | 89.29       |
| 5       | 220C2030005 | EENA CHAUDHARY      | 100.00      |
| 6       | 220C2030006 | Eshaan Chandra      | 85.71       |
| 7       | 220C2030007 | Hardik Rustagi      | 78.57       |
| 8       | 220C2030008 | Harsh Gupta         | 82.14       |
| 9       | 220C2030009 | Jiya Gera           | 92.86       |
| 10      | 220C2030010 | Keshav Gupta        | 75.00       |
| 11      | 220C2030011 | Luvisha Verma       | 92.86       |
| 12      | 220C2030012 | Mehal Raghav        | 81.48       |
| 13      | 220C2030013 | Neha Raju Shinde    | 89.29       |
| 14      | 220C2030014 | Priya Chadda        | 85.19       |
| 15      | 220C2030015 | Purnendu Vashishtha | 96.43       |
| 16      | 220C2030016 | Sagar Bista         | 96.43       |
| 17      | 220C2030017 | Shoryaveer Singh    | 60.71       |
| 18      | 220C2030018 | Yash Garg           | 71.43       |
| 19      | 220C2030019 | Sanchi Narang       | 96.43       |
| 20      | 220C2030020 | Cheshtha Narang     | 96.43       |
| 21      | 220C2030021 | Nishtha Arora       | 100.00      |
| 22      | 220C2030022 | Astha Jaiswal       | 42.86       |
| 23      | 220C2030023 | Kshitij Khera       | 78.57       |
| 24      | 220C2030024 | Hitansh Goel        | 82.14       |
| 25      | 220C2030025 | Sneha Singh         | 82.14       |

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

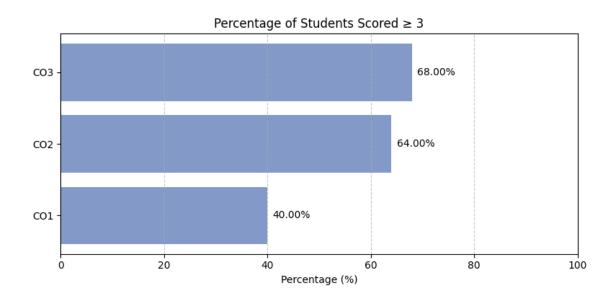
| Sr. | Roll No     | Student Name        | Assignment | End term    | Group        | Individual    | Mid  | Role | Total        |
|-----|-------------|---------------------|------------|-------------|--------------|---------------|------|------|--------------|
| No. |             |                     | Out        | examination | Presentation | Class         | Term | Play | Marks(100.0) |
|     |             |                     |            | Out         | Out          | Participation | Exam | Out  | Out          |
|     |             |                     |            |             |              | Out           | Out  |      |              |
| 1   | 220C2030001 | Aditya Goel         | 8.5        | 0.0         | 9.0          | 0.0           | 6.5  | 8.0  | 32.00        |
| 2   | 220C2030002 | Anisha Chhanpadia   | 8.5        | 21.0        | 9.0          | 9.0           | 10.5 | 8.0  | 66.00        |
| 3   | 220C2030003 | Dhruv Singla        | 8.5        | 24.0        | 9.0          | 1.0           | 6.0  | 8.0  | 56.50        |
| 4   | 220C2030004 | Dorjee Phinjo Sona  | 8.5        | 18.5        | 9.0          | 7.0           | 3.0  | 8.0  | 54.00        |
| 5   | 220C2030005 | EENA CHAUDHARY      | 9.0        | 29.0        | 9.0          | 8.5           | 8.0  | 8.0  | 71.50        |
| 6   | 220C2030006 | Eshaan Chandra      | 7.5        | 26.0        | 8.5          | 6.0           | 8.0  | 7.5  | 63.50        |
| 7   | 220C2030007 | Hardik Rustagi      | 9.0        | 21.0        | 8.5          | 7.5           | 4.5  | 7.5  | 58.00        |
| 8   | 220C2030008 | Harsh Gupta         | 8.0        | 20.0        | 7.5          | 0.0           | 7.5  | 8.0  | 51.00        |
| 9   | 220C2030009 | Jiya Gera           | 8.5        | 26.5        | 8.5          | 7.5           | 8.5  | 8.0  | 67.50        |
| 10  | 220C2030010 | Keshav Gupta        | 7.5        | 5.0         | 8.5          | 0.0           | 4.0  | 8.0  | 33.00        |
| 11  | 220C2030011 | Luvisha Verma       | 8.0        | 20.0        | 7.5          | 9.5           | 7.5  | 7.0  | 59.50        |
| 12  | 220C2030012 | Mehal Raghav        | 8.0        | 30.0        | 7.5          | 3.0           | 4.0  | 7.0  | 59.50        |
| 13  | 220C2030013 | Neha Raju Shinde    | 8.5        | 20.5        | 8.5          | 6.0           | 6.0  | 7.5  | 57.00        |
| 14  | 220C2030014 | Priya Chadda        | 9.0        | 34.0        | 8.5          | 6.5           | 16.0 | 8.0  | 82.00        |
| 15  | 220C2030015 | Purnendu Vashishtha | 8.0        | 11.5        | 8.0          | 6.5           | 8.0  | 7.0  | 49.00        |
| 16  | 220C2030016 | Sagar Bista         | 9.5        | 23.0        | 8.0          | 7.5           | 12.0 | 7.0  | 67.00        |
| 17  | 220C2030017 | Shoryaveer Singh    | 8.0        | 21.5        | 0.0          | 1.0           | 2.5  | 7.0  | 40.00        |
| 18  | 220C2030018 | Yash Garg           | 8.0        | 5.0         | 7.0          | 0.0           | 2.5  | 8.0  | 30.50        |
| 19  | 220C2030019 | Sanchi Narang       | 9.5        | 35.0        | 8.0          | 9.5           | 17.0 | 8.0  | 87.00        |
| 20  | 220C2030020 | Cheshtha Narang     | 7.5        | 33.0        | 9.0          | 9.5           | 8.0  | 8.0  | 75.00        |
| 21  | 220C2030021 | Nishtha Arora       | 8.5        | 18.5        | 7.5          | 8.5           | 17.5 | 8.0  | 68.50        |
| 22  | 220C2030022 | Astha Jaiswal       | 0.0        | 0.0         | 0.0          | 0.0           | 0.0  | 0.0  | 0.00         |
| 23  | 220C2030023 | Kshitij Khera       | 9.5        | 15.5        | 7.5          | 4.5           | 8.5  | 7.0  | 52.50        |
| 24  | 220C2030024 | Hitansh Goel        | 8.0        | 11.5        | 7.5          | 4.0           | 3.5  | 8.0  | 42.50        |
| 25  | 220C2030025 | Sneha Singh         | 8.0        | 26.5        | 8.0          | 5.5           | 9.5  | 8.0  | 65.50        |

## **12. CO Attainment Analysis**

## **CO Attainment Summary**

| Course Outcomes                | CO1    | CO2    | CO3    |
|--------------------------------|--------|--------|--------|
| Weights                        | 55.00% | 21.00% | 24.00% |
| No. of students scored greater | 10     | 16     | 17     |
| than 3                         |        |        |        |
| Percentage of students scored  | 40.00% | 64.00% | 68.00% |
| greater than 3                 |        |        |        |
| Attainment Level               | 2      | 2      | 3      |
| Overall Course Attainment      | 2.3333 |        |        |

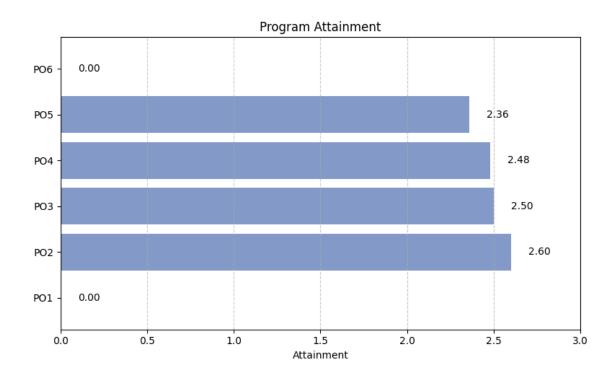
Percentage of Students Scored ≥ 3



## **Program Attainment**

| Program<br>Outcomes   | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  |
|-----------------------|------|------|------|------|------|------|
| Program<br>Attainment | 0.00 | 2.60 | 2.50 | 2.48 | 2.36 | 0.00 |

**Program Attainment Chart** 



## **Student-wise CO Achievement**

| NAME                | CO1 Score | CO2 Score | CO3 Score |
|---------------------|-----------|-----------|-----------|
| Aditya Goel         | 2         | 1         | 1         |
| Anisha Chhanpadia   | 3         | 3         | 3         |
| Dhruv Singla        | 2         | 3         | 3         |
| Dorjee Phinjo Sona  | 2         | 3         | 3         |
| EENA CHAUDHARY      | 3         | 3         | 3         |
| Eshaan Chandra      | 3         | 3         | 3         |
| Hardik Rustagi      | 2         | 3         | 3         |
| Harsh Gupta         | 2         | 2         | 2         |
| Jiya Gera           | 3         | 3         | 3         |
| Keshav Gupta        | 2         | 2         | 2         |
| Luvisha Verma       | 2         | 3         | 3         |
| Mehal Raghav        | 2         | 3         | 3         |
| Neha Raju Shinde    | 2         | 3         | 3         |
| Priya Chadda        | 3         | 3         | 3         |
| Purnendu Vashishtha | 2         | 2         | 2         |
| Sagar Bista         | 3         | 3         | 3         |
| Shoryaveer Singh    | 2         | 2         | 2         |
| Yash Garg           | 2         | 1         | 2         |
| Sanchi Narang       | 3         | 3         | 3         |
| Cheshtha Narang     | 3         | 3         | 3         |
| Nishtha Arora       | 3         | 3         | 3         |
| Astha Jaiswal       | 1         | 1         | 1         |
| Kshitij Khera       | 2         | 2         | 3         |
| Hitansh Goel        | 2         | 2         | 2         |
| Sneha Singh         | 3         | 3         | 3         |
| Average             | 2.36      | 2.52      | 2.60      |

### **Course Outcome Attainment**



## **13. Student Learning Categories**

## **Learner Categories Summary**

| Learner Category  | Number of Students |
|-------------------|--------------------|
| Advanced Learners | 10                 |
| Medium Learners   | 14                 |
| Slow Learners     | 1                  |

## **Student Learning Classification**

| Student Name        | Category         | CO1 | CO2 | CO3 |
|---------------------|------------------|-----|-----|-----|
| Anisha Chhanpadia   | Advanced Learner | 3   | 3   | 3   |
| EENA CHAUDHARY      | Advanced Learner | 3   | 3   | 3   |
| Eshaan Chandra      | Advanced Learner | 3   | 3   | 3   |
| Jiya Gera           | Advanced Learner | 3   | 3   | 3   |
| Priya Chadda        | Advanced Learner | 3   | 3   | 3   |
| Sagar Bista         | Advanced Learner | 3   | 3   | 3   |
| Sanchi Narang       | Advanced Learner | 3   | 3   | 3   |
| Cheshtha Narang     | Advanced Learner | 3   | 3   | 3   |
| Nishtha Arora       | Advanced Learner | 3   | 3   | 3   |
| Sneha Singh         | Advanced Learner | 3   | 3   | 3   |
| Aditya Goel         | Medium Learner   | 2   | 1   | 1   |
| Dhruv Singla        | Medium Learner   | 2   | 3   | 3   |
| Dorjee Phinjo Sona  | Medium Learner   | 2   | 3   | 3   |
| Hardik Rustagi      | Medium Learner   | 2   | 3   | 3   |
| Harsh Gupta         | Medium Learner   | 2   | 2   | 2   |
| Keshav Gupta        | Medium Learner   | 2   | 2   | 2   |
| Luvisha Verma       | Medium Learner   | 2   | 3   | 3   |
| Mehal Raghav        | Medium Learner   | 2   | 3   | 3   |
| Neha Raju Shinde    | Medium Learner   | 2   | 3   | 3   |
| Purnendu Vashishtha | Medium Learner   | 2   | 2   | 2   |
| Shoryaveer Singh    | Medium Learner   | 2   | 2   | 2   |
| Yash Garg           | Medium Learner   | 2   | 1   | 2   |
| Kshitij Khera       | Medium Learner   | 2   | 2   | 3   |
| Hitansh Goel        | Medium Learner   | 2   | 2   | 2   |
| Astha Jaiswal       | Slow Learner     | 1   | 1   | 1   |

## 14. Actions taken for weak students

• we beat them

## **15. Student Feedback**

**Quantitative Feedback:** 

Average Rating: 4.37/5

**Qualitative Feedback:** 

course was good

## **16. Faculty Course Review**

lol this field never was suppose to even work how did it work good question!!!!!

## Pratyut

Plot Number 15, Shanti Nagar, P.O. Sarojini Nagar, Lucknow, Uttar Pradesh - 226008 🤳 9695570887 💌 pratyut987@gmail.com 🛗 linkedin.com/in/pratyut-/ 🕥 github.com/PratyutCS

#### 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

- Computer Networks
- Security Audit
- Blockchain

- Data Structures
- Database Management
- OOP using C++
- 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