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CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY

Managed By St. Thomas Mission, Bhilai

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METRIC No. 2.3.1

**STUDENT CENTRIC METHODS, SUCH AS
EXPERIENTIAL LEARNING, PARTICIPATIVE
LEARNING AND PROBLEM SOLVING
METHODOLOGIES ARE USED FOR ENHANCING
LEARNING EXPERIENCES**

Criterion 2

QIM 2.3.1 Student centric methods



2.3.1 Student centric methods, such as experiential learning, participative learning and problem-solving methodologies are used for enhancing learning experiences using ICT tools

S. No	Description
1	Student centric methods, such as experiential learning, participative learning and problem-solving methodologies
2	Teachers use ICT enabled tools for effective teaching-learning process

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S. No	Description
1	Student Centric Method Policy
2	Copy of Laboratory Practices
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6	Copy of Industrial training/Internship and Industrial Field visits
7	Copy of Alumni Interaction
8	Copy of Integrated Tools

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Run By St. Thomas Malankara Orthodox Syrian Church Mission, Bhilai, Dist.-Durg (C.G.) Pin : 490026

Estd. 1998, Reg. No. M.P.8400/24.10.79

Approved by All India Council for Technical Education (AICTE), New Delhi and Affiliated to CSVTU, Bhilai (C.G.)



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Date: 04/07/2018

STUDENT CENTRIC LEARNING POLICY

Preamble

Student-centered learning is a transformative educational approach that tailors teaching methods and curricula to meet individual students' diverse needs, interests, and backgrounds. Traditional education relied on standardized models, where teachers played a central role, disseminating information in a uniform manner and evaluating students through tests. However, this approach is now viewed as limited in its benefits to students.

In response, educational institutions, including Christian College of Engineering and Technology, Bhilai, are shifting towards student-centric models. These models recognize that students learn best when they can progress at their own pace and have access to a variety of teaching styles and formats. This personalized approach acknowledges that each student is unique, fostering a learning environment where their requirements come first. It involves modifying assignments, instructional methods, and even how students are grouped, aiming to create a more engaging and effective learning experience.

Research supports this shift, indicating that student achievement improves significantly when education is personalized. Embracing student-centered learning not only enhances academic performance but also contributes to the holistic development of students. Christian College of Engineering and Technology, Bhilai is committed to this approach, ensuring a well-rounded education that prioritizes the individual needs of students and promotes their overall growth and development.

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Continuation Sheet

The conceptual framework for Student Centric Learning

The Institute believes in the following design principles for student-centered learning:

- **Personalized Learning:** Acknowledging diverse student engagement styles and locations, personalized learning tailors tasks to individual needs. It involves targeted, formative assessments of existing skills and knowledge, addressing students' unique requirements and interests.
- **Competency-Based Learning:** Progression is based on mastery, not classroom hours. Students advance when they demonstrate a thorough understanding of the content, emphasizing the importance of mastering skills and knowledge over time constraints.
- **Learning Happens Anytime, Anywhere:** Breaking traditional boundaries, learning extends beyond lectures and sessions. The Institute fosters a permeable learning environment, allowing education to occur outside classroom confines.
- **Students Take Ownership:** Student-centered learning empowers students, involving them in their own success. Their interests and skills are integrated into the learning process, fostering motivation. Students actively support each other's progress and celebrate achievements, creating a collaborative and supportive learning community.

In a student-centered education model, teachers play pivotal roles that foster active learning and critical thinking among students:

Role 1: Modeling Thinking/Processing Skills

Teachers must externally process their thoughts, experiences, and problem-solving methods to bridge the gap between their understanding and that of the students. Visual tools, analogies, and metaphors aid in conveying complex ideas effectively.

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Continuation Sheet

Role 2: Knowing Cognitive Goals

Teachers should be aware of the cognitive levels required for various tasks and share this insight with students. Understanding the complexity of assignments enhances students' commitment and engagement.

Role 3: Developing Facilitating Questions

Teachers craft questions that prompt students to gather, sort, organize, and interpret information. These questions guide students' learning process, encouraging active engagement with the material.

Role 4: Using Visual Tools

Visual aids, such as mind maps, help students visualize connections between concepts, emphasizing learning as a continuous process. State-of-the-art presentation tools are crucial in modern classrooms.

Role 5: Providing Group-Learning Settings

Peer-learning environments promote positive interdependence, individual accountability, and social skills. In-depth involvement and extensive student participation enhance the effectiveness of group learning.

Role 6: Using Analogies and Metaphors

Encouraging students to create their own metaphors fosters a deeper understanding of new concepts, stimulating creative thinking and conceptualization skills.

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Continuation Sheet

Role - Providing Non-Threatening Dialogue

Creating a safe space for open dialogue, often through tools like discovery sheets, encourages students to voice opinions and concerns. This exchange transforms the classroom into a community where ideas are valued and shared, fostering a collaborative learning atmosphere.

Through these roles, teachers facilitate an enriching, student-centric educational experience, promoting active learning and knowledge retention.

The Department should adopt the following strategies in varying degrees to make learning more students-centric and ensure the holistic development of the students:

Summer internship - Internships serve as a bridge between classroom learning and practical application. They provide students with valuable experience, new skills, and real-world insights. Internships expand knowledge, build professional networks, and offer hands-on training. The objective of student training programs is to provide practical exposure to specific domains and industries, enhancing students' overall understanding and employability..

Industry visits: Industrial visits are integral to education, offering students a firsthand look at company operations and real-world challenges. These visits enhance functional awareness, introduce students to fascinating technologies, and open doors to internship and placement opportunities. By immersing students in industrial realities, these experiences bridge the gap between academia and the professional world..

Assessment and Feedback & Action Taken

The department should create assessment tools for its activities and gather student feedback on perceptions and practices of student-centered learning. Conducting alignment or gap analysis will help map the impacts accurately. Analyzing feedback, a comprehensive report should be submitted to the Dean (Academics) & IQAC. Based on this report, measures can be devised to enhance student-centered learning activities institution-wide.

Soren
Dr. Dipali Soren
Principal

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Experiential Learning:

The institution offers experiential learning for students with the following approaches-

Laboratory Sessions: Laboratory sessions are conducted for better understanding of the theoretical concepts.



MECHANICAL WORKSHOP



MECHANICAL ENGINEERING LAB

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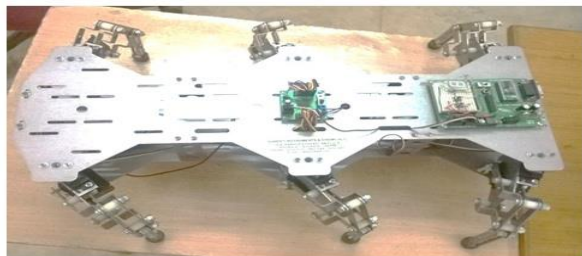
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ROBOTICS LAB



MATERIAL TESTING LAB

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DYNAMICS OF MACHINES LAB



COMPUTER AIDED MACHINING LAB

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SAMPLE LABORATORY MANUAL

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CHRISTIAN COLLEGE OF ENGG. AND TECHNOLOGY, BHILAI

LAB RECORD

OF

DYNAMICS OF MACHINE LAB



DEPARTMENT OF MECHANICAL ENGINEERING

NAME OF STUDENT _____

SEMESTER _____

BATCH _____

ROLL NO. _____

ACADEMIC SESSION _____

CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY
Kailash Nagar, Near Industrial Estate, Bhilai, Distt.-Durg, C.G.
Ph.No. : 0788 2286662/3/4, Fax. No. 0788 2285266
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PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design / development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the Engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments.
12. **Life- long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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Course Objectives:

The overall objective of this course is to impart an understanding of techniques for dynamic analysis of machines and their components

Course Outcomes:

On successful completion of the course, the student will be able to:

1. Analyze the vibration parameters of various systems.
2. Analyze gyroscopic parameters.
3. Analyze various types of governors.
4. Find the critical speed of different diameters of shafts.
5. Analyze the effects of unbalance in machine and methods to reduce/eliminate these effects.

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Dynamics of Machine Lab**Semester: B Tech 5th****Code: C037522(037)****LIST OF EXPERIMENTS (PRESCRIBED BY C.S.V.T.U.)**

Exp.No.	EXPERIMENTS (Minimum 10 Experiments needs to be performed)
1	To find out the oscillations of simple pendulum with universal vibration apparatus.
2	To find out the oscillations of Compound pendulum with universal vibration apparatus.
3	To find out the radius of gyration of bi-filler suspension with universal vibration apparatus.
4	To find out undamped torsional vibrations of single rotor system with universal vibration apparatus.
5	To find out the frequency of damped torsional vibration of single rotor system with universal vibration apparatus
6	To measure the frequency of torsional vibrations of single rotor system with universal vibration apparatus.
7	To measure the frequency of torsional vibrations of double rotor system with universal vibration apparatus.
8	To find out free vibration of helical coiled spring with universal vibration apparatus.
9	To study forced damped vibration of a spring mass system and simple supported beam with universal vibration apparatus
10	To find out the Gyroscopic couple and prove the Gyroscopic law with Gyroscope apparatus.
11	To find out the Power and effort of Proel, Porter & Hartnell Governor with Governor Apparatus
12	To find out the critical speed for different diameters of shaft by whirling of shaft apparatus.
13	To verify the static and dynamic balancing for different planes and masses by balancing apparatus

MECHANICAL ENGINEERING DEPARTMENT**Criterion 2****QIM 2.3.1 Student centric methods**



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DYNAMICS OF MACHINE LAB

5th SEM. MECHANICAL

LIST OF EXPERIMENTS

Sl. NO.	NAME OF EXPERIMENTS	PAGE NO.	PERFORMED ON	REMARKS
1.	To find out the oscillations of simple pendulum with universal vibration apparatus.			
2.	To find out the oscillations of Compound pendulum with universal vibration apparatus.			
3.	To determine the radius of gyration of a body using bi-filler suspension.			
4.	To measure the frequency of torsional vibrations of single rotor system with universal vibration apparatus.			
5.	To measure the frequency of torsional vibrations of double rotor system with universal vibration apparatus.			
6.	To find out free vibration of helical coiled spring with universal vibration apparatus.			
7.	To find out the gyroscopic couple and prove that gyroscopic law with Gyroscope apparatus.			
8.	To find out the power and effort of Proell, Porter & Hartnell governor with governor apparatus.			
9.	To find out the critical speed for different diameters of shaft by whirling of shaft apparatus.			
10.	To verify the static and dynamic balancing for different planes and masses by balancing apparatus.			

Signature of Teacher

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EXPERIMENT No. - 1

AIM:

To find out the oscillations of simple pendulum with universal vibration apparatus.

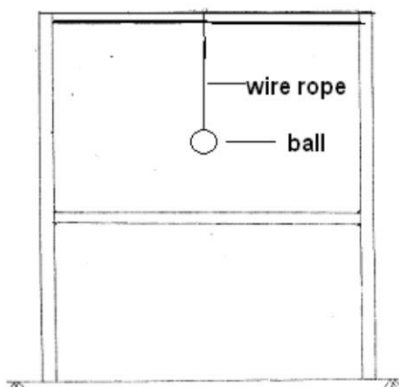
APPARATUS:

The unit is as shown in figure suitably fitted to the sturdy frame and following accessories are attached to it.

- Oscillating pendulum

Supporting apparatus to be used:

- Stop watch
- Measuring tape



simple pendulum

PROCEDURE:

Fix the balls with nylon ropes into the gripping chucks provided at the top beam of the frame & adjust the balls to suitable length. Measure the length of pendulum as shown. Oscillate the pendulum & measure the time required for 10 oscillations, repeat the procedure by changing the ball & changing the length.



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OBSERVATION:

S.No.	Ball size (diameter)	Length (cms)	Time for 10 oscillations t	T_{expt} t/n	T_{th}

CALCULATIONS:



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CONCLUSION:

Time period of simple pendulum is proportional to square root of length L .

GRAPH

Plot a graph of T^2 Vs. L .

VIVA QUESTION:

1. What is the difference between linear frequency & circular frequency of vibration?
2. What do you mean by time period in vibration?
3. What is longitudinal vibration?
4. What do you mean by free vibration?
5. Derive the equation of motion for simple pendulum in free vibration?

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EXPERIMENT No.-2

AIM:

To find out the oscillations of Compound pendulum with universal vibration apparatus.

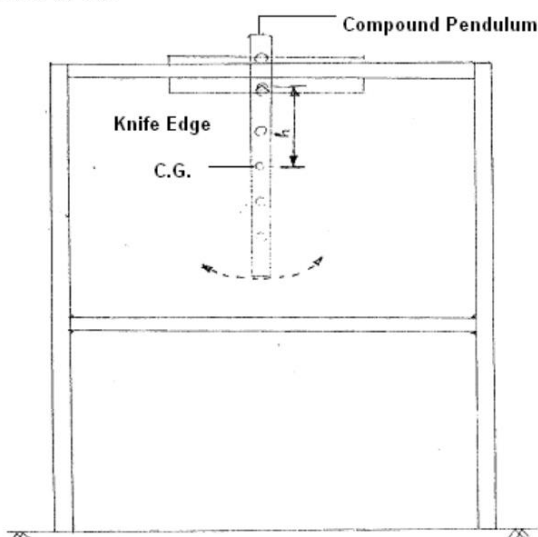
APPARATUS:

The unit is as shown in figure suitably fitted to the sturdy frame and following accessories are attached to it.

- Oscillating pendulum

Supporting apparatus to be used:

- Stop watch
- Measuring tape



THEORY:

A rigid body, when allowed to oscillate in vertical plane about the axis of suspension under the action of gravitational force is called a compound pendulum. The Dynamic unit is provided with a simple design as shown.

PROCEDURE:

Fix the brass bush in any of the holes of the pendulum & mount the pendulum over the suspension shaft. Fitted at top beam of frame. Oscillate the pendulum & measure the time required for 10 oscillations. Repeat the procedure by putting the bush in different holes.



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OBSERVATION:

S.No.	Length of compound pendulum L	Center of gravity (h)	Number of Oscillations	Time reqd. for n Oscillation	T _{expt} in sec t/n	K _{th}	K _{expt}

CALCULATIONS:

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RESULTS:

- The equivalent length of pendulum is found to bemm.
- The radius of gyration is found to bemm.

CONCLUSION:

By experiment it is found that radius of gyration K is verified the Theoretically & experimentally.

VIVA QUESTION:

1. What is the difference between free vibration & forced vibration?
2. Write the equation of motion for compound pendulum?
3. What is then natural frequency of vibration of compound pendulum?
4. What do you mean by compound pendulum?
5. Derive the expression for frequency of oscillation for pendulum?
6. What do you mean by time period of pendulum?



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EXPERIMENT No. -3

AIM:

To determine the radius of gyration of a body using bi-filer suspension.

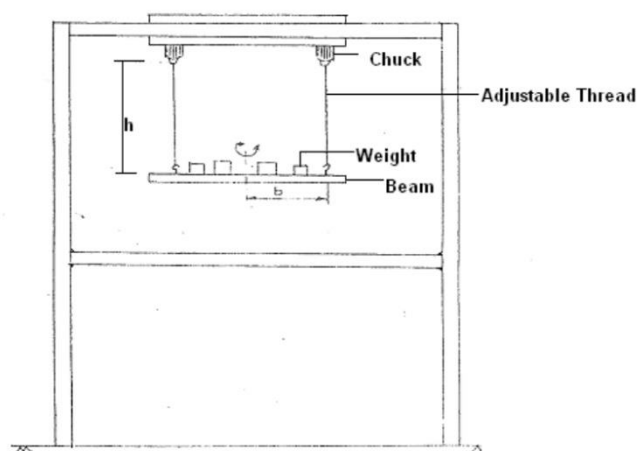
APPARATUS:

The unit is as shown in figure suitably fitted to the sturdy frame and following accessories are attached to it.

- Bi-filer suspension setup
- Weights

Supporting apparatus to be used:

- Stop watch
- Measuring tape



PROCEDURE:

Attach the bi-filer suspension strings in the chuck mounted at top beam of the frame. Adjust the string to equal lengths. Fix the weights required over the beam of bi-filer. Oscillate the system about vertical axis passing through the center of beam. Measure the time required for 10 oscillations. Repeat the procedure by changing the length of suspension.



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OBSERVATION:

S.No.	Length of cord in cm		Weight attached	No of oscillations	Time required for (n) oscillation	T _{exp} (sec)	K _{th}	K _{exp}
	L	b cm	Kg	n	t	t/n		
1.								
2.								
3.								

CALCULATIONS:

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VIVA QUESTION:

1. What is mean by Bi-Filler suspension system?
2. Define radius of gyration?
3. Differentiate between torsional & longitudinal vibration?
4. What is the natural frequency of vibration in case of Bi-Filler suspension?
5. Derive equation of motion of vibration for Bi-Filler suspension system?

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EXPERIMENT NO.-4

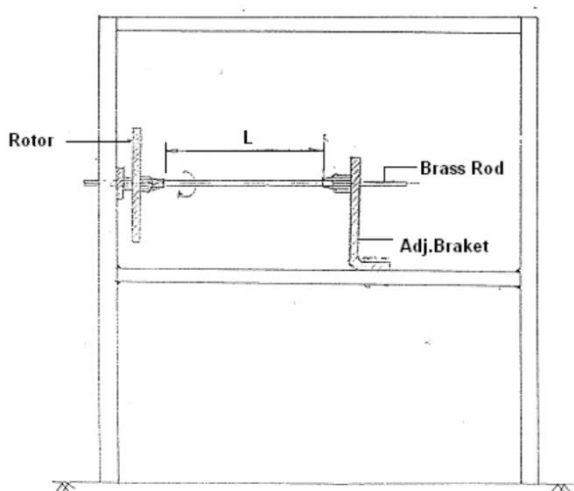
AIM:

To measure the frequency of torsional vibrations of single rotor system with universal vibration apparatus.

APPARATUS:

This unit is as shown in figure suitably fitted to the sturdy frame and following accessories are attached to it.

- Single rotor system
- Shaft
- Stop watch
- Vernier caliper /micrometer
- Measuring tape



PROCEDURE:

Take the bracket on the middle beam of vibration lab fit this bracket at any position. This bracket is fitted with drill chuck. Take spring steel wire and clamp it firmly between any one of the rotor disc and this bracket. Ensure that this clamping is firm. Give a small deflection/twist to the rotor disc. The rotor disc will take some oscillation. Count the oscillation & measure the time required for n number of oscillations.



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OBSERVATION:

1. Diameter of disc =
2. Weight of disc W =
3. Diameter Of shaft/wire d =

OBSERVATION TABLE:

Sr. no.	Length of shaft L cms	No. of oscillation t sec	Time for n oscillation t sec	$T_{\text{expt}} t/n$	T_{th}

CALCULATION:

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GRAPH:

Plot a graph of Frequency Vs shaft length.

CONCLUSION:

Periodic time experimentally and theoretically is verified.

VIVA QUESTION:

1. Derive equation of motion of vibration for single rotor system?
2. What do you mean by transmissibility?
3. What do you mean by amplitude of vibration in single rotor system?
4. What is the natural frequency in case of single rotor system?
5. The vibration in this case of single rotor system is free or forced?



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EXPERIMENT No-5

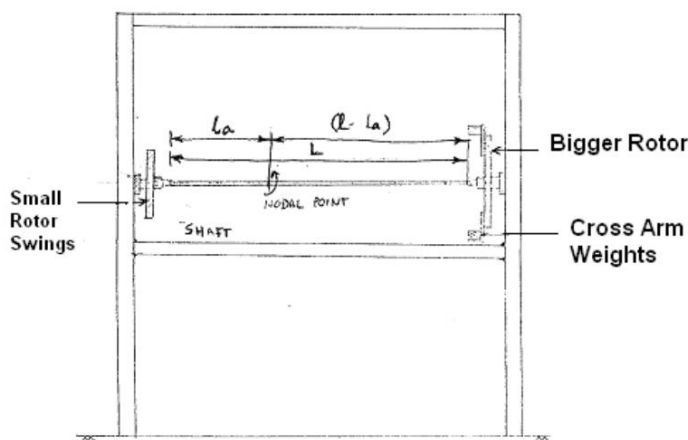
AIM:

To measure the frequency of torsional vibrations of double rotor system with universal vibration apparatus.

APPARATUS:

This unit is as shown in figure suitably fitted to the sturdy frame and following accessories are attached to it.

- Double rotor system
- Shaft
- Stop watch
- Vernier caliper /micrometer
- Measuring tape



PROCEDURE:

Fix the two rotors over the spindles fitted over the frame uprights. Thread the shaft into the chucks & fix the shaft by tightening the chucks. Hold one rotor firm by hand & twist the shaft by gently pulling the rotor. Release the hands. Let the system oscillate. Record the time required for 10 oscillations of system repeat the experiment by adding different weights over the cross arm of the system (add the weights symmetrically)



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OBSERVATION:Diameter of small rotor $d_a = \text{---- cm}$ Diameter of bigger rotor $d_b = \text{---- cm}$ Weight of small rotor $W_a = \text{---- Kg}$ Weight of bigger rotor $W_b = \text{---- Kg}$ $W_1 =$ Weight attached to cross arm = $R =$ Radius of fixation of weight on the arm = $L =$ Length of shaft between rotors =**OBSERVATION TABLE:**

S.No.	No. of Oscillations (n)	Time required for n Oscillations (t sec.)	T_{expt} (t/n sec)	T_{theor}

CALCULATION:

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GRAPH:

Plot a graph of length Vs Frequency.

VIVA QUESTION:

1. What do you mean by torsional vibration?
2. What is the different between free and forced torsional vibration?
3. Derive the expression for natural frequency of free torsional vibration?
4. What is the natural frequency of vibration for a double rotor system?
5. What is the effect of mass moment of inertia in vibration of double rotor system?

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EXPERIMENT No. 6

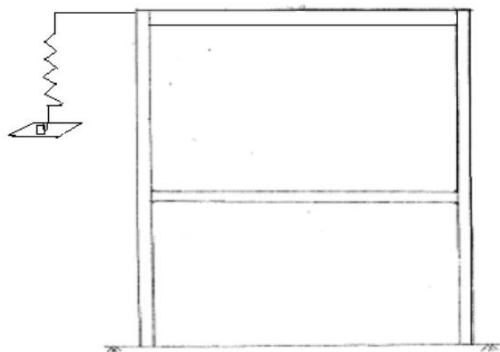
AIM:

To find out free vibration of helical coiled spring with universal vibration apparatus.

APPARATUS:

- Helical coiled spring
- Stop watch
- Measuring tape
- Weights

DIAGRAM:



SPRING MASS SYSTEM

PROCEDURE:

Take any one of the spring and clamp it in the hole provided on bolt, attached to the support of main frame. Now take the weight hanger and clamp it freely to the spring. Measure the length of spring, this is the initial length. Now put a weight of 1 kg in the weight hanger. Tighten the weight clamping strip to avoid falling of weight. Now measure the length of spring and note down. Give vertical oscillations. Count the oscillations and note down time required for these oscillations. Go on increasing the load and repeat the procedure.



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OBSERVATION TABLE:

Sr. no.	Wt. Attached W(kg)	Deflection of spring (δ) cm	Stiffness $k = W/\delta$	Mean Stiffness	Time for 10 oscillation	T_{expt}/n	T_{th}

CALCULATION:

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CONCLUSION:-

Period of vibration is verified theoretically & experimentally.

VIVA QUESTION:

1. What is longitudinal vibration?
2. What is the natural frequency of vibration for a helical spring?
3. Write the equation of motion of helical coil spring?
4. Explain how stiffness affects the natural frequency of a spring?
5. What is the difference between free vibration and forced vibration?

Criterion 2

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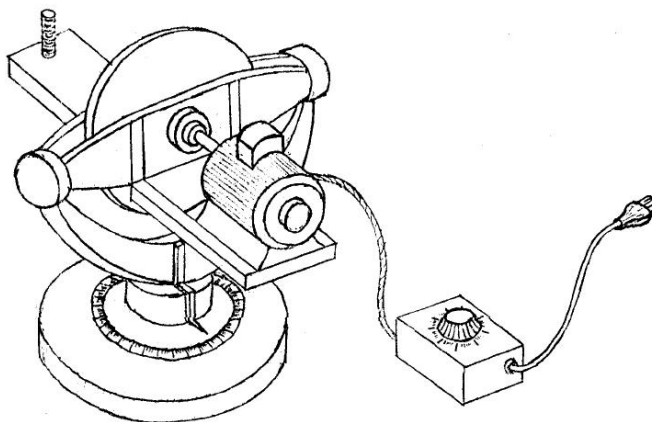
EXPERIMENT No.7

AIM:

To find out the gyroscopic couple and prove that gyroscopic law with Gyroscope apparatus.

APPARATUS REQUIRED: Gyroscope, Tachometer, Stopwatch, Weight balance, Autotransformer.

THEORY: The gyroscope consists of an electric motor supported within a ring mounted on ball bearing which is carried on a cradle attached to a vertical shaft with ball bearings. A disc is mounted co-axially to the armature. A loading arm carrying a counter-poise and hanger is attached to the ring. The heavy base is of mild steel and has a vertical shaft. It has four leveling screws and a spirit level mounted to the base for leveling. A brass angular scale is fitted to the cradle, which enables the angle of the tilt of loading arm to be found when the precession is arrested by stopping the rotation of cradle. Knowing the time for one revolution, the angular velocity of precession can be determined.

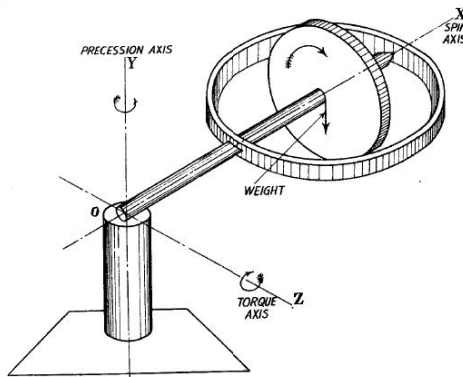


PRINCIPLE OF GYROSCOPE: Principle of gyroscope can be easily understood from the toy gyroscope. A rotating disc supported on gimbals' rings rotates with an angular velocity of spin denoted by ω . Gimballed ring has a projected rod which is supported on frictionless surface such a toy when given to the child, would at first glance, make him feel that the torque created by the weight of the unit would cause the mass to fall vertically downwards. The mass executes a motion contrary to the first reaction-the motion that has been experimentally and analytically verified. The axis of the rotating shaft rotates about the vertical axis with an angular velocity denoted by ω_p . it is called the velocity of precession. If friction is considered zero, the axis of rotation of the rotating disc would revolve in the horizontal plane XOZ. But normally the energy



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is dissipated in friction that is always there and the energy comes from the disc. Thus the rotating disc will gradually drop.



GYROSCOPE

USES OF GYROSCOPE:

- Sea vessels.
- Aircraft.
- Automobiles.
- Bombsights.
- Missiles.

According to the law of gyroscope-

The torque, $T = I_p \cdot \omega \cdot \omega_p$

I_p = mass moment of inertia of the disc.

ω = Angular velocity about horizontal axis.

ω_p = Angular velocity of precession.

Where $\omega = 2\pi n/60$ rad/s

$$\omega_p = 2\pi/t_p$$

t_p = time for one revolution in the horizontal plane.

PROCEDURE:

- 1) Set the instrument perfectly horizontal by four leveling screw and the spirit level.
- 2) Switch on the motor and obtain the desired speed by changing the variable resistance.
- 3) Determine the motor speed by a tachometer.
- 4) Move the counter piece to keep the loading arm horizontal so as to show zero on angular brass scale.



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- 5) Put the hanger with known weight at the end of the loading arm.
- 6) Note the time of one revolution.
- 7) Keeping the speed constant, increase the load, thus the torque, to find out corresponding angular speed of precession.
- 8) Change the motor speed the experiment.
- 9) Plot the graph between torque and speed of precession.
- 10) Calculate the value of moment of inertia of the disc.

OBSERVATION TABLE:

S. No.	Rotor Speed N(RPM)	Weight gms	Time for ω precision sec	velocity of spin ω rad/sec	velocity of precision ω_p rad/sec	T_{act}	T_{theo}
1							
2							
3							
1							
2							
3							

CALCULATION:

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RESULT: The law of gyroscope is verified.

PRECAUTIONS:

- 1) The motor speed should be kept constant by a voltage stabilizer.
- 2) The gyroscope should be leveled properly.
- 3) The time should be measured accurately.

VIVA QUESTIONS:

1. Write short notes on gyroscope.
2. What do you understand by gyroscopic couple?
3. Explain the application of gyroscopic principles to aircrafts?
4. Describe the gyroscopic effect on sea going vessels?
5. Discuss the effect of the gyroscopic couple on a two-wheeled vehicle when taking a turn.



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EXPERIMENT No.8

OBJECT:

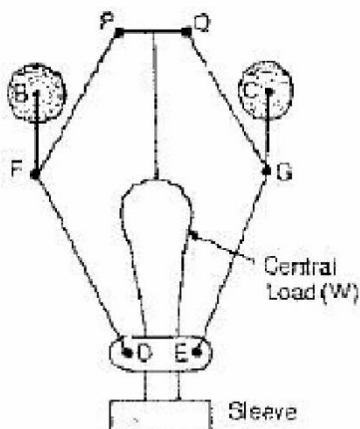
To find out the power and effort of Proell, Porter & Hartnell governor with governor apparatus.

APPARATUS: Proell governor, Porter governor, Hartnell governor, weighing balance, scale and graph paper.

THEORY:

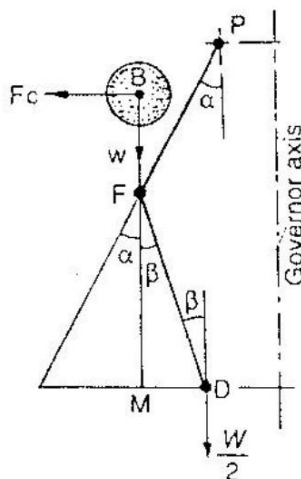
1. Proell Governor:

The proell governor has the balls fixed at B & C to the extension of the links DF & EG as shown in fig. the arms FP and GQ are pivoted at P and Q respectively. Consider the equilibrium of the forces on one-half of the governor as shown in fig. The instantaneous center lies on the intersection of the line PF produced and the line from D drawn perpendicular to the spindle axis. The perpendicular BM is drawn on ID.

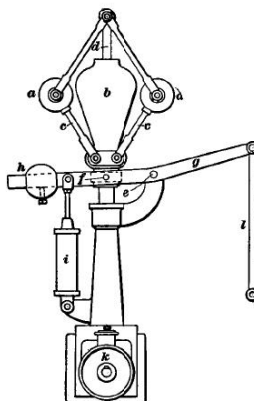




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2. Porter Governor: The Porter Governor was the first effective High Speed engine governor, Designed by the American engineer George Porter. The governor is driven via a pulley (k) through a set of bevel gears (not shown) a vertical shaft (d) is rotated, this in turn drives from above the governor balls (a), through linkages (c) the large and heavy governor deadweight (b) is also rotated, this is free to slide up and down the shaft (d) but rotates at the same speed as the balls.



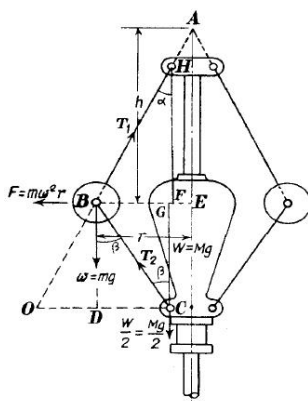


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As rotational speed increases centrifugal force acts on the balls and they try to fly outwards, they are restricted by the linkages (c) held by the weight of the dead-weight (b), however, when a speed is reached at which this force exceeds the resistance imposed by the dead-weight they will lift the weight up and be allowed move outwards.

This action lifts the collar at the base of the dead-weight at point (f) this lifts the lever (g) which is pivoted at point (e) the lever has a counterbalance weight (a) and a dashpot or oil damper (i) which prevents rapid movements of the governor mechanism which can lead to the engine 'hunting' which is unwanted speed fluctuations due to the sensitivity of the governor.

Linkage (l) moves up or down and is connected to the engine this controls the steam allowed into the cylinder either by the amount allowed through a valve or the amount of time a valve is open for, if the engine runs too fast either the quantity of steam allowed in will be reduced or it will be let in for a shorter time, if the engine runs slower then either more steam is let in or it is let in for a longer time.



PORTER GOVERNOR

M= mass of the sleeve in kg.

W= weight of the sleeve= Mg in Newton's.

r = radius of the governor; distance from axis of rotation to the ball center, in meters.

m= mass of the governor ball in kg.

w = mg= weight of the balls in Newton's.

F= mw²r= centrifugal force due to each ball, in Newton's.

T₁= tension in the upper arm, Newton's.

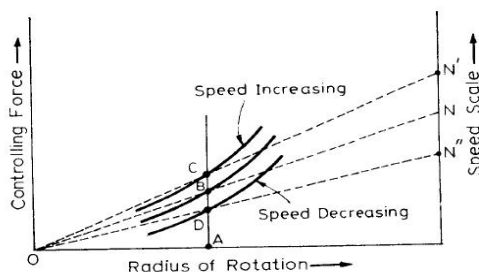
T₂= tension in the lower arm, Newton's.

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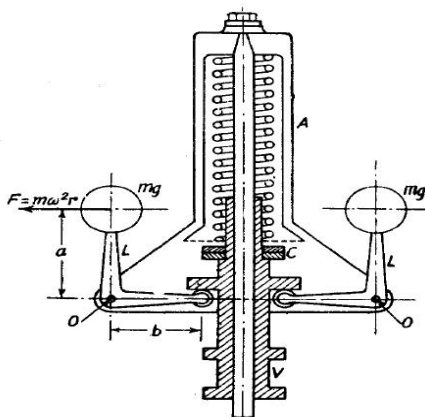
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3. Hartnell Governor:

A Hartnell governor is shown as. The bracket is keyed to the spindle and can revolve with it. The two bell crank levers are pivoted to the bracket at O. the ends of the lower arm of the levers are connected to the sleeve and at the ends of the other arms of the levers are provided with the governor balls as shown.

With the rotation of the spindle, the bracket will revolve, resulting in revolving of the balls .due to the centrifugal forces on the balls, the sleeve will be lifted. The force on the sleeve will be controlled by the downward thrust of the spring, which is conveyed to the sleeve, which is through the struts, which pass through the holes drilled in the bracket and further



Connected to the sleeve. The lock nut at the top end of the spindle is provided to alter the spring thrust so as to adjust the equilibrium speed at certain position without certain limits when the engine running.

A simple diagram of the Hartnell governor is shown in fig.

Where,
 m = mass of the ball in kg.

- $w = mg$ = weight of each ball, in Newton's.
- M = mass of the sleeve in kg.
- $W = Mg$ = weight of the sleeve in Newton's.
- S = force exerted by the spring, in Newton's.
- P = stiffness of the spring or spring rate in N/m
- N = speed of rotation in rpm
- a = length of vertical arm or weight arm or ball arm in m.
- b = length of horizontal arm or sleeve arm in m.
- r = radius of the rotation, in m.

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OBSERVATION TABLE FOR PROELL GOVERNOR

Sl No.	Speed , N rpm	Sleeve Lift x (cm)	Angular Velocity ω (Rad/sec)	Radius of rotation , r	Force F

CALCULATION FOR PROELL GOVERNOR

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OBSERVATION TABLE FOR PORTER GOVERNOR

S.No.	Speed, N (rpm)	Sleeve Lift x (cm)	W weight	Height h mm	Radius of rotation, R c. m.	α	Force F

CALCULATION FOR PORTER GOVERNOR



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OBSERVATION TABLE FOR HARTNELL GOVERNOR

S. NO.	speed, n rpm	Sleeve displacement x	Radius of rotation mm	ω	Force F

CALCULATION FOR HARTNELL GOVERNOR

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PROCEDURE FOR PROELL & PORTOR GOVERNOR:

- 1) Measure the length of columns of the governors and weight, which are to place on sleeve.
- 2) Connect the governor the load on the governor.
- 3) Slowly increase the load on the governor.
- 4) Note down 3 to 4 sets of reading of speed of governor using –Tachometer at the regular interval of voltage.
- 5) Note down the height of sleeve or a particular speed for finding the radius of rotation.

PROCEDURE FOR HARTNELL GOVERNOR:

- 1) Plot a graph between displacement of the sleeve from the mean position and the radii of the balls.
- 2) Determine the mass of the balls and the length of the arms of the bell crank lever.
- 3) Start the motor and adjust the speed so that the ball runs at the innermost position. Note the sleeve position and from the graph determine the ball radius r_2 .
- 4) Increase the speed and adjust its speed so that the ball runs at the outermost position. Again note down the sleeve position and determine the ball radius r_1 .
- 5) Calculate the forces f_1 and f_2 .
- 6) Calculate the spring stiffness.

GRAPHS:

1. FOR PROELL GOVERNOR:

- A) Force vs. radius of rotation
- B) Speed vs. sleeve displacement

2. FOR PORTER GOVERNOR:

- A) Force vs. radius of rotation
- B) Speed vs. sleeve displacement

3. FOR HARTNELL GOVERNOR:

- A) Force vs. radius of rotation
- B) Speed vs. sleeve displacement

PRECAUTIONS:

1. Change the speed of the motor slowly.
2. Measure the speed of the motor accurately.
3. Use a constant voltage transformer to keep the speed constant.
4. Load on governors should be increase slowly.
5. Tachometer should be read only when it attained a constant value.
6. All the nut should be tighten.
7. Parallel error for noting down sleeve height should be avoid



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VIVA QUESTIONS:

1. What is the function of a governor? How does it differ from that of a flywheel?
2. State the different type of governors.
3. Explain the term height of the governor.
4. What is stability of a governor?
5. Explain the term 'effort' and 'Power' of a Porter & Proell governor?



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EXPERIMENT NO. 9

OBJECT:

To find out the critical speed for different diameters of shaft by whirling of shaft apparatus.

APPARATUS REQUIRED: Stroboscope, Tachometer, scale.

DIAGRAM:

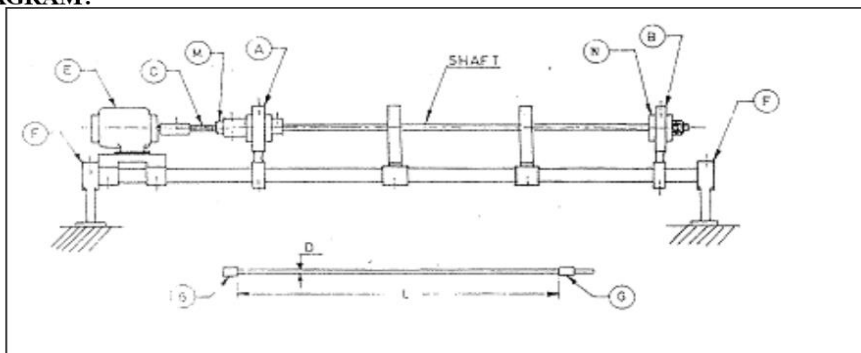


Fig.1

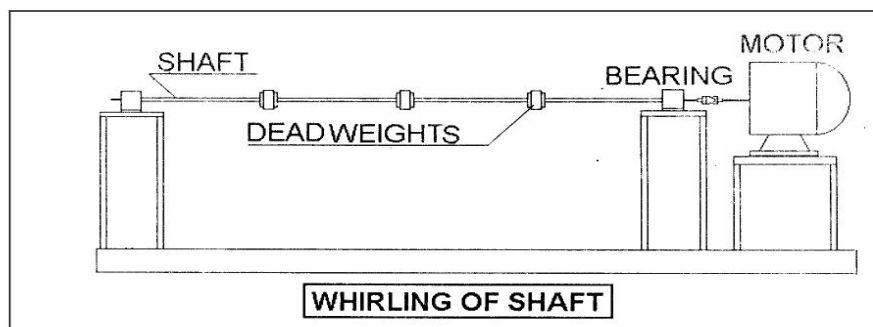


Fig.2

THEORY:

All shafts having self-weighted, deflect during rotation even in the absence of external load. The magnitude of deflection depends up on the stiffness of the shaft and its supports, the total mass of shaft and attached parts, the unbalance of the mass and the amount of damping in the system. As



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the speed of rotation increases gradually, a speed is reached, where the shaft starting' or vibrating violently. This speed is called FIRST CRITICAL SPEED or WHIRLING SPEED of the shaft. The mode of mode of bend is the simplest and known as the first mode. The Whirling speed is very nearly same as the NATURAL FREQUENCY as negligibly small difference occurs due to the gyroscopic action of the masses in the bent position.

OBSERVATIONS TABLE:

Sl.No	Length (c.m.)	Diameter(mm)	Speed(N) in rpm	Node	End condition

CALCULATION:

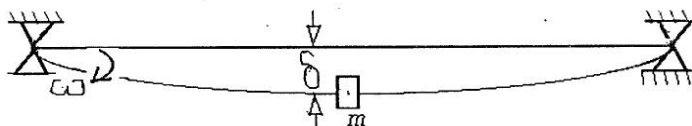
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For a shaft with single attached mass:-



$$\omega_c = \sqrt{k/m} = \sqrt{g/\delta}$$

k = stiffness,

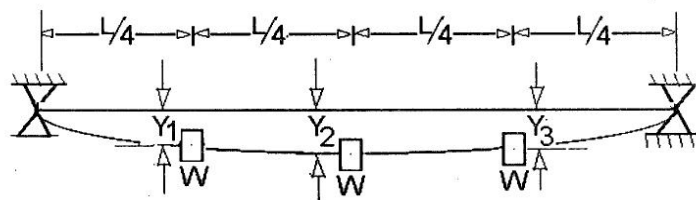
m = mass attached

δ = static deflection

g = Acceleration due to gravity.

The relation shows ω_c depends on the location of the mass also.

For a shaft with self weight and multimass system:



The apparatus consist of a shaft with self weight and three discs of equal weight; W placed on the shaft as shows in the figure. Weight of shaft unit length is " w "

{1}. The upper bound value of the first critical speed can be calculated by the energy balance method, commonly known as RAYLEIGH-RITZ EQUATION.

The general equation is given as (without considering self weight):

$$\omega_c = \sqrt{\frac{g \sum W_n y_n}{\sum W_n y_n^2}}$$

If the effect of the self weight is considered the equation is given as:-

$$\omega_c = \sqrt{\frac{g [W.Y_1 + (W + w.L)Y_2 + W.Y_3]}{[W.Y_1^2 + (W + w.L)Y_2^2 + W.Y_3^2]}}$$

Y_1, Y_2, Y_3 are the total deflection considering also deflection for the given configuration,

$$Y_1 = Y_3 = \frac{9}{256} \cdot \frac{wl^3}{EI} + \frac{19}{2048} \cdot \frac{wl^4}{EI} = [----]$$

Where E = Modulus of elasticity,

I = MI of the shaft

Criterion 2



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$$Y_2 = \frac{19}{384} \cdot w l^4 + \frac{5}{384} \cdot w l^4 = [----]$$

Another approximation for the first critical speed of multimass system, lower bound value providing, is known as DUNKERLEY EQUATION.

$$\frac{1}{\omega_c^2} = \frac{1}{\omega_1^2} + \frac{1}{\omega_2^2} + \frac{1}{\omega_3^2} + \text{-----}$$

Where, ω = first critical speed.

$\omega_1, \omega_2, \omega_3$ are the critical speed, for only mass no. 1, 2, 3 etc respectively.

For the apparatus,

$$\frac{1}{\omega_c^2} = \frac{1}{\omega_1^2} + \frac{1}{\omega_2^2} + \frac{1}{\omega_3^2} = [-----]$$

$\omega_1, \omega_2, \omega_3$ are the critical speed for the masses at three different location on the shaft respectively and ω_s is the critical speed for self weight of the shaft.

$$\omega_1 = \sqrt{\frac{g}{\delta_1}} = [-----]$$

$$\omega_2 = \sqrt{\frac{g}{\delta_2}} = [-----]$$

$$\omega_3 = \sqrt{\frac{g}{\delta_3}} = [-----]$$

$$\omega_s = \sqrt{\frac{5g}{4\delta_{\max}}} = [-----]$$

Where δ_{\max} = Max. Deflection due to self weight only.

E, I, W, w, L are same as above.

Results

From the above calculation the critical/whirling speed of the shaft is

1) Using RAYLEIGH-RITZ EQUATION =

2) Using DUNKERLEY EQUATION. =

Experimentally whirling speed of the shaft is =

PRECAUTIONS:

1. The masses should be attached firmly.
2. Increase the speed gradually.
3. Keep your body away from the rotating shaft.
4. There must not be misalignment of ends.



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VIVA QUESTIONS:

1. Explain the term 'whirling speed' or 'critical speed' of a shaft?
2. Prove that the whirling speed for a rotating shaft is same as the frequency of natural transverse vibration.
3. What do you mean by natural frequency?
4. Which factor affects the critical speed of a shaft and why?
5. Define the term eccentricity?

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EXPERIMENT NO. 10

OBJECT: To verify the static and dynamic balancing for different planes and masses by balancing apparatus.

APPARATUS USED:- Static & dynamic Balancing m/c.

THEORY :-

Static balance Static balance occurs when there is no resultant centrifugal force (centrifugal couple) and the centre of gravity is on the axis of rotation. To avoid the stress upon the bearings caused by the centrifugal couple, counterbalancing weights must be added. The unbalancing weights are an idealization, of course. For example, in the case of an automobile tire the imbalance is due to imperfections of manufacture that make the tire composition inhomogeneous.

Dynamic balance

This occurs when there is no resulting turning moment along the axis of rotation. Dynamic balancing is done on parts that are long compared to their diameters such as rotor assemblies. These parts require balancing to be done in two planes since the actual imbalance will intersect the centerline/axis. Unless both ends of the part are balanced, mass imbalance will continue to exist. Rotor assemblies that MCE manufactures are balanced dynamically (in two planes).

Balancing can be achieved by the addition or removal of mass in certain locations. MCE only provides balancing by use of mass removal which is achieved by abrasive material removal or by drilling/machining. Note that when designing your part, take into account that material removal will be required and allow for extra material such as a balancing ring or thicker flanges than required by design to achieve mechanical structural integrity.

A system of rotating masses is said to be in static balance if the combined mass centre of the system lies on the axis of rotation. Whenever a certain mass is attached to a rotating shaft, it exerts some centrifugal force, whose effect is to bend the shaft and to produce vibrations in it. In order to prevent the effect of centrifugal force, another mass is attached to the opposite side of the shaft. The process of providing the second mass in order to counteract the effect of the centrifugal force of the first mass, is called balancing of rotating masses.

The following cases are important from the subject point of view :

1. Balancing of a single rotating mass by a single mass rotating in the same plane.
2. Balancing of a single rotating mass by two masses rotating in different planes.
3. Balancing of different masses rotating in the same plane.
4. Balancing of different masses rotating in different planes.

PROCEDURE :- Remove the belt, the value of weight for each block is determined by clamping each block in turn on the shaft and with the cord and container system suspended over



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the protractor disc, the number of steel balls, which are of equal weight are placed into one of the containers to exactly balance the blocks on the shaft. When the block becomes horizontal, the number of balls N will give the value of wt. for the block.

For finding out W_r during static balancing proceed as follow:

1. Remove the belt.
2. Screw the combined hook to the pulley with groove. This pulley is diff. than the belt pulley.
3. Attached the cord end of the pans to above combined hook.
4. Attached the block no.-1 to the shaft at any convenient position and in vertical downward direction.
5. Put steel balls in one of the pans till the blocks starts moving up. (upto horizontal position).
6. Number of balls give the W_r value of block-1. repeat this for 2-3 times and find the average no. of balls.
7. Repeat the procedure for other blocks.

OBSERVATION TABLE:-

S.no.	Mass (m) Gms.	Inclination	Distance from plane x(l) m	Couple

CALCULATION :- The balancing masses and angular positions may be determined graphically as given below :-

1. First of all, draw the couple polygon from the data which are calculated in table to some suitable scale. The vector distance represents the balanced couple. The angular position of the balancing mass is obtained by drawing, parallel to vector distance. By measurement will be find the angle.



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2. Then draw the force polygon from the data, which are calculated in table to some suitable scale. The vector distance represents the balanced force. The angular position of the mass is obtained by drawing parallel to vector distance. By measurement will be find the angle in the clockwise direction from mass.

PRECAUTIONS :-

1. Couple should be represented by a vector drawn perpendicular to the plane of the couple.
2. Angular position measure carefully in clockwise direction.
3. Vector diagram should be represent with suitable scale.

VIVA QUESTIONS :-

1. Why is balancing of rotating parts necessary for high speed engines ?
2. Explain the terms 'static balancing' and 'dynamic balancing'. State the necessary conditions to achieve them.
3. Discuss how a single revolving mass is balanced by two masses revolving in different planes.
4. How the different masses rotating in different planes are balanced?
5. Explain the method of balancing of different masses revolving in the same plane.

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LAB RECORD

OF

FLUID MECHANICS

5TH SEM MECHANICAL



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SEMESTER _____

BATCH _____

ROLL NO. _____

ACADEMIC SESSION _____

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PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design / development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments.
12. **Life- long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

MECHANICAL ENGINEERING DEPARTMENT

Criterion 2

QIM 2.3.1 Student centric methods



Established In 1998

CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY

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Course Objectives:

The core objective of this course is to impart an understanding of performance testing of Hydraulic Turbines and Hydraulic Pumps at constant speed and Head and to develop an understanding of basic working principles of various fluid machines.

Course Outcomes:

On successful completion of the course, the student will be able to:

1. Analyze the performance parameters of Pelton Turbine.
2. Analyze the performance parameters of Francis and Kaplan Turbine
3. Analyze the performance parameters of Centrifugal Pump and Reciprocating Pump.
4. Determine Lift and drag force over an air foil.
5. Explain the construction and working of various fluidic devices.

MECHANICAL ENGINEERING DEPARTMENT

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Fluid Machines Lab**Semester: B Tech 5th****Code: C037523(037)****LIST OF EXPERIMENTS (PRESCRIBED BY C.S.V.T.U.)**

Exp.No.	EXPERIMENTS (Minimum 10 Experiments needs to be performed)
1	Performance characteristics of Pelton wheel turbine.
2	Performance characteristics of Francis turbine
3	Performance characteristics of Kaplan turbine.
4	Performance characteristics of variable speed centrifugal pump.
5	Performance characteristics of rated speed centrifugal pump
6	Performance characteristics of multi stage centrifugal pump.
7	Study of Wind Tunnel (Open Circuit blower type)
8	Determination of Lift and drag force over an airfoil.
9	To study the working of fluid IC devices (Analog and Digital)
10	To study the Hydraulic Accumulator
11	To study the Hydraulic Intensifier
12	To study the Hydraulic Crane
13	To study the Hydraulic lift
14	To study the Hydraulic Ram
15	To study the Jet Pump
16	To study the Air Lift Pump
Note- Minimum 7 Experiments & 3 Studies are to be performed by each student.	

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FLUID MECHANICS LAB**5TH SEM MECHANICAL****LIST OF EXPERIMENTS**

S.NO.	NAME OF EXPERIMENTS	PAGE NO.	PERFORMED ON	REMARKS
01	To Study the variation of friction factor for pipe flow.			
02	To verify Impulse Momentum Principle.			
03	To determine the hydraulic coefficients (Cc,Cv,&Cd) of a orifice.			
04	To determine the coefficient of discharge of mouthpiece.			
05	To verify Bernoulli's theorem.			
06	To find C _d for the flow through notches & weir apparatus.			
07	To determine head losses in various pipe fittings.			
08	To study the transition from laminar to turbulent flow and to determine the lower critical Reynolds number.			
09	To determine the metacentric height of a ship model.			
10	Free & forced vortex apparatus.			

Signature of Teacher

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EXPERIMENT NO: 01

LOSSES IN PIPE FRICTION

AIM: To Study the variation of friction factor for pipe flow.

THEORY: When a fluid flowing through the pipe, it is subjected to resistance to flow due to shear forces between the wall and fluid particles and between the fluid particles also. This resistance is generally called frictional resistance. This resistance depends upon the velocity of flow and area of surface in contact. It also depends upon type of flow, i.e. laminar or turbulent. This frictional resistance causes loss of pressure in the direction of flow.

PROCEDURE:

1. Fill up water in the sump tank. (This water should be free of any oil content.)
2. Open all the outlet valves and start the pump.
3. Check for leakages by closing three of outlet valves, for each pipe, and correct the leaks, if any.
4. Open the outlet valves of the pipe to be tested.
5. Remove all the air bubbles from manometer and connecting pipes.
6. Reduce the flow. Adjust outlet valves, so that water heads in manometer are to the readable height.
7. Note down the heads and flow rate.
8. Now, increase the flow and accordingly adjust the outlet valve, so that water will not overflow. Note down heads and flow.
9. Repeat the procedure for other pipes.

(Note –during measuring the heads, slight variation may occur due to voltage change, valves etc. In such cases, average reading may be taken).

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Types of pipe	Head drop		Flow rate t sec time for 10 lt in Sec.
	h1	h2	
G.I (21mm)			
G.I (17mm)			
Cu (14.5mm)			
Al (17.5mm)			

For every pipe,

Area of pipe, $A = \pi \times 4 \times D^2 \text{ m}^2$

Discharge, $Q = 0.01/t \text{ m}^3/\text{sec}$.

Velocity of water, $v = Q/A \text{ m/sec}$.

Let f be the coefficient of friction. Test length of pipe is 1 meter.

For 1 meter length, drop of head, h_f

h_f = manometer difference.

Use to Darcy-Weisbach equation,

Where, f = coefficient of friction.

L = length of pipe.

v = velocity of water m/sec

g = gravitational acceleration $= 9.81 \text{ m/sec}^2$.

d = inside diameter of pipe, m

The value of coefficient of friction is not constant and depends upon roughness of pipe inside surface and Reynolds Number. Any oil content in water also affects value of f .

RESULT:

1] Loss of head due to friction is proportional to length of pipe and square of velocity.

2] Loss of head is inversely proportional to inside diameter of pipe.

3] Average value of ' f ' for-

a) 21 mm. G.I. pipe -



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- b) 17 mm. G.I. pipe -
- c) 14.5 mm. Cu pipe. -
- d) 12.5 mm. Al pipe. -

VIVA QUESTIONS:

1. In what way does the flow through a rough pipe differ from that in a smooth pipe?
2. Why do pipes behave as a hydro dynamically smooth or rough when turbulent flow takes place through them?
3. What do you understand by aging of pipes?
4. What is the mean by a smooth boundary and a rough boundary?
5. Distinguish between effective and actual roughness of a conduit boundary?



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EXPERIMENT NO: 02

IMPACT OF JET

AIM: To verify Impulse Momentum Principle.

THEORY: The apparatus consists of a chamber provided with Perspex sheets. A floating vane fixing rod is provided over the chamber to which the vane is fixed. An initial balance weight is provided for balancing the vane. Another sliding weight is provided to balance the vane-fixing rod while the jet is striking the vane. A nozzle is fixed below the vane through which a vertical jet issues. A control valve provided controls the pressure at the pressure at the jet and hence the flow rate and velocity of the jet.

Flat and hemispherical vanes are provided. The vanes can be interchangeably fixed to the rod. By adjusting the sliding weight, rod is balanced when the jet is striking the vane. By taking the moment about the fulcrum, impact force can be calculated. A nozzle of diameter 6.5mm and 8mm is provided.

EXPERIMENTAL PROCEDURE:

1. Fix the required vane to the fixing rod. Adjust the balancing weight so that vane-fixing rod is in horizontal position.
2. Fill up sufficient water in the sump tank.
3. Open the control valve fully and start the pump. The jet strikes the vane.
4. Put the sliding weight over the rod and adjust its distance such that the vane-fixing rod is balanced.
5. Note down the discharge and distance of the sliding weight.
6. Repeat the procedure by changing the control valve position.
7. Repeat the procedure for another vane.



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OBSERVATION TABLE

Sl No.	Nozzle diameter	Type of vane	Time for 10lit discharge t(Sec)	Weight added (Kg) m	Distance of sliding weight L

Taking the nozzle of 8mm diameter.

Diameter of jet, $d = 8 \times 10^{-3}$ m.

\therefore Cross sectional area of jet, $a = 5 \times 10^{-5}$ m².

Experimentally, taking moments about the fulcrum,

Distance of vane from the fulcrum is 0.135m (along the beam)

VIVA QUESTIONS:

1. Explain the impulse-momentum principle?
2. Describe the nature of various forces normally included in the momentum equation?
3. Briefly comment on the condition under which energy theorem and momentum theorem are applicable?



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EXPERIMENT NO: 03

FLOW THROUGH ORIFICE

AIM: To determine the hydraulic coefficients (C_c , C_v , & C_d) of a orifice

THEORY: An orifice is an opening made in the side or bottom of tank, having a closed parameter, through which the fluid may be discharged. A mouthpiece is short tube fitted to a same size circular opening provided in a tank so that fluid may be discharged through it. Orifice and mouthpiece are used to measure the rate of flow of liquid. The apparatus is to designed to measure the coefficient of discharge of orifice the apparatus consists of a supply tank at the side of which a universal fixture for mounting orifice. A centrifugal pump supplies the water to supply tank. Head over the orifice is controlled by a by pass valve provided at pump discharge. A measuring tank is provided to measure the discharge. A measuring tank is provided to measure the discharge. A gauge for measuring X and Y coordinates of jet from the orifice is provided which is used to calculate C_v of orifice.

Specification

- Supply tank-0.3x0.3mx1 m, height
Orifice- $\phi 8\text{mm}$ & $\phi 10\text{mm}$ orifice (brass)-one each. The orifices are small circular orifices running free.
- X-Y gauges for orifice jet coordinates.
- Measuring tank 0.3x0.3x0.3m height.
- Sump tank of suitable capacity
0.5 pump with valve

PROCEDURE

1) Orifice:

1. Fill up sufficient water in sump tank & supply tank, up to the level of orifice fixture.
2. Fit the required orifice to the tank.
3. Start the pump, adjust the supply valve. Wait for sometime for water level in supply tank to become steady.
4. When water level becomes steady, note down time required for 10 liters level rise in measuring tank.



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5. Measure X and Y coordinate of two points in jet, one of which should be closer to orifice & the other away from the orifice.
6. Repeat the procedure for different heads and for the other orifice.

OBSERVATION TABLE

Sl no.	Head (m)	Time for 10 litres level rise in measuring tank, t(sec)	X ₁ (cm)	Y ₁ (cm)	X ₂ (cm)	Y ₂ (cm)

VIVA QUESTIONS:

1. Define Orifice?
2. Give the complete classification of orifices.
3. Explain the phenomenon of jet contraction in orifice flow?
4. Define C_c , C_v , C_d of a small orifice.
5. Discuss the factors that offset the values of the orifice coefficient.



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EXPERIMENT NO: 04

FLOW THROUGH MOUTHPIECE

AIM: To determine the coefficient of discharge of mouthpiece.

THEORY: An orifice is an opening made in the side or bottom of tank, having a closed perimeter, through which fluid may be discharged. A mouthpiece is a short tube fitted to a same size circular opening provided in a tank so that fluid may flow through it. Orifice and mouthpiece are used to measure the rate of flow of liquid. The apparatus is designed to measure the co-efficient of discharge of orifice and mouthpiece.

The apparatus consists of a supply tank, at the side of which universal fixture for mounting orifice or mouthpiece is attached. A centrifugal pump supplies the water to supply tank. A pass valve provided at pump discharge controls head over the orifice/mouthpiece. A gauge for measuring tank is provided to measure the discharge. A gauge for measuring X and Y co-ordinates of jet from the orifice is provided, which is used to calculate Cv of orifice.

SPECIFICATION:

1. Supply tank – 0.3 x 0.3 x 1 m height.
2. Mouthpiece – ϕ 12 x 48 – 1no.
 - ϕ 12 x12 –1no.
 - ϕ 12 x 12L, Board's mouthpiece – 1no.
 - ϕ 12 exit dia. Convergent mouthpiece – 1no.
3. Measuring tank 0.3 x 1.3 x 0.3 m height.
4. Sump tank of suitable capacity.
5. 0.5HP pump with valve.

PROCEDURE:

1. Fit the required mouthpiece.
2. When water level in supply tank becomes steady, note down the time required for 10 liters level rise in measuring tank.
3. Repeat the procedure for different heads and different mouthpieces and complete the observation table.



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OBSERVATION TABLE

Sl. No.	Mouth piece used	Head (m)	Time for 10 liters level rise in measuring tank, t(sec)

VIVA QUESTIONS:

1. Define Mouthpiece?
2. Derive the discharge equation of an external mouthpiece.
3. What is the maximum possible head of water that this type of mouthpiece can sustain?
4. What is the difference between orifice and mouthpiece?



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EXPERIMENT NO: 05

VERIFICATION OF BERNOULLI'S THEOREM

AIM: To verify Bernoulli's theorem.

THEORY: When an incompressible fluid is flowing through a closed conduit, it may be subjected to various forces, which cause change of velocity, and acceleration or energies involved. The major forces involved are pressure and body forces. Due to elevation of conduits, pressure may change or due to change of cross section, velocity of fluid may change or there is change of velocity, pressure also change accordingly. In other words, if velocity energy of fluid is raised, its pressure will drop, i.e. total energy of fluid is constant at any two points in the path of flow. The theorem is known as Bernoulli's theorem. Hence, when applied to steady irrotational flow of incompressible fluids,

$$\frac{P}{w} + \frac{V^2}{2g} + Z = C$$

Where,

P = pressure

V = velocity at the point

Z = potential head from datum

APPARATUS

The apparatus consists of a rectangular flow channel, which is tapered along the length. Flow area at inlet is maximum and it goes on reducing towards outlet. Water is fed to flow channel through a supply tank. Outlet is also collected through outlet tank. A collector fitted can be directed either in drain or flow measurement tank.

PROCEDURE:

1. Connect the water pipe to the inlet valve
2. Reduce flow by inlet gate valve, so that there is only a small rise of water in the last pressure tapping.
3. Allow the levels to stabilize and note down the heads.
4. Close outlet valve of the measuring tank, put the collector in the measuring tank and measure the time to raise water level by 10 liters.
5. Now repeat the procedure by changing the discharge and note the drop of head towards outlet for each observation



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OBSERVATIONS TABLE

Sl No.	Head in cms Tappings 1, 2, 3, 4, -----14	Discharge time for 10 litres of water flow

CONCLUSIONS:

As value of 'C' is fairly constant, total energy of flow is same over the entire length.

1. As velocity of flow increases, pressure head drops.
2. Bernoulli's equation, i.e.

$$\frac{P}{w} + \frac{V^2}{2g} + Z = C$$

PRECAUTIONS:

1. Note down the head readings after the level has been stabilized.
2. After noting the discharge, drain the measuring tank.
3. After completion of experiment, drain all the water from the equipment.

VIVA QUESTIONS:

1. All the term of Bernoulli's equation: $p/w + V^2/2g + z = C$ have the units: Joules per Newton. In this true? Explain?
2. What are the limitations of Bernoulli's equation?
3. How is the Bernoulli's equation related to the first law of thermodynamics?
4. Which form of the Bernoulli's equation will be more suitable for application to flow of gases?
5. Explain how Bernoulli's equation which is valid for irrotational flows, can be used to solve real fluid flow problems.



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EXPERIMENT NO: 06

FLOW OVER NOTCH & WEIR APPARATUS

AIM: To find C_d for the flow through notches & weir apparatus.

THEORY: The notch is hydraulically defined as an opening provided in the side of tank liquid level in tank is below the top edge of the opening. Notches are generally used for measuring the flow of liquid in channels.

The Unit is provided with following notches:-

- 1) Triangular notch
- 2) Rectangular notch
- 3) Sharp crested weir

In the Unit a centrifugal pump sucks the water from the sump tank, and discharges it to a small flow channel. The notch is fitted at the end of channel. All the notches are interchangeable. The water flowing over the notch falls in the collector.

Water coming from the collector can be directed to the sump tank or to the measuring tank for the measurement of flow.

PROCEDURE:

- 1) Fit the required notch in the flow channel
- 2) Fill up the water in the sump tank.
- 3) Close the water supply gate valve to the channel and fill up the water in the channel up to sill level.
- 4) See that water does not leak from the notch.
- 5) Check the leakage of hose pipes also and keeps the collector diverted in the sump tank.
- 6) Take down the initial reading of crest level (sill tank) by the sliding depth gauge.
- 7) Now start the pump and open the gate valve slowly so that water starts flowing over the notch.
- 8) Let the water level become stable and note down the height of water surface at the upstream side by the sliding depth gauge.
- 9) Close the drain valve of measuring tank, direct the collector into measuring tank.
- 10) Take the readings for different flow rates.
- 11) Repeat the same procedure for other notch also.



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OBSERVATION TABLE

NOTCH TYPE: - Triangular / Rectangular

Sl No	Sill level reading 's' mts	Water height on upstream side 'h' mtr	Discharge time for 10 litres 't' sec

RESULTS

1. Average C_d of the triangular notch is.....
2. Average C_d of rectangular notch is.....

VIVA QUESTIONS

1. Explain Notches and Weirs?
2. What is it that is suppressed in a suppressed weir?
3. Why is it necessary to ventilate the nappe in the case of a suppressed weir?
4. List out the advantages and limitation of various notches and weirs?
5. How will you classify weirs?



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EXPERIMENT NO: 07

PIPE FITTING APPARATUS

AIM: To determine head losses in various pipe fittings.

THEORY: While installing a pipeline for conveying a fluid, it is generally not possible to install a long pipeline of same size all over and straight for various reasons, like space restrictions, aesthetics, location of outlet etc. Hence, the pipe size varies and it changes its direction. Also, various fittings are required to be used. All these variations of sizes and the fittings cause the loss of fluid head. The apparatus is designed to demonstrate the loss due to following fittings-

- 1) Pipe bend (large bend)
- 2) Pipe elbow (small bend)
- 3) Sudden expansion of the flow.
- 4) Sudden contraction of the flow.

The set up consist of 15mm basic piping, in which the above fittings are installed. A pressure tapping is provided at inlet and outlet of each fitting, which is connected to a common differential manometer. A gate valve at outlet and a bypass valve at pump discharge control the flow of water.

PROCEDURE:

- 1) Fill up sufficient clean water in the sump tank.
- 2) Fill up mercury in the manometer.
- 3) Connect the electrical supply. See that the flow control valve and bypass valve are fully opened and all the manometer cocks are closed. Keep the water-collecting funnel in the sump tank side.
- 4) Start the pump and adjust the flow rate. Now, slowly open the manometer tapping connection of small bend. Open both the cocks simultaneously.
- 5) Open air vent cocks. Remove air bubbles and slowly & simultaneously close the cocks. Note down the manometer readings and flow rate.
- 6) Close the cocks and similarly, note down the readings for other fittings. Repeat the procedure for different flow rates.



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OBSERVATION TABLE

Fittings	Manometer difference cms. of Hg	Flow rate t, sec.
Elbow		
Pipe bend		
Sudden Contraction		
Sudden Enlargement		

In elbow, there is no change in the magnitude of velocity of water, but there is change in direction of water, hence head losses exist.

For elbow, mean area, $A = (\pi/4) d^2 = 2.83 \times 10^{-4} \text{ m}^2$

Diameter of the elbow, $d = 19\text{mm} = 0.019\text{m}$.

CONCLUSION:

- 1) For any type of fitting, there is a loss of head, but its magnitude depends upon the type of fitting.
- 2) Loss of head occurs due to changes in magnitude or direction of the fluid velocity.

PRECAUTION:

- 1) Open both the manometer cocks slowly and simultaneously, otherwise the mercury will run away from the manometer.
- 2) Operate the valve gently. Does not force rotate them.
- 3) Always use clean water for the experiment.

VIVA QUESTIONS:

1. What are the different types of head losses in pipes?
2. How does the head loss affect the pipe flow?
3. What is the reason for head losses?
4. How the head losses can be minimized?
5. What is the formula for head loss for sudden contraction and sudden expansions?



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EXPERIMENT NO: 08
REYNOLD'S APPARATUS

AIM: To study the transition from laminar to turbulent flow and to determine the lower critical Reynolds number.

THEORY: Whenever a fluid flowing through the pipe, the flow is either laminar or turbulent. When fluid flowing in parallel layer or lamina sliding past adjustment lamina, its called laminar flow. When the fluid does not flow in parallel layers and there is intermingling of fluid particles then the fluid said to be turbulent. OSBORN REYNOLDS first demonstrated existence of these two types in 1883.

The dynamic apparatus consist of constant head supply tank supplied with water. This tank provided with the bell mouth outlet to which a transparent tube is fitted.

At outlet of the tube a regulating valve provided. a dye tank containing coloured dye is fitted above the supply tank. The water is flow through the pipe and dye is injected at the center of the pipe. When the velocity of flow is low, (i.e. flow is laminar) then dye is remaining in the form of straight filament as the velocity of water

(i.e. flow of water) is increased, a state is rejected when the dye filament becomes irregular and water. With further increase of velocity of water through the pipe, dye filament becomes more and more irregular and ultimately the dye diffuse over the entire cross section of the tube.

The velocity at which the flow changes from to turbulent for the case of given fluid at given temperature and in a given pipe is known as critical velocity. The state of flow between these two types of flow is known as transition state or flow is transition.

The occurrence of laminar and turbulent flow is governed by relative magnitude of inertia and viscous forces. Reynolds related the inertia forces the inertia forces to viscous forces and arrived at a dimensionless parameter now called Reynolds number.

I.D. of pipe = 25 mm cross section area of pipe

$$A = 4.9 \times 10^{-4} \text{m}^2$$

Where, V = velocity, m/sec

L =characteristics linear dimension

D = diameter of pipe =0. 025m

ν = kinematics viscosity of pipe = $0.805 \times 10^{-6} \text{ m}^2/\text{s}$

$$\text{Re} = V \times \frac{D}{\nu} = 31055.9$$



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While increasing the velocity, laminar flow is distributed at slightly higher velocity. But at the time of decreasing velocity, the flow does not turn to laminar at this velocity, but laminar at still lower velocity is called lower critical velocity.

Lower critical Reynolds number flow is always laminar and above upper critical Reynolds number flow is always turbulent. Practically, upper critical Reynolds number lies between 2700 to 4000 and lower critical Reynolds number is approximately 2000. between Reynolds number 2000 and 4000 the transition region exists.

PROCEDURE:

1. Fill up sufficient water in the dye tank and put a small amount of potassium permanganate in water.
2. Start water flow. Adjust the water flow to about 2 lpm starts the dye injection.
3. Wait for some time. Steady line of dye will be observed. Adjust dye flow, if required.
4. Slowly increase the water flow see that water level in the supply tank remains constant. At particular flow rate, dye line will be disturbed note down this flow rate.
5. Further increase the flow. The disturbances of dye line will go on increasing and at certain flow; the dye line diffuses over the entire cross section. Note down this flow.
6. Slightly increase the flow and then slowly reduce the flow. Note the flow at which diffused dye tends to become steady, (beginning of transition zone while reducing velocity.)
7. Further reduce the flow and note the flow at which dye line becomes straight and steady.

OBSERVATION:

1. Increasing velocity
 - a) Flow at beginning of transition.
 - b) Flow at beginning of turbulence.
2. Decreasing velocity
 - a) Flow at beginning of transition.
 - b) Flow at beginning of laminar region.



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VIVA QUESTIONS

1. Define Reynolds number?
2. What is the formula of a Reynolds number for pipe flow?
3. What is the value of Reynolds number for laminar flow?
4. What is the significant of Reynolds number?
5. Differentiate laminar and turbulent flow in terms of Reynolds number?



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EXPERIMENT NO: 09

METACENTRIC HEIGHT MODEL

AIM: To determine the metacentric height of a ship model.

THEORY: When metacentre lies below the centre of gravity, then slight angular displacement of body causes to form a couple that tends to increase the angular displacement further. This is called unstable equilibrium. When metacentre lies exactly on the center of gravity then slight angular displacement does not create any couple, hence body remains in its new position. This is called neutral equilibrium. Hence, in a design of ship, care has to be taken to keep the metacentre well above the center of gravity, so that the ship is in stable equilibrium.

The apparatus consists of a ship model, which is made of rectangular shape for the purpose of simplicity. A movable weight slides in a guide bar at the deck. An upright is provided at the center of the ship from which is hung a plumb. When the weight is shifted from the center position, the ship tilts slightly. The angle of tilt (or angle of heel) is determined with the help of plumb. The position of the metacentre is then determined by displacement of weight and angle of heel.

PROCEDURE:

- 1.) Fill up water in the floating tank.
- 2.) Keep the ship floating over the water.
- 3.) See that plumb indicates zero reading.
- 4.) Displace the weight on the deck.
- 5.) Measure the displacement of weight and distance indicated by plumb.
- 6.) Repeat the procedure for different displacement of weight.

OBSERVATIONS TABLE

Sl No.	Weight displacement x cm	Plumb displacement d cm



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1. Weight of the ship, $W = 4.2$ Kg.
2. Sliding weight on the deck, $w = 0.17$ Kg.
3. Vertical distance of plumb scale from plumb suspension point,
 $L = 0.21$ Mtr. Let distance moved by the weight w at the deck be x .
Let angle of heel (through which the ship is tilted) be θ .

Since the point corresponds to metacentre for small angles of heel only, the true metacentric height is limiting value of $GM \rightarrow \theta$. For this, plot a graph of values of Gm for various values of θ and take the metacentric height of GM at $\theta = 0^\circ$.

VIVA QUESTIONS:

1. Define metacentric height of a floating body?
2. Which factor the Metacentric height depends?
3. Define metacentre of a floating body.
4. What are the criteria of stability of a floating body?
5. Explain how the metacentric height of a ship model is determined in the laboratory?



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EXPERIMENT NO: 10

FREE & FORCED VORTEX APPARATUS

AIM: To obtain the surface profile and the total head distribution of a forced vortex.

THEORY: When a liquid contained in a cylindrical vessel is given the rotation either due to rotation of vessel about vertical axis or due to tangential velocity of water, surface of water no longer remains horizontal but it depresses at the centre and rises near the walls of the vessel. A rotating mass of fluid is called vortex and motion of rotating mass of fluid is vortex motion. Vortices are of two types viz. forced vortex and free vortex. When a cylinder is in rotation then the vortex is called forced vortex. If water enters a stationary cylinder then a vortex is called free vortex.

The apparatus consists of a perspex cylinder with drain at center of bottom. The cylinder is fixed over a rotating platform which can be rotated with the help of a D.C. motor at different speeds. A tangential water supply pipe is provided with flow control valve. The whole unit is mounted over the sump tank. Water is supplied by a centrifugal pump.

SPECIFICATIONS:

- 1) Cylindrical vessel 200 mm dia with central bottom outlet, mounted over rotating platform. D.C. motor with controller to rotate the vessel.
- 2) Measuring tank $600 \times 400 \times 250$ mm mounted over the sump tank.
- 3) Pump to circulate the water.
- 4) X-Y co-ordinate measurement probe.

PROCEDURE:

A) FORCED VORTEX –

- 1) Close the drain valve of the cylindrical vessel. Fill up some water (say 4-5 cms height from bottom) in the vessel.
- 2) Switch 'ON' the supply and slowly increase motor speed. Do not start the pump.



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- 3) Keep motor speed constant and wait till the vortex formed in the cylinder stabilizes. Once the vortex is stabilized note down the co-ordinates of the vortex & complete the observation table.
- 4) With the surface attachment of tachometer, measure outside surface speed of vessel & note down in observation table.

(Tachometer is not supplied with the unit)

B) FREE VORTEX-

- 1) Keep the orifice at the bottom centre of the vessel.
- 2) Open the bypass valve & start the pump.
- 3) Observe the vortex in the vessel.

OBSERVATIONS :

A) Forced Vortex –

Sr. No.	Radius (x co-ordinate) Cms	Height (z) (y co-ordinate) cms	Surface Speed m/min

Similarly calculate values of Z at different r.

(Note- For forced vortex, linear velocity of the cylinder does not equal the actual water velocity near the I.D. of cylinder. Also for free vortex, as water does not enter exactly tangentially & velocity changes after it enters the cylinder which is not known, it is very difficult to calculate velocity of water exactly, the theoretical calculations deviate much from the observations. It can be readily observed that water comes out from pipe with



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high velocity, but velocity of water near the walls of cylinder appears to be very less).

PRECAUTIONS:

- 1) While making the experiment of forced vortex, see that water does not spill away from the vessel. Do not increase the speed of rotation excessively.
- 2) Do not start pump for forced vortex experiment.

VIVA QUESTIONS:

1. Define the terms: Vortex flow, forced vortex flow, & forced vortex flow.
2. Differentiate between forced & free vortex flow.



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LAB RECORD

OF

REFRIGERATION & AIR CONDITIONING



DEPARTMENT OF MECHANICAL ENGINEERING

NAME OF STUDENT _____

SEMESTER _____

BATCH _____

ROLL NO. _____

ACADEMIC SESSION _____

CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY
Kailash Nagar, Near Industrial Estate, Bhilai, Distt.-Durg, C.G.
Ph.No. : 0788 2286662/3/4, Fax. No. 0788 2285266
Website www.ccetbhilai.ac.in

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PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design / development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the Engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments.
12. **Life- long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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Course Objectives:

The main objective of the course are: to demonstrate the concepts discussed in Computer Integrated Manufacturing course, to introduce CNC part programming for simulation of various machining operations, to educate the students on Flexible Manufacturing System and Robot Programming and also on the hydraulics, pneumatics and electro-pneumatic systems.

Course Outcomes: On successful completion of the course, the student will be able to:

1. Demonstrate an understanding of concepts discussed in Computer Integrated Manufacturing course and its implementation in manufacturing
2. Write CNC part programs using CADEM simulation package for simulation of machining operations such as Turning, Drilling & Milling.
3. Write programs for Flexible Manufacturing Systems.
4. Write programs for Robotics.
5. Demonstrate an understanding of the operating principles of hydraulics, pneumatics and electro-pneumatic systems.

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REFRIGERATION & AIR CONDITIONING

Refrigeration & Air-Conditioning Lab	
Semester: B Tech 7 th	Code: D037721(037)

Exp.no.	EXPERIMENTS (Minimum 7 Experiments needs to be performed by each students)
1	To study domestic refrigerator.
2	To study the hermetically sealed compressor.
3	To study Refrigeration Tutor and to determine the following:- a. Theoretical coefficient of performance b. Actual coefficient of performance. c. Theoretical capacity of the plant d. Actual capacity of the plant
4	To study the mechanical heat pump and to determine the following:- a. Theoretical coefficient of performance b. Actual coefficient of performance. c. Theoretical capacity of the plant d. Actual capacity of the plant
5	To study the air and water heat pump and to determine the following:- a. Theoretical coefficient of performance of the system as a refrigerator and as a heat pump. b. Actual coefficient of performance of the system as a refrigerator and as a heat pump. c. Capacity of the system in tons as a refrigerator. d. Capacity of the system in kW as a heat pump under the following conditions of operation:- i. Water cooled condenser and water-cooled evaporator. ii. Water-cooled condenser and air-cooled evaporator. iii. Air-cooled condenser and air-cooled evaporator. iv. Air-cooled condenser and water-cooled evaporator.
6	To study the following processes on the air conditioning test rig: a. Sensible heating b. Sensible cooling c. Sensible cooling/cooling dehumidification d. Humidification and cooling
7	To find the efficiency of cooling tower test rig.
8	To study the simple vapor absorption system.
9	To study the AC Simulator and to determine the following: a. Sensible heating b. Sensible cooling c. COP of R-22 d. Air washer efficiency e. Sensible heat load applied f. Latent heat load applied g. RSHF h. ESHF i. Creation of different climatic conditions in AC simulator

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REFRIGERATION & AIR CONDITIONING7th SEM MECHANICAL**LIST OF EXPERIMENTS**

S.NO.	NAME OF EXPERIMENTS	PAGE NO.	PERFORMED ON	REMARKS
01	To study refrigeration tutor and to determine the following- a. Theoretically co-efficient of performance. b. Actual co-efficient of performance. c. Theoretical capacity of the plant. Actual capacity of the plant.			
02	To study the following processes on the air conditioning test rig- a. Sensible heating. b. Sensible cooling c. Sensible cooling/cooling dehumidification. d. Humidification and cooling			
03	To study the air and water heat pump and to determine the following- a. Theoretical co-efficient of performance of the system as a refrigerator and as a heat pump. b. Actual C.O.P. of the system as a refrigerator and as a heat pump.			

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	<p>c. Capacity of the system in tons as a refrigerator.</p> <p>d. Capacity of a system as kW as a heat pump under the following conditions of operation-</p> <p>i. Water-cooled condenser and water-cooled evaporator.</p> <p>ii. Water-cooled condenser and air-cooled evaporator.</p> <p>iii. Air-cooled condenser and air-cooled evaporator.</p> <p>iv. Air-cooled condenser and water-cooled evaporator.</p>			
04	<p>To study the mechanical heat pump determine the following-</p> <p>a. Theoretical coefficient of performance</p> <p>b. Actual co-efficient of performance</p> <p>c. Theoretical capacity of the plant.</p> <p>d. Actual capacity of the plant.</p>			
05	To study the domestic refrigerator.			
06	To study the hermetically sealed compressors.			
07	To study the simple vapour absorption system.			
08	To find out the efficiency of Cooling tower test rig.			

Signature of Teacher

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GENERAL INFORMATION ON REFRIGERATION **AND** **AIRCONDITIONING**

Refrigeration is a process of removing heat at low temperature and rejecting it at a relatively higher temperature. Normally refrigeration is used when temperatures required are lower than the atmosphere.

The media used for providing refrigeration is a fluid called the refrigerant and the process of refrigeration is achieved by different methods such as vapour compression, absorption, steam jet refrigeration system etc.

The most commonly used system is the vapour compression cycle for which either rotary, reciprocating or centrifugal compressors are used. An extensive survey, recommends, reciprocating compressors are to be the best suited for a wide range of application and different sizes.

The most widely used refrigeration application with vapour compressor cycles are air-conditioning and cold storages. In air-conditioning refrigerant in the liquid states is fed to the evaporator through a throttling device and in the process of changing its states from liquid to vapour, it absorb and removes the heat from the space to be air-conditioned. The vapour is compressed to a higher pressure and heat generated is rejected in a condenser to be cooled to the liquid state. This forms the refrigeration cycle in air-conditioning.



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VAPOUR COMPRESSION REFRIGERATION CYCLE

The vapour compression refrigeration cycle is based on the following factors.

- (a) Refrigerant rate.
- (b) Type of refrigerant used.
- (c) Kind of application via air-conditioning, refrigeration, dehumidification etc.
- (d) The operating designs parameters.
- (e) The system equipments/components proposed to be used in the system.

The vapour compression refrigeration cycle is based on a circulating fluid media, via, a refrigerant having special properties of vaporizing at temperatures lower than the ambient and condensing back to the liquid form, at slightly higher than ambient conditions by controlling the saturation temperature and pressure.

Thus when the refrigerant evaporates or boils at temperature lower than ambient, it extracts or removes heat from the load and lowers the temperature and pressure consequently providing cooling.

The super- heated vapour pressure is increased to a level by the compressor to reach a saturation pressure so that heat added to vapour is dissipated/rejected into the atmosphere, using operational ambient conditions, with cooling medias such as air or water. The vapour is condensed to the liquid form and recycled again to form the refrigeration cycle.

The components used are :-

- (a) Evaporator
- (b) Reciprocating compressor
- (c) Throttling device
- (d) Condenser and receiver

The refrigeration cycle can be explained schematically in the two diagrams show in fig. 1 and 2(a) & 2(b).



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- (1) Schematic refrigeration cycle with components.
- (2) The vapour compression cycle on the mollier diagram.

The working of vapour compression refrigeration cycle and function of each of the above components is given below.

EVAPORATOR

The liquid refrigerant from the condenser at high pressure is fed through a throttling device to an evaporator at a low pressure. On absorbing the heat to be extracted from media to be cooled, the liquid refrigerant boils actively in the evaporator and change state. The refrigerant gains latent heat to vaporize at saturation temperature/pressure and further absorbs sensible heat from media to be cooled and gets fully vaporized and super-heated. The “Temperature-Pressure Relation Chart” table 1 can determine the pressure and temperature in the evaporator.

COMPRESSOR

The compressor is known as heart of the refrigeration system. It pumps the refrigerant vapour in refrigeration cycle as the heart pumps blood in the body. The low temperature, pressure, superheated vapour from the evaporator is conveyed through suction line and compressed by the compressor to a high pressure, without any change of gaseous state and the same is discharged into condenser. During this process heat is added to the refrigerant and known as heat compression. The compressor should have a compression ratio to raise the pressure of refrigerant to such a level that the saturation temperature of the discharge refrigerant is higher than the temperature of the available cooling medium, to enable the super-heated refrigerant to condense at normal ambient condition.

Different types of compressors are reciprocating, rotary and centrifugal and are used for different applications.



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CONDENSER

The heat added in the evaporator and compressor to the refrigerant is rejected in condenser at high temperature/high pressure. The super-heated refrigerant vapour enters the condenser to dissipate its heat in three stages. First on entry the refrigerant loses its super-heat, it then loses its latent heat at which the refrigerant is liquidified at saturation temperature pressure. These liquid losses its sensible heat, further and the refrigerant leaves the condenser as a sub-cooled liquid.

The heat transfer from refrigerant to cooling medium (air or water) takes place in the condenser. The sub-cooled liquid from condenser is collected in a receiver (whenever provided) and is then fed through the throttling device by liquid line to the evaporator.

There are several methods of dissipating the rejected heat into the atmosphere by condenser. These are water-cooled, air-cooled or evaporative cooled condensers.

In the water cooled condenser there are several types viz. shell and tube, shell and coil, tube in tube etc. In evaporative cooled condensers both air and water are used. Air-cooled condensers are prime surface type, finned type or plate type.

The selection of type depends upon the application and availability of soft water.

THROTTLING DEVICE

The high-pressure liquid from the condenser is fed to evaporator through a throttling device, which should be designed to pass maximum possible liquid refrigerant to obtain a good refrigeration effect. The liquid should be properly sized to have minimum pressure drop.

The throttling device is a pressure reducing and a regulator for controlling the refrigerant flow. It also reduces the pressure from the discharge pressure to the evaporator pressure without any change of state of the liquid refrigerant.



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The types of throttling devices are –:

- Capillary Tubes
- Thermostatic expansion valves
- Hand expansion valves
- Hand valves

The most commonly used throttling device is the capillary tube for applications upto approximate 10 refrigeration tons. The capillary is a copper tube having a small dia-orifice and is selected, based on the system design, the refrigerant flow rate, the operating parameters (such as suction and discharge pressures), type of refrigerant, capable of compensating any variations in load by allowing only liquid refrigerant to flow to the evaporator.

SUMMARY

The working pressures, temperatures and states of the refrigerant in different parts of the refrigeration cycle are shown in fig.

There are mainly two pressures operating in the refrigeration cycle, commonly known as the high side and the low side. The “High Side” is referred to high pressure prevailing from compressor onward right upto the inlet of the throttling device and from the throttling device upto the suction of the compressor is called the “Low Side”.

**VAPOUR COMPRESSION REFRIGERATION CYCLE
DIAGRAM (MOLLIER DIAGRAM)**

Earlier the state of the refrigerant in various parts of the refrigeration system, along with the pressures, temperatures etc. have been covered. It is now necessary to understand the individual thermodynamic processes that make up the cycle and also understand the effect of change in a particular part of the cycle on the overall complete cycle. These aspects are greatly simplified by the use of proper charts and diagrams, in which the process, and the complete cycle can be graphically represented for different conditions.



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There are two types of representation in use which are -:

1. The pressure-enthalpy (PH) diagram also known as the mollier diagram.
2. The temperature-enthalpy diagram (TS).

Of these, the pressure-enthalpy (PH) diagram is more commonly used and is explained here under.

MOLLIER DIAGRAM

The mollier of pressure-enthalpy (PH) diagram for a refrigerant is a graph with a number of curves from which various properties of the refrigerant under different conditions of phases can be read.

The curves are drawn by using the values taken from thermodynamic tables of the refrigerant, both at saturation and super-heated conditions. The pressures are represented on the ordinate (left vertical line) and the enthalpy (total heat content) in Btu/lb. are taken on abscissa (bottom horizontal line).

Since pressure and temperature have definite relation at saturation, the horizontal pressure lines can also represent constant temperatures and the diagrams are also termed as temperature-enthalpy diagrams. The charts include a curve, which indicates saturation line showing different states of refrigerant.

The chart is divided into three areas, which are separated from, each other.

- (a) Saturated liquid
- (b) Saturated vapour
- (c) The area in between the two having a mixture of liquid and vapour.



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PROCESSES:

1. Points falling on the left side saturated liquid curve represent Sub-Cooling.
2. Points on the right side of saturated vapour curve represent Superheating.
3. The horizontal distance between the two curves represent difference in enthalpy level between saturated vapour and liquid at specific pressure and is equal to latent heat of vaporization at the saturation pressure/temperature.

For known values of saturation pressures on high side and low side (PH) diagram or mollier diagram is shown in fig.

For simplification only saturated pressures are assumed. Four processes in refrigeration cycle are explained below:

(a) COMPRESSION

In compressor (vertical line 1-2 on diagram) the compression is assumed as adiabatic (constant enthalpy). No heat is added or subtracted to the refrigerant vapour from outside. The vapour is saturated at the beginning and end of compression. In actual practice, the vapors are super-heated at beginning and end of compression shown by dotted line 1'-2'.

(b) CONDENSER

In condenser (horizontal line 2-3 on diagram) the condensation of refrigeration takes place at constant pressure. The drop in enthalpy (total heat content) is equal to latent heat of condensation (or vapourisation) at saturation pressure. The process is shown by line 2-3 on diagram. The liquid at point 3 is saturated. In actual practice, the vapour is super-heated at beginning of condensation and sub-cooled at end of condensation. The process is shown by line 2'2-3'3. The refrigerant changes its state from vapour to liquid in this process.



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(c) THROTTLING

In throttling device (shown by line 3-4 in diagram) this is an adiabatic process, the pressure drop occurs in refrigerant constant enthalpy i.e. on heat transfer occurs between refrigerant and outside. The refrigerant is saturated liquid point 3 and mixture of vapour and liquid at point 4. For sub-cooled liquid the process is shown by dotted line 3'-4'.

(d) EVAPORATION

In evaporator (shown by line 4-1 in diagram) the evaporation of liquid refrigerant takes place at constant pressure. The refrigerant gains latent heat from surrounding medium to be cooled. The refrigerant is saturated vapor at end of evaporation at point 1. The net refrigerating effect is obtained by projection of 1 and 4 on line 0-x i.e. 01-04. In actual cycle taking sub-cooled of liquid refrigerant in condenser and super-heating of refrigerant vapour in evaporator, the net refrigerating effect would be 01-04'. It is seen to obtain better refrigerating effect, sub-cooled in condenser and super-heating in evaporator is essential.

SUMMARY

From mollier diagram the following are known :-

- Sequence of various process involved in the refrigeration cycle
- Refrigerating effect, compression, condensation, throttling

Following can be computed from mollier diagram.

- Refrigerating effect
- Heat equivalent of work done in compression
- Pressure drop in throttling device
- Coefficient of performance and power requirements
- Efficiency of refrigeration cycle
- Power consumption of EER.



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EXPERIMENT NO: 01

REFRIGERATION CYCLE TEST RIG

AIM:

To study refrigeration tutor and to determine the following-

- a. Theoretically co-efficient of performance.
- b. Actual co-efficient of performance.
- c. Theoretical capacity of the plant.
- d. Actual capacity of the plant.

DESCRIPTION:

This is a Refrigeration trainer. In this unit various type of experiments can be conducted. The unit is equipped with Kirloskar, Copland, ISI, CAJ-34 model compressor operate on 220Volt AC supply and works on free on F-12. The unit is fitted on sun mica base with compressor air cooled condensor, fan motor, receiver, liquid line indicator, drier, solenoid valve, thermostatic expansion valve, capillary tube expansion valve, flow meter, liquid diversify valves, water caloric meter (cooling coil), suction gauge, discharge gauge, digital temp. Indicator with probe to measure T_1 , T_2 , T_3 , T_4 , T_5 , & T_6 temp. Heater inside the caloric meter, cooling thermostat, heating thermostat, LPHP cut out other valves to control the liquid and one number charging valve provided to charge the liquid refrigerant. The voltmeter, amp. meter for compressor, amp. meter for heater, energy meter for compressor, energy meter for heater and switch have been provided which are duly interlocked for safety point of view.

PROCEDURE:

1. Switch on main Board, Check Voltage. It should not be less than 190 Volts.
2. Close the Rotameter inlet and outlet by pass valves.
3. Open the Hand shut-off valve on the mode either thermostatic expansion valve or capillary tube expansion valve.
4. Switch on the solenoid valve, when using the mode of Thermostatic Expansion valve.
5. Start the condenser for Fan motor.
6. Switch on the Compressor.



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7. See that all the respective indication lights are on.
8. Check and note down the voltage and Amp. of unit.
9. Put the water in the Evaporative Tank / Calorimeter.

Note: Do not run the unit / or never switch on the Heater without putting water in the evaporative tank.

10. Adjust the cooling thermostat according to your requirement.
11. At the time of start the unit, note not down the reading of Voltage, Amp. Suction and Discharge Gauge – Pressures, Reading of Energy meter for compressor.
12. Check and note down the reading of various temperature through Digital Temp. Indicator, such as T-1, T-2, T-3, T-4, T-5, and T-6 according.
13. Check that the Receiver service valves mist is open during start of the compressor.
14. Always close the door of the Evaporator / Calorimeter.
15. Note down the readings of the various pressure gauges, Absence of any reading will indicate the blockage of pipeline or leakage of Gas.
16. After the gap of 15 minutes start the Agitator motor for two minutes for equalization of the water temperature and note down all the readings.
17. Always run the unit with one Expansion Device, either by expansion valve or capillary tube expansion valve and note down the differences of temperatures and pressures, amps flow rate, etc.
18. While taking the reading of the Rotameter, switch on the Solenoid valve, slightly open by pass valves of the Rotameter; Close the main line and all the (Hand shut of valves) Note down the reading. The Rotameter will show the flow of the liquid refrigerant. The flow rate of the liquid Refrigerant is depending upon the observation of the liquid flowing in the line per minute.
19. While taking the reading of the Rotameter, Through – Capillary Tube Expansion valve. Similarly take reading of Temperatures, Pressures and mass flow rate through Rotameter.
20. After taking the reading, immediately close By-pass valves of the Rotameter.
21. As for the Rotameter is a very much delicate measuring Instrument. So for do not start your unit through Rotameter. Otherwise your Rotameter will Blast out. Use the Rotameter only

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at the time of your experiments. Further, always close the By-pass valves of the Rotameter.

22. Adjust the low pressure and High Pressure cutout.
23. Since the low pressure / and High Pressure cut out is a saving devices. LP will cut down the unit on lower pressure and HP will cut out on High Pressure. HP will cut out on increase of Head Pressure and LP will cutout at the time of Leakage of Gas or close of Receiver Service Valves/Hand Shut off valves.
24. Now let the unit run directly or through either capillary tube Exp. valve or Thermostatic Expansion valve without opening By-pass valves of Rotameter and note down the readings.
25. Now if you want to provide or test load on our compressor.
 - a. Switch on Heater.
 - b. Adjust the Heating thermostat its range must not go ahead more than 35°C as per ISI conditions.
 - c. Adjust the Dimmer state for Heating element.
 - d. Check and note down the reading of voltage, Amp. meters, Energy meter for Heating and Energy meter for compressor.
 - e. Check and note down the reading of temperatures, pressures and Energy.
 - f. Now let the units run at least 10 to 20 minutes.
 - g. Switch on the Agitator motor for 2 minutes for Equivalation of water Temperature.
 - h. Check Water Temperature through Digit Temp. Indicator. It must not go ahead 35°C.
 - i. Again take at least 2 to 3 readings with Rotameter and without Rotameter, with thermostatic Expansion valve or with capillary tube Expansion valve according to your requirements.
 - j. After taking your necessary results, Switch off the Heating Process It the unit run with Compressor cooling process.
 - k. While closing the unit, first switch off compressor, condensor Fan motor and all the valves and switches on the unit.
 - l. Always Check the Indication lights provided on the Board for each component.

Criterion 2

QIM 2.3.1 Student centric methods



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PRECAUTIONS:

1. Check the voltage. It should not be less than 220/230 Volts Single Phase 60 Hz AC supply.
2. Do not run the condensor, without switch on the Fan motor.
3. Do not start the unit, before putting the water in the Evaporative Tank/ water Tank.
4. Whenever the compressor is switched off. Do not switch on the Compressor, before five minutes of Interval.
5. Mount Rotameter Vertically and maintain upwards flow run.
6. Avoid sudden opening / closing of the Hand Shut off valve in the line to Prevent Float hunting and possible glass tube breakage. For this our company will not responsible for Replacement / Repair of the Rotameter.

PUMP DOWN THE GAS.

1. Start the unit and run at least 15 to 20 minutes and check the voltage, Amp. meter, and Gauges Both suction and Discharge gauges.
2. Close the receiver services valves and see that all the controls mounted on the liquid line should be open.
3. Run the unit at least 15 to 20 minutes and see the gauge Pressure, if there is 0 in the gauges, after expansion valves and suction line, and stop the unit with switch off the main switch and all other switches and valves.
4. Now you can also replace any part of the unit, if defective, replace, the parts if any and put it again in the line and light the same.

AGAIN RESTART THE UNIT

1. Check the voltage.
2. Open the Receiver Service valves.
3. Open all the Hand shut off valves (See Rotameter By-pass valves must be closed.)
4. Start the Unit Switch on the main switch.
5. Note down the readings of voltage, amp. meters, Energy meter's Pressure gauges, Dial type thermometers, Readings of glass thermometers etc.
6. Now continuously run your unit, accordingly as per your requirement of experiments. Take at least 2 to 3 readings and close the unit.



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OBSERVATION TABLE:**Take the difference pressures & temperature readings:-**

S.N.	Pressures		Temperatures					Rota Meter Mass	V	I
	P1	P2	T1	T2	T3	T4	T5	Flow rate Kg/min.		

Where

T1, P1 Compressor outlet temperature and pressure.

T2 Condensor outlet temperature

T3, P2 Compressor inlet temperature and Pressure.

T4 Calorimeter temperature.

T5 Ambient temperature.

Also note down value of mass flow rate, voltage, current & final value of energy meter.

Now to Calculate C.O.P. of Refrigeration cycle.

$$\begin{aligned} \text{C.O.P.} &= \frac{Q}{W} = \frac{\text{Heat Extracted Evaporator.}}{\text{Work done.}} \\ &= \frac{(h_1 - h_2)}{(h_3 - h_4)} \end{aligned}$$

h_1 = Enthalpy of refrigeration effects at inlet.



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h_2 = Enthalpy of refrigeration effects before compressor.

h_3 = Enthalpy of refrigeration effects outlet of compressor.

The values of h_1 , h_2 , h_3 can be calculated from p-h chart at follows.

Plot the respective pressure & temperature on p-h chart & find the respective enthalpies on these points. Putting these values in formula we get the C.O.P.

Conversion Factors

1ton of Refrigeration	=	12000 Btu/hr. = 3024 Kcal /hrs.
	=	3519watts
1 Kcal	=	4.187 KJ
1ton	=	4.717H.P.
1kg. per cm^2	=	14.22 Lb per inch^2
1kg. per cm^2	=	9.81 N/m^2
1Lb per inch^2	=	$\frac{9.81 \times 10^4 \text{ N/m}^2}{14.22}$
1Atmospheric pressure	=	1.033kg/Cm = 14.7 PSI
1H.P.	=	746 Watts
1Unit of Electricity	=	1000 Watts/Hr.
1kg	=	2.205 Pound

VIVA QUESTIONS:

1. What is refrigeration?
2. What are the applications of refrigeration?
3. What do you understand by coefficient of performance?
4. What is the standard rating of a refrigeration machine?
5. Enumerate different ways of producing refrigeration?



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EXPERIMENT NO: 02

AIR CONDITIONING TEST RIG

AIM:

To study the following processes on the air conditioning test rig-

- a. Sensible heating.
- b. Sensible cooling
- c. Sensible cooling/cooling dehumidification.
- d. Humidification and cooling

PROCEDURE :

- 1) Switch on main board check voltage. It should not be less than 190 volts
- 2) Close the rotameter inlet and outlet valves.
- 3) Open the hand shut-off on the mode either first capillary or second capillary.
- 4) Start the unit stepwise with condenser fan motor and then compressor.
- 5) See that all the respective indication lights are on.
- 6) Check the Amp. Meter :-
Initially it shall be 15 Amp. And then it will gradually decrease 10 to 12 Amp. It should not exceed 10 Amp. Check for voltage condenser fan motor, more amperes reading load on the compressor.
- 7) Note down the reading of amp. meter, voltmeter, energy-meter for compressor- motor, compressor, condenser cooling fan motor etc.
- 8) Note down the reading of the various pressure gauges. Absence of any reading will indicate the blockage of pipeline or leakage of gas.
- 9) Lower limit for suction pressure is = 50 psi, lower than this indicate less gas flow evaporator. Upper limit of suction pressure is = 80 psi, more than this indicates more gas flow or condenser fan not properly functioning.
- 10) Cutout should be operated at suitable points – LP at 30 or 35 psi and HP at 300 to 350 psi, differential is 7 to 10 psi for both LP and HP cutout.
- 11) Discharge pressure – 325 to 350 psi more value indicate improper condensation, condenser fans may not be working or respecting valve shall be closed.



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- 12) Note down the reading of DBT and WBT.
- 13) Take down the reading of various temperatures.
- 14) Please note that machine should run on only by expansion device (i.e. either capillary).
- 15) To take reading on rotameter close the main valve and open bypass valve for rotameter inlet and outlet reading will be Kg / min.
- 16) To disconnect the rotameter open the main valve then close the bypass valves (inlet & outlet of rotameter).
- 17) While switching off the machine first switch off the heater of in services, switch off the compressor, condenser fan motor, blower fan motor electrical components fitted on the panel board, then switch off the panel then switch off the main-board.

PUMP DOWN THE GAS

- 1) Start the unit run at least 15 to 20 minutes check the voltage, Amp.meter and gauges both suction and discharge gauges.
- 2) Close receiver services valves and see that all the controls mounted on the liquid line should be open.
- 3) Run the unit at least 15 to 20 minutes and see the gauge pressure, if there is 0 in the gauges, after expansion valve and suction valve line and stop the unit with switch off the main switch and all other switches and valves.
- 4) Now you can also replace any part of the unit, if defective replace the part if any and put it again in the line and light the same.

IMPORTANT CAUTIONS

- 1) Check the voltage, it should not be less than 200/240 volts. Single phase 50 hz AC supply.
- 2) Check the water in the boiler before switching on the boiler.
- 3) Do not run the compressor, without switch on the fan motor.
- 4) Do not switch on the heater without switch on the blower fan motor.
- 5) Whenever the compressor is switched off, do not switch on the compressor before five minutes of interval.
- 6) Mount rotameter vertically and maintain upwards flow run.



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- 7) Avoid sudden opening/closing of the hand shut off valve in the line to prevent float hunting and possible glass tube breakage. For this our company will not responsible for replacement / repair of the rotameter.

OBSERVATION TABLE:

S.N.	Pressure (PSIG)		Temperature (°F)				V	I
	P ₁	P ₂	T ₁	T ₂	T ₃	T ₄		

Where, T₁, P₁ are compressor outlet temperature and pressure.
 T₂, P₂ are condenser outlet temperature and pressure.
 T₃ Compressor suction temperature.
 T₄ Cooled air temperature.
 T₅ Ambient temperature.

	Cooling		Heating		Steam	
	WBT	DBT	WBT	DBT	WBT	DBT
Fresh Air						
Conditioned Air						



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VIVA QUESTIONS:

1. Define an 'air conditioning system'. Name its basic elements.
2. Enumerate the main parts of the equipments in the air conditioning cycle.
3. How is air conditioning system classified?
4. What is the difference between summer air conditioning & winter air conditioning?
5. List the applications of air conditioning.



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EXPERIMENT NO: 03

WATER COOLER TEST RIG

AIM:

To study the air and water heat pump and to determine the following-

- a. Theoretical co-efficient of performance of the system as a refrigerator and as a heat pump.
- b. Actual C.O.P. of the system as a refrigerator and as a heat pump.
- c. Capacity of the system in tons as a refrigerator.
- d. Capacity of a system as kW as a heat pump under the following conditions of operation-
 - i. Water-cooled condenser and water-cooled evaporator.
 - ii. Water-cooled condenser and air-cooled evaporator.
 - iii. Air-cooled condenser and air-cooled evaporator.
 - iv. Air-cooled condenser and water-cooled evaporator.

DESCRIPTION:

This is a vapour compression water cooler test rig. In this unit various types of experiments can be conducted. The unit is equipped with kirlosker Copeland, ISI, CAJ-2612M model compressor. Operate on 220 volts AC supply and works on R-12. The unit is fitted on sun mica base with compressor air cooled condenser, condenser fan motor; receiver, liquid line indicator, drier, solenoid valve, thermostatic expansion valve, capillary tube expansion valve, flow meter, liquid diversify valves, water cooler evaporator, suction gauge, discharge gauge, digital temp. indicator with probe to measure T_1 , T_2 , T_3 , T_4 , T_5 & T_6 temp. heater inside the geyser, water flow rotameter provided with water flow control valve, water pump, LPHP cut out, other valves to control the liquid and one number charging valve provided to charge the liquid refrigerant. The volt meter, Amp. meter for compressor, Amp. meter for heater, energy meter for compressor, energy meter for heater and switch have been provided which are duly interlocked for safety point of view.



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PROCEDURE:

1. Switch on main board, check voltage. It should not be less than 190 volts.
2. Close the rotameter inlet and outlet By Pass Valves.
3. Open the hand shut off valve on the mode either thermostatic expansion valve or capillary tube expansion valve.
4. Switch on the solenoid valve, when using the mode of thermostatic expansion valve.
5. Start the condenser fan motor.
6. Switch on the compressor.
7. See that all the respective indication light is on.
8. Check and note down the voltage and Amp. of the unit.
9. Put the water in the water cooler tank.

Note: Do not run the unit / or never switch on the heater without putting Water in the evaporated tanks/ water cooler tank.

10. At the time of start the unit, note down the reading of voltage, Amp. Suction and discharge gauges, pressures, reading of energy meter for compressor.
11. Check and note down the reading of various temperature through digital temp. indicator.
12. Check that the receiver service valves must be open during start of the compressor.
13. Always close the door of the water cooler.
14. Note down the reading of the various pressure gauges, absence of any reading will indicate the blockage of pipeline or leakage of gas.
15. Always run the unit with one expansion device either by the expansion valve or capillary tube expansion valve and note down the differences of temperature and pressure, rotameter flow rate etc.
16. While taking the reading of the rotameter, with solenoid valve, slightly open by pass valves of the rotameter, close the main line, hand shut off valves note down the readings. The rotameter will show the flow of the liquid refrigerant. The flow rate of the liquid refrigerant is depending upon the pressure of the liquid flowing in the line per minute.



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17. While taking the reading of the rotameter, through capillary tube expansion valve, switch off the solenoid valve, open the hand shut of valve for capillary, tube expansion valve you will find that our limit is running through capillary tube expansion valve, similarly. Take reading of temperature, pressure and mass flow rate through rotameter.
18. After taking the reading, immediately close by-pass valves of the rotameter.
19. As for the rotameter is a very much delegate-measuring instrument. So for do not start your unit through rotameter. Otherwise your rotameter will blast out. Use the rotameter only at the time of your experiments. Further always close the by-pass valves of the rotameter.
20. Adjust the low pressure and high-pressure cutout.
21. Since the low pressure and high pressure cutout is a saving devices. LP will cut down the unit on low pressure and HP will cutout on high pressure. HP will cutout on increase of head pressure and LP will cutout at the time of leakage of gas or close of receiver service valves / head shut off valves.
22. Now let the unit runs directly through either capillary tube exp. Valve or thermostatic expansion valve without opening by-pass valves of rotameter and note down the reading.
23. Now if you want to provide test load on compressor.
 - (i) Switch on heater.
 - (ii) Adjust the temperature its range must not go a head more than 45 °C for 15 minutes. If the machine is running for more then 15 minutes then temp. must be less than 40 °C.
 - (iii) Adjust the dimmer stat for heating element.
 - (iv) Check and note down the reading of voltage, Amp. meter energy meter for heating and energy meter for compressor.
 - (v) Check and note down the reading of temperature, pressure and energy.
 - (vi) Now let the unit runs at least 15 minutes.
 - (vii) After taking your necessary results, switch off the heating process let the unit run with compressor cooling process.
 - (viii) While closing the unit first switch off compressor, condenser fan motor and all the other valves and switches on the unit.
 - (ix) Always check the indication lights provided on the board for each component.

Criterion 2

QIM 2.3.1 Student centric methods



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PRECAUTIONS:

1. Check the voltage, it should not be less than 220/230 volts. Single phase 50 Hz Ac supply.
2. Do not start the compressor without switch on the condenser fan motor.
3. Do not start the unit, before putting the water in the evaporated tank/water cooler tank.
4. Whenever the compressor is switched off. Do not switch on the compressor, before five minutes of interval.
5. Mount rotameter vertically and maintain upwards flow run.
6. Avoid sudden opening/closing of the hand shut off valve in the line to prevent float hunting and possible glass tube breakage. For this our company will not responsible for replacement / repair of the rotameter.

PUMP DOWN THE GAS

1. Start the unit and run at least 15 to 20 minutes and check the voltage, Amp. meter and gauge both suction and discharge gauge.
2. Close the receiver services valves and see that all the controls mounted on the liquid line should be open.
3. Run the unit at least 15 to 20 minutes and see the gauge pressure, if there is 0 in the gauge, after expansion valve and suction line and stop the unit with switch off the main switch and all other switches and valves.
4. Now you can also replace any part of the unit, if defective the parts if any and put it again in the line and light the same.

TO RESTART THE UNIT

1. Check the voltage.
2. Open the receiver service valves.
3. Open all the hand shut off valves (see rotameter by-pass valves must be closed)
4. Start the unit with switch on the main switch.
5. Note down the reading of voltage, Amp. meter, energy meter, pressure gauge, dial type thermometers, reading of glass thermometers etc.
6. Now continuously run your unit, accordingly as per your requirement of experiments. Take at least 2 to 3 reading and close the unit.



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COMPRESSOR SPECIFICATIONS:

Rating	– High temperature R-12 group
Compressor model	– CAJ 2612m
No. of cylinder	– 1
Displacement per rev.	– Cu. inch Cc

	1.114 18.27
Rated cooling capacity	– BTU / hr. Kcal/hr.

	5100 1285
Refrigerant	– R-12
Motor circuit	– CSIR
Compressor cooling	– FAN 350 CFM
At rating condition	– Current (Amp.) Watts

	4.0 675
LRA at rated voltage	– 24
Operating voltage range	– 180 – 260 V
Oil refrigeration grade CC	– 890
Approximate weight kg.	– 21
Rating condition	– High temp. R-12
Ambient temp.	– 35 °C / or 95 °F
Evaporating temp.	– 7.2 °C / or 45 °F
Condenser temp.	– 55 °C / or 131 °F
Subcooled liquid temp.	– 46 °C / or 115 °F

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Suction gas temp.	—	35 °C / or 95 °F
Refrigerant	—	R-12
Suction pressure	—	PSIG kg / cm ²
		<hr/>
		41.9 2.9
Discharge pressure	—	PSIG kg / cm ²
		<hr/>
		180 12.6

COEFFICIENT OF PERFORMANCE OF REFRIGERATION CYCLE

The coefficient of performance (C.O.P.) is the ratio of heat extracted in the evaporator to the work done on the refrigerant. It is also called the theoretical C.O.P. and given as -:

$$\text{Theoretical C.O.P.} = \frac{Q}{W}$$

PRESSURE ENTHALPY (p – h) CHART

It is the most convenient chart for studying the behavior of a refrigerant. It is used to find the C.O.P. of the unit if the pressure and temperature are known of –

h_3 = Enthalpy or total heat of refrigerant at the outlet of the compressor.

h_2 = Enthalpy of refrigerant before it enters the compressor.

h_1 = Total heat of refrigerant at the inlet of the evaporator.

$$\text{Then C.O.P.} = \frac{h_2 - h_1}{h_3 - h_2}$$



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TEST & CALCULATION PROCEDURE:

1. Fill the storage tank up to the rated valve (60lt.)
 - Then switch on the main supply and start the pump with full flow rate for one minutes to equalize the temperature. Note down the water outlet temp.
 - Now start the cycle with all the precautions required. Note down the initial reading of energy meter and keep the flow rate as 60 lt. / hr.
 - Run the unit hour take the reading for different pressures & temperatures. The pressures are –
 - a) Compressor outlet.
 - b) Condenser outlet.
 - c) Expansion outlet.
 - d) Compressor inlet.

(Note – The sequence of gauge from left to right in machine will give the above sequence)

 - Similarly we can get the different temp. from the temp. indicator by rotating the knob at desired number. The sequence is as follows:-
 - a) Compressor outlet.
 - b) Condenser outlet.
 - c) Evaporator inlet.
 - d) Evaporator outlet.
 - e) Water outlet.
 - f) Water inlet.

(Note down the value of mass flow rate, voltage current and the final value of the energy meter.)

2. After one hour set the water inlet at any desired temp. (say 35 °C). And take the reading after 15 minute. Keep the flow rate of water at 60 lt. / hr.
 - After 15 minute change the water inlet temp. further and take the readings for next 15 minutes
 - If there is any variation in values of mass flow rate voltage and current then take the mean value for calculation.
 - The observation can also be taken by changing the water flow rate and keeping the temp. constant at any value depending upon the time available for the test.



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OBSERVATION TABLE:

S.N.	Pressure PSIG		Pressure	Mass Flow Rate (Kg/min)	Energy Meter (KWH)		Voltage (V)	Water Flow Rate (Lt/hr)	Current (Amp.)	
	P ₁	P ₂								

T ₁	T ₂	T ₃	T ₄	T ₅	T ₆

CALCULATION:

1. To find the C.O.P

Convert the pressure from PSIA to PSIG by using formula –

$$1 \text{ PSIA} = 14.696 + 1 \text{ PSIG}$$

- Convert the temperatures from °C to 0F by using formula –

$$\frac{C}{5} = \frac{F - 32}{9}$$

- Now draw the pressure enthalpy chart (p – h) chart according to the reading of pressure and temperatures,
- Find the enthalpies h₃, h₂, h₁ at the point's compressor outlet, compressor inlet and evaporator inlet respectively. Then

$$\text{C.O.P.} = \frac{h_2 - h_1}{h_3 - h_2}$$



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2. To find the cooling capacity

- Change the unit of the mass flow rate (m_1) according to the unit of enthalpy. Suppose the enthalpy is in BTU / LBM then change the mass flow rate from kg / min. to lb / min.
- Cooling capacity $m_1 (h_2 - h_1) \times 60$ BTU vapour absorption system / hr.

$$12000 \text{ BTU / hr.} = 3024 \text{ kcal / hr.}$$

$$1 \text{ TR} = 3017.8 = 3018 \text{ kcal / hr.}$$

- Cooling capacity depending upon the storage capacity

$$\text{Storage capacity} = 60 \text{ lt.}$$

$$\text{Let the water inlet temp.} = x \text{ } ^\circ\text{C}$$

$$\text{Let the water outlet temp.} = y \text{ } ^\circ\text{C}$$

$$\text{Then cooling capacity} = \frac{60 \times (x - y)}{3000} \text{ TR}$$

- If heating is continued to maintain the inlet water temp. during the test. Then add the heating capacity in the cooling capacity to find the capacity of the unit.

$$\text{Heating capacity} = \frac{\text{Power consumed} \times 3.14}{12000} \text{ TR}$$

- The power consumed can be taken from the energy by subtracting the initial value from the final and also can be found out taking product of voltage and current.



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VIVA QUESTIONS:

1. What are the types of water-cooled condensers?
2. What do you understand by fouling factor?
3. Write down the Dittus-Boelter equation for waterside coefficient.
4. Give the Grimson's equation for airside coefficient.
5. What are the differences between ordinary & pressure type coolers?
6. What is the basic constructional difference between Jai & Wox coolers?



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EXPERIMENT NO: 04

MECHANICAL HEAT PUMP

AIM :

To study the mechanical heat pump and to determine the following-

- a. Theoretical coefficient of performance.
- b. Actual co-efficient of performance.
- c. Theoretical capacity of the plant.
- d. Actual capacity of the plant.

PROCEDURE:

1. Switch on the main board check voltage. It should not be less than 190 volts.
2. Fill the condenser and evaporator tank with water by switching on the pumps.
3. Switch on the compressor.
4. See that all the respective indication lights are on.
5. Check that the receiver service valves must be open during start of the compressor.
6. The condenser and evaporator should be closed at the top.
7. Now proceed the experiment according to the test procedure given a head.

PRECAUTION:

1. Adjust the low pressure and high-pressure cutout. Since the low pressure and high pressure cutout is a saving device. LP will cut down the unit on low pressure and HP will cutout on high pressure. HP will cutout on increase of heat pressure and LP will cutout at the time of leakage of gas or close of receiver service valves / hand shut off valves.
2. Do not start the unit before filling the water in the evaporator tank and in condenser also.
3. Whenever the compressor is switched off. Do not switch on the compressor before five minutes of interval.
4. Mount rotameter vertically and maintain upwards flow run.
5. Avoid sudden opening and closing of the hand shut off valve in the line to prevent float hunting and possible glass breakage for this our company will not responsible for replacement / repair of rotameter.



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PUMP DOWN THE GAS

1. Start the unit and run at least 15 to 20 minutes and check the voltage, Amp. meter and gauge both suction and discharge gauge.
2. Close the receiver service valves and see that all the control mounted on the liquid line should be open.
3. Run the unit at least 15 to 20 minutes and see the gauge pressure, if there is 0 in the gauges, after expansion valve and suction line and stop the unit with switch off the main switch and all other switches and valves.
4. Now you can also replace any part of the unit, if defective the parts if and put it again in the line and light the same.

TO RESTART THE UNIT

1. Check the voltage.
2. Open the receiver service valves.
3. Open all the hand shut off valves.
4. Start the unit with switch on the main switch.
5. Note down the reading of voltmeter, Amp. meter, energy meter's pressure gauges etc.
6. Now continuously run your unit accordingly as per your requirement of experiments. Take at least 2 to 3 reading and close the unit.

TEST & CALCULATION & PROCEDURE:

- 1 - Start the machine keeping all the precautions in mind that are given in operation manual.
 - Fully open the valve to given maximum refrigerant flow.
 - Note down the initial reading of energy meter.
 - Adjust the water flow rate for condenser and evaporator as 80 LPH taking care not to flood the tank.
 - Allow the equipment to stabilize and after 30 minutes take temperatures:
 - a) Inlet temp. of water to condenser.
 - b) Outlet temp. of water coming out of condenser.
 - c) Inlet temp. of water to evaporator.
 - d) Outlet temp. of water from evaporator.
 - e) Compressor outlet temp.
 - f) Condenser outlet temp.



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OBSERVATION TABLE:

S.N.	Pressure		Temperature						Rotameter Reading	V	I	T ₇	T ₈
	P ₁	P ₂	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆					

The values h_1 , h_2 , h_3 i.e. enthalpies can be taken PH chart to plot the PH chart, make the respective pressures and temperatures on the PH chart and find the respective enthalpies.

To calculate power consumption by compressor -:

$$W = VI \cos \phi$$

Where

V = Voltage from voltmeter

I = Current in Amp. from Amp. meter

$\cos \phi$ = Power factor = 0.8 (Std.)

Note -: Convert the pressures from PSIG to PSIA or to pressure unit as given on your Ph chart.

$$1 \text{ PSIA} = 1 \text{ PSIA} + 14.696$$

- Convert the temperatures from °C to °F by using the formula.

$$\frac{C}{5} = \frac{F - 32}{9}$$

Compressor outlet = h_3

Evaporator outlet = h_2

Evaporator inlet = h_1

Criterion 2

QIM 2.3.1 Student centric methods

**DEPARTMENT OF MECHANICAL ENGG.
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- The COP for refrigeration is given as :-

$$(COP)_R = \frac{h_2 - h_1}{h_3 - h_2}$$

- The EPR or COP for the heat pump is given as :-

$$(COP)_{HP} = \frac{h_3 - h_1}{h_3 - h_2}$$

$$\text{And } (COP)_{HP} = (COP)_R + 1$$

- 2) **Actual COP** – It is found that the actual COP is always less than the theoretical, the actual COP is defined by the equation.

$$COP (\text{Actual}) = \frac{\text{Heat obtain from the condenser (BTU/hr.)}}{\text{Heat equivalent of electric energy input to compressor motor}}$$

$$COP (\text{Actual}) = \frac{MC_p (\Delta T) \times 60 (\text{ BTU/hr. })}{\text{Power from energy meter (Kw) } \times 3400}$$

Where M = Mass flow rate of refrigerant.

ΔT = Difference in inlet and outlet temp. of water circulating in condenser.

C_p = Specific heat of water.

3. Heating Capacity

$$\text{Heating capacity} = M (h_3 - h_1) \times 60 \text{ BTU/hr.}$$

$$12000 \text{ BTU/hr.} = 3024 \text{ kcal/hr.}$$



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VIVA QUESTIONS:

1. Why heat pump is most efficient when used for heating purposes?
2. Suggest the different constructional features used in heat pump to improve the overall EPR.
3. Explain the use of heat pump for heating & cooling cycle.
4. Give the industrial applications of heat pumps.
5. In brief what are the heat sources for heat pump?



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EXPERIMENT NO: 05

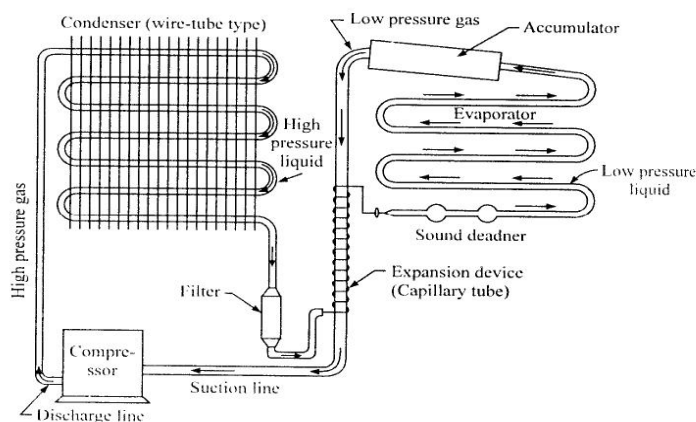
DOMESTIC REFRIGERATOR

AIM:

To study the domestic refrigerator.

THEORY: Refrigeration is the science of the producing and maintaining temperatures below that of the surrounding atmosphere. This means the removing of the heat from a substance to be cooled. Heat always passes downhill, from a warm body to a cooler one, until both bodies are at the same temperature.

CONSTRUCTION: Refrigerator are usually rated with internal gross volume and the freezer volume. The freezer space is meant to preserve perishable products at a temperature much below 0°C such as fish, meat, chicken etc., and to produce ice and ice cream as well. The refrigerators in India are available in different sizes of various makes, that is 90,100,140,200,250,380 liters of gross volume. The freezers are usually provided at top portion of the refrigerator space occupying around one-tenth to one-third of the refrigerator volume. In some refrigerators, freezers are provided at the bottom.



Domestic Refrigerator



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WORKING:-

The low pressure and low temperature refrigerant vapour (usually R-22) is drawn through the suction line to the compressor. The accumulator provided between the suction line and the evaporator collects liquid refrigerant coming out of the evaporator due to incomplete evaporation, if any, prevents it from entering the compressor. The compressor then compresses the refrigerant vapour to a high pressure and high temperature. The compressed vapour flows through the discharge line into the condenser.

In the condenser the vapour refrigerant at high pressure and at high temperature is condensed to the liquid refrigerant at high pressure and low temperature.

The high-pressure liquid refrigerant then flows through the filter and then enters the capillary tube (expansion device). The capillary tube is attached to the suction line. The warm refrigerant passing through the capillary tube gives some of its heat to cold suction line vapour. This increases the heat absorbing quality of the liquid refrigerant slightly and increases the superheat of vapour entering the compressor.

The capillary tube expands the liquid refrigerant at high pressure to the liquid refrigerant at low pressure so that a measured quantity of liquid refrigerant is passed into the evaporator.

In the evaporator the liquid refrigerant gets evaporated by absorbing heat from the container/articles placed in the evaporative chamber and is sucked back into the compressor and the cycle is repeated.

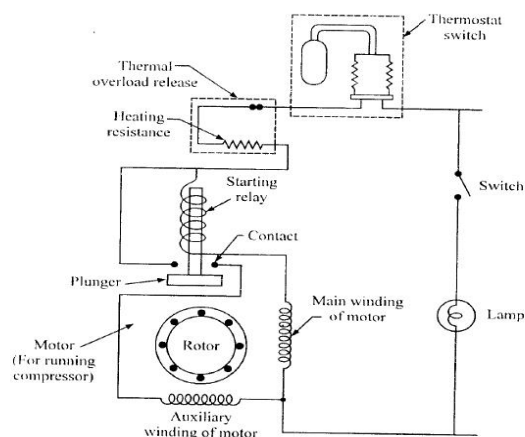
ELECTRICAL CIRCUIT OF A REFRIGERATOR-**Components-**

1. **Lamp and switch-** The arrangement is made in such a way that the lamp remains 'off' as the door is closed and becomes 'on' whenever the door is opened. When the lamp is on it is easy to trace the commodities placed in the refrigerator.
2. **Thermostat switch-** A thermostat switch maintains a requisite temperature in the refrigerator.
Freezer- Temperature remains between -7°C to 5°C approx.
Remaining part of the refrigerator- Temperature remains between 7°C to 15°C



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3. **Thermal over load release-** This component is a protective device for compressor motor unit. It operates when temperature of the compressor rises beyond a certain value or excessive current flows in the motor; under such condition the bimetallic strips disconnect the supply to the motor.
4. **Strain relay-** A starting relay starts the motor by the putting starting Winding/auxiliary winding of split phase induction motor across the supply.



Electrical circuit of a refrigerator

5. **Electric motor-** Electric motor used is single-phase induction motor, split phase type. It is a fractional horsepower induction motor; its size depends upon the capacity of the refrigerator.

VIVA QUESTIONS:

1. What is a domestic refrigeration system?
2. Explain working and construction of a domestic refrigerator?
3. What is the capacity of a refrigerator?
4. What is the meaning of the one-ton refrigerator?
5. Write a brief note of maintenance of a domestic refrigerator
6. How the domestic refrigerator units are changed?



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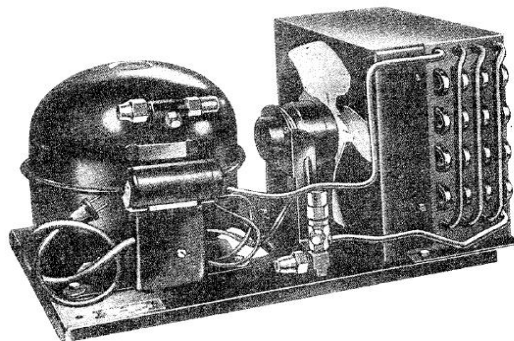
EXPERIMENT NO: 06

HERMETICALLY SEALED COMPRESSOR

AIM:

To study the hermetically sealed compressors.

THEORY: Hermetic, or sealed –type, compressor are directly connected to an electric motor; the motor and compressor operate on the same shaft and are enclosed in a common casing. Condensing units of this type are used almost exclusively in domestic refrigerators and also in locker and home cold-storage plants, drinking fountains, ice cream and food display cabinets, soda fountains and the like. They are made to operate on either the reciprocating or rotary principle and may be mounted with the shaft in either the vertical or horizontal position. In a unit of this type, the revolutions per minutes (rpm) obviously are the same for both compressor and motor. This factor has a very important bearing on the size and design of the unit since it determined the type of refrigerant, the type of control to be used, etc.



Hermetically sealed compressors

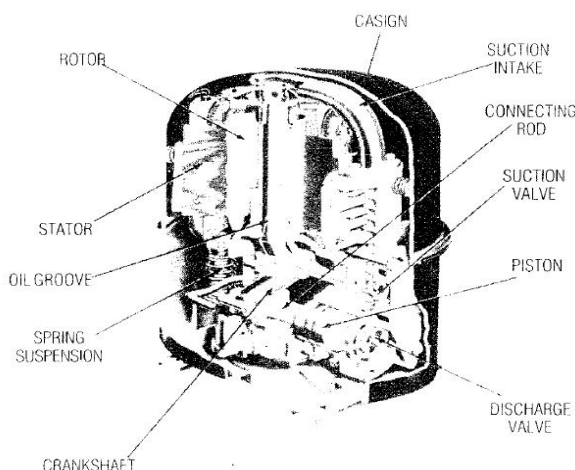
CONSTRUCTION & WORKING: In this unit one-piece housing provides for quietness and a minimum of vibrations. In addition the seal and coupling (always amaintenance problem in open compressors) are eliminated. Still anther dependable feature is the fact that the motor operates in an ideal



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atmosphere. Because of the fact that it is entirely enclosed no airborne dust or dirt can reach it. Suction gas at 50° to 60°F cools the motor and shell. Together the foregoing factors ensure long troublefree motor operation.

A different type of compressor in fig. (b) is internally spring-mounted. The motor located above the compressor operates in a vertical position where as the compressor is horizontal. This construction permits operation of the compressor in oil simplifying the lubricating problem. The suction intake is placed so that the suction vapour must travel through the holes in the motor rotor in order to get to the top of the shell and then to the intake tube.



Sectional view of a Vertical Hermetically sealed compressors

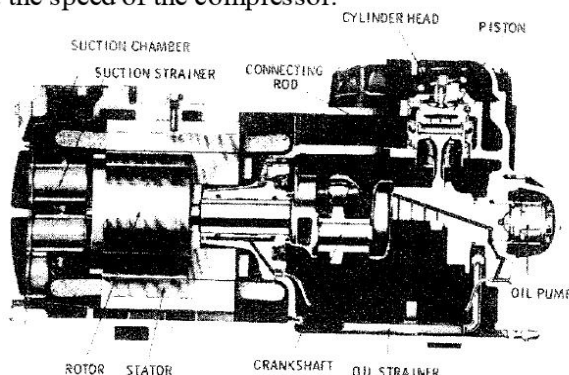
Certain models of this type of compressor are provided with internal thermostats, which are inserted in the motor windings and therefore measure motor temperature exactly without allowing for the air gap between the motor and the top of the shell where overloads are normally located. This is particularly important in heat pump applications where the ambient temperature may have considerable influence on the protection system. Because the thermostat is located at the most critical point it gives instantaneous and accurate sensing of the motor temperature and therefore can remove the compressor



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from the line at a safe temperature level. It is always operative when the compressor is running.

Another important feature is an anti-lug device consisting basically of two assemblies. One is the centrifuge, which is press fit on the crankshaft and therefore rotates at the speed of the compressor.



Sectional view of a Horizontal Hermetically sealed compressors

The refrigerant is drawn in through the holes in the top. Any liquid or oil is expelled through the slots on the side by centrifugal force, and the gas (being lighter) is drawn through the slots in the hub. The second assembly collects the gas and directs it to the cylinder heads. This system always operates when the compressor is running and functions under all conditions that may affect slugging. It is not dependent upon any external component, which may fail, and so is practically full proof.

VIVA QUESTION:

1. What do you understand by hermetically sealed compressors?
2. Where are these hermetic units used?
3. What are the merits and demerits of a hermetically sealed compressor?



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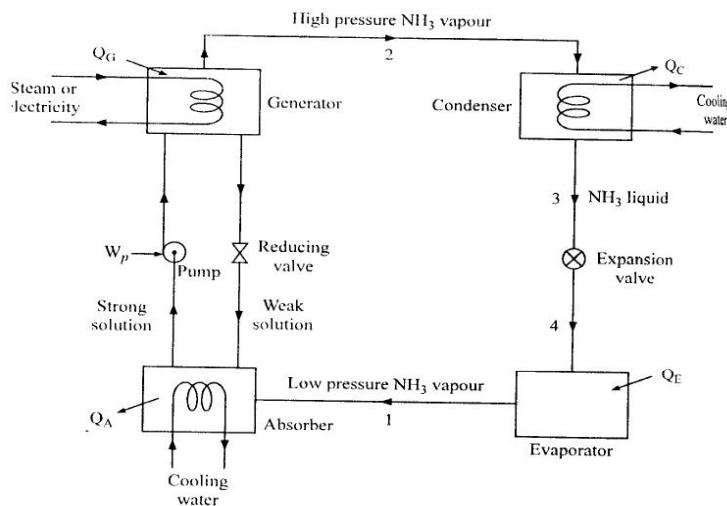
EXPERIMENT NO: 07

VAPOUR ABSORPTION SYSTEM

AIM:

To study the simple vapour absorption system.

THEORY: The vapour absorption refrigeration is a heat-operated system. It is quite similar to the mechanical vapour compression system, which employs reciprocating, centrifugal or rotary compressors. In both the system, we have the evaporator and condenser. The process of evaporation and condensation of the refrigerant takes place at two different pressure levels to achieve refrigeration in both the cases. The difference between the two systems lies in the method employed to create the two pressure levels in the system for evaporation and condensation of the refrigerant. They also differ in the manner by which circulation of the refrigerant in the system is achieved.



Simple vapour absorption system

Simple vapour absorption system consists of an absorber, a pump, a generator and a pressure-reducing valve to replace the compression



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system. The other components of the system and condenser, expansion valve and evaporator as in the vapour compression system.

WORKING:

- The ammonia vapour leaving the evaporator at point '1' is readily absorbed in the low temperature hot solution in the absorber, realizing the releasing the latent heat of condensation. The temperature of the solution tends to rise, while the absorber is cooled by the circulating water, absorbing the heat of solution Q_A and maintaining a constant temperature.
- Strong solution, rich in ammonia, is pumped (pump increase the pressure of the solution up to 10 bar) to the generator where heat (Q_G) is supplied from an external source (steam, electricity, gas flame, etc.) since the boiling point of ammonia is less than that of water, the ammonia vapour is given off from the aqua-ammonia solution at high pressure, and the weak solution returns to the absorber through a pressure reducing valve.
- The high-pressure ammonia vapour from the generator is condensed in the condenser to high-pressure liquid ammonia.
- This liquid ammonia is throttled by the expansion valve, and then evaporates, absorbing the heat of evaporation from the surrounding or brine to be chilled. This completes the simple vapour absorption cycle.

VIVA QUESTIONS:

1. What is simple vapour absorption system? State how can efficiency can be improved?
2. What is the basic function of a compressor in a vapour refrigeration system?
3. State the advantages of vapour absorption refrigeration system over vapour compression refrigeration system.



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EXPERIMENT NO: 08

WATER COOLING TOWER APPARATUS

AIM:

To find out the efficiency of cooling tower test rig.

INTRODUCTION: Many air conditioning and industrial processes generate heat which is to be removed and dissipated. Cooling tower is a device which is most commonly used to dissipate heat from various refrigeration, air conditioning and industrial processes. Cooling towers use a combination of heat and mass transfer to cool the water. Water to be cooled is sprayed in tower by spray nozzles, splash bar etc. so that a large water surface is exposed to air. The relative heat levels of water and air cause a portion of water to evaporate, which absorbs its latent heat of evaporation from the water remaining in liquid state. Thus, heat of vaporization at atmospheric pressure is removed from circulating water and is transferred to air stream.

Air is circulated in different ways, e.g. fans, convective currents, natural currents etc. Now days, counter flow forced draught cooling towers are used at many places because of compactness & simplicity. Most of places they have replaced atmospheric and natural draught towers.

DESCRIPTION: The apparatus consists of a cooling tower 200 x 200 mm cross sectional area of 1.5 m height. The tower is provided with expanded wire mesh as packing. The mesh is given special shape for extending water surface area exposed to air. The tower is provided with Perspex front for visualization. Hot water is sprayed evenly through holes in a spray box



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provided at the top of the tower, which falls over the packing and flows downwards by gravity. Air is supplied by a blower, which enters the tower through the air box provided at the bottom of the tower, making the unit counter flow forced draught cooling tower.

Escape air box provided at the top of the tower is fitted with eliminators which prevent passage of water droplets with air stream.

Inlet water flows through Rota-meter to geyser & finally sprayed over the packing. Outlet water flow is measured with measuring tank & stop watch. Air flow is measured with orifice and water manometer. A multi-channel Digital Temperature Indicator reads temperatures at various points. Five thermocouples are provided at intermediate locations to note down the intermediate temperatures.

SPECIFICATIONS:

- 1) Cooling Tower - 200 x 200 mm cross-section, 1.5 m height, filled with aluminum expanded wire mesh packing.
- 2) Geysers to supply hot water 3 kW capacity - 2 nos.
- 3) Centrifugal Blower - 1HP
- 4) Control valves for water and air.
- 5) Pump for re-circulating the water
- 6) Measurements –
 - a) Rota-meter for water inlet flow.
 - b) Measuring Tank and stop watch for outlet water flow.
 - c) Orifice with water manometer for air flow measurement (Orifice dia. - mm, $C_d = 0.64$)
 - d) Multi-channel Digital Temperature Indicator for temperatures at various points.



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PROCEDURE:

- 1) Connect electric supply to the unit & switch on pump.
- 2) Start the water supply. Switch 'ON' the geysers depending upon the water flow rate and temperature required. (With all geysers working water temperature rise of about 20 - 22°C is obtained at the flow rate of 250 LPH).
- 3) Start the blower. Cooling of water will start. Normally within 30 to 40 minutes, steady temperatures will be observed. Note down the readings and complete the observation table.
- 4) Change the airflow and repeat the procedure.
- 5) Change the water temperature (either by switching ON/OFF the geysers or by changing water flow rates.) If the temperature exceeds 65°C, thermostat will automatically put off the geyser.

DEFINITIONS:**Range –**

The difference of inlet and outlet water temperatures is called the range of cooling tower. Actually it is the range through which the water is cooled.

Approach –

The temperature difference between leaving water and entering air wet bulb temperature is known as 'approach' of the cooling tower.

Nomenclature –

m_a = mass flow of air, kg / s

m_w = mass flow of water, kg/s.

d = Diameter of orifice = 35 mm

a = area of orifice = m^2

h_{wi} = enthalpy of water entering tower kJ / Kg.



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h_{wo} = enthalpy of water leaving tower, kJ / Kg.

h_{ai} = total enthalpy of air entering tower, kJ / Kg.

h_{ao} = total enthalpy of air leaving tower, kJ / Kg.

$P_{sat\ in}$ = saturation pressure of water vapor in entering air, bar, at dry bulb temperature.

$P_{sat\ out}$ = saturation pressure of water vapor in leaving air, bar.

P_{wi} = partial pressure of water vapor in entering air, bar.

P_{wo} = partial pressure of water vapor in leaving air, bar.

P_a = atmospheric pressure, bar.

RH_i = Relative humidity of entering air, %

RH_o = Relative humidity of leaving air, %

w_i = absolute humidity of entering air, kg / kg of dry air

w_o = absolute humidity of leaving air, kg / Kg of dry air

h_{di} = enthalpy of dry air entering the tower, kJ / kg

h_{do} = enthalpy of dry air leaving the tower, kJ / kg

h_{si} = sensible heat of moisture entering air, kJ / kg

h_{so} = sensible heat of moisture in leaving air, kJ / kg

h_l = latent heat of evaporation of moisture, kJ / kg

h_{sh} = heat superheating of moisture, kJ / kg

ρ_a = density of air, kg / m³

m_s = mass flow rate of moisture in air, kg / s

C_{pw} = specific heat of water, 4.2 kJ / kg °K

C_{pa} = specific heat of dry air, 1 kJ / kg °K

C_{ps} = specific heat of moisture in air, 1.9 kJ / kg °K.

Criterion 2

QIM 2.3.1 Student centric methods

**DEPARTMENT OF MECHANICAL ENGG.
CHRISTIAN COLLEGE OF ENGG. AND TECHNOLOGY, BHILAI****OBSERVATIONS:**1) Water inlet flow, LPH, m_{wi} =

2) Water outlet flow,

Time for 5 lit, sec. M_{wo} 3) Manometer difference, mm of water = h_w

4) Temperatures –

i) Air inlet, DB - T_8 WB - T_9 ii) Air Outlet, DB - T_{10} WB - T_{11} iii) Water inlet - T_1 iv) Water outlet - T_7 v) Intermediate water temperatures - T_2
 T_3
 T_4
 T_5
 T_6 **CALCULATIONS:**

During cooling, water is assumed to be in the form of a droplet. The bulk water is surrounded by bulk air. The interface between water & air is assumed to be a film of saturated air having an intermediate temperature.

As surrounding air temperatures (wet and dry bulb) approach the bulk water temperature at that position, air becomes saturated with moisture at that temperature. Under adiabatic conditions equilibrium is reached at the temperature of adiabatic saturation i.e. at thermodynamic wet bulb temperature of air. This is lowest attainable temperature in a cooling tower.



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°C	Water & Steam	Sat. Water	Evaporation	Steam
	p_{sat} kg / cm ²	h_{sw} , kJ / kg.	L , kJ / Kg	h_{st} kJ / kg.
0	0.006228	0.0 0	2496.7	2496.7
1	0.007198	8.4 0	2492.10	2500.5
2	0.006664	4.22	2494.18	2498.4
3	0.007723	12.62	2489.48	2502.1
4	0.008289	16.80	2487.40	2504.2
5	0.008890	20.98	2484.12	2505.1
6	0.009530	25.21	2482.39	2507.6
7	0.010210	29.39	2480.31	2509.7
8	0.010932	33.61	2477.69	2511.3
9	0.011690	37.79	2475.21	2513.0
10	0.012513	41.97	2473.13	2515.1
11	0.013376	46.15	2470.65	2516.8
12	0.014291	50.33	2472.67	2523.0
13	0.015261	54.51	2465.59	2520.1
14	0.016289	58.69	2463.41	2522.1
15	0.017376	62.87	2461.43	2524.3
16	0.018527	67.04	2558.95	2526.0
17	0.019745	71.23	2456.37	2527.6
18	0.02103	75.41	2453.89	2529.3
19	0.02239	79.59	2451.81	2531.4
20	0.02383	83.77	2459.23	2533.0
21	0.02534	87.95	2446.85	2534.8
22	0.02694	92.13	2444.67	2536.8

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23	0.02863	96.31	2442.19	2538.5
24	0.03041	100.45	2440.15	2540.6
25	0.03229	104.63	2436.67	2542.3
26	0.03426	108.81	2435.09	2543.9
27	0.03634	112.99	2433.01	2546.0
28	0.03853	177.17	2429.93	2547.1
29	0.04083	121.35	2427.75	2549.1
30	0.04125	125.48	2426.02	2551.5
31	0.04580	129.66	2005.44	2135.1
32	0.04847	133.84	2421.36	2555.2
33	0.05123	138.2	2418.70	2556.9
34	0.05423	142.20	2416.40	2558.6
35	0.05733	146.34	2414.36	2560.7
36	0.06057	150.52	2411.48	2562.0
37	0.06398	154.70	2409.30	2564.0
38	0.06755	158.88	2407.12	2566.1
39	0.07120	163.06	2404.74	2567.8
40	0.07520	167.24	2402.26	2569.5
41	0.07930	171.42	2400.08	2571.5
42	0.08360	175.56	2397.64	2573.2
43	0.08809	179.74	2394.36	2574.1
44	0.09279	183.92	2392.68	2576.6

Criterion 2

QM 2.3.1 Student centric methods



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VIVA QUESTIONS:

1. What are the factors that influence the performance of a cooling tower?
2. What are the different types of cooling towers in use for refrigeration?
3. What is wet bulb approach of a cooling tower?
4. What is Algae?
5. What are the routine maintenance steps connected with the cooling tower?
6. Define the efficiency of a cooling tower.



Program: - B Tech MECHANICAL	Faculty Name:- Dr. P S RAO	Sem:- 6th
Course Name:-POWER PLANT ENGINEERING	Course Code: - C037632(037)	Max Marks:- 20

Assignment- 1

Note: - Each Question carries 4 marks.

1. Draw the layout of a modern steam power plant and describe the elements and circuits in it. (CO-1, PO-1, Level-2) [4]
2. Discuss elements of electric power system and explain primary and secondary power distribution system. (CO-2, PO-1&2, 2, Level-1) [4]
3. Draw a neat layout of diesel power plant and nuclear power plant. (CO-1&2, PO-2, 2, Level-2&3) [4]
4. Discuss the importance of following circuits of steam power plant:
Ash handling system, air preheater, steam reheater, feed water preheater and deaerator. (CO-1, PO-1, 2, Level-1)[4]
5. Briefly explain the pneumatic and hydraulic ash handling systems? (CO-3, PO-2,Level-2) [4]

Criterion 2

QIM 2.3.1 Student centric methods



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Criterion 2

QIM 2.3.1 Student centric methods



Assignment - 01

Name :- Rahul Kumar Bramhankar

Semester :- 5th

Roll no. :- 301103719003 (01)

Subject :- Solid Mechanics (SM)

College :- CCET Bhilai

Criterion 2

QIM 2.3.1 Student centric methods



Q.(1) state and prove Castiglione's theorem.

Ans(1):— If the total amount of energy stored in any loaded structure is 'U' then the deflection at a point 'A' of the structure at which the load is P, is given by —

$$\boxed{y_A = \frac{\partial u}{\partial P}} \text{ in dir. of } P.$$

→ let the load at 'A' be increased by small amount δP ; then the amount of energy in the structure will increase by δu and the total energy will become $U + \delta u$.

Now suppose that first the load δP was applied to the structure. Causing a deflecting δy_A , the workdone would be $\frac{1}{2} \delta P \cdot \delta y_A$ which is the negligible quantity of the second order.

let, given load be applied the deflecting at 'A' will be y_A , and the total workdone will be equal to the workdone by the given load. which will be equal to 'U', plus the workdone by δP , which will be $-\delta P \cdot y_A$.

Criterion 2



So that total work done will be -

$U + \delta P \cdot y_A \rightarrow$ This must be equal to the total energy in the structure.

$$\therefore U + \delta P \cdot y_A = U + \delta U$$

$$y_A = \frac{\delta U}{\delta P}$$

Similarly, it can be shown that if a couple M_A is applied at A and U is the total energy of the system, then the slope at A is given by -

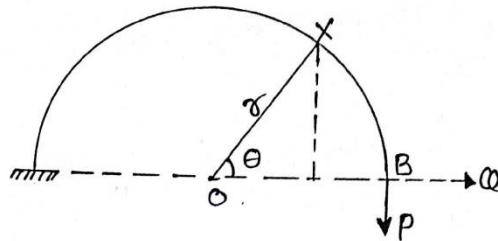
$$\theta_A = \frac{\delta U}{\delta M_A}$$

If it is desired to find the deflection in a direction different from that of P , apply an imaginary load Q in that direction. Find the total energy U , stored in the structure.

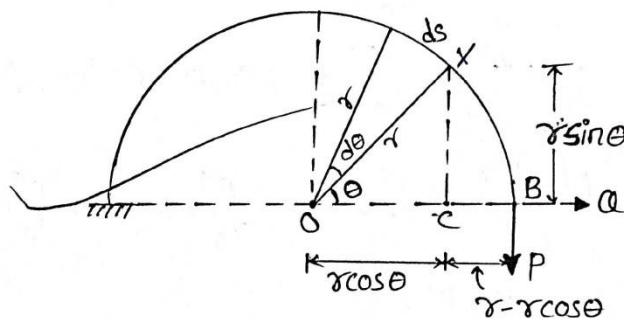
Then the deflection in the required direction will be $\frac{\delta U}{\delta Q}$ where Q is to be put equal to zero after the deflection.



Q. (2) Determine the vertical and horizontal deflection of the end B of the thin bar semi-circular shape, shown in fig, due to the vertical load P.



Solution (2) :-



(i) vertical deflection at 'B' :-

In ΔOXC

$$OC = r \cos \theta$$

$$XC = r \sin \theta$$

$$BC = r - r \sin \theta$$

taking moment from ds,

$$m_y = P \times (r - r \sin \theta) \quad \text{--- (i)}$$



differentiating eqn (i) w.r.to 'p'

We know that :-

$$U = \int_0^{\pi} \frac{M^2 ds}{2EI}$$

$$U = \int_0^{\pi} \frac{[Pr(1-\cos\theta)]^2}{2EI} \cdot r d\theta$$

$$U = \int_0^{\pi} \frac{P^2 r^2 (1-\cos\theta)^2}{2EI} r \cdot d\theta$$

$$U = \frac{P^2 r^3}{2EI} \int_0^{\pi} (1-\cos\theta)^2 d\theta$$

$$U = \frac{P^2 r^3}{2EI} \int_0^{\pi} (1 - 2\cos\theta + \cos^2\theta) d\theta$$

$$U = \frac{P^2 r^3}{2EI} \times \int_0^{\pi} 1 d\theta - \int_0^{\pi} 2\cos\theta d\theta + \int_0^{\pi} \cos^2\theta d\theta$$

$$U = \frac{3\pi P^2 r^3}{4EI}$$

if Δ_{cv} be the vertical deflection at B,

$$\frac{1}{2} \times P \times \Delta_{cv} = \frac{P^2 r^3 \times 3\pi}{4EI}$$

$$\Delta_{cv} = \frac{3\pi P r^3}{2EI}$$



i) For Horizontal deflection:- at 'B'

Now, Consider a dummy load ' Q ' applied in the horizontal deflection:-

Taking moment about ds , we get.

$$M_{sx} = Qr \sin \theta$$

differentiating w.r. to Q

$$\frac{\partial M_{sx}}{\partial Q} = r \sin \theta$$

Using Castiglione's theorem.

$$\therefore \text{Horizontal deflection } (\delta)_H = \left(\frac{\partial u}{\partial P} \right)_{Q=0}$$

$$\delta_{CH} = \int_0^\pi \frac{M_{sx} \cdot \frac{\partial M_{sx}}{\partial P}}{EI} \cdot ds.$$

$$\delta_{CH} = \int_0^\pi \frac{Qr \sin \theta \times r \sin \theta}{EI} \cdot r d\theta$$

$$\delta_{CH} = \frac{Qr^3}{EI} \int_0^\pi \sin^2 \theta \cdot d\theta \Rightarrow \frac{Qr^3}{EI} \int_0^\pi \frac{1 - \cos 2\theta}{2} d\theta$$

$$\delta_{CH} = \frac{Qr^3}{EI} \left[\frac{\theta}{2} - \frac{\sin 2\theta}{4} \right]_0^\pi$$

Criterion 2

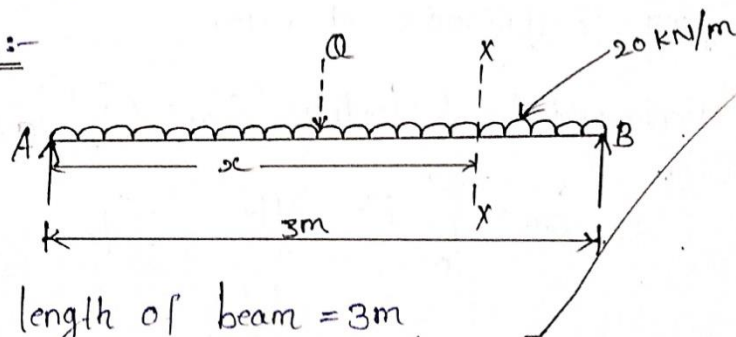


$$\delta_{CH} = \frac{Qx^3}{EI} \left[\frac{1}{2} - 0 \right]$$

$$\delta_{CH} = \frac{1}{2} \cdot \frac{Qx^3}{EI}$$

- Q. (3) Using Castigliano's Theorem, obtain the deflection at the centre of a beam carrying UDL of 20 kN/m over the whole span. The beam is simply supported over a span of 3m and $EI = 2.5 \text{ MN-m}^2$.

(3) Solution:-



Given: length of beam = 3m
 UDL (w) = 20 kN/m
 $EI = 2.5 \text{ MN-m}^2$

Let Q be the dummy load at the centre of the beam.

Taking moment about B,

$$R_A \times 3 = 60 \times 1.5 + W \times 1.5$$



$$R_A = 30 + \frac{W}{2}$$

Consider a section XX at dist. x from A.

$$\therefore M_x = \left(30 + \frac{W}{2}\right)x - \frac{20x^2}{2} - w(x-1.5)$$

$$\frac{\partial M_x}{\partial w} = \frac{x}{2} - (x-1.5)$$

Using Castiglione's theorem,

$$\text{Deflection } (\delta) = \int \frac{M}{EI} \frac{\partial M}{\partial w} dx.$$

$$\delta = \frac{1}{EI} \int_0^{1.5} \left[\left(30 + \frac{W}{2}\right)x - 10x^2 \right] \times 0.5x \cdot dx + \frac{1}{EI} \int_{1.5}^3 \left[\left(30 + \frac{W}{2}\right)x - 10x^2 - w(x-1.5) \right] \times [0.5x - (x-1.5)] dx$$

$$\delta = \frac{1}{EI} \int_0^{1.5} (15 + 0.25W)x^2 - 5x^3 dx + \frac{1}{EI} \int_{1.5}^3 \left[\left(30 + \frac{W}{2}\right)x - 10x^2 - w(x-1.5) \right] \times [0.5x - (x-1.5)] dx$$

$$\delta = \frac{1}{EI} \int_0^{1.5} (15 + 0.25W)x^2 - 5x^3 dx + \frac{1}{EI} \int_{1.5}^3 (30 - 0.5W)x - 10x^2 + 1.5w \times (1.5 - 0.5x) dx$$

Criterion 2



$$\delta = \frac{1}{EI} \int_0^{1.5} (15 + 0.25w) x^2 - 5x^3 dx + \frac{1}{EI} \int_{1.5}^3 (45 - 1.5w) + (0.25w - 30)x^2 + 5x^3 + 2.25w \cdot dx$$

Putting $w=0$

$$\Rightarrow \delta = \frac{1}{EI} \int_0^{1.5} 15x^2 - 5x^3 dx + \frac{1}{EI} \int_{1.5}^3 45x - 30x^2 + 5x^3$$
$$\Rightarrow \delta = \frac{1}{EI} \left[15 \frac{x^3}{3} - \frac{5x^4}{4} \right]_0^{1.5} + \frac{1}{EI} \left[\frac{45x^2}{2} - \frac{30x^3}{3} + \frac{5x^4}{4} \right]$$
$$\Rightarrow \delta = \frac{1}{EI} [16.875 - 6.33] + \frac{1}{EI} [151.88 - 286.27 + 94.9]$$
$$\Rightarrow \delta = \frac{21.09 \text{ kN}}{EI}$$

$\because E = 2.5 \times 10^6 \text{ N-m}^2$

$$\Rightarrow \delta = \frac{21.09 \times 10^3}{2.5 \times 10^6}$$
$$\Rightarrow \delta = 8.436 \times 10^{-3}$$

OR

$$\Rightarrow \delta = 8.436 \text{ mm.}$$

Criterion 2



Q.4) A Fixed beam of span 6m carries a point load 160kN & 120kN at distance 2m & 4m from left end. Find the fixed end moment and reaction at the support Draw the BM and SF diagram.

Solution (4):-

Taking moment about 'A'

$$R_B \times 6 - 160 \times 2 - 120 \times 4 = 0$$

$$6R_B - 320 + 480 = 0$$

$$R_B = 133.33 \text{ kN}$$

$$R_A + R_B = 160 + 120$$

$$R_A = 280 - 133.33$$

$$R_A = 146.67 \text{ kN}$$

BM. at C:-

$$R_A \times 2 = 293.34 \text{ kNm}$$

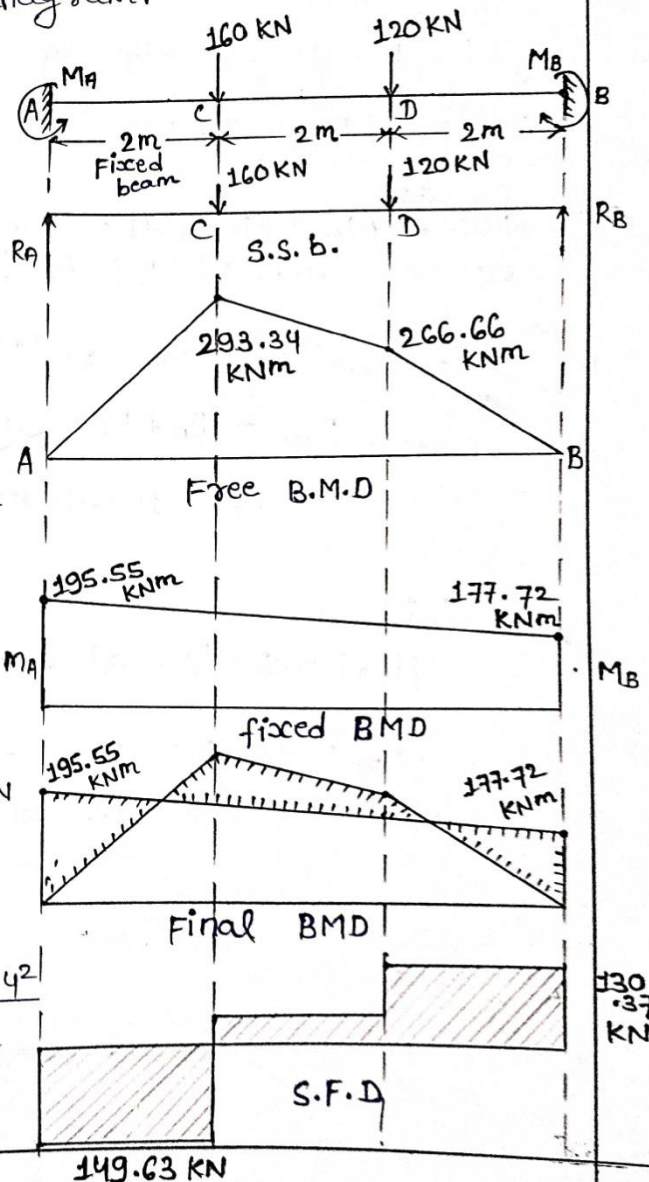
BM at D:-

$$R_B \times 2 = 266.66 \text{ kNm}$$

Fixed moment at left end 'A' -

$$M_A = \sum \frac{wab^2}{l^2} = \frac{160 \times 2 \times 4^2}{6^2} + \frac{120 \times 4 \times 2^2}{6^2}$$

$$M_A = 195.55 \text{ kNm}$$



Criterion 2



$$M_B = \frac{\sum wa^2b}{L^2} = \underline{\underline{177.78 \text{ KNm}}}$$

Reaction (R) at each point support due to end moment alone,

$$R = 195.55 - 177.78$$

$$\boxed{R = 2.96 \text{ KN}}$$

Since, $M_A > M_B$, the reaction at A is upward and at B it is downward.

∴ Final reaction at 'A'

$$R_{Af} = R_A + R_i = 146.67 + 2.96$$

$$R_{Af} = \underline{\underline{149.63 \text{ KN}}}$$

And,

Final reaction at 'B'

$$R_{Bf} = R_B - R = 133.33 - 2.96$$

$$R_{Bf} = \underline{\underline{130.37 \text{ KN}}}$$



Q.5) A fixed beam of span 5m carries a concentrated load of 200kN at 3m from the left end. if the right end sinks by 1mm the, the fixing moments at the supports. For the beam section take, $I = 10 \times 10^7 \text{ mm}^4$ and $E = 200 \text{ GPa}$. Find also the reaction at the supports.

Solⁿ (5):-

Given data:-

Length, $l = 5 \text{ m}$

Sink, $\delta = 1 \text{ mm} = 1 \times 10^{-3} \text{ m}$

Load, $w = 200 \text{ kN}$

$I = 10 \times 10^7 \times 10^{-12} \text{ m}^4$

$E = 200 \text{ GPa}$
 $= 200 \times 10^6 \text{ kN/m}^2$

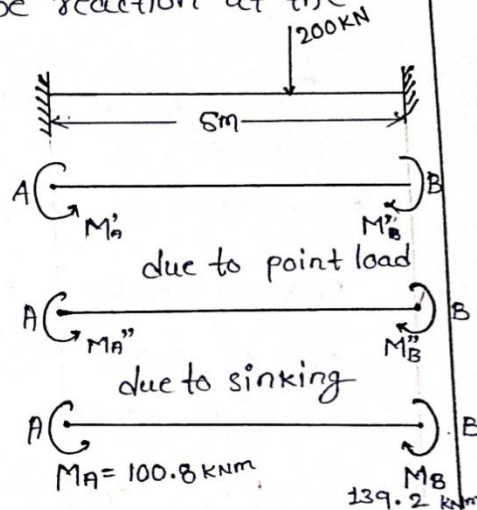
Fixing moment at A;

$$M_A = M_A' + M_A''$$

$$M_A = \frac{wab^2}{l^2} + \frac{GEI\delta}{l^2}$$

$$M_A = \frac{200 \times 3 \times (2)^2}{(5)^2} + \frac{200 \times 10^6 \times 10 \times 10^7 \times 10^{-12} \times 10^{-3}}{(5)^2}$$

$$M_A = 100.8 \text{ kNm} \quad (\text{hogging})$$



Criterion 2



Fixing moment at B,

$$M_B = M'_B - M''_B$$

$$M_B = \frac{W a^2 b}{l^2} - \frac{6 E I \delta}{l^2}$$

$$M_B = \frac{200 \times (3)^2 \times 2}{5^2} - \frac{20 \times 200 \times 10^6 \times 10 \times 10^7 \times 10^{-12} \times 1 \times 10^3}{(5)^2}$$

$$M_B = 139.2 \text{ kNm} \quad (\text{hogging})$$

Reactions A & B

$$R_A \times 5 - 200 \times 2 - M_A + M_B = 0$$

$$R_A \times 5 - 400 - 100.8 + 139.2 = 0$$

$$5 R_A = 361.6$$

$$R_A = 72.32 \text{ kN}$$

$$R_A + R_B = 200$$

$$72.32 + R_B = 200$$

$$R_B = 127.68 \text{ kN}$$



Criterion 2

QIM 2.3.1 Student centric methods



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SAMPLE ADDON COURSE

Criterion 2

QIM 2.3.1 Student centric methods



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A
Certificate Course
On
Control System Design

Report

Venue : CCET Bhilai

Date: 27/08/2018 to 14/09/2018

Name of resource person: Mr. M. Biswal

Criterion 2

QIM 2.3.1 Student centric methods



NOTICE

Date: 02/08/2018

All the faculty members and non teaching staff of the department are requested to attend departmental meeting on date: 02/08/2018, Time: 01:00 p.m.
Venue: HOD Cabin

Agenda of the meeting:

1. Finalization of Certificate Course
2. In-house (in case of availability of expert) / external guest faculty or Agency

Number of hours/days, Venue and Eligibility of Participants

HOD

Department of Electrical Engineering

Copy to:

1. Principal mam
2. All Faculty members
3. IQAC



Date: 03/08/2018

Minutes of Meeting

A departmental meeting of teaching and non teaching staff with HOD was held on date: 03/08/2018, Time: 01:00 p.m. Venue: HOD Cabin. Discussion on following points has been done.

1. It has been decided that a Certificate Course on Control System Design will be conducted from 27/08/2018 to 14/09/2018 for 30 hours.
2. Students of 3rd and 4th year studying in Electrical Engineering are eligible to attend the course
3. The title of the course will be Automation of Industrial Control Process
4. Mr. M. Biswal, Assistant Professor of Electrical Engineering Department will be conducting the classes
5. The course conducted will be free of cost
6. The course will be conducted for 2 hours every day after regular classes .
7. Venue for the course is Computer Lab.

HOD

Department of Electrical Engineering

Copy to:

1. Principal mam
 2. All Faculty members
 3. IQAC
-



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NOTICE

Date: 10/08/2018

All the students of 3rd and 4th year of Electrical Engineering Branch are hereby informed that we are planning to conduct a certificate course on Control System Design will be conducted from 27/08/2018 to 14/09/2018 for 30 hours. No fee will be charged for the same. Students willing to participate register your names to respective Class Incharges earliest by 25.08.2018.

HOD

Department of Electrical Engineering

Criterion 2

QIM 2.3.1 Student centric methods



Course Objective:

The course exposes students to control design for continuous-time linear time-invariant (LTI) systems. The course focuses primarily on using Laplace and frequency-domain techniques. It discusses design of 1-degree of freedom (i.e., single controller) and 2-degree of freedom control systems for Single Input-Single Output (SISO) plants, using a range of tools including Nyquist plots, Bode plots, Evans plots (root locus), and Nichols plots. It also discusses the fundamental limits associated with control design and the related trade-offs that need to be made during design.

Course Syllabus:

- ☐ Linear system theory
 - ☐ Fourier and Laplace transforms,
 - ☐ Transfer functions Fundamentals of feedback control
 - ☐ Nyquist stability theory Bode plots
 - ☐ Design of 1-degree of freedom control systems
 - ☐ Robust control Quantitative Feedback Theory
 - ☐ Quantitative Feedback Theory
 - ☐ Bode sensitivity integral
 - ☐ Bode Gain-Phase relationship
 - ☐ Ideal Bode Characteristic
 - ☐ Control of non-minimum phase systems
 - ☐ Control of unstable systems
 - ☐ Describing functions
 - ☐ Solved examples
-

Criterion 2

QIM 2.3.1 Student centric methods



Course Outcomes:

- ☐ Learn Linear system theory, Fourier and Laplace transforms, Nyquist stability theory Bode plots.
- ☐ To design -degree of freedom control systems, Robust control Quantitative Feedback Theory, Quantitative Feedback Theory
- ☐ To analyse Bode sensitivity integral, Bode Gain-Phase relationship, Ideal Bode Characteristic
- ☐ Learn Control of unstable systems and Describing functions

Criterion 2

QIM 2.3.1 Student centric methods

**Enrolment List**

S/NO.	Enroll No.	Name of Student
1	BA0095	AATIFA FATIMA
2	BA1785	AWINT KUJUR
3	BA2732	BHUPENDRA KUMAR DEWANGAN
4	BA3259	DEEPALI SAHU
5	BB5592	DIVYA SUNA
6	BB6487	RAHUL KUMAR CHOUDHARY
7	BA9523	RITESH KUMAR
8	BB1868	SANDHYA SAH
9	BB2161	VARGHESE EKKA
10	BA0095	VINAY KUMAR SINGH

Criterion 2**QIM 2.3.1 Student centric methods**

Attendance List

S.No	ENROLL NO.	NAME	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10	DAY 11	DAY 12	DAY 13	DAY 14	DAY 15	DAY 16	DAY 17	DAY 18	DAY 19	DAY 20	DAY 21	DAY 22	DAY 23	DAY 24	DAY 25	Signature
1	BA0095	AATIFA FATIMA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	<i>Aatifa</i>
2	BA1785	AWINT KUJUR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	<i>Awint</i>
3	BA2732	BHUPEN DRA KUMAR DEWANG AN	P	P	P	P	A	A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	<i>Bhupen</i>
4	BA3259	DEEPA SAHU	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	<i>Deepa</i>
5	BB5592	DIVYA SUNA	P	P	P	P	A	A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	<i>Divya</i>
6	BB6487	RAHUL KUMAR CHOUDHARY	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	<i>Rahul</i>
7	BA9523	RITESH KUMAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	<i>Ritesh</i>
8	BB1868	SANDHYA SAH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	<i>Sandhya</i>
9	BB2161	VARGHESE EKKA	P	P	P	P	A	A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	<i>Varghese</i>
10	BA0095	VINAY KUMAR SINGH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	<i>Vinay</i>

Criterion 2**QIM 2.3.1 Student centric methods**



Report On “A certificate course on Control system design”:

“A Certificate Course on Control system design” for 30 hours was arranged for the students of 3rd and 4th year of Electrical Students from 27/08/2018 to 14/09/2018. A total of 10 students enrolled themselves for the course and participated in the program. The sessions were conducted by Mr. M. Biswal, Assistant Professor, CCET Bhilai. The main objective of the course was to introduce the students about Control system design.

From the overall responses received from the students regarding the course, It has been analysed that a majority of students have recommended for similar type of Certificate Courses to be organised in the institution.

Photographs



Criterion 2

QM 2.3.1 Student centric methods



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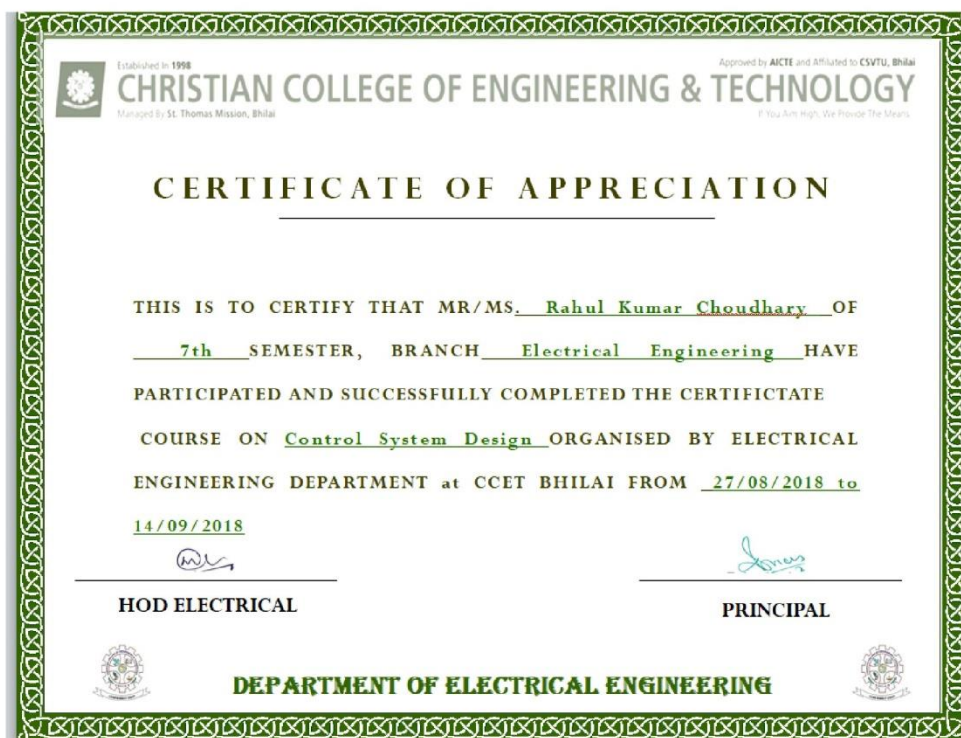
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Sample of Certificate



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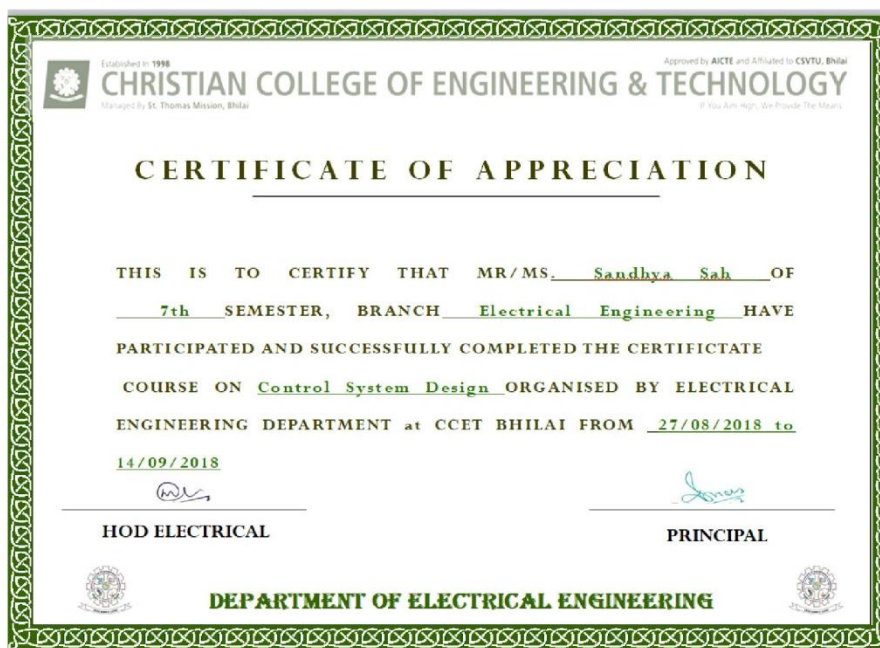
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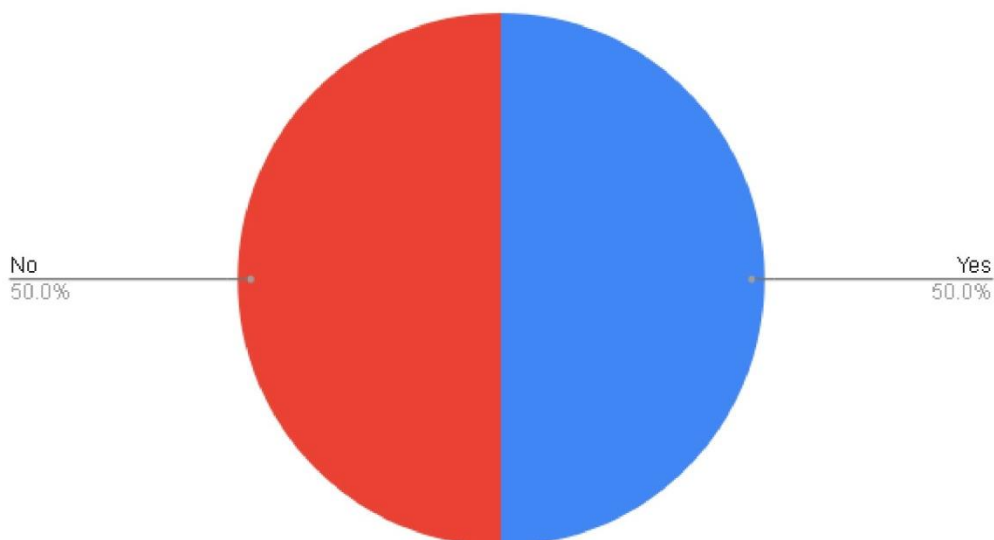
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Feedback:

Feedback link:

<https://forms.gle/zJf59H9uXUatQyba7>

Count of Q.1 Where objectives of the session clear to you?

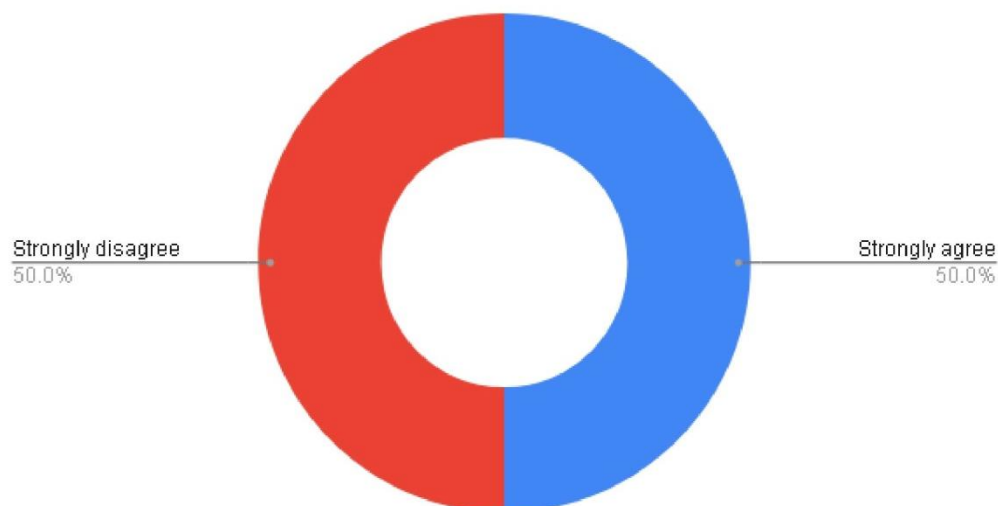


Criterion 2

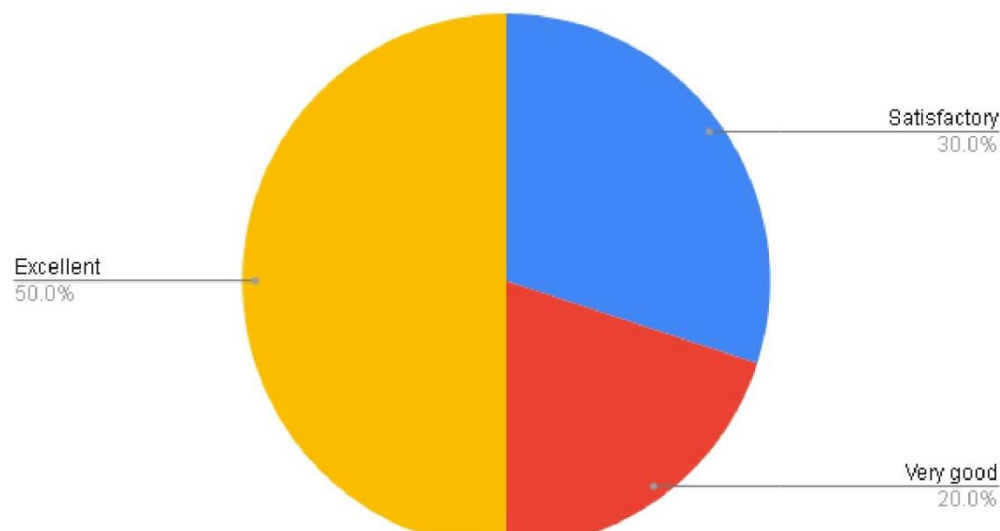
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Count of Q.2 The session exposed you to new knowledge and practices. :



Count of Q.3 Contribution of lecture to your skill/knowledge. :



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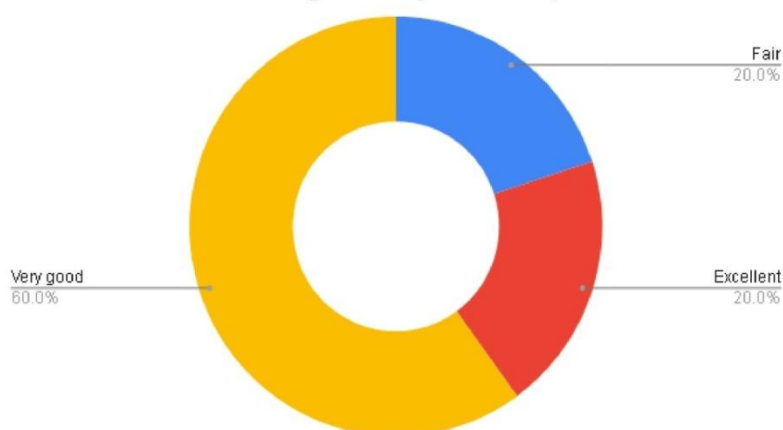
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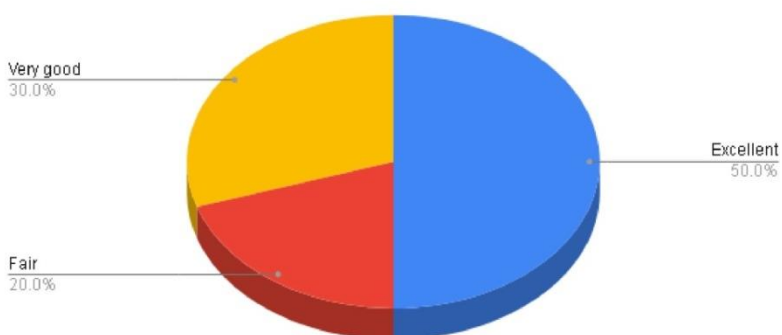
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Count of Q.4 Time management by session speaker.



Count of Q.5 Communication Skill of Speaker.



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A
Add on Course
On
Hands on to Mathematical Skills

Report

Venue: CCET Bhilai

Date: 19/10/2022 to 30/11/2022

Name of resource person: Dr. S.S. Bishoyi

Criterion 2

QIM 2.3.1 Student centric methods

**Course Objective :**

The objective of the course on **Hands on to Mathematical Skills** is to provide students with the fundamental knowledge and the practical experience needed to develop essential skills in mathematics.

Students will develop the ability to learn the mathematical concepts and techniques with the real world problems and academic pursuits.

Through the lectures and exercises students will learn mathematical skills such as Arithmetic's, Algebra, Trigonometry, Determinants and Matrices.

They will enhance the mathematical concepts and skills for problem solving and critical thinking

Detail of Resource Person: Dr.S.S.Bishoyi, Associate Professor, CCET Bhilai

Target Audience:

- Engineering students of first year students (All branch)
- A total of 18 students enrolled and 18 students participated in the program

Course Syllabus:

The course 'Hands on to Mathematical Skills' contains following modules

- Fundamentals of Mathematics,
 - Properties of Numbers (commutative, associative and Distributive)
 - Algebra and Quadratic Equations
 - Linear inequalities.
 - Geometry and its properties.
 - Introduction to Trigonometry
 - Introduction to Coordinate geometry
 - Determinants and Matrices
-

Criterion 2

QIM 2.3.1 Student centric methods



Course Outcome :

The outcome of the course on **Hands on to Mathematical Skills** was that the students could attain the fundamental knowledge and the practical experience needed to develop essential skills in mathematics. Students learned the mathematical concepts and techniques with the real world problems and academic pursuits.

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Circular

Date: 18/10/2022

All the students of First year Students are hereby informed that we are planning to conduct **A certificate course on “Hands on to Mathematical Skills”** daily for one hour from **19/10/2022 to 30/11/2022**. No fee will be charged for the course. **Dr. S.S. Bishoyi, Associate Professor, CCET.** will be the resource person. Students willing to participate should register your names to Class In charge at the earliest

First Year Incharge

Criterion 2

QIM 2.3.1 Student centric methods

**List of Students :-**

Roll No.	Name of Student	Branch
1	ANISHA KUMARI	COMP.SC.
2	DHEERAJ SONI	COMP.SC.
3	DIKSHA SONI	COMP.SC.
4	DURGA JYOTI YADAV	COMP.SC.
5	KUNAL DEVDA	COMP.SC.
6	MAYANK	COMP.SC.
7	NAFIYA KHAN	COMP.SC.
8	NAMRATA KUMARI	COMP.SC.
9	NEELKANTH	COMP.SC.
10	OMKAR	COMP.SC.
11	TANNU MAJUMDAR	COMP.SC.
12	VISHAL YADAV	COMP.SC.
13	ASHISH SONI	E&TC
14	HARSH TARONE	E&TC
15	KOMAL PRASAD	E&TC
16	NIHAL SHARMA	E&TC
17	ASHWANI KUMAR	EE
18	SAGAR YADAV	MECH.

Criterion 2**QIM 2.3.1 Student centric methods**



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Attendance Sheet

ATTENDANCE SHEET - SS BISHOYI

19/10/2022 TO 30/11/2022

HANDS ON TO MATHEMATICAL SKILLS

Roll No.	Name of Student	Branch	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	SIGNATURE			
			19/10	20/10	21/10	25/10	26/10	27/10	28/10	11/02	2/11	3/11	4/11	7/11	8/11	9/11	10/11	15/11	16/11	17/11	18/11	21/11	22/11	23/11	24/11	25/11	28/11	29/11	30/11	30/11						
1	ANISHA KUMARI	CSE	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Munish			
2	DHEERAJ SONI	CSE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep			
3	DIKSHA SONI	CSE	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep			
4	DURGA JYOTI YADAV	CSE	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
5	KUNAL DEVDAS	CSE	A	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
6	MAYANK	CSE	P	P	P	P	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
7	NAFIYA KHAN	CSE	P	A	P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
8	NAMRATA KUMARI	CSE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
9	NEELKANTH	CSE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
10	OMKAR	CSE	A	P	P	A	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
11	TANNU MAJUMDAR	CSE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
12	VISHAL YADAV	CSE	P	A	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
13	ASHISH SONI	CSE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
14	HARSH TARONE	CSE	P	P	A	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
15	KOMAL PRASAD	CSE	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
16	NIHAL SHARMA	CSE	P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
17	ASHWANI KUMAR	CSE	A	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep
18	SAGAR YADAV	CSE	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Arshdeep

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Criterion 2

QIM 2.3.1 Student centric methods



Report on “A Certificate Course on “Hands on to Mathematical Skills”

A certificate course on “Hands on to Mathematical Skills” daily for one hour from **19/10/2022 to 30/11/2022** daily one hour for 30 days in Room Number B-104 ground floor B block Building. **Dr. S.S. Bishoyi, Associate Professor, CCET** was the resource person. A total of 18 students enrolled them for the course and participated in the program.

The main objective of the course was to provide students with a deep understanding of the mathematical skills in the field of science, technology, engineering and mathematics. The courses helped in addressing the common challenges and misconceptions that students face when learning Maths. After attending the course they will be equipped with the concepts in mathematics and learn the skills in solving the problems.

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QIM 2.3.1 Student centric methods



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Photographs



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Sample Certificates

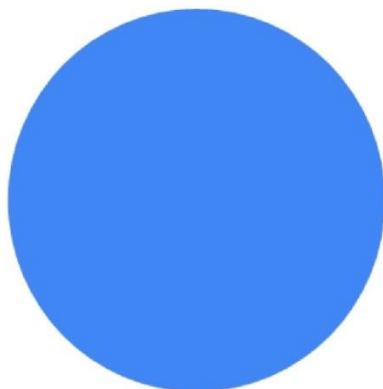


Criterion 2

QIM 2.3.1 Student centric methods

**FEEDBACK**

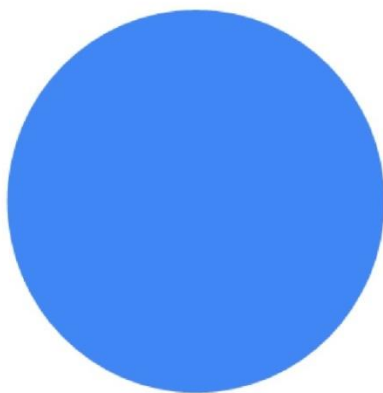
1. Were objectives of the sessions clear to you? *



■ YES

■ No

2. The session exposed you to new knowledge and practices.



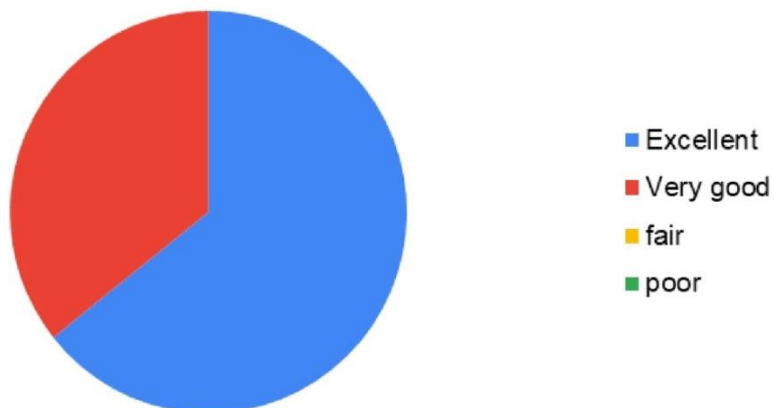
■ Strongly Agree

■ disagree

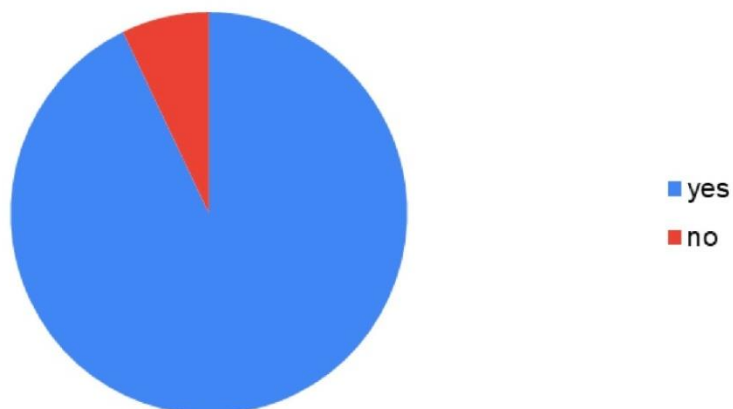
Criterion 2**QIM 2.3.1 Student centric methods**



3 Time management by session speaker



4. Communication Skill of Speaker .



Criterion 2

QIM 2.3.1 Student centric methods



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COPY OF WORKSHOPS, GUEST LECTURES, SEMINARS AND WEBINARS

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Invited Lecture

on

Quantitative Research Methodology

Resource Person: Dr. Nutan Singh

**Assistant Professor, Rungta College of Engineering and Technology,
Bhilai**

Date: 01 August 2018

Venue : CCET, Bhilai (C.G)



Organized by R&D Cell, CCET, Bhilai

Criterion 2

QM 2.3.1 Student centric methods



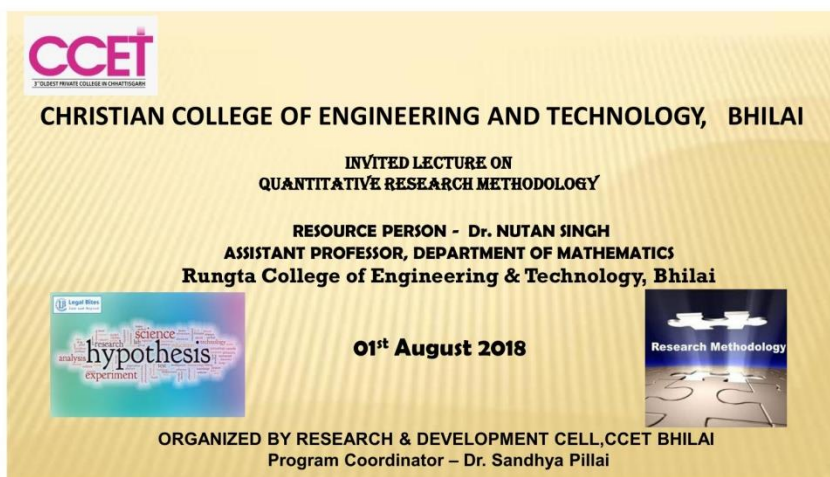
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Date: 01/08/2018

Brief summary of the program:

The Invited talk on Quantitative Research Methodology was organized on 01 August 2018 by R&D Cell for all the students pursuing undergraduate, postgraduate, research scholars and faculty members of all departments. The resource person was Dr. Nutan Singh, Assistant Professor in the department of Mathematics, Rungta College of Engineering and Technology, Bhilai. The objective behind organizing the talk was to enlighten all the participants about the Quantitative Research Methodology.

The program started with welcome address by Dr. Dipali Soren, Principal CCET. She introduced speaker and she also talked about the various aspects of research methodology in different areas.

The guest speaker, Dr. Nutan Singh, is the Assistant Professor of the Rungta College of Engineering and Technology, Bhilai. He gave insights on various methods and approaches to quantitative research. He also explained how a qualitative research is different from a quantitative research. He gave plenty of examples and case studies. By attending this lecture, students were able to understand

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QIM 2.3.1 Student centric methods

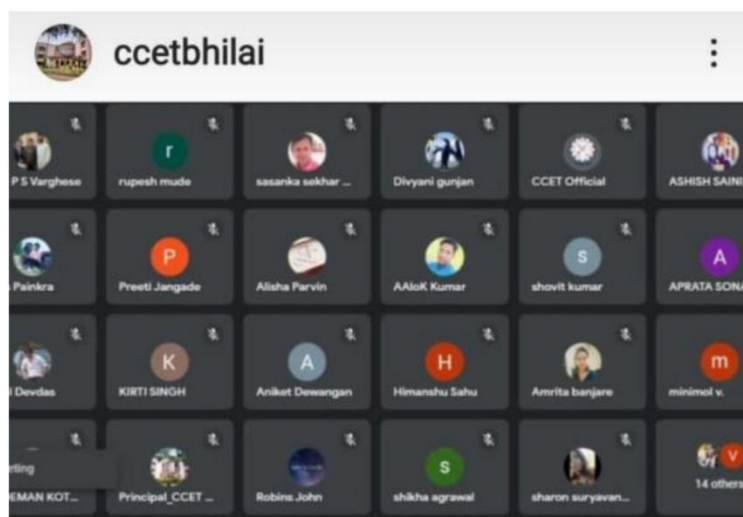


the different methods involved in a quantitative research. Various goals and objectives of research were also addressed. By sharing his own experiences, Dr. Nutan emphasized on how observation and ethnography are some of the widely used approaches for a quantitative research. The session ended with some interesting questions from curious students followed by detailed and insightful answers by the speaker. The lecture was interactive, informative and attention grabbing. She emphasized on the difference between Qualitative and Quantitative research methods, Introduction and types of quantitative methods of research methods and various interactive daily life examples.

The guest lecture was hosted by Dr. Sandhya Pillai. The guest lecture was apt in steaming the curiosity in pupils pertaining to Qualitative research methods. The whole session was conducted with enthusiasm and with a lot of interaction between the resource person and the audience.

The participants were extremely overwhelmed by the lecture delivered by Dr. Nutan Singh as it would be very effective for their career and future work on research. The participants would also like to extend their gratitude to Dr. Sandhya Pillai Co-ordinator of R&D cell for taking the initiative for organizing the guest lecture for students and faculties of all departments.

The Photos taken During the Events:



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QIM 2.3.1 Student centric methods

**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	
1	Dr. Nutan Singh	SPEAKER
2	Dr. PREETI NANDKUMAR	FACULTY
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Dr. DILLIP KUMAR DASH	FACULTY
5	Dr. JOJI THOMAS	FACULTY
6	Dr. PULIVARTI SRINIVASA RAO	FACULTY
7	Mr. AMIT SARDA	FACULTY
8	Mr. RADHESHYAM H GAJGHAT	FACULTY
9	PRITY BAXLA	CSE
10	MANJU SHARMA	CSE
11	ANAND MOHAN YADAV	CSE
12	CHANAKAYA DEWANGAN	CSE
13	HARISHANKAR BANJARE	CSE
14	praveen kumar mandle	CSE
15	SOBIT TOPPO	CSE
16	ABHISHEK PAL	MECH
17	AJAY KUMAR	MECH
18	AMAN KUMAR	MECH
19	AMIT KUMAR YADAV	MECH
20	ANJALI RAWAT	MECH
21	ANMOL FERNANDEZ	MECH
22	ARJUN DUBEY	MECH
23	ASHUTOSH KUMAR	MECH
24	BIKKU KUMAR	MECH
25	DEEPAK KUMAR NISHAD	MECH
26	AAKASH VERMA	ELECT.
27	ABHIJEET CHAKRABORTY	ELECT.
28	ANITOSH KUMAR	ELECT.
29	ANJULATA MINJ	ET & T
30	DEEPA NISHAD	ET & T
31	MAX DAS	ET & T
32	NEELIMA KINDO	ET & T
33	PREETI KUSHWAHA	ET & T
34	SANDHYA MINJ	ET & T
35	SHIVANI GUPTA	ET & T
36	VARA DEEPTHI	ET & T
37	VIMAL KUMAR	ET & T
38	AASHANA KHATOON	MTECH

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NATIONAL WORKSHOP

ON

Research Methodology & Anti plagiarism for Research Integrity”

Resource Person

- Dr. Srikar Potnuru, Associate Professor, Mechanical engineering Department, Malla Reddy College of Engineering and Technology, Hyderabad
- Dr. K. Subramanian, Director General CCOST, Raipur
- Dr. K Raghu Ram Mohan Reddy, Professor of Mechanical Engg, HITAM, Telangana
- Dr. Subhankar Bhowmick, Associate Professor Mechanical Engineering Department, NIT Raipur

Date : 10 and 11th August 2018

Venue: CCET Bhilai, C.G.



**Organized by
Electronics and Telecommunication department &
R&D Cell, CCET, Bhilai**

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Date: 11 August 2018

Summary of the National Workshop

A two day workshop on Research Methodology and Ant plagiarism for Research Integrity sponsored by Chhattisgarh council of Science and Technology, Raipur was organized by Electronics and telecommunication department in coordination with R&D cell of CCET, Bhilai on 10th and 11th August 2018. This two day event was inaugurated by Fr Jose K Varghese, Executive Vice Chairman in the presence of Dr. Dipali Soren Principal CCET, Dr. Srikar Potnuru, Key Note speaker, Dr. Mina Mishra Convener.

In the first session the keynote speaker Dr. Srikar Potnuru, Associate Professor, Mechanical engineering department, Malla Reddy College of Engineering and Technology, Hyderabad educated the gathering about the process of submission of proposal for research grant and project approval.

He motivated the gathering for fundamental and radical research. In the second session of the first day key note speaker Dr. Dipali Soren explained the various types of plagiarism their pitfalls and fallouts.

On the second day of the workshop the first session was conducted by Dr. K Subramanian, Director General CCOST, and Raipur. He emphasized the value of social connectivity in any good research. He urged the gatherings to commit to original work rather than plagiarism, prevalent now days in research community. He observed that the quality of Indian research has seen significant degradation in recent years. In the second day session Dr. K Raghu Ram Mohan Reddy, Professor of Mechanical Engg, HITAM, Telangana. He said that the vital aspect of research is its Topic, which must have a genuine social need. He told various tips for the same and mentioned that the essence of one's work lies in its significance.

In the final session of the workshop Dr. Subhankar Bhowmick, Associate Professor Mechanical Engineering Department, NIT Raipur gave a very enlightening lecture on Thesis writing as well as software's and tools needed for the same.

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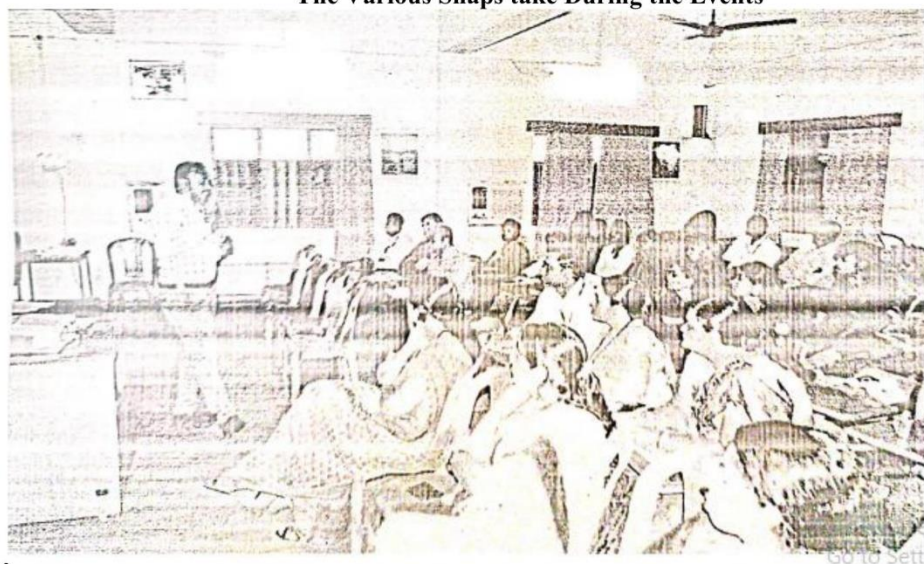
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The Various Snaps take During the Events



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Christian College of Engineering & Technology, Bhilai

INVITATION

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION

in co-ordination with R & D Cell

Cordially invites you to the Inaugural session of

NATIONAL WORKSHOP ON

Research Methodology and Anti-plagiarism for Research Integrity

ON
10th & 11th August 2018

Sponsored by CCOST

At 10:00 am in A-Block, Seminar Hall, CCET, Bhilai

Dr. K. SUBRAMANIAM
(IFS, Director General, CCOST)

&

Hon. Fr. JOSE K. VARGHESE
(Executive Vice Chairman,
CCET, Bhilai)

will inaugurate the workshop

Prof. Dr. Dipali Soren
(Principal, CCET, Bhilai)
will preside over the workshop



Mrs. Dhanya Vineesh
Organizing Secretary

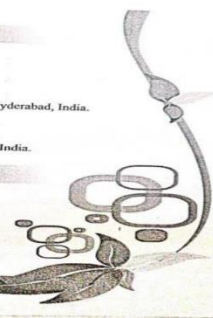
Dr. Dolly Rency
Co-Convener

Dr. Mina Mishra
H.O.D. & Convener


Dr. Dipali Soren
Principal, CCET

Program Schedule

Day-1 (10th August 2018)

<p>10:00 to 10:30 am High Tea</p> <p>10:30 to 11:30 am Inaugural Function & Introduction to Workshop</p> <p>11:30 to 01:00 pm Technical Talk by Dr. Srikar Potnuru, Associate Professor, Mechanical Engineering Dept. Malla Reddy College of Engineering & Technology, Hyderabad, India.</p> <p>01:00 to 02:00 pm Lunch</p> <p>02:00 to 04:30 pm Technical Talk by Dr. Dipali Soren, Principal, CCET & Professor, ETC Dept, Chhattisgarh, India.</p>	
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Day-2 (11th August 2018)

<p>10:00 to 10:30 am High Tea</p> <p>10:30 to 01:30 pm Technical Talk by Dr. K Raghu Ram Mohan Reddy, HOD & Prof. Mechanical Engineering Dept. HITAM, Telangana, India.</p> <p>01:30 to 02:30 pm Lunch</p> <p>02:30 to 04:00 pm Technical Talk by Dr. Shubhankar Bhewmick, Associate Professor, Mechanical Engineering Dept., NIT, Raipur, India.</p> <p>04:00 to 04:30 pm Valedictory function & Certificate Distribution</p>	
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S.No.	Name	Branch	College
1.	B. Shridhar	Electrical	CCET, Bhilai
2.	Dr. Abhishek Verma	EEE	CCET, Bhilai
3.	Piyush Prakash Sharma	Sports	BIT, Durg
4.	Tejeshwari Sahu	ETC	CCET, Bhilai
5.	Nitesh Tamboli	ETC	RCTI, Bhilai
6.	R.K. Rathore	Mech	LCTI, Bilaspur
7.	Amit Singh Dhaakad	Mech	CCET, Bhilai
8.	Nitin Chandekar	Mech	GDRCET, Bhilai
9.	Abid Khan	ETC	CCET, Bhilai
10.	Praveen Singh Rathore	ETC	CCET, Bhilai
11.	Smithy Philip	ETC	CCET, Bhilai
12.	Revati Raman Dewangan	CSE	CCET, Bhilai
13.	Ashish Mishra	Elect	CCET, Bhilai
14.	Pramod Kumar Bhagmar	Elect	CCET, Bhilai
15.	Ashish Dewangan	Elect	CCET, Bhilai
16.	Payal Roy	Elect	CCET, Bhilai
17.	Soumya Singh	Elect	CCET, Bhilai
18.	Prasant Srivastava	ETC	CCET, Bhilai
19.	Dr. Sandhya Pilai	SC & Humanities	CCET, Bhilai
20.	S.K. Patel	ETC	CCET, Bhilai
21.	Sanjay Sahu	M.Tech Scholar	CCET, Bhilai
22.	Indronil Sarkar	CSE	CCET, Bhilai
23.	D. Janet	CSE	CCET, Bhilai
24.	Neha Soni	CSE	CCET, Bhilai
25.	Yogesh Tamarakar	CSE	CCET, Bhilai
26.	Rukhmani	M.Tech scholar	CCET, Bhilai
27.	Sofiya Bano	M.Tech scholar	CCET, Bhilai
28.	Archana Kispotta	M.Tech scholar	CCET, Bhilai
29.	G. Singaiah	Mechanical	HITAM Hyderabad
30.	Vikky Kumar	Mechanical	HITAM Hyderabad
31.	G. Baby Theresa	Mechanical	HITAM Hyderabad
32.	L.B. Bharat Raju	Mechanical	HITAM Hyderabad
33.	PVN Sai Chandra	Mechanical	HITAM Hyderabad
34.	B. Pavani	Mechanical	HITAM Hyderabad
35.	Mrs. Neha Singh	ETC	CCET, Bhilai
36.	Dr. Mina Mishra	ETC	CCET, Bhilai
37.	Dr. Dolly Reney	ETC	CCET, Bhilai
38.	Shishir Verma	ETC	CCET, Bhilai
39.	Dhanya Vineesh	ETC	CCET, Bhilai
40.	Divya Singh	ETC	CCET, Bhilai

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Report of Guest Lecture

on

Intellectual Property Rights and Trade Secrets

Resource Person: Dr. C. Ramesh Kumar

Professor, Department of Mathematics

Rungta College of Engineering & Technology, Bhilai

Date: 20th September 2018

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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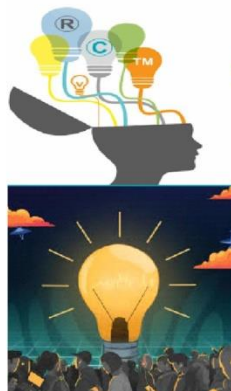
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GUEST LECTURE ON Intellectual Property Rights and Trade Secrets

Resource Person:
Dr. C. Ramesh Kumar
Professor, Department of
Mathematics
Rungta College of Engineering
& Technology, Bhilai

Date: 20th September 2018 & Time: 11.00 am

Organized By: Research and Development Cell
Coordinator: Dr. Sandhya Pillai

Date: 20/09/2018

Brief summary of the program:

The program Coordinator Dr. Sandhya Pillai started the session. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to him for start the lecture. The lecture was attended by HODs, faculty of all departments, M.Tech and B.Tech students and also research Scholars.

Dr. Ramesh started her lecture by making the audience aware of basics of Intellectual Property Rights, how to protect our inventions and information. He discussed about Intellectual Capital of a University, different elements of IP viz. Knowhow, Trade secrets, Trade dress, Copyrights, Patents etc.

The session was very interactive and was concluded by the vote of thanks by Coordinator of R&D cell Dr. Sandhya Pillai by giving vote of thanks.

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LIST OF PARTICIPANTS

SL. N	LIST OF PARTICIPANTS	FACULTY& STUDENTS
1	Dr. C. RAMESH	SPEAKER
2	Dr. DIPALI SOREN	FACULTY
3	Dr. PREETI NANDKUMAR	FACULTY
4	Dr. SANDHYA PILLAI	FACULTY
5	Mr. ASHISH DEWANGAN	FACULTY
6	Mr. Devendra Kumar Sahu	FACULTY
7	Mr. PRAMOD KUMAR BAGHMAR	FACULTY
8	Mr. PRASHANT BAWANEY	FACULTY
9	Mr. SALIK RAM DEWANGAN	FACULTY
10	Mr. Sanjay Gupta	FACULTY
11	JEEVAN BARA	CSE
12	POONAM LAKRA	CSE
13	ROSHAN KUMAR SAHU	CSE
14	SHILANATH PRATAP SINGH	CSE
15	SHIVAM PANDEY	CSE
16	VIBHA	CSE
17	VINAY MINJ	CSE
18	ANURAG SHARMA	MECH
19	RAHUL KUMAR BRAMHANKAR	MECH
20	ROBINS JACOB JOHN	MECH
21	ROSHAN ROY	MECH
22	SAHIL HUSSAIN	MECH
23	SHARON SURYAVANSHI	MECH
24	SHIVNATH GOTA	MECH
25	SHREYANSH LAL	MECH
26	AAKASH VERMA	ELECTRICAL
27	ABHIJEET CHAKRABORTY	ELECTRICAL
28	ANITOSH KUMAR	ELECTRICAL
29	ANUPAMA KUJUR	ELECTRICAL
30	DEEPAK BAGHEL	ELECTRICAL
31	DIVYANK SURYAWANSHI	ELECTRICAL
32	MD AYAN KHAN	ELECTRICAL
33	NAGRAJ	ELECTRICAL
34	SONALI PAUL	ELECTRICAL
35	ANIL DESHMUKJ	M.TECH
36	JAY SHANKAR PRASAD	M.TECH
37	SANDEEP GUPTA	M.TECH
38	SHIV KUMAR	M.TECH
39	VISHAL BHAGAT	M.TECH
40	SUMAN GAJBHIYE	M.TECH

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Report of
Invited Talk
on
Intellectual Property Rights: an overview and Their Implications in
Research

Resource Person: Dr. Shekh Md. Ashfaque

Associate Professor, Department of Computer Engineering Rizvi
College of Engineering, Mumbai

Date: 14th March 2019

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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Christian College of Engineering and Technology



INVITED TALK ON
INTELLECTUAL
PROPERTY RIGHTS:
AN OVERVIEW AND
THEIR IMPLICATION
IN RESEARCH



Resource Person: Dr. Shaikh Md.
Ashfaque

Associate Professor
Rizvi College of Engineering
(Mumbai)

Date: 14th March 2019 & Time: 11.30 am

Organized By: Research
and Development Cell
Coordinator:
Dr. Sandhya Pillai

Date: 14/03/2019

Brief summary of the program:

The R&D department organized an invited talk on the topic of “**Intellectual Property Rights: An Overview and Their Implication in Research**”. Prof **Dr. Shaikh Md. Ashfaque**, Rizvi College of Engineering, Mumbai, was the resource person who delivered the talk through online platform. He gave an elaborated overview of various aspects of fundamentals of **Intellectual Property Right** and its types. He also gave detailed description of IPR in research and their utilization in research. Prof. Ashfaque made the audience aware about the IP law in India and explained the types of patents and various bioethics issues through citing examples. The lecture was followed by the interactive session wherein the students scholars and faculties got their doubts cleared from the resource person. Dr. Sandhya Pillai, Associate Professor of Physics, expressed vote of thanks to Prof. Shaikh for her insightful and elaborated talk on “**Intellectual Property Rights: An Overview and Their Implication in Research**”. The program was attended by the teachers, students and research scholars of entire CCET.

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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr. Shaikh Md. Ashfaq	SPEAKER
2	Dr. DIPALI SOREN	FACULTY
3	Dr. PREETI NANDKUMAR	FACULTY
4	Dr. SANDHYA PILLAI	FACULTY
5	Mr. ASHISH DE WANGAN	FACULTY
6	Mr. Devendra Kumar Sahu	FACULTY
7	Mr. PRAMOD KUMAR BAGHMAR	FACULTY
8	Mr. PRASHANT BAWANEY	FACULTY
9	Mr. SALIK RAM DEWANGAN	FACULTY
10	Mr. Sanjay Gupta	FACULTY
11	JEEVAN BARA	CSE
12	POONAM LAKRA	CSE
13	ROSHAN KUMAR SAHU	CSE
14	SHILANATH PRATAP SINGH	CSE
15	SHIVAMPANDEY	CSE
16	VIBHA	CSE
17	VINAY MENJ	CSE
18	ANURAG SHARMA	MECH
19	RAHUL KUMAR BRAMHANKAR	MECH
20	ROBINS JACOB JOHN	MECH
21	ROSHAN ROY	MECH
22	SAHIL HUSSAIN	MECH
23	SHARON SURYAVANSHI	MECH
24	SHIVNATH GOTA	MECH
25	SHREYANSH LAL	MECH
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29	ANUPAMA KUJUR	ELECTRICAL
30	DEEPAK BAGHEL	ELECTRICAL
31	DIVYANK SURYAWANSHI	ELECTRICAL
32	MD AYAN KHAN	ELECTRICAL
33	NAGRAJ	ELECTRICAL
34	SONALI PAUL	ELECTRICAL
35	ANIL NARAYAN DESHMUKH	MTECH
36	JAY SHANKAR PRASAD	MTECH
37	SANDEEP GUPTA	MTECH
38	SHIV KUMAR	MTECH
39	VISHAL BHOSLE	MTECH

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Report of

Invited Talk

on

Academic Perspective of Innovation and Intellectual Property Rights

**Resource Person: Mr. Shrikant Bhurje, Associate Professor Rungta
College of Engineering & Technology, Bhilai**

Date: 23rd January 2019

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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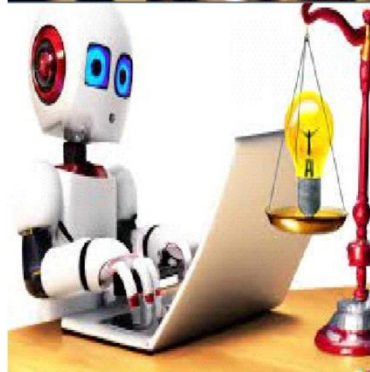
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Christian College of Engineering and Technology



WEBINAR ON
ACADEMIC
PERSPECTIVE OF
INNOVATION AND
INTELLECTUAL
PROPERTY RIGHTS



Resource Person: Mr. Shrikant
Burje
Associate Professor
Rungta College of Engineering &
Technology, Bhilai (C.G)

Date: 23rd January 2019 & Time: 11.00 am

Organized By: Research
and Development Cell
Coordinator: Dr.
Sandhya Pillai

Date: 23/01/2019

Brief summary of the program:

The program started with the welcome address by Dr. Sandhya Pillai, Associate professor of Physics and Coordinator of R&D. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to him for start the lecture.

A webinar on IPR (Intellectual Property Rights) was conducted on 23 January 2019. The resource persons for the sessions were Mr. Shrikant Burje, Associate professor of Department of ET. It created

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a great impact on the entire audience. Students were taught on how IPR restricts copying others ideas and how this will help the development of new ideas for the betterment of the society.

Students learnt how IPR provides total control over a new innovation and its creator. They were also given a platform to discuss how small innovations influence societies at large and how they should indulge in innovating and patenting ideas that will be useful for all the classes of individuals in the society.

He described in his lecture that IPR provide certain exclusive rights to the inventors or creators of that property, in order to enable them to reap commercial benefits from their creative efforts or reputation. Further he also gave brief summary about Patents, Trademark and Copyright etc.

Finally, this webinar was concluded by Dr. Sandhya Pillai who was the Coordinator of the program by giving vote of thanks.

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**List of participants**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr. Shrikant Burje	SPEAKER
2	Dr. DIPALI SOREN	FACULTY
4	Dr. SANDHYA PILLAI	FACULTY
5	Mr. ASHISH DEWANGAN	FACULTY
6	Mr. Devendra Kumar Sahu	FACULTY
7	Mr. PRAMOD KUMAR BAGHMAR	FACULTY
8	Mr. PRASHANT BAWANEY	FACULTY
9	Mr. SALIK RAMDEWANGAN	FACULTY
10	Mr. Sanjay Gupta	FACULTY
11	AJAY KUMAR DAHAHE	ET & T
12	ANAMKA GAUTAM	ET & T
13	ANURADHA PATEL	ET & T
14	ARPIT GUPTA	ET & T
15	DHARMENDRA SING	ET & T
16	MUSKAN QURAISHI	ET & T
17	POONAM SONI	ET & T
18	RAVI KANT SAW	ET & T
19	RAHUL KUMAR BRAMHANKAR	MECH
20	ROBINS JACOB JOHN	MECH
21	ROSHAN ROY	MECH
22	SAHIL HUSSAIN	MECH
23	SHARON SURYAVANSHI	MECH
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34	SANDEEP GUPTA	MTECH
35	SHIV KUMAR	MTECH
36	VISHAL BHAGAT	MTECH
37	JEEVAN BARA	CSE
38	POONAM LAKRA	CSE
39	ROSHAN KUMAR SAHU	CSE

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If You Aim High, We Provide The Means

WORKSHOP

ON

RESEARCH METHODOLOGY

Resource Person -Dr. Anju Singh,

Faculty,Central Institute of Plastic Technology, Korba

Date :10 Sep 2020

Venue :CCET Bhilai,C.G.



Organized by R&D Cell, CCET, Bhilai

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CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY, BHILAI

Workshop on Research Methodology



RESOURCE PERSON - Dr Anju Singh
Central Institute of Plastic Engineering and Technology, Korba

10TH Sep 2020



ORGANIZED BY RESEARCH & DEVELOPMENT CELL, CCET BHILAI
Program Coordinator - Dr. Sandhya Pillai

Criterion 2

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Date:10 Sep2020

Summary of the workshop

A workshop was conducted on research methodology in online mode on 10 th Sep 2020 in CCET with various participants.

This workshop was conducted to provide an understanding of research methodology and its various components, such as research design, data collection, data analysis, and interpretation of results.

The program started with Welcome address by Dr. Dipali Soren, Principal CCET. She explained the importance of research methodology in conducting research and also mentioned the significance research.

Speaker of the workshop was Dr. Anju Singh, Faculty from Central Institute of Plastic Technology, Korba

The participants were guided for research design which includes the selection of appropriate research methods. She explained different research questions and the hypothesis and formulating a research plan. The workshop was mainly emphasized on the need for a well-defined research designs it serves as the foundation for the entire research process. Here the main focus was on various data collection methods, including surveys, interviews, observations, and experiments. The participants were introduced to the strengths and weaknesses of each data collection method and were guided on how to choose the most appropriate method based on their research objectives. The aspects covered in the workshop explained the crucial aspect of different methods of data analysis such as quantitative and qualitative analysis. It was defined by providing practical examples of how to analyze and interpret research data.

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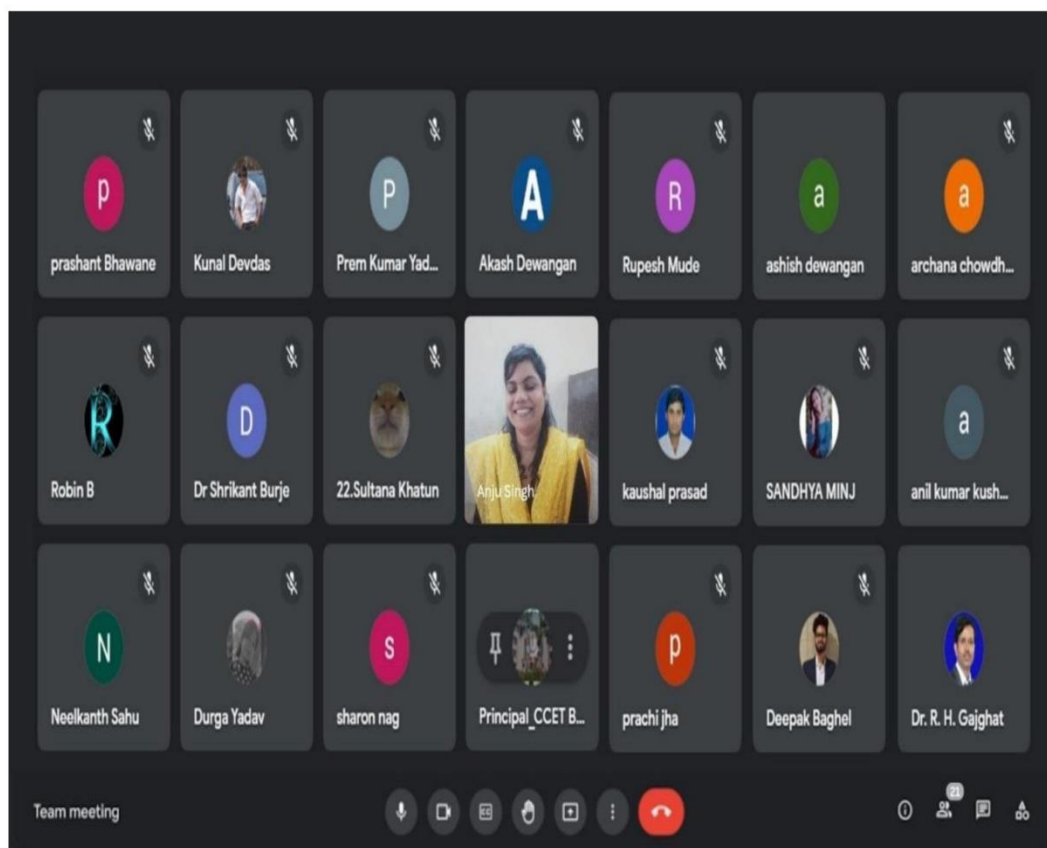
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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr. Anju Singh	SPEAKER
2	Dr. DIPALI SOREN	FACULTY
3	Dr. PREETI NANDKUMAR	FACULTY
4	Dr. SANDHYA PILLAI	FACULTY
5	Mr. ASHISH DEWANGAN	FACULTY
6	Mr. Devendra Kumar Sahu	FACULTY
7	Mr. SALIK RAMDEWANGAN	FACULTY
8	Mr. SRIDHAR BURLA	FACULTY
9	Mrs. PAYAL ROY	FACULTY
10	Mr. SALIK RAMDEWANGAN	FACULTY
11	AJAY KUMAR DAHAHE	ET & T
12	ANAMKA GAUTAM	ET & T
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16	MUSKAN QURAISHI	ET & T
17	POONAM SONI	ET & T
18	RAVI KANT SAW	ET & T
19	RAHUL KUMAR BRAMHANKAR	MECH
20	ROBINS JACOB JOHN	MECH
21	ROSHAN ROY	MECH
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**Report
of
Guest lecture
ON
Entrepreneurship & Start Up.**

Date : 23/05/2020

Speaker : Dr. Avinash Kumar

**Organized by Institution Innovation Council (MHRD Initiative), CCET,
Bhilai**



Institution Innovation Council (MHRD Initiative) of CCET, Bhilai

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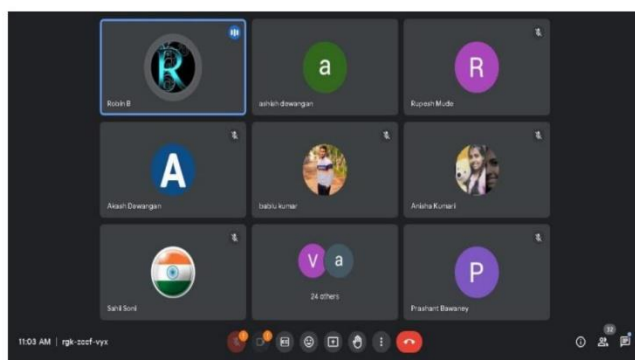
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The program started with the welcome address by Mrs. Lincy, Faculty of Computer Science Engineering. He has welcomed the participants and briefed about the significance and current & Future Scope of Start Up. Mrs. Lincy, Faculty of Computer Science Engineering has given the introduction about the guest speaker of the lecture and handed over the session to him.

Dr. Avinash Kumar discussed about the Startup & the challenges faced by young entrepreneurs. He also explained the Boom in Startups & encouraged our students. Finally the meeting concluded with the vote of thanks given by Mrs. Lincy, Faculty of Computer Science Engineering, Host for the guest lecture.

Screenshots of the program



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SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	DR. Avinash Kumar	SPEAKER
2	Dr. DIPALI SOREN	FACULTY
3	Dr. PREETI NANDKUMAR	FACULTY
4	Mr. PRAMOD KUMAR BAGHMAR	FACULTY
5	Mr. PRASHANT BAWANEY	FACULTY
6	Mr. SALIK RAM DEWANGAN	FACULTY
7	Mr. SRIDHAR BURLA	FACULTY
8	AANCHAL PANDEY	CSE
9	ABHISHEK MINJ	CSE
10	ANAND MOHAN YADAV	CSE
11	CHANDRAMUKHI VERMA	CSE
12	DAMINI	CSE
13	DAVIS S CHERIAN	CSE
14	HARISHANKAR BANJARE	CSE
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17	AJAY KUMAR NAVRANG	MECH
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22	MD AYAN KHAN	ELECTRICAL
23	NAGRAJ	ELECTRICAL
24	SONALI PAUL	ELECTRICAL
25	MAXDAS	E&TC
26	NEELIMA KINDO	E&TC
27	PREETI KUSHWAHA	E&TC
28	SANDHYA MNJ	E&TC
29	SHIVANI GUPTA	E&TC
30	SUMAN GAJBHIYE	MTECH
31	POONAM SONI	MTECH
32	JAY SHANKAR PRASAD	MTECH

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Guest Lecture

on

Intellectual Property Management for Innovation and Startup

Resource Person: Mr. Deepak Nanaware, Assistant Manager JP-Hi Tech, Rewa (M.P)

Date: 8th October 2020

Venue: Online mode



Organized by R&D Cell, CCET, Bhilai

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INVITED LECTURE ON INTELLECTUAL PROPERTY MANAGEMENT FOR INNOVATION AND STARTUP

Resource Person: Mr. Deepak Nanaware
Assistant Manager, JP Hi Tech Rewa
(M.P)

Date: 8th October 2020 & Time: 11.30 am

Organized By: Research and Development Cell
Coordinator: Dr. Sandhya Pillai



Date: 08/10/2020

Brief summary of the program

The program started with the welcome address by Dr. Dipali Soren, Principal of CCET, Bhilai. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to him for start the lecture.

The focus of the lecture was on the protection of Intellectual Property Rights by the Start-up's. How start-up's have to develop their innovations under various Intellectual Property Rights. Inputs were also given how to manage Intellectual Property Rights in their organizations. When starting a business, there are many factors to consider, ranging from bank branding and targeting markets to financial growth. However, intellectual property protection is one of the crucial parts of the market challenges. IP for any companies, specially a start-up, is an intangible asset. It levels the playing field between entrepreneurs and incumbents and is more likely to attract lucrative opportunities.

Nearly 90% of the start-up's fail within their first five years. With the odds stacked against them, they need nearly everything to fall into place to succeed including Intellectual Property Rights. A startup is essentially a disrupter. It disrupts an existing market by providing more convenient service, a service at a lower cost, or both. Every startup that enters a market believes it has a unique strategy. At the heart of every startup's strategy is usually a technology and a clever name or attractive logo. Intellectual Property Rights is crucial for start-up's.

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The surest way a startup can succeed against larger rivals is by patenting innovations and inventions. Patents level the playing field between startups and incumbents by ensuring those who innovate are adequately required. When a startup company patents its ideas its valuation increases and it is likely to attract investors. This is because the investors are more likely to acquire a startup whose patents, designs, and trademarks are protected. When a startup patents its ideas, it is the only entity that can take advantage of creating products or services using its patents. This allows it to create unique products and services that have a good chance of success, thereby increasing profits. Unless a startup protects its patents, designs and trademarks using Intellectual Property Rights, its rivals can copy them and steal market share.

An idea that is not patented, when copied by a rival company can be patented by the rival making it difficult for the originator of the idea to benefit from it. Hence, patenting technologies and ideas are vital to the success of a startup. IPR are an important reason for the vast innovation around us. Disruptive startups are challenging incumbents with patented technology ideas. IPR allows a startup that has developed an innovative device to compete effectively against large companies after patenting its invention.

Companies are eager to invest in startups that have unique patents because it gives them access to the technology behind the patents, if not outright ownership of patents themselves. Once a startup has been granted a patent it can use the technology behind it for 20 years without fear that rivals may copy it. The patented technology is also likely to lead the development of new technologies based on the original patent. Trademarks also extend to logos. Every start-up's logo is crucial to its brand's success. Unless a start-up trademarks its logo, it may discover unscrupulous companies copying its logo and stealing its customers.

By trademarking its logo a startup ensures the integrity of its brand and that everyone who wants to buy its product or service can make out the originator of the product. Apart from patents and trademarks, start-ups also use other forms of intellectual property to safeguard its business and increase its market share. Prominent protection is also provided to start-ups in the form of design registration and trade secrets. Leveraging intellectual property by start-up is not only a recommendation but is mandatory for a success and growth in the marketplace. IP assets are given life as ideas, innovations, compilations, and presentations of information, designs, brands, and licenses. Okay fully conducted IP audit and a well thought out organized IP management plan a valuable IP management tools that can help business cultivate and optimize IP assets. As IP assets become of every increase in value to business, the development, management, and protection of IP assets will continue to impact the bottom line. Organizations that devote the appropriate resources to cultivate and manage their IP assets will be positioned to reap the greatest benefits. Every company stakeholder, from the marketing experts in the marketing department to the scientist in the technology labs to top management must aggressively

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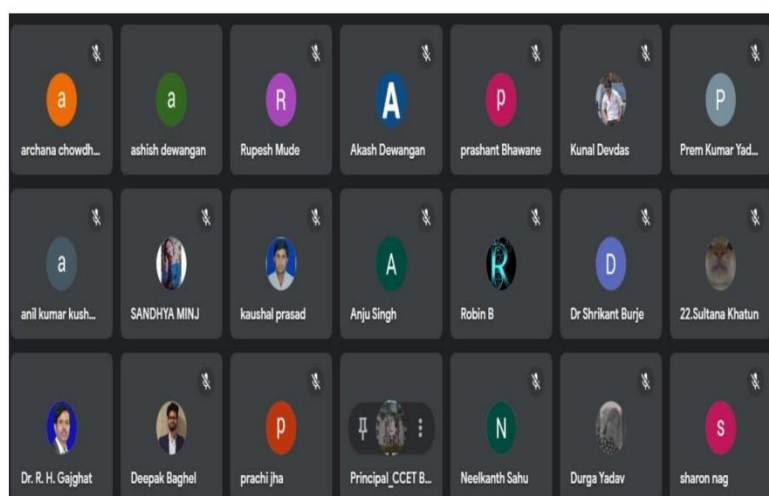
participate in IP management. Strategies for Intellectual Property Management in startups were also discussed.

Top 5 strategies are as follows:

1. Keep your new idea aside from your other employment work.
2. Put in efforts to know your market and competition.
3. Evaluate your core assets well and decide on the form of IP Protection you require.
4. Make sure that your startup owns its Intellectual Property Rights (IPRs)
5. Give a unique name to your startup.

Finally, this lecture was concluded by Dr. Sandhya Pillai, Associate Professor department of Physics and Coordinator of R&D cell by giving vote of thanks.

Screenshots of the program



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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Mr. Deepak Nanaware	SPEAKER
2	Dr. DIPALI SOREN	FACULTY
3	Dr. PREETI NANDKUMAR	FACULTY
4	Dr. PULIVARTI SRINIVASA RAO	FACULTY
5	Mr LALIT SAHU	FACULTY
6	Dr. Sasanka Sekhar Bishoyi	FACULTY
7	DEVENDRAKUMAR SAHU	FACULTY
8	DHARAMSINGH L	FACULTY
9	JESWAR	FACULTY
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30	MOHIT MAHESHWARI	ELECTRICAL
31	PITAMBAR PATAIL	ELECTRICAL
32	PRAVEEN	ELECTRICAL
33	HARISHANKAR BANJARE	CSE

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WORKSHOP

ON

RESEARCH METHODOLOGY

Resource Person -Dr. B.K Rath

Professor, Mathematics, Gandhi University, GIET, Gunpur

Date: 15 November 2021

Venue : CCET Bhilai, C.G.

Organized by R&D Cell, CCET, Bhilai



R&D cell of CCET, Bhilai

Criterion 2

QM 2.3.1 Student centric methods



Date: 15 Nov 2021

Summary of the workshop

A workshop titled "A Step to Research and Its Methods" took place at the CCET. Seminar Hall on 15th November 2021. The goal of the workshop was to give participants a thorough understanding of the research procedure and the many research techniques that can be applied in both academic and professional settings.

There were two sessions in the workshop. While the first session concentrated on research fundamentals and the second session was concentrated on research methods.

First session Research Fundamentals

The definition of research, its significance, and its many varieties were all topics covered in the first session. The speakers emphasized the value of research as a method for learning new things and comprehending the world around us. The creation of a research question that can direct their investigation was encouraged among the participants.

Second session Research Methods

The second session focused on the different research methods that can be used in research. The presenters discussed both quantitative and qualitative research methods and their respective strengths and weaknesses. The participants were also introduced to mixed-methods research, which involves the use of both quantitative and qualitative methods.

The workshop provided an excellent opportunity for the participants to learn about the research process and the various research methods that can be used in academic and professional settings. The participants were able to gain a better understanding of the importance of research and how it can be used to create new knowledge and understanding. The workshop was successful in achieving its objectives and was well-received by the participants.

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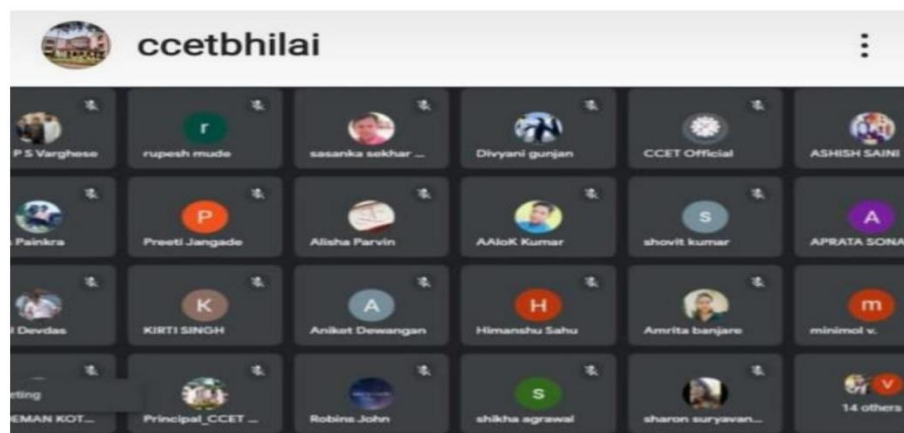
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The Various Snaps take During the Events are as follows:

ONLINE



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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	DR. B.K RATH	SPEAKER
2	Dr. DIPALI SOREN	FACUL TY
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Ms SHIKHA AGRAWAL	FACUL TY
5	Mr. RADHESHYAMH GAJGHAT	FACUL TY
6	Mr. AMIT SARDA	FACUL TY
7	Dr. PULIVARTI SRINIVASA RAO	FACUL TY
8	Dr. PREETI NANDKUMAR	FACUL TY
9	Dr. Mrs. MINA MISHRA	FACUL TY
10	AAKASH KASHYAP	CSE
11	AALOK KUMAR MUNDA	CSE
12	AAYUSHI	CSE
13	ABHISHEK KUMAR	CSE
14	ANGAD YADAV	CSE
15	ARYAN GUPTA	CSE
16	ASHISH SAINI	CSE
17	DURGA SONI	CSE
18	AMIT KUMAR SAO	MECH
19	ATUL HIRWANI	MECH
20	BHUPENDRA KUMAR SEN	MECH
21	DINESH KUMAR YADAV	MECH
22	KHUSHBOO	MECH
23	DEEPAK KUMAR	EE
24	HARISH KUMAR	EE
25	KAMLESHWAR	EE
26	PREMKUMAR YADAV	EE
27	RAKESH KUMAR	EE
28	MD AYAN KHAN	EE
29	SAHIL SONI	EE
30	AVINASH EKKA	ETC
31	SHOBHIT KUMAR	ETC
32	AMIT KUMAR	ETC

Criterion 2**QM 2.3.1 Student centric methods**



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If You Aim High, We Provide The Means

Invited Talk

on

Research Methodology: Major Conceptual Concerns

Resource Person: Dr. Aruna Sao

**Assistant Professor, Shaheed Durwasha Nishad Govt. College, Arjunda
(Balod)**

Date: 16 December 2021

Venue : CCET, Bhilai (C.G)



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CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY, BHILAI

**Invited Talk
On
Research Methodology: Major Conceptual Concerns**

Resource Person - Dr. Aruna Sao
Assistant Professor, Department of Chemistry
Shaheed Durwasha Nishad Govt. College, Arjunda (Balod)



16th December 2021



ORGANIZED BY RESEARCH & DEVELOPMENT CELL, CCET BHILAI
Program Coordinator – Dr. Sandhya Pillai

Date: 16/12/2021

Brief summary of the program:

The Invited talk on Research Methodology: Major Conceptual Concerns was organized on 16 December 2021 for all the students pursuing undergraduate, postgraduate, PhD and faculty members of all departments. The resource person was Dr. Aruna Sao, Assistant Professor in the department of Chemistry, Shaheed Durwasha Nishad Govt. College, Arjunda (Balod)

The program started with welcome address by Dr. Dipali Soren, Principal CCET. She explained the various aspect of research methodology in different areas and also mentioned the significance research.

A guest lecture was organized by the R&D Cell. The lecture was delivered on a very relevant topic 'Research Methodology: Major Conceptual Concerns' by Dr. Aruna Sao, Assistant Professor, Department of Chemistry, Shaheed Durwasha Nishad Govt. College, Arjunda (Balod). Dr. Aruna Sao has a vast experience of more than 15 years of teaching.

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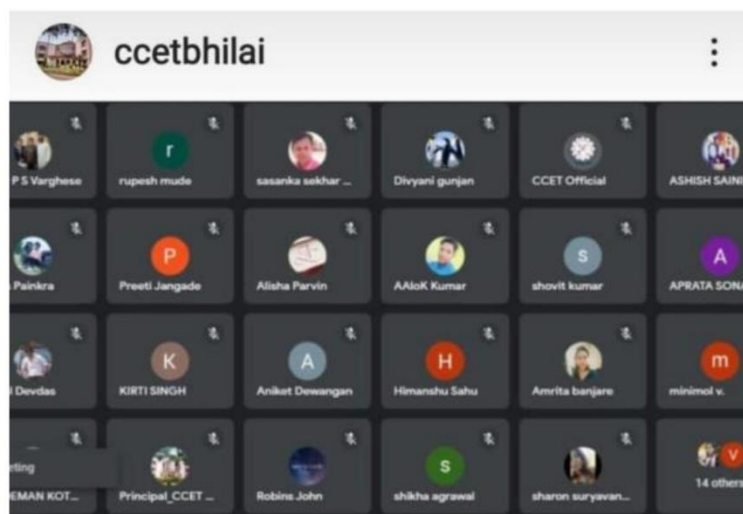
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Dr. Aruna Sao enlightened the students and faculties of all the departments about major concepts of Research Methodology. He spoke on the relevance of research methodology. He elaborated the covert and overt aspects of conducting research where the overt aspect involves critical and creative thinking. He also emphasized that without critical analysis, research cannot be hailed as appropriate creative and vice versa. Therefore, creativity juxtaposes critical research.

Overall, the lecture was a refreshing tryst of research methodology with the critical areas of M.Tech students for the curious and enthusiastic students of both B.Tech. and research scholars also. The students were inquisitive and raised many queries, which were answered by the guest in a very pleasant and interesting manner.

The Program ended with a vote of thanks proposed by Dr. Sandhya Pillai, Associate Professor of department of Physics and Coordinator of R&D cell.

The Photos taken During the Events



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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY& STUDENTS
1	Dr. Aruna Sao	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. SANDHYA PILLAI	FACULTY
4	Dr. ARCHANA CHOWDHURY	FACULTY
5	Dr. PREETI NANDKUMAR	FACULTY
6	Ms SHIKHA AGRAWAL	FACULTY
7	Mr. ASHISH DEWANGAN	FACULTY
8	Mr. PRASHANT BAWANEY	FACULTY
9	Mr. RADHESHYAMH GAJGHAT	FACULTY
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25	KAMLESHWAR	EE
26	VAIBHAV LAKSHMI DUBEY	EE
27	AVINASH EKKA	ETC
28	SHOBHIT KUMAR	ETC
29	AMIT KUMAR	ETC
30	A SATISH KUMAR	MTECH
31	AATIFA FATIMA	MTECH
32	AKASH KUMAR YADAV	MTECH
33	BHUPESH KASHYAP	MTECH
34	MEHELLE AKANKSHA GEORGE	MTECH
35	NIDHI MINJ	MTECH

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If You Aim High, We Provide The Means

One Day Workshop

on

Qualitative Research Methodology: Foundations and Data Analysis

Resource Person: Dr. Ritesh Dash

Professor, Reva University, Bangalore

Date: 20 October 2021

Venue : CCET, Bhilai (C.G)



Organized by R&D Cell, CCET, Bhilai

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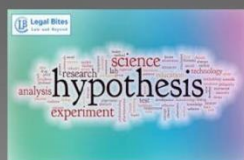


CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY, BHILAI

**One Day Workshop
On**

Qualitative Research Methodology: Foundations and Data Analysis

**RESOURCE PERSON - Dr. RITESH DASH
PROFESSOR, DEPARTMENT OF ELECTRICAL
RIVA UNIVERSITY, BANGLORE**



20th October 2021



**ORGANIZED BY RESEARCH & DEVELOPMENT CELL, CCET BHILAI
Program Coordinator – Dr. Sandhya Pillai**

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Date: 20/10/2021

Brief summary of the program:

Research and Development cell of CCET, Bhilai, organized one day workshop on ‘Qualitative Research Methodology: Foundations and Data Analysis’ on 20th October 2021 at its campus. The key resource person for the workshop was Dr. Ritesh Dash Reva University, Bangalore. About thirty participants including faculty members and research scholars attended the program.

The workshop began with a warm welcome to the participants and the resource person, Dr. Ritesh Dash. Thereafter, Dr. Dipali Soren, Professor and Principal of CCET gave a welcome address and apprised the participants about the program objective. Dr. Ritesh started the first session with the basics of research. He talked about the motivation behind doing research and asked the participants to share their motivations behind doing research. He then talked about the philosophical background of research and briefed about the three schools of thought – Traditional, Modern, and Pre Modern view. Thereafter, Dr. Ritesh discussed about epistemology and ontology of qualitative research. Moreover, he explained the difference between constructivism and interpretivism. Later, he explained the usage of these philosophical theories in research. Dr. Ritesh concluded the session by discussing the Ground theory approach of research.

In the second session of workshop started with the discussion on interpretative phenomenological analysis (IPA) by Dr. Ritesh Dash which he discussed about the role and importance of IPA in analyzing the personal experiences of the users. Further, he mentioned that it is the most appropriate qualitative approach to provide detailed examinations of participants’ experiences. Dr. Dash also conducted a brief exercise wherein participants gained hands-on experience of manually identifying codes, categories, themes and concepts from qualitative data. In this session of the Dr. Dash described how to conduct the qualitative research through NVivo software and differentiated the manual and mechanical experiences of qualitative research. Further, he gave an overview of the NVivo software and explained in detail its features and their usage. In the last session, he discussed how to conduct the content analysis using NVivo software.

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All three sessions of this workshop were conducted by Dr. Ritesh Dash. He started the first session by explaining Thematic Analysis through various examples and then demonstrated it using NVivo software. Later, he conducted a practice session for participants to gain practical experience on thematic analysis using the software. In the second and third sessions, Dr. Dash followed the same approach while explaining Sentiment Analysis and Image Analytics with NVivo software. The practice sessions in all three sessions triggered a lot of queries by the participants which were well answered by Dr. Dash. The program concluded by Dr. Sandhya Pillai, Coordinator of R&D cell with valediction, certificate distribution, and a group photograph.

The program was a great learning experience for the participants as they not only acquired the knowledge on various facets of qualitative research but also gained the conviction to apply those learnings in their research domains. Overall, the program was highly appreciated by the participants who expressed their willingness to attend such programs in the future as well.

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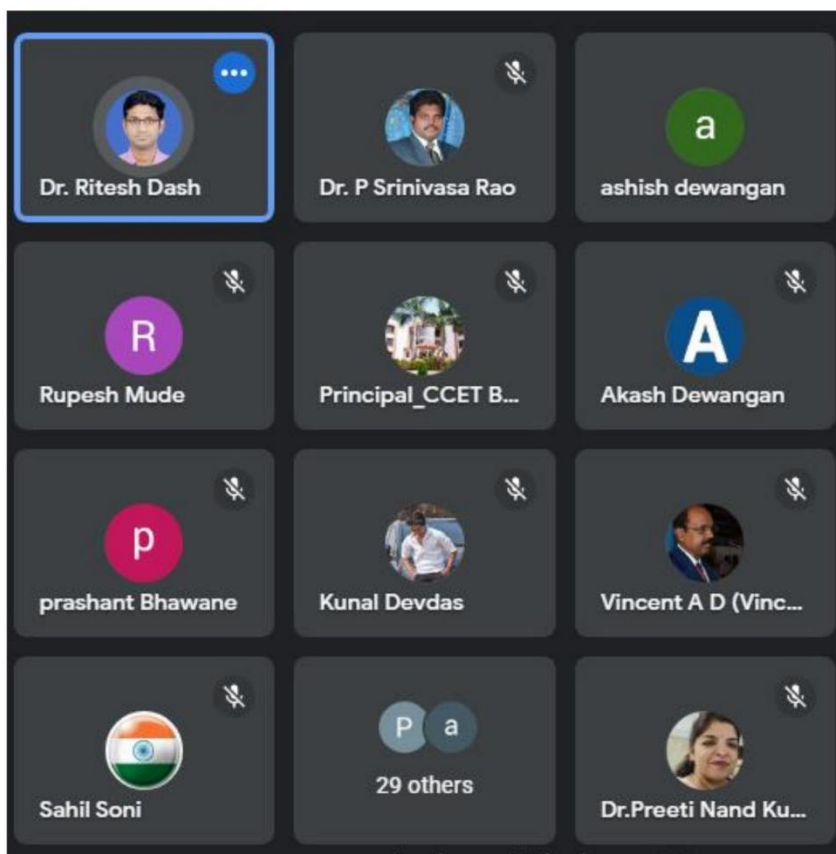
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The Photos taken During the Events:



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**List of participants**

SL. NO.	LIST OF PARTICIPANTS	FACUL TY & STUDENTS
1	Dr. Ritesh Dash	SPEAKER
2	Dr. DIPALI SOREN	Principal
6	Ms SHIKHA AGRAWAL	FACUL TY
7	Mr. ASHISH DEWANGAN	FACUL TY
8	Mr. PRASHANT BAWANEY	FACUL TY
9	Mr. RADHESHYAMH GAJGHAT	FACUL TY
3	Dr. SANDHYA PILLAI	FACUL TY
4	Dr. ARCHANA CHOWDHURY	FACUL TY
5	Dr. PREETI NANDKUMAR	FACUL TY
20	ASHISH PRASAD	MECH
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17	DURGA SONI	CSE
18	J AISLEEN SAHOTA	CSE
19	KARAN KUMAR BISEN	CSE
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Invited Talk

on

Intellectual Property Rights and Their Significance

Resource Person: Mr. Dhananjay Singh, Manager Production

Bhilai Engineering Corporation Ltd.

Date: 10th September 2021

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY



**INVITED TALK ON
INTELLECTUAL
PROPERTY RIGHTS
AND THEIR
SIGNIFICANCE**



**Resource Person: Mr. Dhananjay
Singh
Manager Production
Bhilai Engineering Corporation,
(C.G)**

Date: 10th September 2021 & Time: 11.30 am

**Organized By: Research
and Development Cell
Coordinator: Dr.
Sandhya Pillai**

Date: 16/09/2021

Brief summary of the program:

A guest Lecture on “Intellectual Property Rights and Their Significance” was organized by Research and Development cell at Christian College of Engineering and Technology on 10.9.2021 at Auditorium. Mr Dhananjay Singh, Manager Production in Bhilai Engineering Corporation Ltd. was the resource person in this program. This lecture was organized to create awareness among students and teachers regarding IPR and its protection.

Dr Sandhya Pillai, Associate Professor of Physics and Coordinator of R&D Cell welcomed the gathering, introduced the guest and mentioned objective and importance of program. . She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to the speaker for start the lecture.

Mr. Dhananjay Singh in his speech illustrated the importance of IPR, copy right infringement, do's and don'ts to avoid infringements. He also gave the students insights on the effect of Intellectual Property Rights on international trade. The speaker emphasized the need for the patent filing procedure, limitations and other intellectual property rights. The information was very useful followed by intensive interactions with the students.

During the session the students would be exposed to different types of intellectual property rights and they would be enlightened and motivated to convert their ideas into innovation and further transformation into IP assets through the protection of their IP rights.

Dr. Sandhya Pillai gave vote of thanks. 30 students and 15 staff members participated in this program

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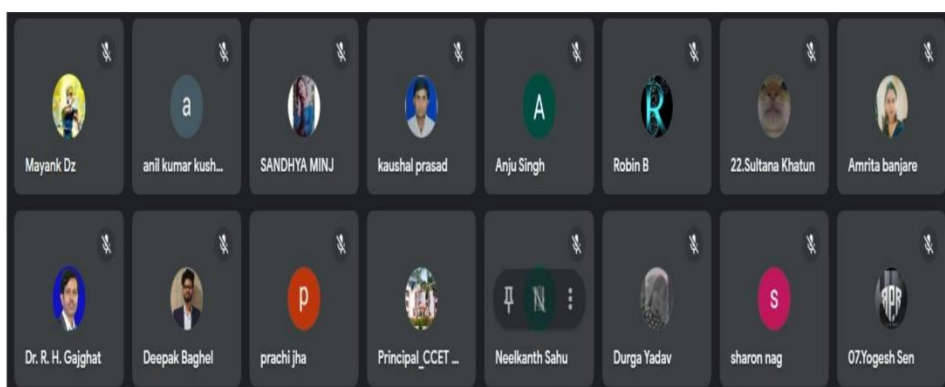
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Screenshots of the program



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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	MR. DHANANJAY SINGH	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Ms SHIKHA AGRAWAL	FACULTY
4	Mr. ASHISH DEWANGAN	FACULTY
5	Mr. PRASHANT BAWANEY	FACULTY
6	Mr. RADHESHYAMH GAJGHAT	FACULTY
7	Dr. SANDHYA PILLAI	FACULTY
8	Dr. ARCHANA CHOWDHURY	FACULTY
9	Dr. PREETI NANDKUMAR	FACULTY
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33	KAMLESHWAR	EE
34	PREMKUMAR YADAV	EE
35	RAKESH KUMAR	EE

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Invited Talk

on

Innovation and Intellectual Property Rights

**Resource Person: Dr. A.J Khan, Principal,
MATS University, Raipur (C.G)**

Date: 12th December 2021

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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Date: 12/12/2021

Brief summary of the program:

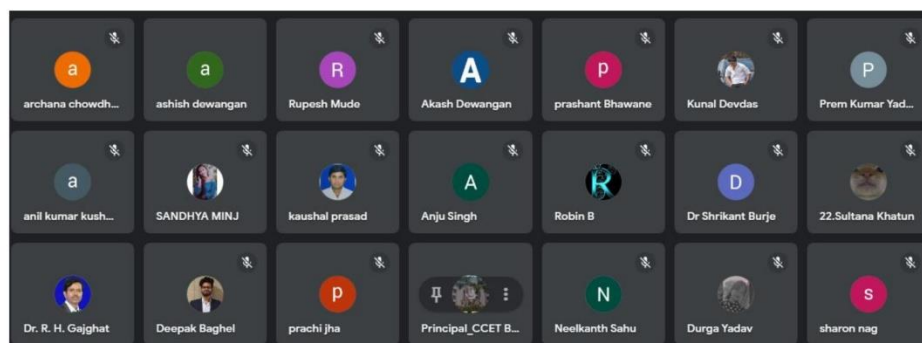
Inaugural talk on Intellectual Property & Innovation was given by Dr. Dipali Soren, Principal CCET, Bhilai.

The invited talk on “Intellectual property rights & Innovations” was well structured, focused and result oriented. The workshop focus on different aspects of Intellectual Property Rights (IPRs), Conversion of the research/project works into Patents and Handson-Training on patent searches for Innovations. This lecture was bring a positive transformation in the Faculty member’s attitude in their UG/PG Projects and research works and get them more focused as well as result oriented.

Dr. Khan in his talk highlighted the significance of IPR like patents, copyrights, trademarks, etc. He started his lecture with background of Intellectual Property, tangible and intangible properties, utilizing the published patent specifications, transferring invention as public property after expiry of term or cessation of patent, providing reward as exclusive right disclosure, etc. He also discussed the trademark and brand mark, Geographical indication, product of mind intellectual property, etc. He explained the detailed case study of filing and granting the patent application. He also elaborated the forms to be used for filing the patent application.

The online lecture on “Intellectual Property Rights (IPR’s) and Patents” was conducted through online via google meet on 12 December, 2021. The aim of the workshop was to establish a basic level of awareness amongst the workshop participants. There were 37 participants registered for this lecture from various departments representing. Dr Sandhya Pillai, convener of the online lecture introduced the program and also expressed the vote of thanks on behalf of entire CCET.

Screenshots of the program



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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr. A.J Khan	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. SANDHYA PILLAI	FACULTY
4	Dr. ARCHANA CHOWDHURY	FACULTY
5	Mr. RADHESHYAMH GAJGHAT	FACULTY
6	Dr. SANDHYA PILLAI	FACULTY
7	Dr. PREETI NANDKUMAR	FACULTY
8	Ms SHIKHA AGRAWAL	FACULTY
9	Mr. ASHISH DEWANGAN	FACULTY
10	Mr. PRASHANT BAWANEY	FACULTY
11	KAUSHAL PRASAD	MTECH
12	MANISH KUMAR YADAV	MTECH
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If You Aim High, We Provide The Means

Report of
Invited Lecture
on
Intellectual Property Rights of Patents, Copyrights and
Trademarks

Resource Person: Dr. Ritesh Dash, Professor

Reva University, Bangalore

Date: 15th April 2021

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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Christian College of Engineering and Technology

LECTURE ON INTELLECTUAL PROPERTY RIGHTS OF PATENTS, COPYRIGHTS AND TRADEMARKS

Resource Person: Dr. Ritesh Dash
Professor, Reva University, Bangalore

Date: 15th April 2021 & Time: 11.00 am

Organized By: Research and Development Cell
Coordinator: Dr. Sandhya Pillai



Date: 15/04/2021

Brief summary of the program:

A lecture on intellectual Property Rights of Patents, Copyrights and Trademarks was conducted at CCET, Bhilai on 15/04/2021. The session was organized by Research and Development Department. The lecture was delivered from the conference hall of the CCET. Over 50 participants attended the session through online mode. Participants were welcomed by program Coordinator Dr. Sandhya Pillai at 10.50 am, followed by initial remarks from Dr. Dipali Soren, Principal of CCET. The program was inaugurated by our Respected Principal Prof. Dr. Dipali Soren at 10.40 am with inaugural address.

His lecture started with an introduction to Intellectual Property Laws and spanned across the different disciplines related to IPR. He pointed out that IPR is no more confined to the legal fraternity, but has spread across all disciplines because of which it has an impact and

Criterion 2

QIM 2.3.1 Student centric methods



significance on arts, science, commerce, management and business. Patents copyright and trademarks have great significance not only in the uplifting the knowledge economy but also in fine-tuning it. He elucidated the meaning of intellectual use of traditional knowledge with an example of basmati rice case of 1997. He recalled the 1980's IPR laws in India. Also, he recollected his PG teaching to genetics students of University of Mysore during 2005-06 related to intellectual property rights and technology transfers. He gave an overview on the importance of legislation in the field of science and arts community, how innovation comes with different disciplines with collaboration research, marketing innovations etc. He explained how to file a patent in India itself with respect to life science, biotechnology, computer science and physical sciences and also in the context of collaboration research.

He briefed on IPR laws in different countries like USA, Germany, and UK etc. He gave an overview on the claim drafting to capture a molecule or a compound, process, methods, drugs, claims to monopoly, copyright for arts, authoring music, painting, movie, computer program, first author claim of book, translator claim to different language and trademarks used in the court of business and management etc. Then he discussed on different aspects of intellectual properties like industrial design, geographical indication, trade secret, protection of farmers' rights and researchers' rights. He concluded the talk by explaining the rationale of protection and the nature of IPR. He emphasized that IPR has to be renewed from time to time for keeping them in force except in case of copyright and trade secrets.

The program was concluded at 1.00 pm by a vote of thanks by Dr. Sandhya Pillai. The lecture was highly informative to students, teachers and research scholars. Thus the lecture provided valuable awareness and insights on the various aspects of IPR.

Criterion 2

QIM 2.3.1 Student centric methods

**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACUL TY & STUDENTS
1	DR. RITESH DASH	SPEAKER
2	Dr. DIPALI SOREN	FACUL TY
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Ms SHIKHA AGRAWAL	FACUL TY
5	Mr. RADHESHYAMH GAJGHAT	FACUL TY
6	Mr. AMIT SARDA	FACUL TY
7	Dr. PULIVARTI SRINIVASA RAO	FACUL TY
8	Dr. PREETI NANDKUMAR	FACUL TY
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19	ATUL HIRWANI	MECH
20	BHUPENDRA KUMAR SEN	MECH
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Report

On

Webinar on “A Guide for Entrepreneurship”

Date : 13th July 2021, 11am

Resource Person : Prof Anil Brahmin

Venue : Online Mode.



Organized by IIC, CCET

Criterion 2

QM 2.3.1 Student centric methods



Report

The Department Electrical Engineering conducted a webinar titled “A Guide for Entrepreneurship” on 13th June 2021, under IIC Unit of CCET Bhilai. The talk was delivered by prof Anil Brahmin, SSTC Bhilai.

The webinar began with defining the term ‘entrepreneurship’, and stated that entrepreneurs work for the betterment of society. Passion, commitment, leadership skills and the ability to teach are some of the characteristics an entrepreneur should have. He laid emphasis on the birth and importance of novel ideas which can lead to the creation of wealth for themselves and the society. An entrepreneur should also be a good mentor to guide and lead a team of people, as well as having multifaceted knowledge of the enterprise because the business environment is always changing and a need to adapt to the current situation is paramount. There is also a need for funding the entrepreneurial endeavor which may be sought from government and private institutions, angel investors and through personal funding. The primary goal is to develop the idea into a practical implementation. The current pandemic has unfortunately led to an economic recession and it may take some time for things to get back to normal. After the talk was completed, the resource person took questions from the participants. A number of questions were asked, some being on the necessity of big ideas versus small ones, the hesitancy of people to join startups because of job security, the risks involved when taking up the entrepreneurial route and differences between an entrepreneur and a business man. Mr Brahmin answered all the queries with clear and crisp information. Dr S S Bishnoyee, IQAC Coordinator, then summed up the talk with his succinct concluding remarks. As the webinar came to a close, Mr Prashant Bawaney, faculty member in the Department Electrical Engineering, proposed the vote of thanks. The webinar received 83 registrations, it was attended by 68 people comprising of faculty and students of the college from all streams.

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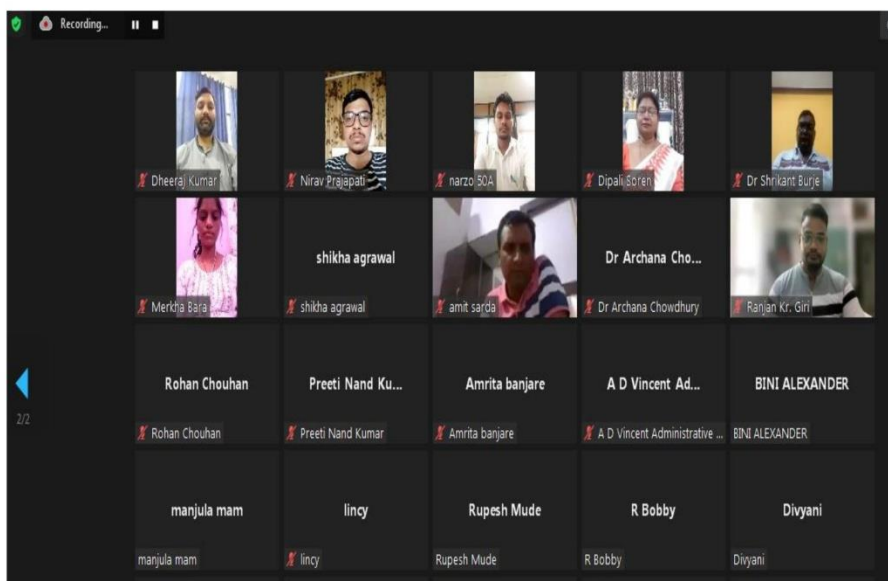
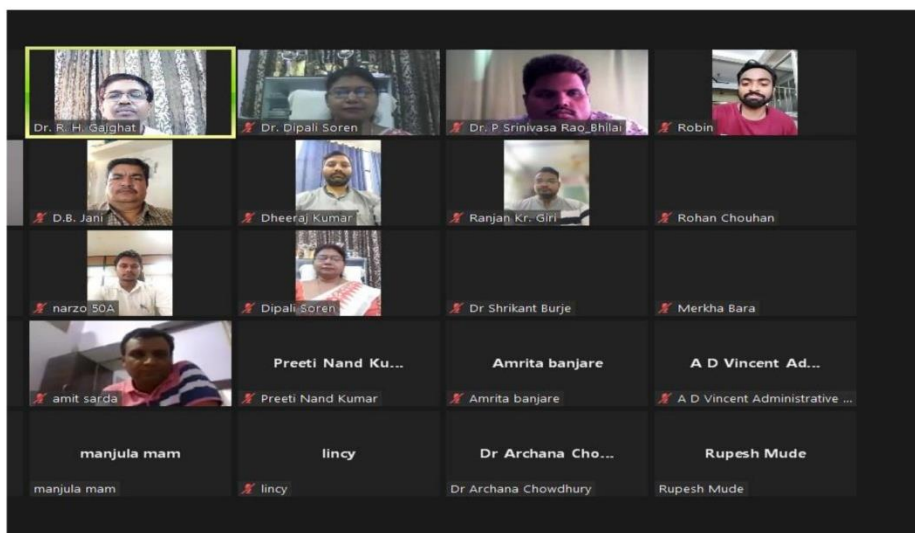
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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr. Anil Brahmin	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. SANDHYA PILLAI	FACULTY
4	Dr. ARCHANA CHOWDHURY	FACULTY
5	Mr. RADHESHYAMH GAJGHAT	FACULTY
6	Dr. SANDHYA PILLAI	FACULTY
7	Dr. PREETI NANDKUMAR	FACULTY
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17	ANGAD YADAV	CSE
18	ARYAN GUPTA	CSE
19	ASHISH SAINI	CSE
20	DURGA SONI	CSE
21	GRAMU	MECH
22	HARSAD	MECH
23	HIMANSHU SAHU	MECH
24	MAYUR YADAV	MECH
25	RAJESH KUMAR SHRIVASTAVA	MECH
26	DEEPAK KUMAR	EE
27	HARISH KUMAR	EE
28	KAMLESHWAR	EE
29	PREMKUMAR YADAV	EE

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Report

On

The Power of Nanotechnology – Applications and Implications (Webinar)

Date : 6th July 2021, 11am

Speaker: Dr. Tata Narsinga Rao

Venue : Online Mode.



Organised by R & D Cell, CCET

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Nano materials have unique properties that makes it so fascinating like the transparent sunscreen creams and at the same time nano particles can cause harm like the nanosized spikes in the SARS-CoV2 which keeps mutating and affect our respiratory organs. The amazing world of nano materials was very lucidly and interestingly presented by **Dr. Tata Narsinga Rao** from International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI) Hyderabad during the Webinar Series on “Science, Technology and Innovation organized by the R&D Cell of Christian College of Engineering and Technology (CCET), Bhilai in association with the Coordinator Cell of Chhattisgarh Council of Science & Technology, Raipur on 6th July 2021. There was huge participation by students, research scholars and faculty members from different parts of the country during the Webinar.

The program began with a brief introduction about the topics deliberated during this Webinar Series by Dr.Dipali Soren, Principal of CCET followed by Dr. Sandhya Pillai, In-charge, R&D Cell, CCET who gave a quick description on the importance of nanotechnology and nanoscience.

Dr. Tata Narasinga Rao explained about the various applications of nanomaterials like Aluminium Nanoparticles for making Hydrogen flame, Nano Aluminium powders for propellant additives, Nano silver for textile industry, Self -cleaning TiO₂ coatings for clothes. He also elaborated upon the recent projects taken up by ARCI including the manufacture of face masks coated with nano Copper that can be very effective in killing the Covid 19 virus.

Rev Father George C Varughese, Executive Vice Chairman of CCET, and Principal Dr.Dipali Soren applauded the efforts of the R&D team in organising such informative and interesting lectures. The program concluded with the vote of thanks by Mr.Ronny Sunny, Asst. Professor, Civil Engineering department and the Coordinator of the Webinar Series.Mrs. Lincy Rodriguez, Assistant Professor, CSE, CCET was the moderator for the event.

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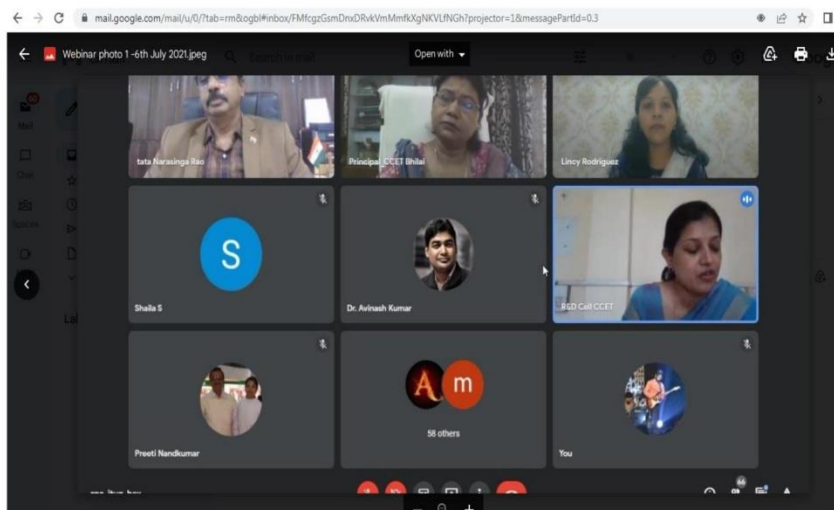
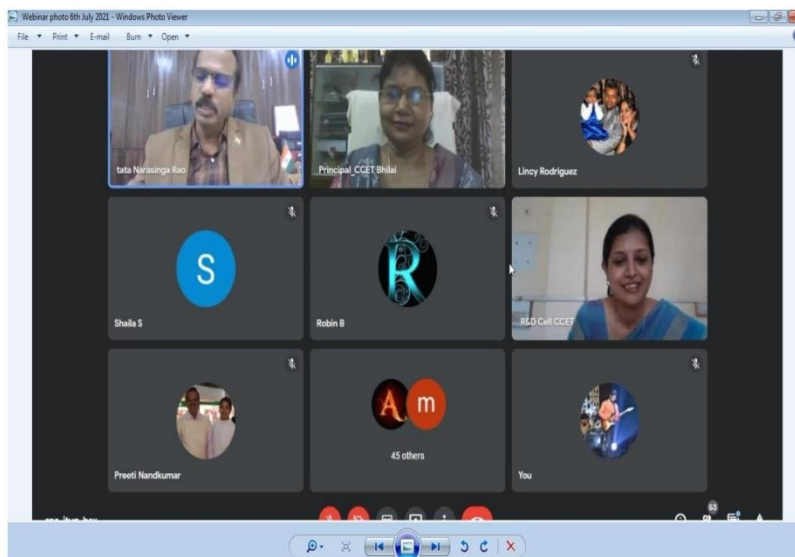
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**LIST OF PARTICIPANTS**

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1	Dr. Tata Narsinga Rao	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. SANDHYA PILLAI	FACULTY
4	Dr. ARCHANA CHOWDHURY	FACULTY
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30	RAKESH KUMAR	EE

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Report

On

‘Entrepreneurship - Challenges & Opportunities’ (Webinar)

Date : 6th Dec 2021, 11am

Speaker: Mr Amit KumarSingh

Venue : Online Mode.



Organized by: Electrical Department & IIC of CCET Bhilai

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REPORT

Webinar on 'Entrepreneurship - Challenges & Opportunities' jointly organized by Electrical Department & IIC of CCET Bhilai was held on 6th December 2021 through Google meet platform by 3pm. The Webinar was organized with the aim of sharing and imparting knowledge and awareness on the webinar topics. Altogether 60 members were registered for the event.

Mr Prashant Bawaney, Electrical Department welcomed Speaker Mr Amit Kumar Singh and the participants and introduced the speaker to the audience who were connected via Google Meet. The webinar was a very detailed and fun dive into what being an entrepreneur means and what it entails. It was interesting to listen to the perspective about success and failures in being an entrepreneur.

This session overall was highly informative, captivating, and enlightening. It stimulated the minds and inspired the participants to take a step towards being an entrepreneur.

The vote of thanks was delivered by Mr Ashish Kumar Dewangan, faculty of Electrical Engineering.

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WEBINAR
on
ENTREPRENEURSHIP CHALLENGES & OPPORTUNITIES

Keynote Speaker
Mr Amit Kumar Singh
A . S. Industries Durg



Date : 6th December 2021
Time 3pm



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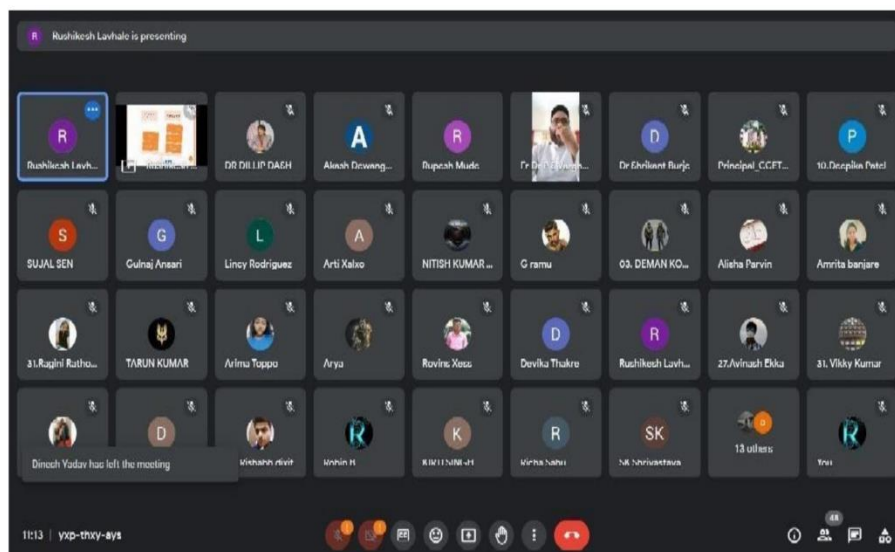
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**List of participant**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	MR. Amit Kumar Singh	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Ms SHIKHA AGRAWAL	FACULTY
4	Mr. ASHISH DEWANGAN	FACULTY
5	Mr. PRASHANT BAWANEY	FACULTY
	Mr. RADHESHYAM H	
6	GAJGHAT	FACULTY
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10	ASHISH PRASAD	MECH
11	BABLU KUMAR	MECH
12	D JOHN VICTOR	MECH
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24	JAISLEEN SAHOTA	CSE
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29	VAIBHAV LAKSHMI DUBEY	EE
30	A SATISH KUMAR	M.TECH
31	AATIFA FATIMA	M.TECH
32	AKASH KUMAR YADAV	M.TECH
33	BHUPESH KASHYAP	M.TECH
	MECHELLE AKANKSHA	
34	GEORGE	M.TECH
35	NIDHI MINJ	M.TECH
36	NIKITA TIGGA	M.TECH
37	PRAVEEN KUMAR GAVEL	M.TECH
38	SHIVA JI	M.TECH
39	SANDHYA MINJ	M.TECH
40	BHUPESH SONKAR	M.TECH

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WORKSHOP

ON

RESEARCH METHODOLOGY

Resource Person -Dr. R.P. Dewangan, Chairman Water Cell, CSVTU Bhilai

Date :07 Dec 2022

Venue :CCET Bhilai,C.G.



Organized by R&D Cell,CCET,Bhilai

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Date: 7 Dec 2022

Summary of the workshop

A research methodology workshop was conducted on 7th December 2022 in CCET with 31 participants. The workshop aimed to provide a comprehensive understanding of research methodology and its various components, including research design, data collection, data analysis, and interpretation of results. The workshop began with an introduction to the importance of research methodology in conducting high-quality research and its significance in producing reliable and valid results.

The program started with lamp lighting and welcome of the guest for the session by Dr ArchanaChoudhary, Vice Principal CCET. She emphasized the importance of Research and how a proper methodology should be followed for carried out while doing well defined research activities. Speaker of the workshop was delivered by Dr. R.P. Dewangan, Chairman Water Cell, CSVTUBhilai

The participants were guided through the process of developing a research design which include the selection of appropriate research methods, defining research questions and hypothesis and formulating a research plan. The workshop emphasized on the need for a well-defined research designs it serves as the foundation for the entire research process.

The workshop also focused on various data collection methods, including surveys, interviews, observations, and experiments. The participants were introduced to the strengths and weaknesses of each data collection method and were guided on how to choose the most appropriate method based on their research objectives.

Data analysis techniques were another crucial aspect covered in the workshop. The participants learned about different methods of data analysis, such as quantitative and qualitative analysis, and were provided with practical examples of how to analyze and interpret research data.

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The Various Snapshots During the Events



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**LIST OF PARTICIPANTS**

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1	MR. R. P. DEWANGAN	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Dr. PREETI NANDKUMAR	FACULTY
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9	Ms Richa Sahu	FACULTY
10	Ms Divyani	FACULTY
11	ANISHA KUMARI	CSE
12	DHEERAJ SONI	CSE
13	DIKSHA SONI	CSE
14	DURGA JYOTI YADAV	CSE
15	SHIVNATH GOTA	MECH
16	SHREYANSH LAL	MECH
17	ASHWANI KUMAR PANDEY	EE
18	BHARTI JENA	EE
19	Dewanshu Ghatode	EE
20	HARBHAJAN BAGHEL	EE
21	Himanshu Sharma	EE
22	Nikita	EE
23	RAGINI RATHORE	EE
24	KOMAL PRASAD	ET & T
25	NIHAL SHARMA	ET & T
26	AVINASH EKKA	ET & T
27	AMIT KUMAR	ET & T
28	AMIT KUMAR YADAV	MTECH
29	Kunal Anant	MTECH
30	Lokesh Patel	MTECH
31	NIKHIL KUMAR VERMA	MTECH

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Guest Lecture

on

Basics of Research Methodology

Resource Person: Dr. Pratibha Kurup

Associate Professor, Chhatrapati Shivaji Institute of Technology, Durg

Date: 10 February 2022

Venue : CCET, Bhilai (C.G)



Organized by R&D Cell, CCET, Bhilai

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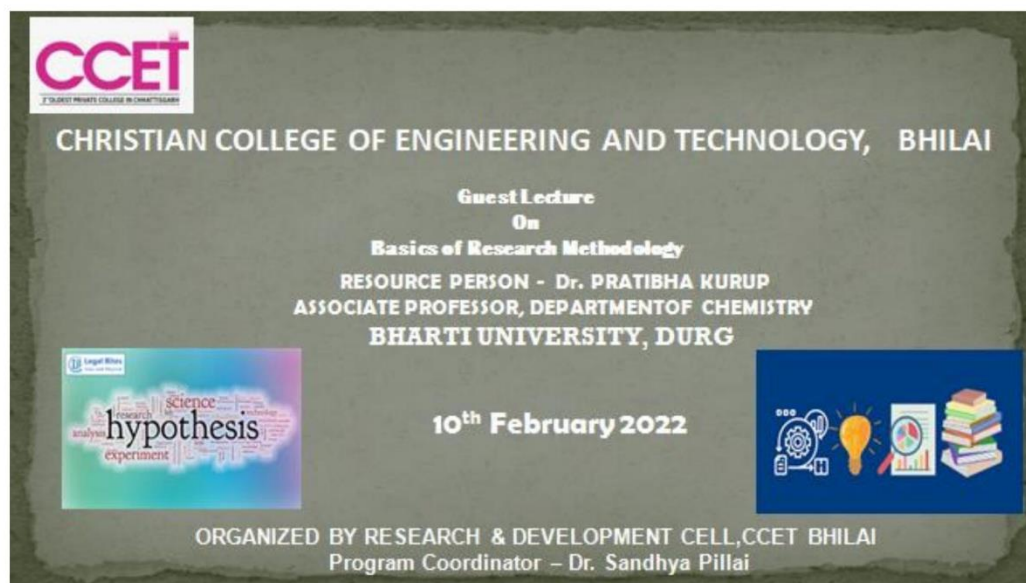
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Date: 10/02/2022

Brief summary of the program:

A guest lecture on Basics of Research and Methodology was organized on 10th February, 2022. Dr. Pratibha Kurup, Associate Professor of Department of Chemistry, was the chief speaker. He explained the importance of research and methodology, methods of preparation, and importance of published papers. He also discussed the steps to publish research papers, the content, and how to present research in paper

The program started with welcome address by Dr. Dipali Soren, Principal CCET. She explained the various aspect of research methodology in different areas and also mentioned the significance research.

Objectives of conducting Guest lecture

- To make students learn and interact with renowned industry experts.
- Make Students to receive an unparallel education on the art of “Research Methodology with personal one on one attention.
- To make every student an expert in Research Methodology this would be very useful for developing of their

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own Research projects.

Overview about the lecture

The aim of this workshop is to make the students are going to gain basic knowladge in the field of Research for their projects handled in the B.Tech and upcoming students. Research methods are very important to implements the projects their academics.

Dr. Pratibha Kurup gave knowledge to students about Research methodology and the steps required for it, he enlightened students about the Research field and opportunities in it, he also threw focus on report writing which will help students in academics projects and will also help them in future if they wish to pursue career in research field.

Learning Outcome

- Students were given knowledge about the Research field and opportunities in it.
- Students got to know about the report writing skills and its importance.
- The knowledge gained will help students for while writing their final year project reports.

The program concluded by Dr. Sandhya Pillai, Associate Professor of Physics and Coordinator of R&D cell with valediction and certificate distribution.

The Photos taken During the Events:

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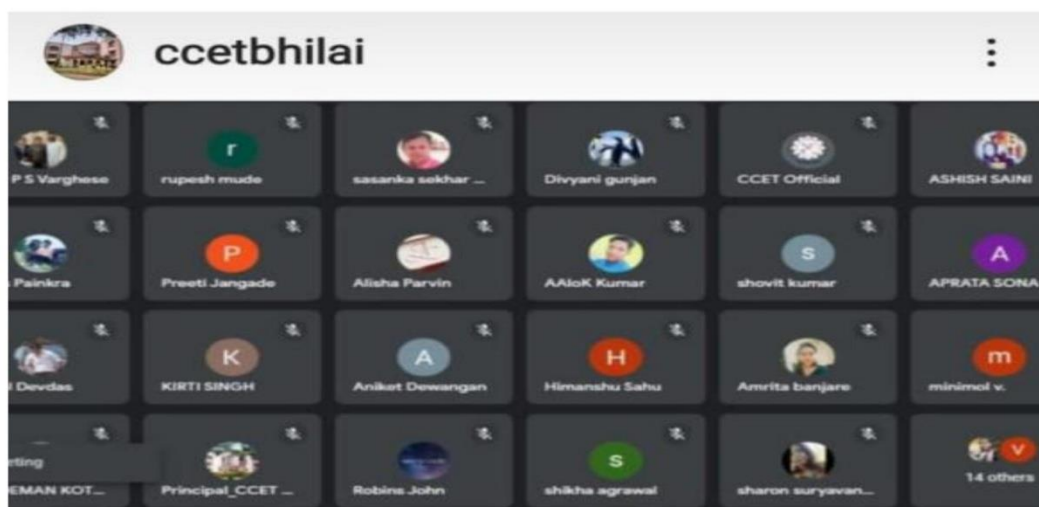
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**LIST OF PARTICIPANTS**

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1	DR. PRATIBHA KURUP	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Dr. PREETI NANDKUMAR	FACULTY
5	Dr. SANDHYA PILLAI (nov)	FACULTY
6	Mr. ASHISH DEWANGAN	FACULTY
7	Mr. PRASHANT BAWANEY	FACULTY
8	Mr. RADHESHYAMH GAJGHAT	FACULTY
9	Ms Richa Sahu	FACULTY
10	Ms Divyani	FACULTY
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One Day Workshop

on

Fundamentals of Research Methodology

Resource Person: Dr. Anupam Choudhary

Professor, Rizvi College of Engineering, Mumbai

Date: 20 April 2022

Venue : CCET, Bhilai (C.G)



Organized by R&D Cell, CCET, Bhilai

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Date: 20/04/2022

Brief summary of the program:

The workshop on Fundamentals of Research Methodology was organized on 20 April 2022 for all the students pursuing undergraduate, postgraduate, PhD and faculty members of all departments. The resource person was Dr. Anupam Choudhary, Professor in the department of Computer Science, Rizvi College of Engineering, Mumbai.

The program started with welcome address by Dr. Dipali Soren, Principal CCET. She explained the fundamental of research methodology and also mentioned the importance of Research methodology in different fields.

The Fundamental of Research Methodology Workshop was tailor-made to facilitate the academic requirements of the Post-Graduate student community and faculty members also. The one day trans-disciplinary workshop

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- to develop knowledge on the fundamentals of research
- to build knowledge on research design, application & data analysis
- to develop skills for synopsis/thesis development & academic writing The workshop was conducted free of cost to the students.

The workshop started with the session on 'Fundamentals of Research' by Dr Anupam Choudhary, Professor Department of Computer Science. The first session is based on, 'Qualitative Methodology: Research Design, Sampling Design & Application'. The second session was followed by 'Data Analysis & Presentation in Qualitative Research'. The last session of the day was 'Essentials of Literature Review'.

In this workshop, the 'Quantitative Methodology: Research Design, Sampling Design & Application' was also discussed by him. He introduced the basics of research and emphasized on the importance of research methodology, hypothesis testing, sample selection and research process.

The student participants gave a positive feedback on their learning experience during the one day workshop in the feedback session.

The participants were extremely overwhelmed by the lecture delivered by Dr. Anupam Choudhary as it would be very effective for their career and future work on research.

It was concluded by the vote of thanks delivered by Dr. Sandhya Pillai, Associate Professor of Department of physics and Coordinator of R& D cell.

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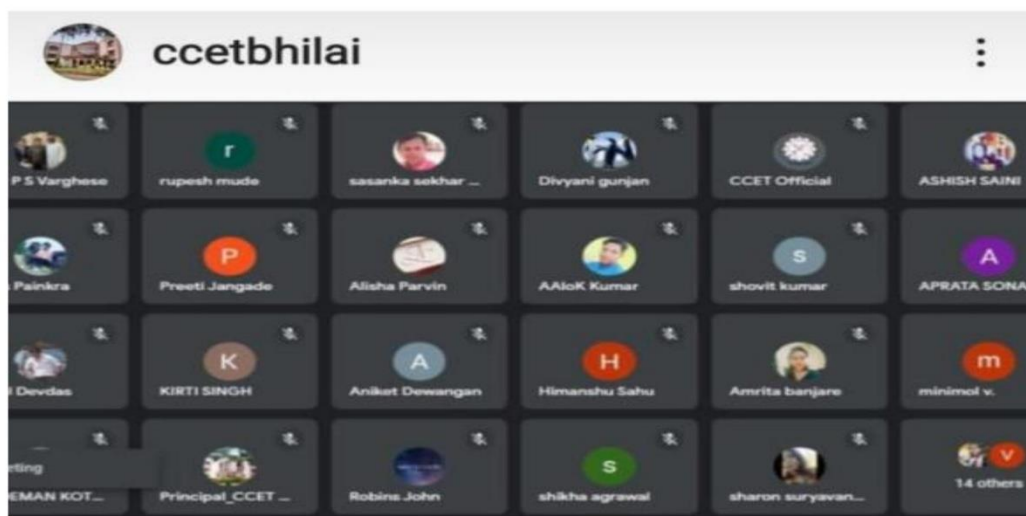
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The Photos taken During the Events:



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1	DR. ANUPAM CHOUDHARY	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Mr. RADHESHYAMH GAJGHAT	FACUL TY
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19	Aman Uikey	MECH
20	Amit sahu	MECH
21	ankush kumar	MECH
22	ATUL HIRWANI	MECH
23	ROVINS XESS	EE
24	SHIVENDRA PANIGRAHI	EE
25	SUGAM BAKSHI	EE
26	VEDINA XAXA	EE
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Report on
One Day Workshop on Research
Methodology

Keynote Speaker: Dr Dewanand Bhosale
Professor, SSTC Bhilai

Session – 2021-22

Date of visit: -02/09/2022



Organized by Electrical Department, CCET Bhilai

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The workshop on research methodology for Engineering research scholars aims to enhance their understanding and application of various research techniques. It will focus on both theoretical knowledge and practical skills related to research in the Engineering field. Here are the key topics that the workshop is covered by Dr Dewanand Bhosale, Keynote speaker.

1. Formulation of Research Problem:

Participants will learn how to identify and articulate research problems effectively. Understanding how to frame a clear and well-defined research problem is crucial for the success of any research study.

2. Formulation of Research Hypothesis and Testing:

The workshop will cover the process of formulating research hypotheses based on the research problem. Participants will also learn about different hypothesis testing methods to determine the validity of their hypotheses.

3. Conducting Literature Review:

The importance of literature review in the research process will be emphasized. Participants will learn how to conduct a comprehensive literature review to understand the existing knowledge and identify gaps in previous studies.

4. Data Collection Methods:

Different data collection methods commonly used in Engineering research will be explored. This may include surveys, experiments, case studies, interviews, observations, etc. Understanding the strengths and limitations of each method is essential for accurate data collection.

5. Selection of Statistical Methods for Data Analysis:

Participants will learn how to select appropriate statistical methods for analyzing the collected data.

This includes both parametric (e.g., t-tests, ANOVA) and non-parametric (e.g., Mann-Whitney U test, Kruskal-Wallis test) methods, depending on the nature of the data and research questions.

6. Report Writing:

The workshop will cover the essentials of effective research report writing. Participants will be guided on how to structure their research reports, present their findings, and draw meaningful conclusions.

Throughout the workshop, there will be practical exercises and case studies to reinforce the concepts discussed. Participants will have the opportunity to work on sample research problems and datasets to gain hands-on experience in applying the research methodology techniques.

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SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	DR. Dewanand Bhosale	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Dr. PREETI NANDKUMAR	FACULTY
5	Mr. ASHISH DEWANGAN	FACULTY
6	Mr. PRASHANT BAWANEY	FACULTY
7	Ms Divyani	FACULTY
8	Mr. RADHESHYAMH GAJGHAT	FACULTY
9	Ms Richa Sahu	FACULTY
10	TIKESHWARI	CSE
11	VAISHALI	CSE
12	VANADA YADAV	CSE
13	VIBHA	CSE
14	VIJAY RELWANI	CSE
15	VINAY MINJ	CSE
16	SAGAR YADAV	MECH
17	Alakh Niranjan	MECH
18	Aman Uikey	MECH
19	Amit sahu	MECH
20	ankush kumar	MECH
21	ATUL HIRWANI	MECH
22	ROVINS XESS	EE
23	SHIVENDRA PANIGRAHI	EE
24	SUGAMBAKSHI	EE
25	VEDINA XAXA	EE
26	ASHISH SONI	ET & T
27	HARSH TARONE	ET & T
28	KOMAL PRASAD	ET & T
29	NIHAL SHARMA	ET & T
30	AVINASH EKKA	ET & T
31	AMT KUMAR	ET & T
32	Atul Choudhary	MTECH
33	Deepak Baghel	MTECH
34	G Praveen Kumar	MTECH

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Report
on
IPR Awareness Programme
Keynote Speaker
Dr RajKumar Jhapate
Professor, SSTC Bhilai
Date of visit: -08/12/2022



Organized by Electrical Department
CCET Bhilai
Session – 2021-22

Criterion 2

QIM 2.3.1 Student centric methods



Report

The training program on Intellectual Property (IP) rights, held on 8th December 2022, was a pivotal initiative to educate 25 participants on the importance of IP and to establish transparent procedures for its ownership, protection, and commercialization. The program was designed to uphold the core moral values of academic researchers and faculty, including integrity, merit, academic freedom, and pursuit of excellence. The primary objective of the program was to promote awareness about the significance of intellectual property as a crucial asset for organizations, particularly in the dynamic global market environment. By educating participants about IP rights, the program aimed to empower them to safeguard their innovative creations and ideas.

Additionally, the training program fostered a culture of creativity and innovation in the fields of science and technology. Through a diverse range of activities, the attendees were encouraged to explore, stimulate, and cultivate inventive endeavors in the broadest sense. Practical workshops and interactive sessions provided a platform for participants to brainstorm and collaborate on innovative projects. The program also emphasized ethical practices in handling intellectual property. By incorporating discussions on maintaining academic integrity and adhering to core moral values, the participants were equipped to pursue their creative activities responsibly and with a sense of purpose.

Ultimately, the training program on Intellectual Property rights served as a catalyst for the participants to recognize the potential of their intellectual contributions and provided them with the tools and knowledge to protect and commercialize their innovations effectively. As these trained individuals move forward, they are better prepared to contribute to the growth of their organizations and the advancement of science and technology, leveraging their intellectual assets to thrive in the competitive global market.

Criterion 2

QIM 2.3.1 Student centric methods

**List of Participants**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Mr. RAJ KUMAR JHAPTE	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Dr. PREETI NANDKUMAR	FACULTY
5	Mr. ASHISH DEWANGAN	FACULTY
6	Mr. PRASHANT BAWANEY	FACULTY
7	Ms Divyani	FACULTY
8	Mr. RADHESHYAM H GAJGHAT	FACULTY
9	Ms Richa Sahu	FACULTY
10	TIKESHWARI	CSE
11	VAISHALI	CSE
12	VANADA YADAV	CSE
13	VIBHA	CSE
14	VIJAY RELWANI	CSE
15	JEEVAN BARA	CSE
16	VINAY MINJ	CSE
17	SAGAR YADAV	MECH
18	Alakh Niranjana	MECH
19	Aman Uikey	MECH
20	Amit sahu	MECH
21	ankush kumar	MECH
22	ATUL HIRWANI	MECH
23	ROVINS XESS	EE
24	SHIVENDRA PANIGRAHI	EE
25	SUGAM BAKSHI	EE
26	VEDINA XAXA	EE
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28	HARSH TARONE	ET & T
29	KOMAL PRASAD	ET & T
30	NIHAL SHARMA	ET & T
31	AVINASH EKKA	ET & T
32	AMIT KUMAR	ET & T
33	Atul Choudhary	M.TECH
34	Deepak Baghel	M.TECH
35	G Praveen Kumar	M.TECH
36	Nagraj	M.TECH
37	Sujit Kumar Singh	M.TECH
38	Suyash kumar sahu	M.TECH
39	Vinita Garhvaliya	M.TECH
40	BHUPESH SONKAR	M.TECH
41	JUSTIN CHACKO PULICKTHARAYIL	M.TECH

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If You Aim High, We Provide The Means

**Invited Talk
on
Legal Aspects and Intellectual Property Rights**

Resource Person: Mr. Rakesh Yadu, Advocate, District Court Durg (C.G)

Date: 16th December 2022

Venue: CCET, Bhilai (C.G.)



Organized by: R&D Cell, CCET, Bhilai

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CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY



**INVITED TALK ON
LEGAL ASPECTS AND
INTELLECTUAL
PROPERTIES RIGHTS**



**Resource Person: Mr. Rakesh Yadu
Advocate
District Court Durg, (C.G.)**

Date: 16th December 2022 & Time: 11.30 am

**Organized By: Research
and Development Cell**

Date: 16/12/2022

BRIEF SUMMARY

The Research and Development Cell conducted an invited talk on Legal Aspects and Intellectual Property Rights for students and faculty members on 16 December 2022. The viewers were asked to send their questions in advance so that they could obtain their answers from the expert itself.

The program started with the welcome address by Dr. Dipali Soran, Principal CCET Bhilai. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to him for start the lecture.

Ms Rakesh began the seminar stating that our country has one of the strongest IP law in the world. Since most of the viewers for that day's session were engineers, they tend to produce various ideas which ultimately need to be protected. IPR is a regime a pillar of protection and second enforcement by IP lawyers.

IP is basically a property which is the product of an individual's intellect in the form of symbols, names, sound, music, invention, paintings, photographs, movies, technologies and design etc. IP are classified further into types as patents, copyright, trademarks, designs, geographical indications, integrated circuits and semiconductor layout designs, plant varieties and trade secrets.

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Patents are exclusive rights to an inventor to capitalize an invention and prevent third parties from manufacturing, using, selling or importing the said invention. There are two kinds of patents namely product patent and process patent. The type of inventions to be included in a patent is new, non-obvious to a person skilled in the relevant field and that has industrial application. The validity of a patent is only 20 years.

He also told about “What is not patentable?” Inventions that are frivolous or against established natural laws, which may get harmful to humans and animal health, a person’s discovery already known including new properties of substance, scientific principles or formulations, mathematical formulae, algorithms etc. are not patentable. Methods of agriculture or horticulture, a rule or method of performing mental act or playing games are also non patentable.

The next topic focused on was Copyrights and related rights. Copyright is an exclusive right given by law for original literary, dramatic, musical, artistic works, cinematograph films and sound recordings.

The related rights are as follows:

- Performer’s rights: rights of an actor, singer, musician, dancer, acrobat, juggler etc.
- Broadcasters right: communication to public by any means of wireless diffusion, sound or visual images
- Economic rights: to reproduce, make copies, sell, distribute, display to public, assign/license
- Moral rights: right of acknowledgement, right to object against mutilation/distortion of work

He described about the Copyright infringement. It includes making infringing copies for sale or hire, distributing infringing copies for trade or incorporation of infringing copies into India. It does not include a fair deal for research, study, criticism, review and news reporting.

Trademarks and branding has also explained by him. A trademark is a mark capable of being represented graphically and capable of distinguishing the goods or services of one person from those of others such as a visual, symbol, word, name, label, numerals or combination of colours’ Trademark is registered for 10 years and can be renewed.

Counterfeiting is when a counterfeit product which is either an exact copy of a genuine product, with the same words, logos and colours or so similar that one can mistake it for a real product. Industrial designs features of shape, configuration, pattern, ornament, composition of colours or lines or a combination there of, applied to an article by any industrial process/ means, which appeal and judged solely by eye. After registration a design is

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QIM 2.3.1 Student centric methods



valid for 15 years during which a registered design can only be used after getting a license from its owner. Once the validity period is over the design is free for anybody to use.

Geographical Indication is a sign used on product that have a specific geographical origin and possess qualities or a reputation that are due to that origin. The importance of geographical indication is that primarily an agricultural, natural or a manufactured product (handicrafts and industrial goods) originating from a definite geographical territory. The registration is valid for 10 years and can be renewed every 10 years.

He discussed about the Semiconductor Integrated layout design. A layout design is the layout of transistors and other circuitry elements including lead wires connected in semiconductor integrated circuits. The act 2000 deals with “layout design” used in semiconductor integrated circuits which is in the form of intellectual property. The act provides protection for a period of 10 years

He also gave detailed description of Protection of plant varieties. It is exclusively and recognition provided to plant breeders and farmers for their contributions in developing, improving and cultivating new varieties of plants. So one must register plant varieties under the farmer’s rights act 2001 a far reaching legislation establishing rights of breeders. This act grants IPRs to farmers and plant breeders who cultivate or develops new or extant plant varieties. It recognizes the farmer as a cultivator, conserver and breeder.

Trade secrets have also been discussed by him. It is any commercially valuable and sensitive business information. Trade secrets may include R&D information, software algorithms, invention, designs, formulas, financial records, ingredients, lists of customers, devices, methods, consumer profiles and advertising strategies or policies of a company etc.

India like many other countries does not have a statute to protect trade secrets. Trade secrets are protected through common law rights and equity. Businesses can protect its trade secrets through confidentiality agreements for its employees and vendors and by restricting access to the information any other means. A trade secret can be protected for an unlimited period of time.

The session was concluded by Dr. Preeti Nandkumar explaining an individual’s responsibility towards IP protection methods which includes: Originality in business approach, by not purchasing/accessing counterfeit products/pirated content, due diligence resisting party IP and by securing protection for one’s own IP.

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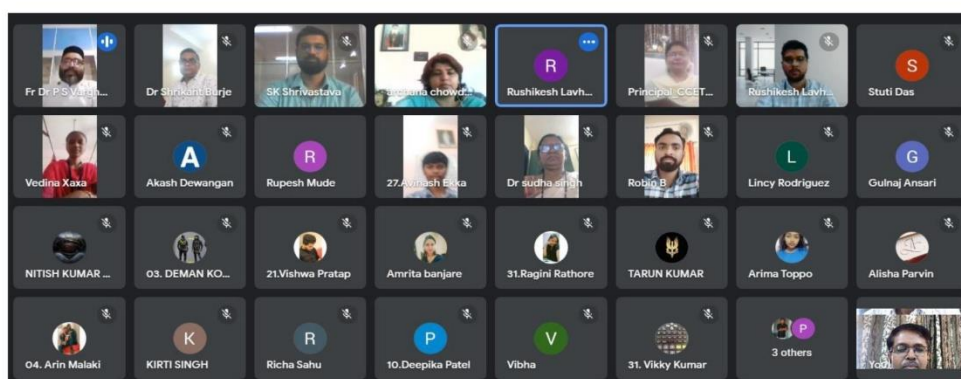
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SCREEN SHOT



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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACUL TY & STUDENTS
1	Mr.Rakesh Yadu	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Dr. PREETI NANDKUMAR	FACUL TY
5	Ms SHIKHA AGRAWAL	FACUL TY
6	Mr. ASHISH DE WANGAN	FACUL TY
7	Mr. PRASHANT BAWANEY	FACUL TY
8	Mr. RADHESHYAMH GAJGHAT	FACUL TY
9	Ms Richa Sahu	FACUL TY
10	Ms Divyani	FACUL TY
11	ANISHA KUMARI	CSE
12	DHEERAJ SONI	CSE
13	DIKSHA SONI	CSE
14	DURGA JYOTI YADAV	CSE
15	SHIVNATH GOTA	MECH
16	SHREY ANSH LAL	MECH
17	ASHWANI KUMAR PANDEY	EE
18	BHARTI JENA	EE
19	Dewanshu Ghatode	EE
20	HARBHAJAN BAGHEL	EE
21	Himanshu Sharma	EE
22	Nikita	EE
23	RAGINI RATHORE	EE
24	KOMAL PRASAD	ET & T
25	NIHAL SHARMA	ET & T
26	AVINASH EKKA	ET & T
27	AMIT KUMAR	ET & T
28	AMIT KUMAR YADAV	MTECH
29	NIDHI MINJ	MTECH
30	NIKITA TIGGA	MTECH
31	PRAVEEN KUMAR GAVEL	MTECH
32	SHIVA JI	MTECH
33	SANDHYA MINJ	MTECH
34	BHUPESH SONKAR	MTECH
35	Vivek Jatra	MTECH

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Session on

ON

Story of an Entrepreneur

Resource Person –Shiju Raju

**CCET Alumnus and Managing director of ACE VISION METAL AND
STEELWORKS LLC, in Dubai**

Date :25 Nov 2022

Venue :CCET Bhilai,C.G.

Organized by R&D Cell, and Start up Cell, IIC ,CCET,Bhilai



R&D cell of CCET,Bhilai

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INSTITUTION'S INNOVATION COUNCIL
(Initiative of IITB Institutes)

CCET

MoE's INNOVATION CELL
(GOVERNMENT OF INDIA)

ACE VISION
GROWING & THRIVING WORLD

MR. SHIJU PLAVELA

Date & Time
25th November
@ 2.00 pm

**Institution's Innovation Council
In Association With R&D Cell
CCET presents A Session On**

Story Of An Entrepreneur

**Institution's Innovation Council
(Startup cell)**

Register Now

Join Us  **Google Meet**

Faculty Coordinator:
Dr. Preeti Nand Kumar
Ms. Richa Sahu

Student Coordinator:
Mr. Ashish Saini (CSE)

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Report of the workshop

CCET Alumnus shares his journey of becoming Entrepreneur

Institution' Innovation Council Under Startup Cell in association with R&D Cell of Christian College of Engineering and Technology (CCET) BHILAI, organized a talk on the "Story of an Entrepreneur". Young Entrepreneur Mr.Shiju .P,managing director of ACE VISION METAL AND STEEL WORKS LLC, in Dubai who is an alumnus of Mechanical Engineering Branch of CCET shared his journey of starting his own startup. Shiju.P.Raju is an accomplished and result driven engineering professional with more than 17 years of extensive experience in managing local and international construction projects within time and budgetary constraints. He is equipped with record of success on process improvement, combined and demonstrated abilities in defining innovative solutions and methodologies for safe, cost efficient and smooth project operations. He motivated the students with success mantra to always use your time. Maintain quality in dealing, in character and all the things which we perform. If we succeed every mistake it helps to become legendary. He emphasized to learn from our mistakes. He gave thrust to make goal clear in life and plan accordingly to achieve success.

CCET startup cell organised this expert talk with an objective to create awareness, to explore business opportunities to students of engineering courses by bringing together experts from industries, government agencies in order to provide ideas and information for becoming an entrepreneur as an alternative career option and also to highlight the merits of pursuing such an option. It will also explore the possible business opportunities and create all necessary awareness to start a new project on his own or with the help of government procedures. This cell primarily works to support, encourage, and to create platform to new and young entrepreneurs. Program started with the word of blessings from Fr. Dr. P.S.Varghese, Executive Vice Chairman. DrDipaliSoren, Principal welcomed the CCET alumnus. The program was anchored by MsDivyani. IIC Startup Cell Faculty Coordinators Dr. Preeti Nand Kumar and Ms.Richa Sahu along with student coordinator organised the session.

You tube link for today's event <https://youtu.be/8UV9xHV2aOo>

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The Various Snapshots During the Events are as follows:



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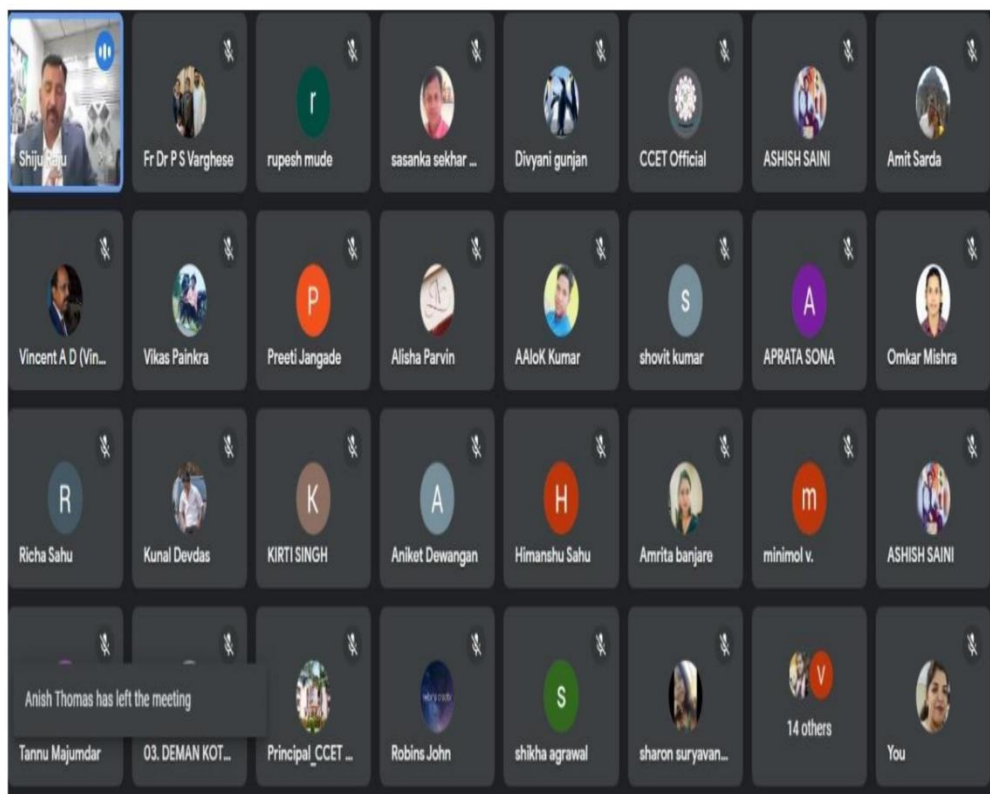
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SL. NO.	LIST OF PARTICIPANTS	FACUL TY & STUDENTS
1	Shiju Raju	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Dr. PREETI NANDKUMAR	FACUL TY
5	Dr. SANDHYA PILLAI (nov)	FACUL TY
6	Mr. ASHISH DEWANGAN	FACUL TY
7	Mr. PRASHANT BAWANEY	FACUL TY
8	Mr. RADHESHYAMH GAJGHAT	FACUL TY
9	Ms Richa Sahu	FACUL TY
10	Ms Divyani	FACUL TY
11	DEVIKA THAKRE	CSE
12	GULNAJ ANSARI	CSE
13	VIBHA	CSE
14	VIJAY RELWANI	CSE
	VINAY MINJ	CSE
16	SAGAR YADAV	MECH
17	Alakh Niranjana	MECH
18	Poonam	MECH
19	G RAMU	MECH
20	HARSAD	MECH
21	HIMANSHU SAHU	MECH
22	MAYUR YADAV	MECH
23	RAJESH KUMAR SHRIVASTAVA	MECH
24	VAIBHAV LAKSHMI DUBEY	EE
25	VISHNU RAM	EE
26	VIVEK	EE
27	DEEPAK CHAUDHARY	EE
28	DUJENDRA KUMAR SAHU	EE
29	VEDINA XAXA	EE
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32	AVINASH EKKA	ET & T
33	AMIT KUMAR	ET & T

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Report on

Importance of CAD/CAM/CAE in Industries

Expert Speaker: Dr Manoj A Kumbhalkar, Head & Associate Professor

Dept. of Mech. Engg., JSPM Narhe Technical Campus, Pune, Maharashtra

Date: 19/10/2022

Total participants: 24



Organized by: Mechanical Engineering Department, CCET,
in association with Institution Innovation Council (MHRD Initiative)

Brief Report about the program:

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The program started with the blessings of Executive Vice Chairman Rev. Fr. Dr. P S Varghese. After that, Dr. P S Rao, HOD Mechanical Engineering welcomed the participants and briefed about the emergence of growing power of computers gave rise to a new genre of software called CAD / CAE / CAM. Mr. Robin Babu Asst. Professor has given the introduction about the guest speaker of the lecture and handed over the session to him.

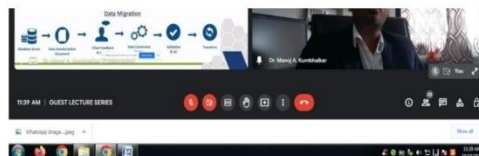
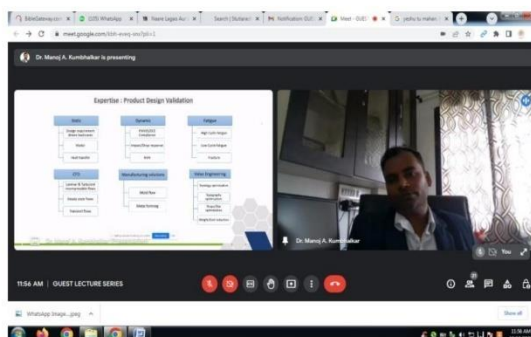
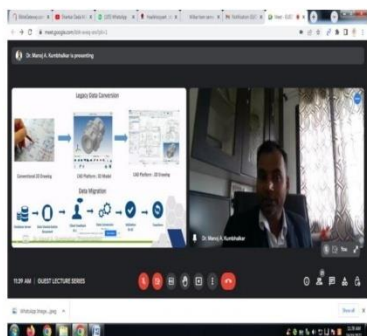
Dr. Kumbhalkar has given basic introduction of CAD/ CAM and its applications in industries and research sectors. He has also mentioned that the mechanical engineer having huge number opportunities if they can equip with CAD/CAM and CNC knowledge. He has concluded that CAD / CAE / CAM are the reduced design iteration process, and documentation that helps the future versions or even other, similar products.

Finally the meeting concluded with the vote of thanks given by Mr. Chandrashekhar Sahu, Coordinator of the guest lecture

Objective- To make students aware about the use of CAD/CAM in industry and research sector.

Benefit- Students came to know about CAD/CAE/CAM and their applications.

Screenshots of the program



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Facebook link-

https://m.facebook.com/story.php?story_fbid=pfbid033th1UhyFpKaupwqEakpcvqANRB4BLNjga5SGeXNRuNGEd813HBYyM8oyyXDcgQP8l&id=100047879977438&mibextid=Nif5oz

List of Participants

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr Manoj A Kumbhar	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Mr. AMIT SARDA	FACULTY
5	Mr. ABID KHAN	FACULTY
6	Ms LINCY MENDONZA	FACULTY
7	Dr. DILLIP KUMAR DASH	FACULTY
8	Mr Praveen Chandrakar	FACULTY
9	Mr. PRAVEEN SINGH RATHORE	FACULTY
10	Dr. PREETI NANDKUMAR	FACULTY
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17	Suyash kumar sahu	MTECH
18	Vinita Garhvaliya	MTECH
19	A S ATISH KUMAR	MTECH
20	AATIFA FATIMA	MTECH
21	AKASH KUMAR YADAV	MTECH
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24	KOMAL PRASAD	ET & T
25	NIHAL SHARMA	ET & T
26	AVINASH EKKA	ET & T
27	AMIT KUMAR	ET & T
28	Satyam bharti	EE
29	DEEPAK KUMAR	EE
30	HARISH KUMAR	EE
31	KAMLESHWAR	EE
32	PREMKUMAR YADAV	EE
33	RAKESH KUMAR	EE
34	SAHIL SONI	EE
35	TRIBHUWAN	EE

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Report of Guest Lecture

Building Innovation Ecosystem in Educational Institution

Event Date: 25/08/2022

Resource Person: Dr. Manoj Varghese, Dean(Innovation & Incubation),

Rungta College of Engineering & Technology, Bhilai.



Organized by: Institutional Innovation Cell (IIC), CCET

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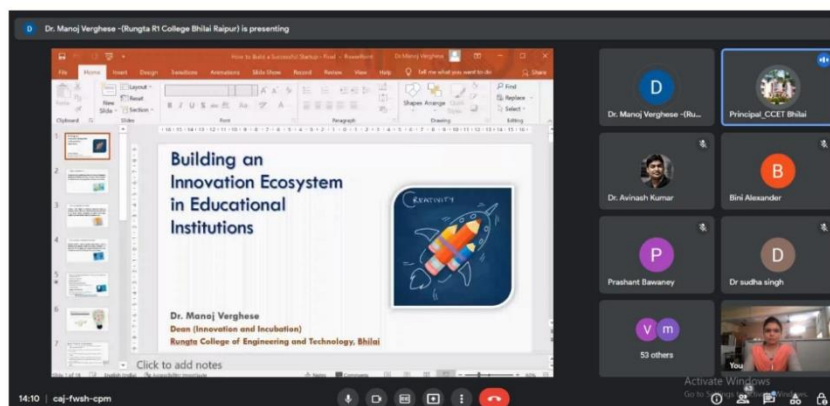
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Objective: The objective of the session was to create awareness about innovations in educational institutes.

Brief report: The session held on August 25, 2022 on the topic of “Building an Innovation Ecosystem in Educational Institution” was focused on promoting innovations in educational institutes. As the educational institutes are responsible for molding the students thus they have a great responsibility. Innovation refers to creating something new. Innovation can be a new way of thinking also. Innovation may lead to an increase in GDP so the government is giving stress to startups. To promote innovation, the institute can invite entrepreneurs to share their ideas among students. The institutes should incorporate the design thinking process to train students to think out of the box. Government gave the National Innovation and Startup Policy in 2019 to provide a guideline for innovation. There are governance and strategies by which funds for startups can be generated. If an institute’s infrastructure is used for a startup then the institute can take equity. Faculties from multidiscipline can come together to support and engage in startups. Innovation ecosystem is the need of the time and we need to adopt it.

Outcome: The staff and students came to know about various initiatives of the Ministry of Education, Govt. of India, to promote innovation and startup.

Photos:



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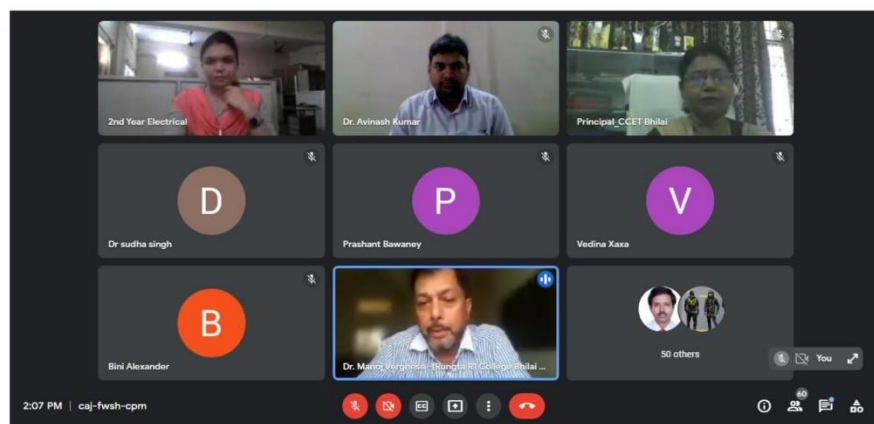
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**LIST OF PARTICIPANTS**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr. Manoj Varghese	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Ms Richa Sahu	FACULTY
5	Mr. ABID KHAN	FACULTY
6	Ms LINCY MENDONZA	FACULTY
7	Dr. DILLIP KUMAR DASH	FACULTY
8	Mr Praveen Chandrakar	FACULTY
9	Mr. PRAVEEN SINGH RATHORE	FACULTY
10	Dr. PREETI NANDKUMAR	FACULTY
11	Ms SHIKHA AGRAWAL	FACULTY
12	Mr. ASHISH DE WANGAN	FACULTY
13	Mr. PRASHANT BAWANEY	FACULTY
14	Mr. RADHESHYAMH GAJGHAT	FACULTY
15	OMKAR MISHRA	CSE
16	TANNU MAJUMDAR	CSE
17	VISHAL YADAV	CSE
18	A RAHUL	CSE
19	ABHINAV GARDIA	CSE
20	ALISHA PARVIN	CSE
21	APRATA SONA	CSE
22	ARIN MALAKI	CSE
23	DEEPIKA PATEL	CSE
24	DEMAN LAL KOTHARI	CSE
25	DINESH KUMAR YADAV	MECH
26	Poonam	MECH
27	Prashant Yadav	MECH
28	SHREYANSH EKKA	MECH
29	SNEHA MOTWANI	MECH
30	SHIVAM	MECH
31	ASHISH PRASAD	MECH
32	KRISHNAKANT SAHU	EE
33	LEO KOSHY VARGHESE	EE
34	MITHLESH	EE
35	PAWAN KUMAR	EE

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A Report On

Introduction to Energy Conservation and its Industrial Case Studies

Expert Speaker: Dr. Bade Mukund H, Asst. Professor, SVNIT, Surat, Gujarat.

Total participants: 52

Date: 27/09/2022



**Organized by: Mechanical Engineering Department, CCET,
in association with Institution Innovation Council (MHRD Initiative)**

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**Brief Summary of the lecture:**

Dr. Bade Mukund has given basic introduction of energy conservation and its applications which are playing a vital role in various sectors such as industrial/commercial and residential applications. Sir has mentioned that it is the heart of all energy-efficiency programs. Regardless of the type of industry, commercial space or building, the art and philosophy of energy-saving techniques are common and transferable. Sir has dealt with a few common, innovative and profitable case studies of energy-saving ideas for utilities and typical specialized equipment for the practicing energy engineers, as executed in India.

Objective- To make students aware about research in energy conservation techniques.

Benefit- Students became aware about the innovative and profitable energy saving techniques.

Facebook link-

<https://www.facebook.com/100047879977438/posts/pfbid02Q8V3wcbiQF5UmLmGVE3WTiz1NPFAXnfnEWVspCdkAdRGCppYN3aX26mG7XRJKSMsl/?mibextid=Nif5oz>

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SL. NO.	LIST OF PARTICIPANTS	FACUL TY & STUDENTS
1	Dr. Bade Mikund H	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Ms Richa Sahu	FACUL TY
5	Mr. ABID KHAN	FACUL TY
6	Ms LINCY MENDONZA	FACUL TY
7	Dr. DILLIP KUMAR DASH	FACUL TY
8	Mr Praveen Chandrakar	FACUL TY
9	Mr. PRAVEEN SINGH RATHORE	FACUL TY
10	Dr. PREETI NANDKUMAR	FACUL TY
11	Ms SHIKHA AGRAWAL	FACUL TY
12	Mr. ASHISH DEWANGAN	FACUL TY
13	Mr. PRASHANT BAWANEY	FACUL TY
14	Mr. RADHESHYAMH GAJGHAT	FACUL TY
15	ASHISH SONI	ET & T
16	HARSH TARONE	ET & T
17	KOMAL PRASAD	ET & T
18	NIHAL SHARMA	ET & T
19	AVINASH EKKA	ET & T
20	KRISHNAKANT SAHU	EE
21	LEO KOSHY VARGHESE	EE
22	MITHLESH	EE
23	PAWAN KUMAR	EE
24	VISHWAKARMA	EE
25	RAJKUMAR	EE
26	ROVINS XESS	EE
27	SHIVENDRA PANIGRAHI	EE
28	SUGAMBAKSHI	EE
29	VEDINA XAXA	EE
30	OMKAR MISHRA	CSE
31	TANNU MAJUMDAR	CSE
32	VISHAL YADAV	CSE
33	A RAHUL	CSE
34	ABHINAV GARDIA	CSE
35	ALISHA PARVIN	CSE

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A Report on Session

on **“ENTREPRENEURSHIP AND INNOVATION AS CAREER OPPORTUNITY”**

Speaker: Dr. Achala Jain

23rd November 2022.



Organized by Institution Innovation Council

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“Innovation is taking two things that exist and putting them together in a new way and INSTITUTION INNOVATION COUNCIL provides this way.

Institution's Innovation Council in association with Electrical and Electronics Department has organized a session on **“ENTREPRENEURSHIP AND INNOVATION AS CAREER OPPORTUNITY”** on **23rd November 2022**.

Dr. Achala Jain Associate Professor Electrical and electronics department ShriShankaracharya Technical Campus Bhilai was the speaker of the session. She has received **LILAVATI AWARD**, in Self Defense Category, in AICTE headquarters, New Delhi and also **President Award for Best NSS Unit** in India for the exclusive work.

Dr. Achala Jain quoted the points on the 3 I's of entrepreneurship which are Innovation, Idea and Inventions. She also gave the meaning of how one should be empathize with the persons in the surrounding and how it helps in the invention. She explained everything with real time examples of how empathizing with someone gives many reasons to create and invent.

She extended the session with explanations on Design Thinking for Idea, Prototype and Validation and highlighted on the points utilized as preliminary tools like Growth Mindset, Wicked problems and Convergent and Divergent Thinking.

The program was organized by the members Mr. Prashant Bawaney, Mr. Akash Dewangan, Mr. Abid Khan and Mr. Chandrashekhar Sahu.

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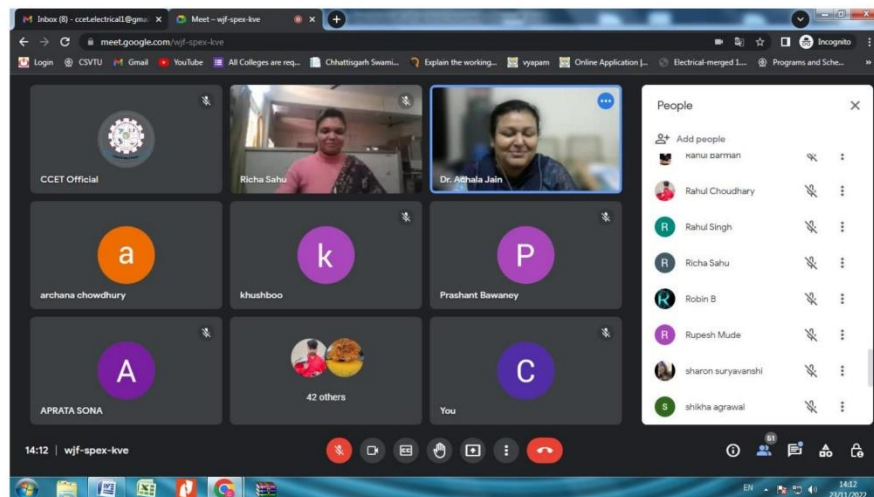
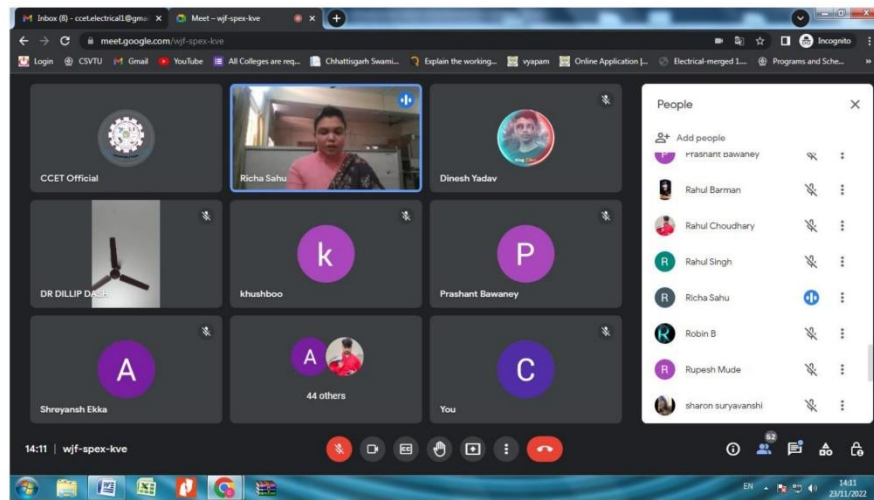
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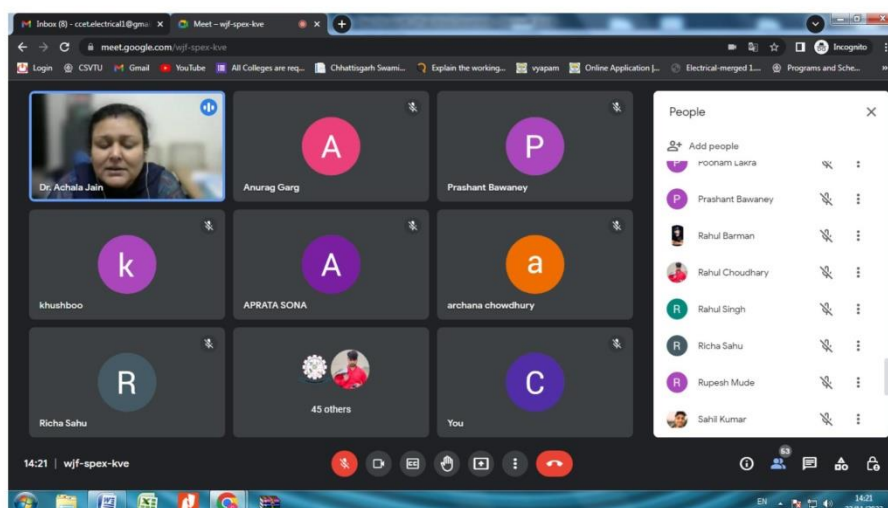
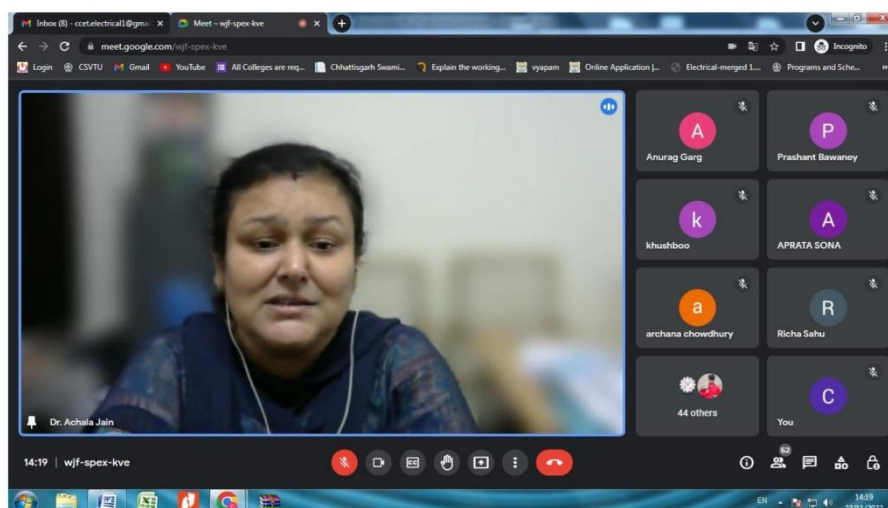
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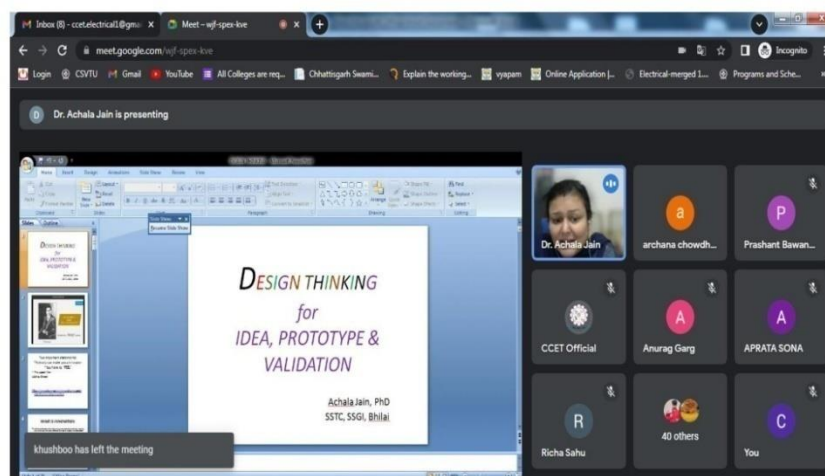
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Youtube link- <https://youtu.be/Bua93bQejaA>

Facebook link-

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1	Dr. Achala Jain	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Mr. ABID KHAN	FACULTY
5	Ms LINCY MENDONZA	FACULTY
6	Chandrasekhar Sahu	FACULTY
7	Mr Praveen Chandrakar	FACULTY
8	Dr. PREETI NANDKUMAR	FACULTY
9	Mr. ASHISH DEWANGAN	FACULTY
10	Mr. PRASHANT BAWANEY	FACULTY
11	RAHUL KUMAR	CSE
12	RICHA JHA	CSE
13	RISHABH DIXIT	CSE
14	RISHABH KUMAR SINGH	CSE
15	SHIVAM KUMAR	CSE
16	SOMESH KUMAR DHRUV	CSE
17	SOMYA C KURIAN	CSE
18	SUNNY SAMSON	CSE
19	VIJENDRA BAHADUR PRASAD	CSE
20	ATUL HIRWANI	MECH
21	BHUPENDRA KUMAR SEN	MECH
22	Dheeraj kumar sori	MECH
23	DINESH KUMAR YADAV	MECH
24	Poonam	MECH
25	Prashant Yadav	MECH
26	SHREYANSH EKKA	MECH
27	SNEHA MOTWANI	MECH
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34	VISHWAKARMA	EE
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REPORT ON

Guest

lecture

ON

Entrepreneurship Skill Development among students.

Date : 03/03/2022

Speaker : Dr. Ritesh Dash



**Organized by Institution Innovation Council (MHRD Initiative), CCET,
Bhilai**

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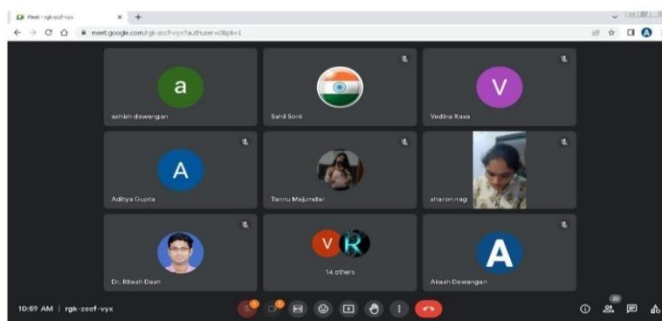
Brief Report about the program:

The program started with the welcome address by Ms. Richa Sahu, Faculty of Electrical Engineering. He has welcomed the participants and briefed about the significance and current & Future Scope of Information Technology. Ms. Richa Sahu Asst. Professor has given the introduction about the guest speaker of the lecture and handed over the session to him.

Dr. Ritesh Dash has discussed about the Startup & the challenges faced by young entrepreneurs. He also explained the Boom in Startups & encouraged our students.

Finally the meeting concluded with the vote of thanks given by Ms. Richa sahu, of Electrical Engineering.

Screenshots of the program



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← About this call

People	Info	Activities
Arya		⋮
bablu kumar		⋮
Deepak Baghel		⋮
Diksha Soni		⋮
Dr. R. H. Gajghat		⋮
Dr. Ritesh Dash		⋮
Durga Yadav		⋮
HARISH KUMAR		⋮
KOMAL PRASAD		⋮
Prashant Bawa...		⋮
Preeti Jangade		⋮

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SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	DR. Ritesh Dash	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Dr. PREETI NANDKUMAR	FACULTY
5	Ms SHIKHA AGRAWAL	FACULTY
6	Mr. ASHISH DEWANGAN	FACULTY
7	Mr. PRASHANT BAWANEY	FACULTY
8	Mr. RADHESHYAMH GAJGHAT	FACULTY
9	Ms Richa Sahu	FACULTY
10	Ms Divyani	FACULTY
11	ANISHA KUMARI	CSE
12	DHEERAJ SONI	CSE
13	DIKSHA SONI	CSE
14	DURGA JYOTI YADAV	CSE
15	SHIVNATH GOTA	MECH
16	SHREYANSH LAL	MECH
17	ASHWANI KUMAR PANDEY	EE
18	BHARTI JENA	EE
19	Dewanshu Ghatode	EE
20	HARBHAJAN BAGHEL	EE
21	Himanshu Sharma	EE
22	Nikita	EE
23	RAGINI RATHORE	EE
24	KOMAL PRASAD	ET & T
25	NIHAL SHARMA	ET & T
26	AVINASH EKKA	ET & T
27	AMIT KUMAR	ET & T
28	AMIT KUMAR YADAV	MTECH
29	NIDHI MINJ	MTECH
30	NIKITA TIGGA	MTECH
31	PRAVEEN KUMAR GAVEL	MTECH
32	SHIVA JI	MTECH
33	SANDHYA MINJ	MTECH
34	BHUPESH SONKAR	MTECH
35	Vivek Jatra	MTECH

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**CCET'S BUDDING ENTREPRENEUR Mr.Vijay Relwani**

Date : 14 October 2022

Objective: To motivate students to take up entrepreneurship.

Institution's Innovation Council of Christian College of Engineering Technology, Bhilai in association with the Computer Science & Engineering Department, conducted a session with a rising entrepreneur Mr.Vijay Relwani. Honourable Executive vice chairman Father Dr.P.S Varghese and Principal Dr.Dipali soren also spoke about the importance of innovation and entrepreneurship in current scenario. Dr Archana Chowdhury, Head of the Department of Computer Science & Engineering Department stated about the Government of India, Ministry of Education's, Innovation cell's initiative to build a culture of innovation across all education institutes. In this event CCET's final year student Mr.Vijay Relwani motivated everyone with his inspirational story. He started from zero but now he is the owner of Relwani automobiles. During Covid his family's economic condition became worse so he started working in an E rickshaw manufacturing company. The owner was very surprised to see that he had repaired the controller of E-rickshaw. From there he got an idea of creating a bike. He has participated in the well-known show Shark Tank season I and has got standing ovation from the judges for his idea. He started creating a bike prototype but he had to face many difficulties due to financial problems, but he faced it with intelligence like he asked one sculptor to make the body of the bike and also he used many parts from scrap shop. He had also participated in Smart India Hackathon organized at GITAM University and was among the top 100 finalist. He has started incubation at Raipur which is approved by Government of India startup scheme. He also gave guidance on how to participate in shark tank and also invited students to be a part of his new initiative.

Benefit: Students came to know how to apply for registration of a new company and also about the various schemes of government for startups.

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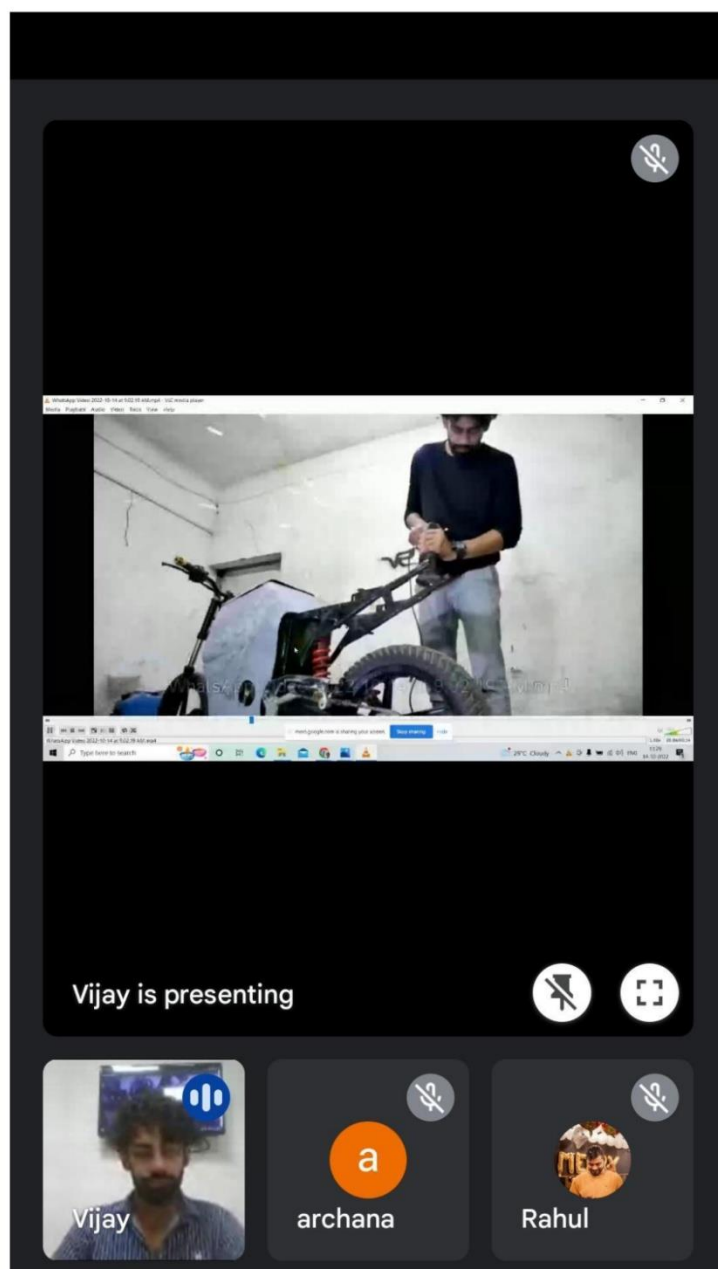
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Facebook link-

https://m.facebook.com/story.php?story_fbid=pfbid0DMau1AuThpN9jMh5jsj17fJzaUyygekV8J6jbaqgVmtuta1UsQW3UYvWTDoxiwPQI&id=100047879977438&mibextid=Nif5oz

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SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Mr. Vijay Relwani	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Mr. AMIT SARDA	FACULTY
5	Mr. ABID KHAN	FACULTY
6	Ms LINCY MENDONZA	FACULTY
7	Dr. DILLIP KUMAR DASH	FACULTY
8	Mr Praveen Chandrakar	FACULTY
9	Mr. PRAVEEN SINGH RATHORE	FACULTY
10	Dr. PREETI NANDKUMAR	FACULTY
11	Ms SHIKHA AGRAWAL	FACULTY
12	Atul Choudhary	MTECH
13	Deepak Baghel	MTECH
14	G Praveen Kumar	MTECH
15	Nagraj	MTECH
16	Sujit Kumar Singh	MTECH
17	Suyash kumar sahu	MTECH
18	Vinita Garhvaliya	MTECH
19	A SATISH KUMAR	MTECH
20	AATIFA FATIMA	MTECH
21	AKASH KUMAR YADAV	MTECH
22	ASHISH SONI	ET & T
23	HARSH TARONE	ET & T
24	KOMAL PRASAD	ET & T
25	NIHAL SHARMA	ET & T
26	AVINASH EKKA	ET & T
27	AMIT KUMAR	ET & T
28	Satyam bharti	EE
29	DEEPAK KUMAR	EE
30	HARISH KUMAR	EE
31	KAMLESHWAR	EE
32	PREMKUMAR YADAV	EE
33	RAKESH KUMAR	EE
34	SAHIL SONI	EE
35	TRIBHUWAN	EE

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APPLICATION OF RESEARCH METHODOLOGY IN DIFFERENT AREAS

Resource Person: Dr. Raunak Kumar Tamrakar

Assistant Professor, Bhilai Institute of Technology, Durg

Date: 27 July 2022

Venue : CCET, Bhilai (C.G)



Organized by R&D Cell, CCET, Bhilai

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Date: 27/07/2022

Brief summary of the program:

Research and Development(R & D), Cell of CCET, Bhilai organized guest lecture on “Application of Research Methodology in Different Areas”on 27th July 2022. Dr.Raunak Kumar Tamrakar, Assitant Professor of department of Physics at Bhilai Institute of Technology, Durg was the resource person. The lecture was attended by more than 40 students.

The program started with welcome address by Dr. Dipali Soren, Principal CCET. She explained the application of research methodology in conducting research and also mentioned their implication in research.

The objective behind organizing the lecture was to enlighten the students about the theoretical and practical aspects of doing research. Dr. Tamrakar started his lecture with the meaning of research. Then, he talked about some basic concepts of research

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methodology, which are essential to know in order to have quality research. He also discussed about Qualitative and Quantitative Paradigms, types of literature reviews and various research types.

Then, he differentiated between Research Methodology and Research Methods. In fact, the speaker attached immense respect to the idea of research and explained how a good research facilitates in the development of the society. The speaker further highlighted as to the attributes and duties of a critical scholar and how the same would affect the quality of research. Some of such attributes includes being scientifically faithful with the research, objectivity, potential to edit the document and ensuring proper acknowledgement of the sources from which relevant ideas have been taken for carrying out the research. The speaker was emphasized the application of Research

Methodology in different areas.

The speaker explained all the aspects with the help of illustrations and examples that provided a clearer understanding to the students with regard to the various concepts that were discussed. The entire lecture was very interactive and informative for participants. In the end, Dr. Sandhya Pillai, Coordinator of R & D Cell, presented the vote of thanks and gratefully acknowledged to all the dignitaries and participants for their consistent support and motivation in organizing academic activities.

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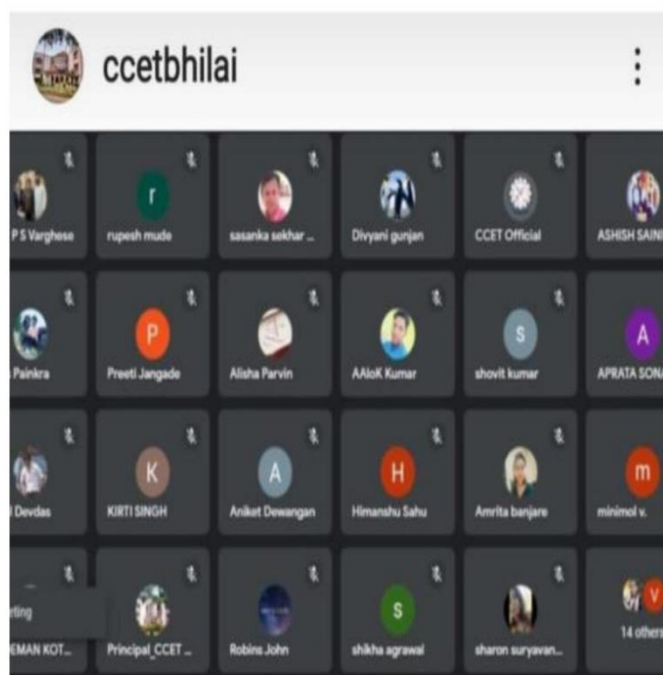
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The Photos taken During the Events:



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**List of Participants**

SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	DR. RAUNAK KR. TAMRAKAR	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Dr. PREETI NANDKUMAR	FACULTY
5	Ms SHIKHA AGRAWAL	FACULTY
6	Mr. ASHISH DEWANGAN	FACULTY
7	Mr. PRASHANT BAWANEY	FACULTY
8	Mr. RADHESHYAM H GAJGHAT	FACULTY
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Invited Talk

on

Different Aspects of Research Methodology

Resource Person: Dr. C. Ramesh Kumar

Professor, Rungta College of Engineering and Technology, Bhilai

Date: 10 March 2023

Venue : CCET, Bhilai (C.G)



Organized by R&D Cell, CCET, Bhilai

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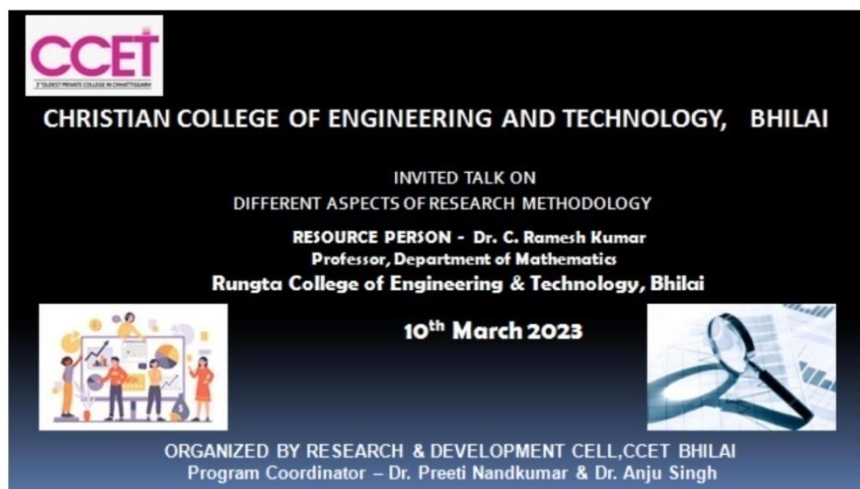
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Date: 10/03/2023

Brief summary of the program:

The Invited talk on different aspect of Research Methodology was organized on 10 March 2023 for all the students pursuing undergraduate, postgraduate, PhD and faculty members of all departments. The resource person was Dr. C. Ramesh Kumar, Professor in the department of Mathematics, Rungta College of Engineering and Technology, Bhilai. The objective behind organizing the talk was to enlighten the all the participants about the different aspects of research methodology.

The program started with welcome address by Dr. Dipali Soren, Principal CCET. She explained the various aspect of research methodology in different areas and also mentioned the significance research.

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QIM 2.3.1 Student centric methods



He discussed the aims of conducting research, what research is and is not, the difference between methods and methodology. Research methods may be understood as all techniques used by the researchers during the course of studying the research problem. Research methodology involves various steps generally adopted by a researcher in studying the research problem along with the logic behind them. He also covered the deductive and inductive approaches adopted in research. In Deductive reasoning thinking proceeds from general assumptions to specific applications, while Inductive reasoning is concluding about events (general) based on information generated through many individual and direct observations (specific).

The resource person also spoke about the components of a theory in research i.e. What, How and Why and the importance of boundary conditions i.e. Who, Where and When. Then he went on to speak about the process involved in research in greater detail

The resource person stressed on the importance of review of literature i.e. why it is important, why a researcher should not stop and continue reviewing the existing literature till the time of data collection. He also gave his insights on how to review the existing literature in a particular area of research, how to identify the research problem and research gap, How to formulate hypotheses, the errors involved in accepting and rejecting hypotheses i.e. Type I and Type II errors etc.

Sir briefed the students about research methodology topic which is very much important for the students of M.Tech as they are required to carry out research and submit their projects as it is one of the subject of the course. Sir covered all the related and important topics starting with introduction about Research, types of research and process. The Research process comprises of the following steps: • Defining problem • Review of literature • Formulation of Hypothesis • Sample designing • Collection of data • Statistical analysis • Interpretation of the Report

The lecture also touched upon another critical aspect with respect to the qualifications or traits to be present in a research scholar. He mentioned that a research scholar must have the taste for the subject matter, patience, intellectual honesty, objectivity and

Criterion 2

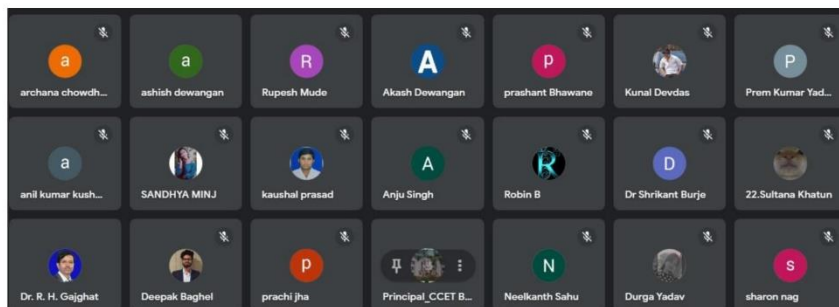
QIM 2.3.1 Student centric methods



should not suffer from chronic inaccuracy.

The participants were extremely overwhelmed by the lecture delivered by Dr. C. Ramesh Kumar as it would be very effective for their career and future work on research. The participants would also like to extend their gratitude to Dr. Preeti Nandkumar and Dr. Anju Singh, Co-ordinator and Co-coordinator of R&D cell for taking the initiative for organizing the guest lecture for students and faculties of all departments.

The Photos taken During the Events:



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QIM 2.3.1 Student centric methods



SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr. C. Ramesh	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Mr. AMIT SARDA	FACULTY
5	Mr. ABID KHAN	FACULTY
6	Ms LINCY MENDONZA	FACULTY
7	Dr. DILLIP KUMAR DASH	FACULTY
8	Mr. RADHESHYAM H GAJGHAT	FACULTY
9	Ms Richa Sahu	FACULTY
10	Ms Divyani	FACULTY
11	Dr. SANDHYA PILLAI (nov)	FACULTY
12	Amrita BANJARE	FACULTY
13	Dr Anju Singh	FACULTY
14	GULNAJ ANSARI	CSE
15	JEEVAN BARA	CSE
16	POONAM LAKRA	CSE
17	RAHUL ANISH PRASAD	CSE
18	ROSHAN KUMAR SAHU	CSE
19	SHILANATH PRATAP SINGH	CSE
20	SHIVAM PANDEY	CSE
21	TIKESHWARI	CSE
22	VAISHALI	CSE
23	VANADA YADAV	CSE
24	VIBHA	CSE
25	VIJAY RELWANI	CSE
26	VINAY MINJ	CSE
27	SAGAR YADAV	MECH
28	Alakh Niranjn	MECH
29	Aman Uikey	MECH
30	Amit sahu	MECH
31	ankush kumar	MECH
32	HARBHAJAN BAGHEL	EE
33	Himanshu Sharma	EE
34	Nikita	EE
35	RAGINI RATHORE	EE
36	Shiwani sonwani	EE
37	SAHIL SONI	EE
38	TRIBHUWAN	EE
39	VAIBHAV LAKSHMI DUBEY	EE
40	VISHNU RAM	EE
41	LEO KOSHY VARGHESE	EE
42	MITHLESH	EE
43	PAWAN KUMAR	EE
44	VISHWAKARMA	EE
45	RAJKUMAR	EE
46	ROVINS XESS	EE
47	SHIVENDRA PANIGRAHI	EE
48	SUGAM BAKSHI	EE
49	VEDINA XAXA	EE
50	ASHISH SONI	ET & T
51	HARSH TARONE	ET & T
52	KOMAL PRASAD	ET & T
53	NIHAL SHARMA	ET & T
54	AVINASH EKKA	ET & T
55	AMIT KUMAR	ET & T

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If You Aim High, We Provide The Means

WORKSHOP

ON

RESEARCH METHODOLOGY

Resource Person – Dr Pratibha Kurup

Bharti University, Durg

Date :20 April 2023

Venue :CCET Bhilai,C.G.

Organized by R&D Cell,CCET,Bhilai



R&D cell of CCET,Bhilai

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Date: 20 April 2023

Summary of the workshop

Workshop on research methodology was conducted on Research Methodology on 20th April 2023. Expert lecture was delivered by Dr Pratibha Kurup, Faculty Chemistry, Bharti University, Durg. She is an experienced research scholar and Academician. The workshop was organized by the R&D cell of CCET, Bhilai. It was attended by faculty members and research scholars from various departments.

The program started with the blessings of Executive Vice Chairman Fr. Dr. P. S. Varghese. He highlighted the significance of research methodology to address the research questions. Principal Dr Dipali Soren in her welcome address briefed the understanding of research methodology and its various components, such as research design, data collection, data analysis, and interpretation of results.

The speaker began the session by explaining the meaning and significance of research in academia. The importance of the research was discussed with the importance of selecting an appropriate research design, based on the research question, objective and methodology. She emphasized that research is not just about collecting data but it should involve a systematic approach to investigate a problem, find solutions and contribute to knowledge.

She discussed the different types of research methodologies such as qualitative, quantitative methods. Key features of each method and types of data that can be collected through each method were explained. The emphasis of Literature survey, reading of reference papers, finding data from the scholars was very well discussed. The importance of data analysis in research and the various methods were elaborated. The speaker discussed the role of plagiarism, ethical guidelines and standards for conducting research.

The anchor for the program was Mrs. Lincy Mendonza. Program coordination for the workshop was R&D coordinators Dr Preeti Nand Kumar. Overall the lecture was an excellent platform for participants to learn from an experienced researcher and it was a valuable addition for our academic community.

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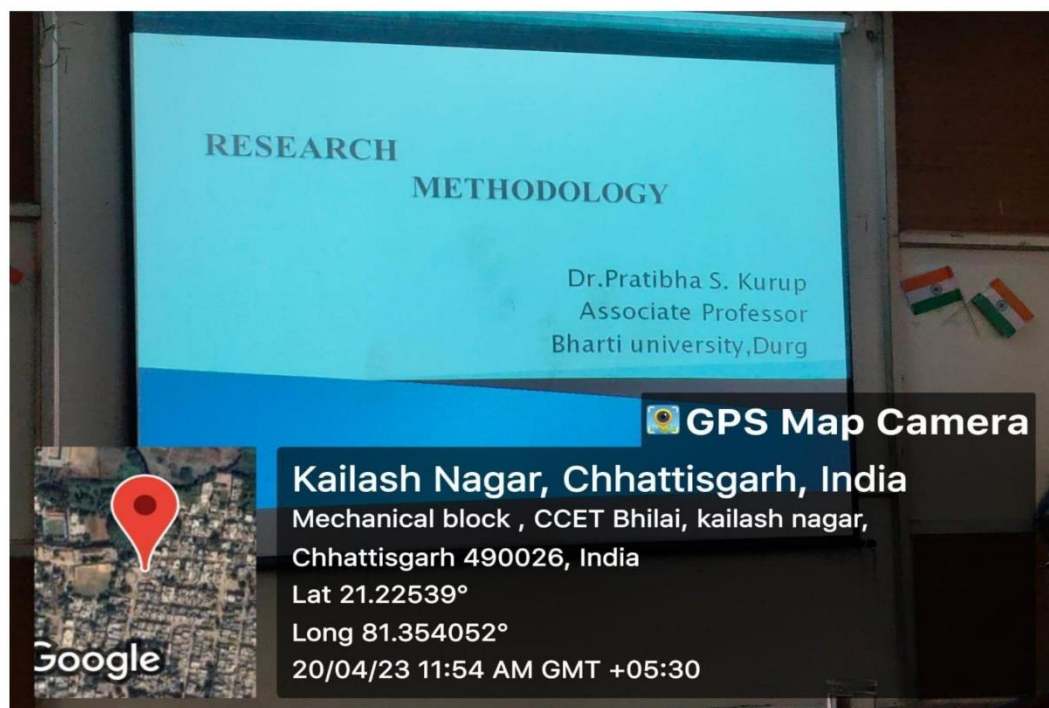
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List of Faculties who attended the workshop

S.N	Name	Department	Post	SIGN
1	FR DR P S VARGHESE		EXECUTIVE VICE CHAIRMAN	<i>[Signature]</i>
2	DR. DIPALI SOREN	ETC	PROFESSOR & PRINCIPAL	<i>[Signature]</i>
3	Dr Shrikant Burje		ASSOCIATE PROFESSOR	<i>[Signature]</i>
4	MR. ABID KHAN	ETC	ASST. PROFESSOR	<i>[Signature]</i>
5	Dr SHAILENDRA VERMA	ELECTRICAL	ASSOCIATE PROFESSOR	<i>[Signature]</i>
6	MR. PRASHANT BAWANEY	ELECTRICAL	ASST. PROFESSOR	<i>[Signature]</i>
7	MR. ASHISH DEWANGAN	ELECTRICAL	ASST. PROFESSOR	<i>[Signature]</i>
8	MS. RICHHA SAHU	ELECTRICAL	ASST. PROFESSOR	<i>[Signature]</i>
9	MR AKASH DEWANGAN	ELECTRICAL	ASST. PROFESSOR	<i>[Signature]</i>
10	DR. DILIP KUMAR DASH	SCIENCE AND HUMANITIES	PROFESSOR	<i>[Signature]</i>
11	DR. PREETI NANDKUMAR	SCIENCE AND HUMANITIES	ASSOCIATE PROFESSOR	<i>[Signature]</i>
12	DR MRS ANJU SINGH	SCIENCE AND HUMANITIES	ASSISTANT PROFESSOR	<i>[Signature]</i>
13	MRS. ARCHANA CHOUDHARY	CSE	PROFESSOR & HOD	<i>[Signature]</i>
14	MRS. SHIKHA AGRAWAL	CSE	ASST. PROFESSOR	<i>[Signature]</i>
15	MRS. LINDY MENDONZA	CSE	ASST. PROFESSOR	<i>[Signature]</i>
16	MRS AMRITA BANJARE	CSE	ASST. PROFESSOR	<i>[Signature]</i>
17	MS DIVYANI	CSE	ASST. PROFESSOR	<i>[Signature]</i>
18	MR RUPESH MAUDE	CSE	ASST. PROFESSOR	<i>[Signature]</i>
19	DR. PUJAWATI SRINIVASA RAO	MECH	PROFESSOR	<i>[Signature]</i>
20	DR. RADHESHYAM H GAIGAT	MECH	PROFESSOR & HOD	<i>[Signature]</i>
21	MR. AMIT SARDAR	MECH	ASSOCIATE PROFESSOR	<i>[Signature]</i>
22	MR. PRAVEEN CHANDRAKAR	MECH	ASSISTANT PROFESSOR	<i>[Signature]</i>
23	MR CHANDRA SHEKHAR SAHU	MECH	ASSISTANT PROFESSOR	<i>[Signature]</i>
24	MR ROBIN BABU	MECH	ASSISTANT PROFESSOR	<i>[Signature]</i>
25	MR SUMIT KUMAR SHRIVASTAVA	MECH	ASSISTANT PROFESSOR	<i>[Signature]</i>
26	DR. SUDHA SINGH	LIBRARY	Librarian	<i>[Signature]</i>
27	MRS. BINDU KOSHY	LIBRARY	Library Attendant	<i>[Signature]</i>
28	MRS SANGEETA PATKAR		Assistant Librarian	<i>[Signature]</i>
29	MR A D VINCENT	ADMIN	Administrative Officer	<i>[Signature]</i>
30	MR. R. BOBBY	ADMIN	Jr. Demonstrator	<i>[Signature]</i>
31	MRS. A. MANJULA	ADMIN	Administrative Executive	<i>[Signature]</i>
32	MS. BINI ALEXANDER	ADMIN	Accounts Executive	<i>[Signature]</i>
33	MRS SHINY BLESSON		Receptionist	<i>[Signature]</i>
34	MR. GHANSHYAM SHARMA	EXAM SEC	JR TECHNICAL ASST	<i>[Signature]</i>
35	MRS. MINIMOL V.	SCIENCE AND HUMANITIES	JR TECHNICAL ASST	<i>[Signature]</i>

Criterion 2**QIM 2.3.1 Student centric methods**



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If You Aim High, We Provide The Means

Invited Talk

on

IMPORTANCE OF RESEARCH METHODOLOGY

Resource Person: Dr. Raunak Kumar Tamrakar

Assistant Professor, Bhilai Institute of Technology, Durg

Date: 22 June 2023

Venue : CCET, Bhilai (C.G)



Organized by R&D Cell, CCET, Bhilai

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CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY

**INVITED TALK ON
IMPORTANCE OF RESEARCH METHODOLOGY**

Resource Person: Dr. Raunak Kumar Tamrakar

Bhilai Institute of Technology, Durg
(C.G.)
22nd June 2023



ORGANISED BY R&D CELL
Program Coordinators: Dr. Preeti Nandkumar & Dr. Anju Singh

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Date: 22/06/2023

Brief summary of the program:

The Invited talk on Importance of Research Methodology was organized for all the students pursuing undergraduate, postgraduate, PhD and faculty members of all departments. The objective behind organizing the talk was to enlighten the all the participants about the theoretical and practical aspects of doing research.

The program started with Welcome address by Dr. Dipali Soren, Principal CCET. She explained the importance of research methodology in conducting research and also mentioned the significance research.

The lecture was scheduled for one hour and was presided over by Dr. Raunak kumar Tamrakar who is currently serving as the Assistant professor of Department of Physics, Bhilai Institute of Technology, Durg. Speaking on the occasion, Dr. Raunak kumar Tamrakar started the session on a very critical note by stating that ***Research must be construed as an action and it is translation of knowledge into action.***

The speaker attached immense respect to the idea of research and explained how a good research facilitates in the development of the society. He also emphasized on the fact that a good research should be socially relevant and of contemporary nature. The speaker further highlighted as to the attributes and duties of a critical scholar and how the same would affect the quality of research. Some of such attributes includes being scientifically faithful with the research, objectivity, potential to edit the document and ensuring proper acknowledgement of the sources from which relevant ideas have been taken for carrying out the research.

The speaker explained all the aspects with the help of illustrations and examples that provided a clearer understanding to the students with regard to the various concepts

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that were discussed.

The lecture also touched upon another critical aspect with respect to the qualifications or traits to be present in a research scholar. He mentioned that a research scholar must have the taste for the subject matter, patience, intellectual honesty, objectivity and should not suffer from chronic inaccuracy.

The speaker also exemplified on the different types of research methods which includes Prognosis research, Creative research, Experimental research and Prescriptive research. He explained the concept of internal and external criticism in research which is highly critical for a research scholar. The lecture was concluded on a very important note i.e. the different headings to be mandatorily present while preparing a research proposal. The speaker mentioned that a Research scholar must always highlight the importance of the research topic as it signifies his/her expression of work.

The participants were extremely overwhelmed by the lecture delivered by Dr. Raunak Kumar

Tamrakar as it would be very effective for their career and future work on research. The participants would also like to extend their gratitude to Dr. Preeti Nandkumar and Dr. Anju Singh, Co-ordinator and Co-coordinator of R&D cell for taking the initiative for organizing the guest lecture for students and faculties of all departments.

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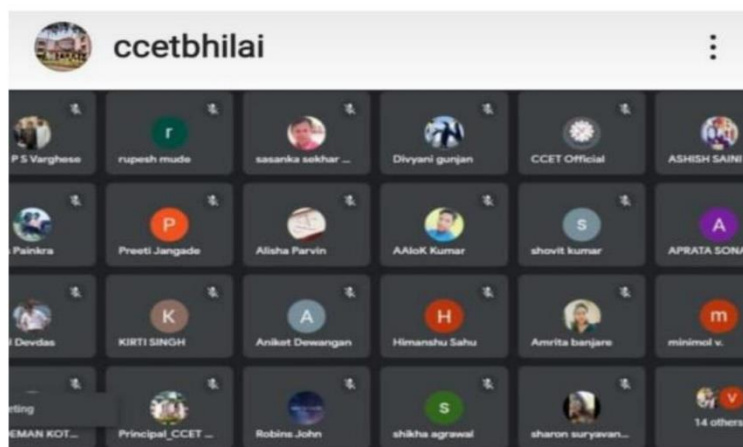
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The Photos taken During the Events:



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SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Dr. Raurak Kumar	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Ms LINCY MENDONZA	FACULTY
5	Ms Richa Sahu	FACULTY
6	DR. Preeti Nand Kumar	FACULTY
7	Amrita BANJARE	FACULTY
8	Dr Anju Singh	FACULTY
9	GULNAJ ANSARI	CSE
10	JEEVAN BARA	CSE
11	POONAMLAKRA	CSE
12	RAHUL ANISH PRASAD	CSE
13	ROSHAN KUMAR SAHU	CSE
14	SHILANATH PRATAP SINGH	CSE
15	Alakh Niranjan	MECH
16	Aman Uikey	MECH
17	Amit sahu	MECH
18	ankush kumar	MECH
19	HARBHAJAN BAGHEL	EE
20	Himanshu Sharma	EE
21	Nikita	EE
22	RAGINI RATHORE	EE
23	SHIVENDRA PANIGRAHI	EE
24	SUGAMBAKSHI	EE
25	VEDINA XAXA	EE
26	ASHISH SONI	ET & T
27	HARSH TARONE	ET & T
28	KOMAL PRASAD	ET & T
29	NIHAL SHARMA	ET & T
30	AVINASH EKKA	ET & T
31	AMIT KUMAR	ET & T
32	PRAVEEN KUMAR GAVEL	MTECH
33	SHIVA JI	MTECH
34	SANDHYA MINJ	MTECH
35	BHUPESH SONKAR	MTECH
36	Lokesh Patel	MTECH
37	NIKHIL KUMAR VERMA	MTECH

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Guest Lecture

on

Awareness on Intellectual Property Rights

Resource Person: Mr. Nadeem Hussian Khan,

Plant Head, Standard Alloys India Pvt. Ltd., Aimer (Rajasthan)

Date: 27th March 2023

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY



GUEST LECTURE ON AWARENESS ON INTELLECTUAL PROPERTY RIGHTS

Resource Person:
Mr. Nadeem Hussian Khna
Plant Head
STANDARD ALLOYS INDIA PVT. LTD.
AIMER (RAJASTHAN)

Date: 27th March 2023 & Time: 11.00 am

Organized By: Research and Development Cell
Coordinators: Dr. Preeti Nandkumar & Dr. Anju Singh

Date: 27/03/2023

Brief summary of the program:

Dr Preeti Nandkumar, Associate professor of department of chemistry and Coordinator of R&D cell, welcomed the gathering, introduced the guest and mentioned objective and importance of program. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to the speaker for start the lecture.

The main objective of the training program is to increase IP filing of states and thus building a robust IP ecosystem in the states of India.

Others objectives are given below:

- To assist States in creating/developing a Strong IP ecosystem thereby, transforming it into an attractive investment destination for the Industries.
- To sensitize the clusters about Intellectual Property Right and their protection.
- To identify protectable innovations.
- To suggest steps for transforming innovations into proprietary assets.
- To use IP information, particularly relating to patents and designs, for further research and development in developing new product and process.
- Utilize the IP information in their business development

The objective of this Awareness Program is to sensitize the Industry, R&D Organization, Scientific

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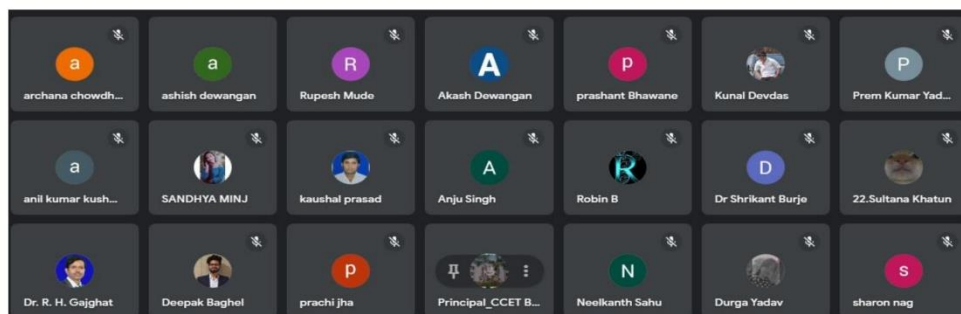
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Department and Educational Institutions about the growing need for promotion and protection of the intellectual assets, in the form of Patents, Designs & Trademarks and Geographical Indications, of inventors & creators from misappropriation by third party without their authorization.

Mr. Nadeem Hussain Khan, General Manager and Plant Head started with talking about legal benefits of registering patents and geographical indications. Further to make this lucid to understand cited the example of MTS as a registered Trade Mark. Through citing further examples and small case studies he emphasized on the commercial value of registering Trademarks and Logos. During his session Apple and Samsung legal case was discussed in brief. Representatives from industries are also put forward their queries on this to him.

From the feedback of the audience, session on Geographical Indication & Patents especially pertaining to the state's product and invention by intellectuals respectively is suggested to be pursued again, as the state has rich traditional handlooms and handicrafts, special agricultural products, Local inventions etc. which are yet to be registered. Overall, the program went well and all the dignitaries and concern person attended the program and made it a very successful. The number of audience present at the program reached about 50 which were more than expected. The delegates were very enthusiastic and eager to know about the IPR and also had given their best for the success of the program.

After the completion of the lecture, Dr. Anju Singh, Assistant Professor of Department of Physics and Co-coordinator of R&D cell gave vote of thanks to all the participants on behalf of entire CCET group.



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SL. NO.	LIST OF PARTICIPANTS	FACUL TY& STUDENTS
1	Dr. Nadeem Hussain Khan	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Dr. PREETI NANDKUMAR	FACUL TY
5	Mr. ABID KHAN	FACUL TY
6	Ms LINCY MENDONZA	FACUL TY
7	Dr. DILLIP KUMAR DASH	FACUL TY
8	Mr Praveen Chandrakar	FACUL TY
9	Mr. PRAVEEN SINGH RATHORE	FACUL TY
10	SHILANATH PRATAP SINGH	CSE
11	SHIVAMPANDEY	CSE
12	TIKESHWARI	CSE
13	VAISHALI	CSE
14	VANADA YADAV	CSE
15	VIBHA	CSE
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19	Alakh Niranjana	MECH
20	Aman Ukey	MECH
21	Amit sahu	MECH
22	ankush kumar	MECH
23	ATUL HIRWANI	MECH
24	BHUPENDRA KUMAR SEN	MECH
25	Dheeraj kumar sori	MECH
26	DINESH KUMAR YADAV	MECH
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28	MITHLESH	EE
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31	ROVINS XESS	EE
32	SHIVENDRA PANIGRAHI	EE
33	SUGAM BAKSHI	EE
34	VEDINA XAXA	EE
35	ASHISH SONI	ET & T

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If You Aim High, We Provide The Means

Invited Talk

on

An overview of Intellectual Property Rights

Resource Person: Mr. R.K. Rathod, Assistant Professor, RCET, Bhilai

Date: 27th February 2023

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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Date: 27/02/2023

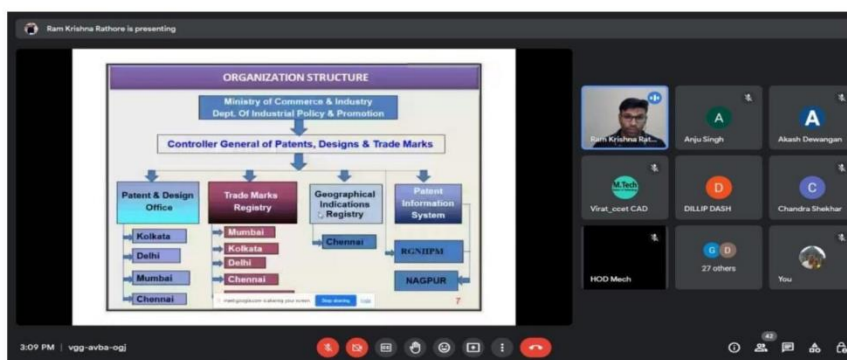
Brief summary of the program:

The program started with the welcome address by Dr. Anju Singh, department of Physics. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to him for start the lecture.

Mr. R K Rathore gave basic introduction to Intellectual Property Rights. He also mentioned about various systems in IPR. He described in his lecture that IPR provide certain exclusive rights to the inventors or creators of that property, in order to enable them to reap commercial benefits from their creative efforts or reputation. In his lecture, he defined detailed descriptions of the patent certificate on the basis of colour and statement. Further he also gave brief summary about Patents, Trademark and Copyright (Registration and application process).

Finally, this meeting was concluded by Dr. Dillip Kumar who was the Coordinator of the program by giving vote of thanks.

Screenshots of the program



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Ram Krishna Rathore is presenting

PATENT ACT & RULES

Criteria of Patentability:

- > Novelty
- > Inventive step or it must be non-obvious
- > Capable of industrial application
- > Not fall within the provision of section 3 & 4 of the Patents Act 1970

Patents Act 1970:

- > Section 3: List which are not inventions
 - > Frivolous or obvious
 - > Contrary to well established natural laws
 - > Injurious to Public Health
 - > Mere arrangement or re-arrangement
 - > Discovery of Scientific principle
 - > Discovery of living thing or non-living substances in nature
 - > Method of agriculture or horticulture
 - > A mathematical or business method or a computer program
- > Section 4: Not-patentable: Atomic Energy related

3:23 PM | vgg-avba-ogj

Ram Krishna Rathore is presenting

PATENTS

Patent is an exclusive monopoly right:

- > Granted by Government of India
- > For an invention
- > To the Inventor or his Assignee
- > As a Territorial Right
- > In lieu of Disclosure of invention to the Government
- > Term of Patent: 20 years from date of filing

3:20 PM | vgg-avba-ogj

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SL. NO.	LIST OF PARTICIPANTS	FACUL TY & STUDENTS
1	Shiju Raju	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Dr. PREETI NANDKUMAR	FACUL TY
5	Dr. SANDHYA PILLAI	FACUL TY
6	Mr. ASHISH DE WANGAN	FACUL TY
7	Mr. PRASHANT BAWANEY	FACUL TY
8	Mr. RADHESHYAMH GAJGHAT	FACUL TY
9	Ms. Anju Singh	FACUL TY
10	Ms Divyani	FACUL TY
11	DEVIKA THAKRE	CSE
12	GULNAJ ANSARI	CSE
13	VIBHA	CSE
14	VIJAY RELWANI	CSE
	VINAY MNJ	CSE
16	S AGAR YADAV	MECH
17	Alakh Niranjani	MECH
18	Poonam	MECH
19	G RAMU	MECH
20	HARSAD	MECH
21	HIMANSHU SAHU	MECH
22	MAYUR YADAV	MECH
23	RAJESH KUMAR SHRIVASTAVA	MECH
24	VAIBHAV LAKSHMI DUBEY	EE
25	VISHNU RAM	EE
26	VIVEK	EE
27	DEEPAK CHAUDHARY	EE
28	DUJENDRA KUMAR SAHU	EE
29	VEDINA XAXA	EE
30	ASHISH SONI	ET & T
31	HARSH TARONE	ET & T
32	AVINASH EKKA	ET & T
33	AMIT KUMAR	ET & T

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QIM 2.3.1 Student centric methods



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If You Aim High, We Provide The Means

Invited Talk

on

A Lecture on Intellectual Property Rights

Resource Person: Dr. Mukesh Kumar Ray, Associate Professor, Bharti University, Durg (C.G)

Date: 20th April 2023

Venue: CCET, Bhilai (C.G.)



Organized by: First Year Department, CCET, Bhilai

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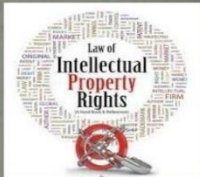




CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY

LECTURE ON INTELLECTUAL PROPERTY RIGHTS

Resource Person: Dr. Mukesh Kumar Ray
Bharti University, Durg (C.G.)

20th April 2023



ORGANISED BY FIRST YEAR DEPARTMENT

Date: 20-04-2023

Brief summary of the program:

The program started with the welcome address by Dr. Dipali Soran, Principal CCET Bhilai. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to him for start the lecture.

Dr. Mukesh Kumar Ray gave basic introduction to Intellectual Property Rights. He explained actual meaning of Intellectual Property Rights. He said that if you acknowledge your work than you are free from any kind of risk. He also discussed Intellectual property on the basis of many examples like slogan of any company, logo, story, web series and unique designs etc. He described in his lecture that IPR provides certain exclusive rights to the inventors or creators of that property, in order to enable them to reap commercial benefits from their creative efforts or reputation. In his lecture, he defined detailed descriptions of the property on the basis of their types. He also discussed about the IP chain of activities like creation, Innovation, protection and enforcement. He said that geographical identifications like

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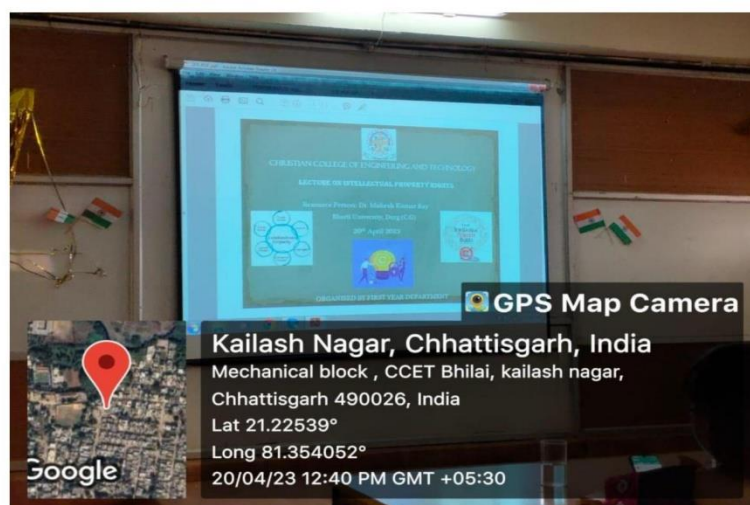
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Alphonso mango, Orange of Nagpur, Kolhapuri chhapal etc. are also Intellectual property. In his lecture, he said that Intellectual properties can also sold, bough and lease. Some international convention for IP has also been discussed. He also discussed different laws of Intellectual property protection like copyright act 1987, trademark act 1999, laws of torts etc. In his lecture he also discussed why some inventions are not patentable according to laws. Infringement of patent are also discussed. He also discussed about the important symbols of copyright, trademark and unregistered trademark. Further he also gave brief summary about indexing of India in IPR.

Finally, this program was concluded by Dr. Dillip Kumar Das, Professor of mathematics, by giving vote of thanks.



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QM 2.3.1 Student centric methods



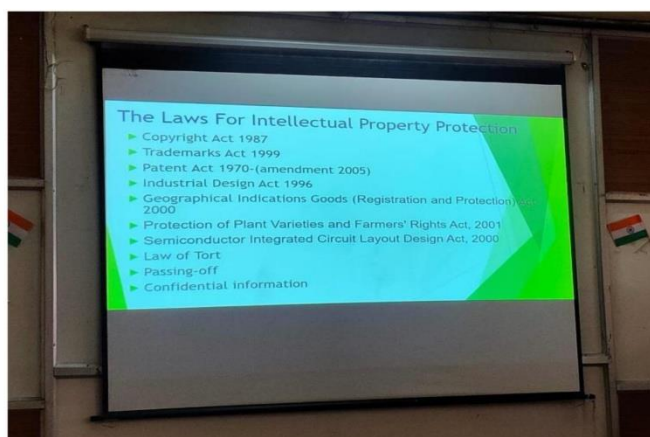
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S.N.	NAME	DEPT.	SIGN.
1.	Dr. Anil Singh	Physics	(Signature)
2.	Ms. Shikha Agrawal	CSE	(Signature)
3.	Amrita Bhatnagar	CSE	(Signature)
4.	Dr. Preeti	Chemistry	(Signature)
5.	Rashmi Singh	Library	(Signature)
6.	Minimol	Physics	(Signature)
7.	Linny Mendonca	CSE	(Signature)
8.	Pam Alexander	Accounts	(Signature)
9.	D. Mangala	Adms	(Signature)
10.	Dr. Lucile Lunge	Library	(Signature)
11.	Dr. S.S. Bichay	Mathematics	(Signature)
12.	Dr. R. Gajjar	Mech Engg.	(Signature)
13.	Dr. P.S. Rao	Mechanics Training	(Signature)
14.	Mr. A.D. Vincent	Administration Officer	(Signature)
15.	R. Bhat	Admin.	(Signature)
16.	Abid Khan	CSE	(Signature)
17.	Dr. Shailendra Verma	Electrical	(Signature)

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Webinar

on

Intellectual Property Rights

Resource Person: Mr. Rushikesh G Lavhale

IPR Professional, Techno minds IP Solutions, Amravati

Date: 24th April 2023

Venue: CCET, Bhilai (C.G.)



Organized by: Mechanical Department in association with Institution's Innovation Council CCET, Bhilai (C.G.)

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Date: 24/04/2023

Brief summary of the program:

A Webinar on 'Intellectual Property Rights' was organized by Department of Mechanical Engineering in Association with Institution's Innovation Council (IIC), Christian College of Engineering & Technology, Bhilai on 24 April 2023.

The program started with the blessing of Executive Vice Chairman, Fr Dr P S Varghese. He blessed all the participants and motivated them to apply for IPR publications. The speaker of this webinar was Mr. Rushikesh G. Lavhale, IPR Professional, Techno minds IP Solutions, Amravati. He explained the various technical and financial aspects of Intellectual Property Rights for faculties, students and the research community. Principal Dr Dipali Soren welcomed the dignitaries and the participants. This program was conducted under National Intellectual Property Awareness Mission (NIPAM).

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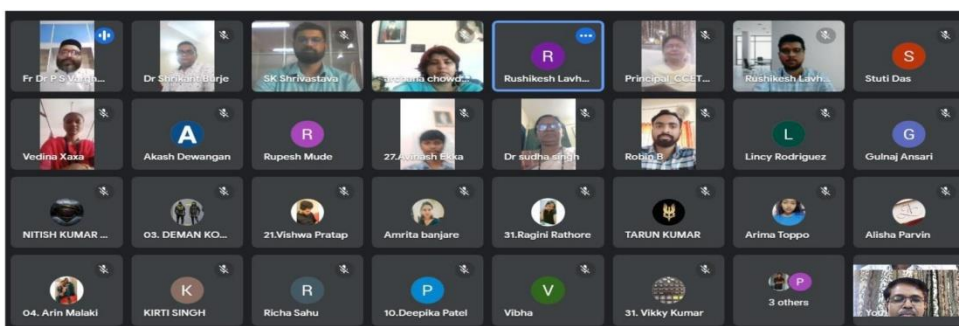
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This webinar was focused on patent, design patent, copyright, trademark, the commercialization of patents, and IP laws applicable in India. Sumit Kumar Shrivastava conducted the program and Dr R H Gajghat, HoD, Mechanical Engineering, proposed vote of thanks. Overall the webinar was excellent and it was very useful for the faculties, students and for the academic Community.



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SL. NO.	LIST OF PARTICIPANTS	FACULTY & STUDENTS
1	Mr. Rushikesh G Lavhale	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Mr. AMIT SARDA	FACULTY
5	Mr. ABID KHAN	FACULTY
6	Ms LINCY MENDONZA	FACULTY
7	Dr. DILLIP KUMAR DASH	FACULTY
8	ASHISH SONI	ET & T
9	HARSH TARONE	ET & T
10	KOMAL PRASAD	ET & T
11	NIHAL SHARMA	ET & T
12	AVINASH EKKA	ET & T
13	AMIT KUMAR	ET & T
14	Satyam bharti	EE
15	DEEPAK KUMAR	EE
16	HARISH KUMAR	EE
17	KAMLESHWAR	EE
18	PREMKUMAR YADAV	EE
19	RAKESH KUMAR	EE
20	SAHIL SONI	EE
21	TRIBHUWAN	EE
22	SOMESH KUMAR DHURUW	CSE
23	SOMYA C KURIAN	CSE
24	SUNNY SAMSON	CSE
25	VIJENDRA BAHADUR PRASAD	CSE
26	VIKAS PAINKRA	CSE
27	AMIT KUMAR SAO	CSE
28	KHUSHBOO	CSE
29	KIRTI SINGH	CSE

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Invited Talk

on

Roadmap to Intellectual Property Rights

Resource Person: Mr. Ankur Gupta, Advocate, District Court, Durg (C.G)

Date: 24th January 2023

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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**INVITED TALK ON
ROADMAP TO INTELLECTUAL
PROPERTY RIGHTS**

**Resource Person:
Mr. Ankur Gupta
Advocate
Durg District Court (C.G)**

Date: 24th January 2023 & Time: 11.00 am

Organized By: Research and Development Cell

Date: 24/01/2023

BRIEF SUMMARY

The program started with the welcome address by Dr. Dipali Soran, Principal CCET Bhilai. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to him for start the lecture.

The Department of Research and Development Cell conducted one hour invited talk on “Roadmap to Intellectual Property Rights” in offline mode. The Programme included talks on the value of Intellectual Property Rights and how to defend them, patenting procedures and patent informatics, patent searches, the role of innovation and invention in academia-industry partnerships, trademark and copyright protection, and do's and don'ts for researchers in the sense of publishing and patenting. The workshops intended to cover various aspects of IPR like Patents, Copyrights, and Trademark, etc. Mr. Ankur Gupta, Advocate and Legal Advisor of District Court, Durg (C.G) were the expert speakers of this talk, who enlightened the audience with their wisdom and expertise. Dr. Dipali Soren, Principal of CCET, Bhilai, delivered the Opening remark on this talk; she shared his valuable insights on the topic and motivated the audience for their active participation. Dr. Preeti Nandkumar, Coordinator of R&D cell, delivered a closing Remark; she highlighted the importance and relevance of the topic in the current scenario. This talk has received a lot of positive feedback from both students and faculty members. There were 45 enthusiastic participants in total, who took part in the talk on IPR deliberations. An Assessment activity was conducted under which quiz after the session was completed. Dr. Anju Singh, Co- coordinator of R & D cell has coordinated the program very well.

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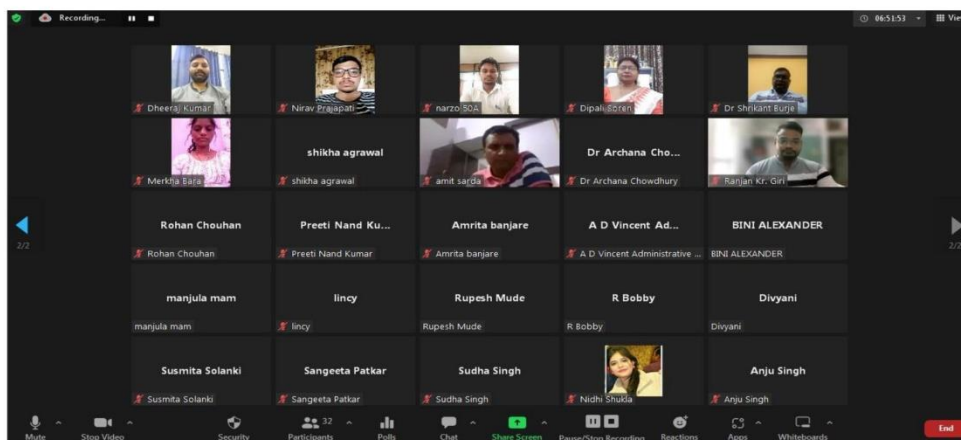
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1	Mr. Ankur Gupta	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Mr. AMIT SARDA	FACUL TY
5	Mr. ABID KHAN	FACUL TY
6	Ms LINCY MENDONZA	FACUL TY
7	Dr. DILLIP KUMAR DASH	FACUL TY
8	Mr Praveen Chandrakar	FACUL TY
9	Mr. PRAVEEN SINGH RATHORE	FACUL TY
10	Dr. PREETI NANDKUMAR	FACUL TY
11	Ms SHIKHA AGRAWAL	FACUL TY
12	Anul Choudhary	MTECH
13	Deepak Baghel	MTECH
14	G Praveen Kumar	MTECH
15	Nagraj	MTECH
16	Sujit Kumar Singh	MTECH
17	Suyash kumar sahu	MTECH
18	Vinita Garhvaliya	MTECH
19	A SATISH KUMAR	MTECH
20	AATIFA FATIMA	MTECH
21	AKASH KUMAR YADAV	MTECH
22	ASHISH SONI	ET & T
23	HARSH TARONE	ET & T
24	KOMAL PRASAD	ET & T
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31	KAMLESHWAR	EE
32	PREMKUMAR YADAV	EE
33	RAKESH KUMAR	EE
34	SAHIL SONI	EE
35	TRIBHUWAN	EE

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Invited Talk

On

Role of Intellectual Property Rights for Industry and Academia

Resource Person: Mr. Ravish Rajput, Advocate, District Court, Durg (C.G)

Date: 14th March 2023

Venue: CCET, Bhilai (C.G.)



Organized by R&D Cell, CCET, Bhilai

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LECTURE ON ROLE OF INTELLECTUAL PROPERTY RIGHTS FOR INDUSTRY AND ACADEMIA

Resource Person: Mr. Ravish Rajput
Advocate, District Court Durg (C.G)

Date: 14th March 2023 & Time: 11.30 am

Organized By: Research and Development Cell



Date: 14/03/2023

BRIEF SUMMARY

The program started with the welcome address by Dr. Dipali Soran, Principal CCET Bhilai. She has welcomed the participants and gave detailed introduction of the speaker and handed over the session to him for start the lecture.

Intellectual Property Rights (IPR) is concerned with the protection of tangible and intangible property. It provides rewards and recognition to inventors/contributors for their research, designs, discoveries and inventions etc. The aim of this lecture is to train the participants about the mechanism of accessing and using IPR information for further research and development in developing new products and process and for their use in business development, also suggest steps for transforming innovations into proprietary assets.

The main objectives of this program are:

- To encourage widespread awareness and understanding of the role that intellectual property plays in fostering a creative and innovative culture.
- To encourage protection of IP achievements through increased registration of rights.

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- Educate the participants on how to respond to infringements of rights including patent rights.
- To educate about the protection and enforcement of IPRs from infringements.
- To raise the level of IP awareness in universities and college particularly among students and scholars.
- To establish the link between industry and academia on IPR.

He also discussed about the international and national framework of IPRs, Introduction to IPR tools such as Patents, Trademarks, Industrial Design, Geographical Indication, Copyright, Trade secrets, IP enforcement and challenges, Leveraging IPR in Industry and Business, success stories, Leveraging IPR in Academia and R&D institutions and panel discussion on Industry- Academia collaboration for industry and Academia.

In this program he discussed about the general awareness about the Intellectual Property (IP), the advantages and the need of small and medium Enterprises to protect their own IPs.

He also talked on IP enforcement, the enforcement machinery in India, practical challenges in IP Rights and the current judicial scenario. He also talked about IP audit, exchange of IPRs and Technology and Merchandise Licensing.

The program ended with vote of thanks by Dr. Preeti Nandkumar , Coordinator of R&D cell, CCET, Bhilai.

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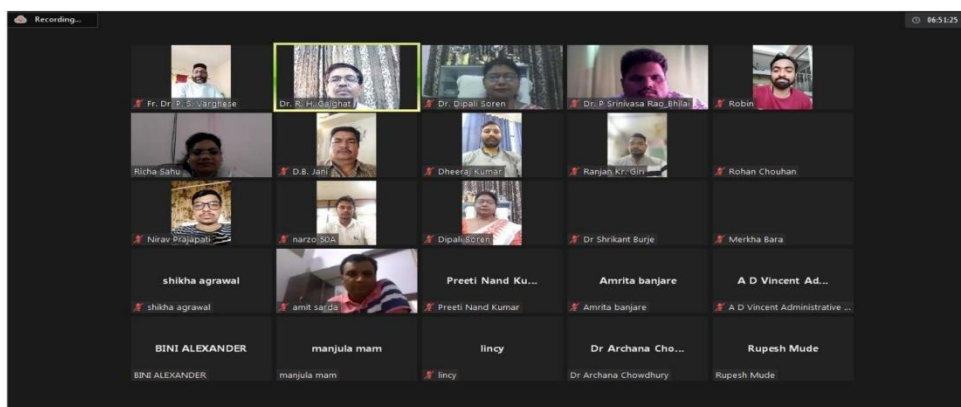
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1	Mr. Ravish Rajput	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Ms LINCY MENDONZA	FACULTY
5	Ms Richa Sahu	FACULTY
6	DR. Preeti Nand Kumar	FACULTY
7	Amrita BANJARE	FACULTY
8	Dr Anju Singh	FACULTY
9	GULNAJ ANSARI	CSE
10	JEEVAN BARA	CSE
11	POONAM LAKRA	CSE
12	RAHUL ANISH PRASAD	CSE
13	ROSHAN KUMAR SAHU	CSE
14	SHILANATH PRATAP SINGH	CSE
15	Alakh Niranjan	MECH
16	Aman Ukey	MECH
17	Amit sahu	MECH
18	ankush kumar	MECH
19	HARBHAJAN BAGHEL	EE
20	Himanshu Sharma	EE
21	Nikita	EE
22	RAGINI RATHORE	EE
23	SHIVENDRA PANIGRAHI	EE
24	SUGAM BAKSHI	EE
25	VEDINA XAXA	EE
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31	AMIT KUMAR	ET & T
32	PRAVEEN KUMAR GAVEL	MTECH
33	SHIVA JI	MTECH
34	SANDHYA MINJ	MTECH
35	BHUPESH SONKAR	MTECH
36	Lokesh Patel	MTECH

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A Seminar

On

“Entrepreneurship Development”

**Resource person: Dr Rajkumar Jhapte,
Alumni of CCET Bhilai and Associate Professor, SSTC Bhilai**

Date :12/06/2023

Venue :CCET Campus Bhilai, C.G.



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**Report :**

Coordinator: Dr Shailendra Verma. CCET Bhilai

No. of students attended this seminar: 30

The Seminar on **Entrepreneurship Development** was conducted by Christian College of Engineering and Technology Bhilai on 12/06/2023. The seminar was organized for UG students. Dr. Raj Kumar Jhapte from SSTC Bhilai, was the speaker.

Entrepreneurship is a process of identifying and starting a business venture, sourcing and organizing the required resources and taking both the risks and rewards associated with the venture.

Entrepreneurship is a key factor for economic development. There is an increased rate of students across developed and developing countries considering the issue of self-employment. Whether you start your own company or choose to ascend the corporate ladder, maintaining the spirit of entrepreneurship all along the way is essential. This goes far beyond just making money. It is about creating value and ideas, about possessing internationally convertible leadership skills and about cultural diversity. The objective of this session was to motivate students towards entrepreneurship as it can create employment for the future generations. Dr. Raj Kumar Jhapte, addressed the students about the concept of entrepreneurship.

The lecture was organized to raise basic awareness of entrepreneurial concepts and to enable students to identify and learn how to make a mindset to take up entrepreneurship as a career. The facilitator introduced the concept of entrepreneurship by focusing on myths related to it and the different aspects of entrepreneurship such as entrepreneurs are born not made, entrepreneur fit an ideal profile, all you need is money to be an entrepreneur, all you need is luck to be an entrepreneur and another is that great idea is the only ingredient in a recipe for business. He mentioned that the reason that people do not start their new ventures in a country like India is due to non-awareness amongst the population of India and decides to go for jobs in private or government sector so as to minimize the risk. Sir explained in detail about the various attributes of successful entrepreneurs such as drive, communication skills and technical skills. The concept was further infused with a power point presentation that spoke about the startup business in India Followed by a discussion on contemporary business environment prevailing in the country. He also highlighted names of some successful entrepreneurs like Sriram Subramanya, Rohit Bhatt, Azim Premji, Lakshmi Mittal, Dhirubhai Ambani, Sachin Bansal and Binny Bansal, Kishore Biyani and their journey towards becoming an entrepreneur. This lecture motivated the students to work hard and start a new venture through adequate forward planning and the execution of the plans. The session was an interactive one where the students were very participative and engaged in questions with the dignitary.

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1	Dr Rajkumar Jhapte	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACUL TY
4	Dr. PREETI NANDKUMAR	FACUL TY
5	Dr. SANDHYA PILLAI	FACUL TY
6	Mr. ASHISH DE WANGAN	FACUL TY
7	Mr. PRASHANT BAWANEY	FACUL TY
8	Mr. RADHESHYAMH GAJGHAT	FACUL TY
9	Ms. Anju Singh	FACUL TY
10	Ms Divyani	FACUL TY
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14	VIJAY RELWANI	CSE
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23	RAJESH KUMAR SHRIVASTAVA	MECH
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WORKSHOP

on

How to plan for Start-up and Legal and Ethical Step

Date: 7/6/2023

Resource Person -Mauli Chandra

Founder & Director Force Intellect

PvtLtd.Pune

Venue:CCET Bhilai,C.G.



Organized by Start up Cell,IIC Cell,CCET,Bhilai

IIC cell of CCET, Bhilai

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INSTITUTION'S INNOVATION COUNCIL

MoE's INNOVATION CELL
(GOVERNMENT OF INDIA)

SESSION ON
"How to plan for Start-up and Legal and Ethical Steps"

Resource Person
Maully Chandra
Founder & Director Force Intellect Pvt Ltd. Pune

Date: 7th June 2023 , Time: 1.00 pm

(In coordination with Industry Institute Interaction Cell & R&D Cell)
CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY, BHILAI

REPORT ON GUEST LECTURE

Report on Session

"How to plan for Start-up and Legal and Ethical Steps"

By

Maully Chandra Shahi,

Founder & Director Force Intellect Pvt Ltd.

Institution' Innovation Council under Startup Cell in association with R&D Cell of Christian College of Engineering and Technology (CCET) BHILAI, organized a session on **"How to plan for Start-up and Legal and Ethical Steps"** by Maully Chandra Shahi,

The primary objective of the entrepreneurship session was to equip participants with valuable insights into the entrepreneurial journey, impart practical knowledge, and motivate them to pursue their entrepreneurial ambitions.

Maully Chandra Shahi is Founder & Director Force Intellect Pvt Ltd. He is instrumental in designing & implementing ERP software for manufacturing companies. He is passionate about adding value & enabling growth of manufacturing SMEs by transforming companies digitally with ERP software. During the entrepreneurship journey he has actively handled various business functions such as product development, implementation, project management, marketing & sales. He has helped more than 125+ manufacturing industries from various verticals such as Steel, Fabrication, Engineering, Electrical, Mining, Chemical, Transmission Line Tower Industries to achieve excellence & growth.

In his session he gave the introduction to entrepreneurship and its significance in today's business

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landscape, identifying entrepreneurial opportunities and assessing market potential, understanding the entrepreneurial mind-set and the importance of perseverance, adaptability, and risk-taking. He elaborated how to develop a business plan, including market research, competitive analysis, and financial projections, fundraising strategies and accessing startup capital. He gave thrust on building a strong team and effective leadership skills. How to navigate challenges and overcoming obstacles in entrepreneurship was the key theme of the session. Mauli Chandra shared real-life examples, case studies, and anecdotes to illustrate key concepts and inspire participants. The session encouraged interactive discussions, allowing participants to ask questions and seek guidance on specific entrepreneurial challenges they faced or anticipated.

CCET startup cell organized this expert talk with an objective to create awareness, to explore business opportunities to students of engineering courses by bringing together experts from industries, government agencies in order to provide ideas and information for becoming an entrepreneur as an alternative career option and also to highlight the merits of pursuing such an option. It will also explore the possible business opportunities and create all necessary awareness to start a new project on his own or with the help of government procedures. This cell primarily works to support, encourage, and to create platform for new and young entrepreneurs. Program started with the word of blessings from Fr. Dr. P.S. Varghese, Executive Vice Chairman. Dr. Dipali Soren, Principal welcomed the resource person. The program was conducted by Dr. Anju Singh and Dr. Preeti Nand Kumar R&D Cell coordinators in association with IIC Start cell.

The session shed light on the challenges and obstacles that entrepreneurs commonly face. With this Participants can proactively plan and create solutions to overcome the difficulties faced by them during the journey of starting a new start up. Participants' chances of success can be increased by making better judgments and being aware of potential obstacles in advance.

<https://www.facebook.com/ccet.bhilai.904/posts/pfbid0FCwFhJq5TTbLzxMCTxB13VsW9fatGC3tV2ief9ddBL7fPZhqmoTm5z6TFmA5aoiJl>

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If You Aim High, We Provide The Means

Mauli Chandra Shahi is presenting

YOU ARE A WHOLE

- CAN'T HAVE A BOSS
- EASILY BORED
- TOO CREATIVE
- TOO IMPATIENT
- WITH A CRIMINAL STREAK
- NO TOO EDUCATED
- TOO EDUCATED
- HAS NOTHING TO LOSE
- RESOURCEFUL
- YOU ARE A WHOLE
- WANTS FREEDOM ABOVE ALL

1:13 PM | kng-otgd-apz

Mauli Chandra Shahi is presenting

Start with the Why? - Simon Sinek

Why You Do What You Do?
Your Purpose, Your Cause,
Your Motivation, Your Belief

How You Do What You Do?
Your Processes, Functions
Your Unique Selling Proposition

1:13 PM | kng-otgd-apz

Mauli Chandra Shahi is presenting

Importance of having a Good Mentor

- Knowledge & Experience Beyond Books
- Opportunity to Access Mentors Network
- Guide You in the Right Direction
- Support & Reassurance you can overcome initial difficulties
- Ways to Survive & Grow
- Higher Probability of Achieving success in Business

1:13 PM | kng-otgd-apz

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The screenshot shows a Zoom meeting interface. The main window displays a presentation slide titled "HOW TO START A START-UP". The slide content includes a flowchart with steps: "How to Start a Business", "What to expect", "What to do next", "How to fund your business", "How to grow your business", and "How to exit your business". The flowchart also mentions "1,000" and "TECHNET AUTOMATION". The Zoom interface shows a list of participants on the right, including SHEKHAR, SK Shrivastava, SUGAM BAKSHI, Sushil kumar Bharti, TARUN KUMAR, Techonet Automation, and Tribhu Sahu. The bottom status bar indicates the time is 2:12 PM and the user is hjx-mkev-oqo.

The screenshot shows a Zoom meeting interface. The main window displays a presentation slide titled "Entrepreneurship as a Career". The slide content includes a list of bullet points: "Around 5-6% of Indians run their own business.", "In an average of 100,000 new businesses are started annually", "The past two decades have shown a heightened interest in entrepreneurial careers.", and "People choose entrepreneurship for many reasons - Dissatisfaction with traditional work. Their ideas fulfill customer needs". The Zoom interface shows a list of participants on the right, including SUGAM BAKSHI, TARUN KUMAR, Techonet Automation, Tribhu Sahu, Vaibhav Dubey, Vaishali Banjare, Vedina Xasa, and Vivek. The bottom status bar indicates the time is 2:20 PM and the user is hjx-mkev-oqo.

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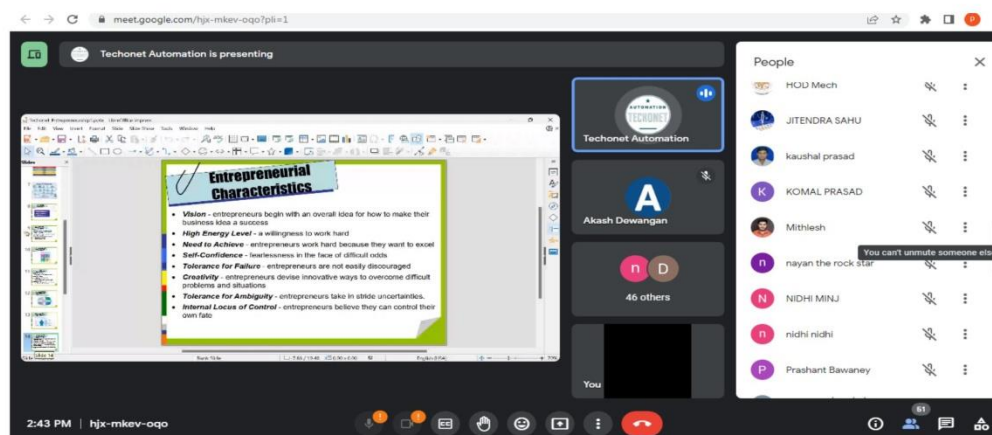
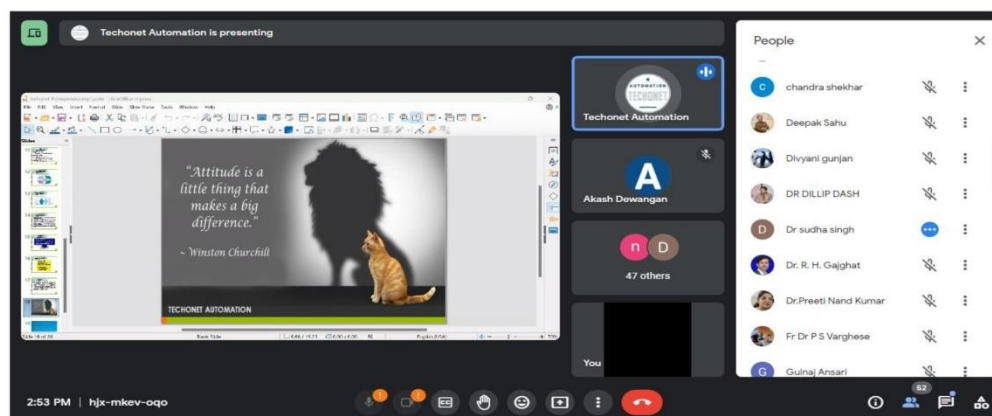
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1	Ms. Mauly Chandra	SPEAKER
2	Fr. Dr. P.S. Varghese	EVC
3	Dr. DIPALI SOREN	Principal
4	Dr. ARCHANA CHOWDHURY	FACULTY
5	Dr. PREETI NANDKUMAR	FACULTY
6	Mr. ABID KHAN	FACULTY
7	Ms LINCY MENDONZA	FACULTY
8	Dr. DILIP KUMAR DASH	FACULTY
9	AKHIL ANU ABRAHAM	MECH
10	DEEPAK KUMAR	MECH
11	HIMANSHU TAMRAKAR	MECH
12	RAHUL KUMAR BRAMHANKAR	MECH
13	ROBINS JACOB JOHN	MECH
14	ROSHAN ROY	MECH
15	SAHIL KUMAR YADAV	CSE
16	SANDEEP SIKDAR	CSE
17	STUTI DAS	CSE
18	SUKHJEET SINGH HANS	CSE
19	SULTANA KHATUN	CSE
20	ASHWANI KUMAR PANDEY	EE
21	BHARTI JENA	EE
22	Dewanshu Ghatode	EE
23	HARBHAJAN BAGHEL	EE
24	Himanshu Sharma	EE
25	TARUN KUMAR	EE
26	Thanes Gaur	EE
27	Satyam bharti	EE
28	HARISH KUMAR	EE
29	VEDINA XAXA	EE
30	ASHISH SONI	ET & T
31	HARSH TARONE	ET & T
32	KOMAL PRASAD	ET & T
33	NIHAL SHARMA	ET & T
34	AVINASH EKKA	ET & T
35	AMIT KUMAR	ET & T

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REPORT ON

GUEST LECTURE

Entrepreneurship Skill, Attitude & Behavior Development.

Expert Speaker: Mr. Kailash Kumar Patel, Founder & Director of TECHONET, ONET Infotech & Sanvidhan IAS

Date: 24/02/2023

Total participants: 50



Organized by: Mechanical/Electrical Engineering Department,

CCET, in association with Institution Innovation Council (MHRD Initiative) & NDLI Club

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**Brief Report about the program:**

The program started with the welcome address by Mr. Robin Babu, Faculty of Mechanical Engineering. He has welcomed the participants and briefed about the significance and current & Future Scope of Information Technology. Mr. Robin Babu Asst. Professor has given the introduction about the guest speaker of the lecture and handed over the session to him.

Mr. Kailash Kumar Patel has given basic introduction regarding Internet of things(IOT), Data Science, Artificial Intelligence. He has also discussed about the Startup & the challenges faced by young entrepreneurs. He also explained the Boom in Startups & encouraged our students. Further the resource person has given brief summary about Internet of things (IOT), Data Science, Artificial Intelligence and its applications. Finally the meeting concluded with the vote of thanks given by Mr. Robin Babu, Host for the guest lecture.

Facebook Link for Advertisement-

<https://www.facebook.com/ccet.bhilai.904/posts/pfbid0rhVGx46EzwcKdhxhRumG39FwGfsGGsG16o1qUtGh3J2HBazAt9bT64SQTrjozSX2l>

Facebook Link after Presentation-

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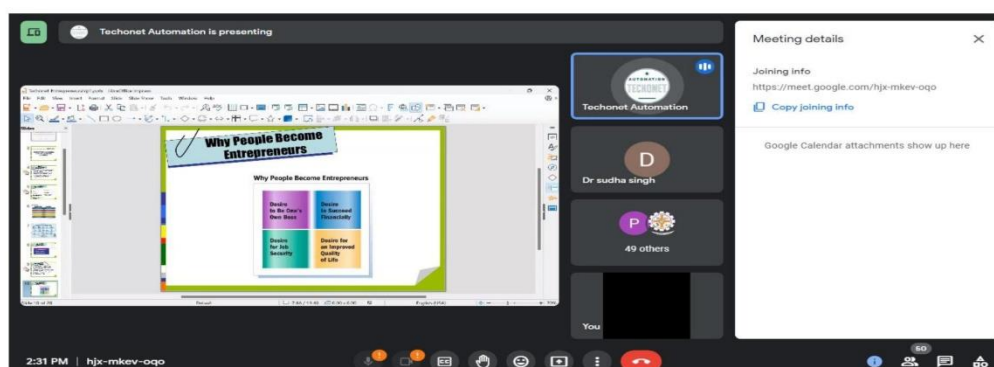
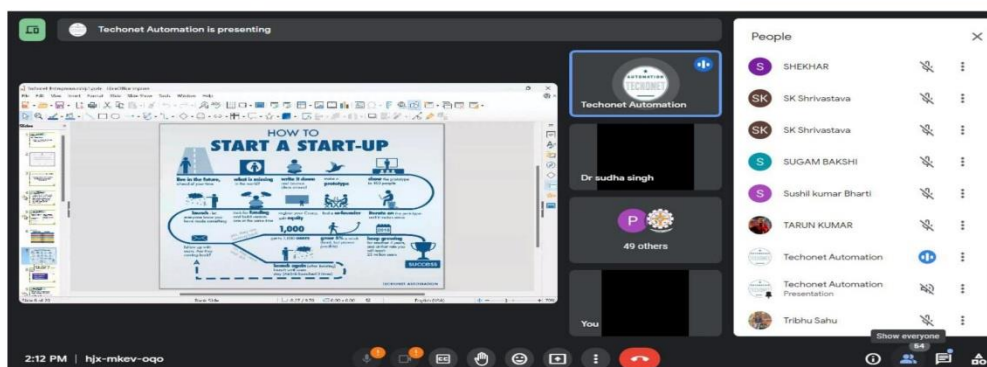
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Screenshots of the program



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Techonet Automation is presenting

Entrepreneurship as a Career

- Around 5-6% of Indians run their own business.
- In an average month, Indians start approximately 465,000 new businesses.
- The past two decades have shown a heightened interest in entrepreneurial careers.
- People choose entrepreneurship for many reasons
 - Dissatisfaction with traditional work
 - Their ideas fulfill customer needs

2:20 PM | hjx-mkev-oqo

Techonet Automation is presenting

"Attitude is a little thing that makes a big difference."

~ Winston Churchill

TECHNET AUTOMATION

2:53 PM | hjx-mkev-oqo

Techonet Automation is presenting

Entrepreneurial Characteristics

- **Mission:** entrepreneurs begin with an overall idea for how to make their business make a business
- **High Energy Level:** - a willingness to work hard
- **Need to Achieve:** - entrepreneurs work hard because they want to excel
- **Risk-Confidence:** - entrepreneurs take the leap of difficult odds
- **Persistence for Failure:** - entrepreneurs are not easily discouraged
- **Imagination:** - entrepreneurs develop innovative ways to overcome difficult situations and obstacles
- **Persistence for Ambiguity:** - entrepreneurs take in vague uncertainties
- **Internal Locus of Control:** - entrepreneurs believe they can control their own fate

2:43 PM | hjx-mkev-oqo

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1	Mr. Kailash Kr. Patel	SPEAKER
2	Dr. DIPALI SOREN	Principal
3	Dr. ARCHANA CHOWDHURY	FACULTY
4	Dr. PREETI NANDKUMAR	FACULTY
5	Mr. ABID KHAN	FACULTY
6	Ms LINCY MENDONZA	FACULTY
7	Dr. DILLIP KUMAR DASH	FACULTY
8	Mr Praveen Chandrakar	FACULTY
9	Mr. PRAVEEN SINGH RATHORE	FACULTY
10	SHILANATH PRATAP SINGH	CSE
11	SHIVAMPANDEY	CSE
12	TIKESHWARI	CSE
13	VAISHALI	CSE
14	VANADA YADAV	CSE
15	VIBHA	CSE
16	VIJAY RELWANI	CSE
17	VINAY MNJ	CSE
18	SAGAR YADAV	MECH
19	Alakh Niranjana	MECH
20	Aman Ukey	MECH
21	Amit sahu	MECH
22	ankush kumar	MECH
23	ATUL HIRWANI	MECH
24	BHUPENDRA KUMAR SEN	MECH
25	Dheeraj kumar sori	MECH
26	DINESH KUMAR YADAV	MECH
27	LEO KOSHY VARGHESE	EE
28	MITHLESH	EE
29	PAWAN KUMAR	EE
30	VISHWAKARMA	EE
31	RAJKUMAR	EE
32	ROVINS KESS	EE
33	SHIVENDRA PANIGRAHI	EE
34	SUGAM BAKSHI	EE
35	VEDINA XAXA	EE
36	ASHISH SONI	ET & T

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**A Webinar
On
“How to Start a Start- UP”**

**Resource person: Dr Achala Jain, Alumni of CCET Bhilai and Associate Professor,
SSCET Bhilai**

Date :10/05/2023

Venue :CCET Campus Bhilai, C.G.



Organized by: Institutional Innovation Cell (IIC), CCET

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**Report :****Coordinator:** Dr Shailendra Verma, CCET Bhilai**No. of students attended this seminar: 40**

Prof. Achala Jain is Associate Professor and in-charge of Innovation Center SSCET Bhilai. She focused on as why startups are important for the country? How they are able to create Job Opportunities and new market? One of the India's startup Flipkart falls in the world's Top 10 Startups. She also made us aware about the brief history of Entrepreneurship in India. When the wave of startup came in India, then the first wave was of BT and IT sector. And the second wave represents Consumerism. Presently India ranked 4th position for startup so emerging on global level. 37% startups are in Business Analytics, 59% in E commerce sector and 42% in Aggregators and Recruitment. The success rate of Startups is quite low, on an average 90% startups fail and 10 % of startups fail in their first year itself.

For a successful startup we require 4 elements:

- Idea
- Team
- Business Model

Execution Plan Different initiatives under Start up India and Make In India are:

- PLI Scheme extended to 11 sectors including Medical Devices Industry
- 11 new schemes to promote MSME in India. Support includes technology upgradation, innovation, skill enhancement, rural employment etc
- Establishment of Manufacturing zones
- CSR funds via Incubation centers for startups and MSME

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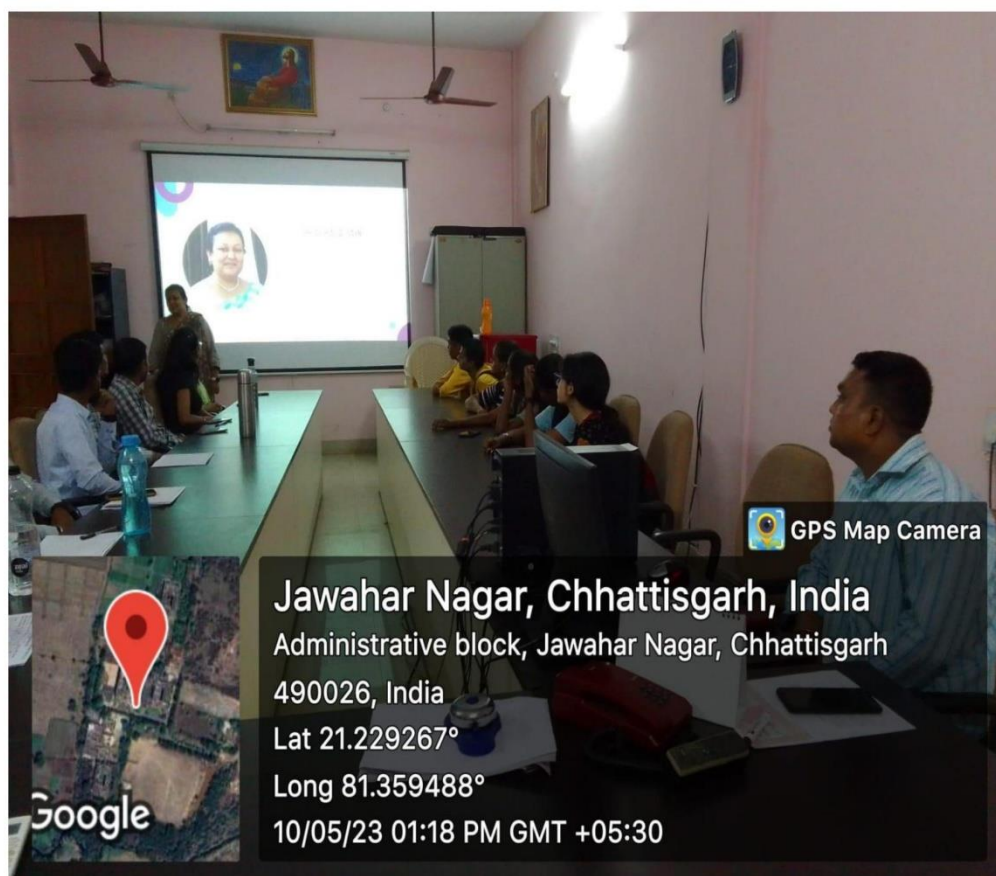
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1	Dr. Achala Jain	SPEAKER
2	Fr. Dr. P.S.Varghese	EVC
3	Dr. DIPALI SOREN	Principal
4	Dr. ARCHANA CHOWDHURY	FACULTY
5	Dr. Shaileendra Verma.	FACULTY
6	Mr. PRAVEEN SINGH RATHORE	FACULTY
7	Dr. PREETI NANDKUMAR	FACULTY
8	Ms SHIKHA AGRAWAL	FACULTY
9	Mr. PRASHANT BAWANEY	FACULTY
10	Mr. RADHESHYAMH GAJGHAT	FACULTY
11	KUNAL DEV DAS	CSE
12	Mayank	CSE
13	NAFIYA KHAN	CSE
14	NAMRATA KUMARI SHARMA	CSE
15	NEEL KANTH	CSE
16	OMKAR MISHRA	CSE
17	SAGAR YADAV	MECH
18	Akh Niranjan	MECH
19	Aman Ukey	MECH
20	Amit sahu	MECH
21	ankush kumar	MECH
22	ATUL HIRWANI	MECH
23	ASHWANI KUMAR PANDEY	EE
24	BHARTI JENA	EE
25	Dewanshu Ghatode	EE
26	HARBHAJAN BAGHEL	EE
27	Himanshu Sharma	EE
28	Nikita	EE
29	ASHISH SONI	ET & T
30	HARSH TARONE	ET & T
31	KOMAL PRASAD	ET & T
32	NIHAL SHARMA	ET & T
33	AVINASH EKKA	ET & T
34	AMT KUMAR	ET & T
35	AMT KUMAR YADAV	MTECH
36	Kunal Anant	MTECH
37	Lokesh Patel	MTECH
38	NIKHIL KUMAR VERMA	MTECH
39	SHALINI	MTECH

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SAMPLE REPORTS ON INDUSTRIAL VISITS

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Industrial Visit

Industrial Visit to Jindal Steel & Power Ltd.

Introduction and Objective of the Industrial Visit:

Mr. Naveen Jindal, the youngest son of the legendary Shri O.P. Jindal have established the **Jindal Steel & Power (JSPL)** company, which produces economical and efficient steel and power through backward and forward integration. JSPL's business operations span across the states of Chhattisgarh, Odisha and Jharkhand in India, where it operates some of India's most advanced steel manufacturing and power generation capacities of global scale. JSPL's heavy machinery division at Raipur caters to all the requirements of equipment and spares of steel, cement, mining and power plants of the group and other similar industries.

JSPL has created cutting-edge capacities to produce upto 9.95 Million Tonne Per Annum (MTPA) Iron through a judicious mix of Direct Reduced Iron (DRI), Blast Furnace and Hot Briquetted Iron (HBI) Routes catering to its 11.6 MTPA Liquid Steelmaking capacities across three locations in India and abroad. The company has a well-spread out installed finished steel capacity of 6.55 MTPA prudently spread over Bar Mills, Plate Mills, Rail and Universal Beam Mill (RUBM), Medium & Light Structural Mill (MLSM), and Wire Rod Mill. JSPL's captive iron ore mines at Tensa, Odisha have a production capacity of 3.11 MTPA. The company owns and operates combined power generation capacities of 5034 MW including the 3400 MW O.P. Jindal Super Thermal Power complex at Tamnar, Chhattisgarh.

The main objective behind this industrial visit was to give the practical knowledge to the students regarding fabrication work and assembly of various heavy machinery components by different manufacturing processes such as Casting, Welding, Surface finishing, Heat treatment, Fitting, and Moulding, etc.

Products made by the Jindal Steel & Power heavy machinery division Raipur are:

1. Rail
2. Parallel flange beams and columns
3. Plates and coils
4. Angles and channels
5. Jindal panther TMT rebars
6. Wire rods
7. Round bars
8. Fabricated sections
9. Semi finished products
10. Pressure vessels

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11. Assembly of machine parts

The students of Mechanical Engineering Department of Christian College of Engineering and Technology visited Jindal Steel & Power Ltd. on 4th October, 2019 sponsored by TEQIP-III. All the students of 3rd, 5th and 7th semester mechanical department visited Jindal Steel & Power Heavy Machinery division, Raipur along with three faculty members Mr. Hrishabh Singh Bais, Mr. Lalit Kumar Sahu and Mr. Sumit Agrawal of Mechanical Engineering Department. The students were grateful to the Jindal Steel & Power and CCET management especially to the Executive Vice Chairman, Rev. Fr. George C. Varghese and the Principal, Dr. Dipali Soren, Dr. P. S. Rao, HOD of Mechanical Department and faculty co-coordinators for organizing and making the trip memorable.

Venue of Visit:

**Jindal Steel & Power Heavy Machinery Division, Raipur
Chhattisgarh**

Schedule of Visit:

4th October, 2019

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Formerly Known as

MPCCT

ccet@ccetbhilai.ac.in

www.ccetbhilai.ac.in

Ref. No/CCET/2019/563

Date- 24-Sep-2019

To,

The Training officer/ HR Dept.
Jindal Pvt. Ltd., Raipur(C.G.)

OK Permitted.
[Signature]

Subject – Regarding Permission for Industrial Visit in your organization

Respected Sir,

We are glad to inform you that our college is 2nd oldest engineering college in Bhilai. As the curriculum of the B.E. students there is an **Industry-Institute-Interaction** program to gain the practical knowledge over the theoretical one. To fulfilling the curriculum of the students, we wish to arrange an industrial visit for our Mechanical Engineering students to your esteemed organization to learn the actual working environment of the industry.

We are having around 50 interested candidates in the 3rd, 5th and 7th semester, who wish to visit your industry. We will be highly obliged for your permission to visit on 04.10.2019.. Expecting a positive response from your end as early as possible.

Thanking you,

[Signature]
24.9.19.

Mr. Harishabh Singh Bais
Industry-Institute-Interaction cell
Dept. Of Mechanical Engineering
CCET, Bhilai

[Signature]
24/9/19

Dr. Dipali Soren
Principal
CCET, Bhilai
Principal
Christian College
of Engg. & Tech., Bhilai

PHANOS MAR THEODOSIUS ROAD, KAILASH NAGAR, NEAR INDUSTRIAL ESTATE, BHILAI, C.G. PIN: 490026 Fax : 0788 228 5266 Tel: 0788 228 6662 / 69 16

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Industrial Visit to Gangrel Hydro Electric Project

Introduction and Objective of the Visit:

Gangrel Dam, also known as the R.S. Sagar Dam, is located in Chhattisgarh, India. It is built across the Mahanadi River. It is located in Dhamtari district, about 15 km from Dhamtari and about 90 km from Raipur. It is the longest dam in Chhattisgarh. This dam supplies year-round irrigation, allowing farmers to harvest two crops per year. The dam also supplies 4x2.5 MW of hydro-electric power capacity. The geographical location is at Latitude 20°37'02.60" N and Longitude 81°33'22.47" E. The total Capacity of the plant is 10MW, which consists of 4 units, each of 2.5 MW capacities.

The turbine is M/S Alstom make vertical full Kaplan with automatically adjustable guide vane and runner blades. The rated output is 2650KW, rated speed 375 rpm and rated discharge is 16.277m³/sec for a single unit. The rated head is 18 meters. Full reservoir level is 348.70m and minimum is 336.21m. The generated power is evacuated through 33KV Gangrel and Chitod feeders.

Parts of a Hydroelectric Plant

Most conventional hydroelectric plants include four major components (see graphic below):

1. **Dam:** It raises the water level of the river to create falling water. Also controls the flow of water. The reservoir that is formed is, in effect, stored energy.
2. **Turbine:** The force of falling water pushing against the turbine's blades causes the turbine to spin. A water turbine is much like a windmill, except the energy is provided by falling water instead of wind. The turbine converts the kinetic energy of falling water into mechanical energy.
3. **Generator:** Connected to the turbine by shafts and possibly gears so when the turbine spins it causes the generator to spin also. It converts the mechanical energy from the turbine into electric energy. Generators in hydropower plants work just like the generators in other types of power plants.
4. **Transmission lines:** Conduct electricity from the hydropower plant to homes and business.

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The students of Mechanical Engineering Department of Christian College Of Engg and Technology visited Chhattisgarh State Power Generation Company Ltd (CSPGCL), Hydro Power plant Gangrel on 20th November 2019 sponsored by TEQIP-III. The main objective behind this industrial tour was to make students aware about the Power system networks, Generation and transmission equipment's. On 20th November 2019 total 43 students of 3rd and 5th Semester Mechanical dept. visited the 10 MW Hydro Power Generation located at Gangrel Dhamtari along with Mr. Hrishabh Singh Bais, Mr. Manmohan Soni, Mr. Ganpat Rakesh, (Asst. Prof.) and Mr. Sajjoo (Assistant Demonstrator) Mechanical Dept. Hydro Power Generation Gangrel has 10 MW capacity and is responsible for supplying electricity to nearby state grids. Mr. M. Dani, Assistant engineer, CSEB showed the Turbine working section and Relay section to the students. While guiding the tour of the control room, he said that any fault at any part of the substation will be indicated by a buzzer- alarm in the control room. The students of Mechanical dept. were grateful to the CSPGCL and CCET management including Executive Vice Chairman, Rev. Fr. George C. Varughese and the Principal, Dr. Dipali Soren, Dr. P. S. Rao, HOD of Mechanical Department and faculty co-coordinators for organizing and making the trip memorable.

Venue of Visit: Gangrel Hydro Project, Dhamtari, Chhattisgarh

Schedule of Visit: 20th November 2019

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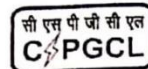
CHHATTISGARH STATE POWER GENERATION CO. LTD.

छत्तीसगढ़स्टेट पावर जनरेशन कंपनी लिमिटेड

(A Govt. of Chhattisgarh Undertaking)

(छत्तीसगढ़ शासन का एक उपक्रम)

CIN:U40108CT2003SGC015821



No. 03-01/ Gangrel/ 1497

Raipur, dt. 21.11.2019

To,


**The Principal
Christian College of Engineering & Technology,
Bhilai**

Kind attn. : Dr. (Mrs.) Dipali Soren.

Sub: - Regarding permission to visit 4X2.5 MW Gangrel Hydel Power Plant.

Ref:- Your letter no : CCET/ADMIN/2019/675 date 08.11.2019.

In connection to above subject, permission is hereby granted for 50 students (as per your list) Mechanical Engineering, Deptt. of Christian college of Engineering & Technology, Bhilai along with 3 nos. of faculty member's of your institute to visit Gangrel HEP on date 20.11.2019. Please ensure that the student and faculty member's should take all safety precautions and advice to follow the safety rules & instructions issued by site authorities during the visit of Hydro Electric Power Plant Gangrel.


**EXECUTIVE DIRECTOR (O&M:GEN)
CSPGCL, Raipur**

Copy to:-

The Assistant Engineer, Hydro Electric Plant Gangrel, Dist Dhamtari (C.G.)
-Please extend your co-operation in the matter, to the visitors & also ensure that at a time 20 visitors are go inside the power house. (MO 9993797808).

Executive Director (O&M:Gen.), 5th Floor, Vidhyut Sewa Bhavan, Dangania Raipur - 492 013
Phone : 0771-2574421; Fax : 0771-2574425; mail : econm.gen@cseb.gov.in; web site : www.cseb.gov.in

Registered Office : 3rd Floor, Vidhyut Sewa Bhavan, Dangania Raipur - 492 013; CIN No. U40108CT2003SGC015821

Criterion 2

QIM 2.3.1 Student centric methods



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Assistant Engineer is giving safety instructions before visiting inside of the Gangrelpower plant



QIM 2.3.1 Student centric methods



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Details of power plant



DAM Front View

centric methods



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BHILAI 490 026, CHHATTISHGARH – INDIA

Tel. (O) 0788-2286662/63/64, 2285299 Fax : (+91) 788-2285266

www.ccetbhilai.ac.in



Industry Institute Interaction Cell

Criterion 2

QIM 2.3.1 Student centric methods



Industry Institute Interaction Cell

Better interaction between Technical Institutions and Industries is the need of the hour. This will have great bearing on the Engineering Curriculum, exposure of Industrial atmosphere to engineering students and subsequent placement of the young graduating engineers in industries across the country. With the advent of globalization and opening up of Indian economy to outside world, competition among industries has become stiff. To solve their engineering problems they look up now to Engineering Institutions. Similarly. There is an urgent need to prepare engineering students for the jobs in multinational companies, by exposing them to newer technologies and engineering methodologies. These objectives can only be achieved well by bridging the gap between industry and the academic institute.



To promote Industry – Institute Interaction Following Schemes are being Undertaken:

- Establishment of Industry – Institute Partnership/Interaction Cell
- Organizing Workshops, Conferences and Symposia with joint participation of the Faculty and the Industries.
- Encouraging Engineers from Industries to Visit Engineering Institutions to deliver lectures.
- Participations of the Experts from industries in curriculum development
- Arranging visits of staff members to various industries.
- Joint Research Programmers and field studies by faculty and people from industries.
- Visits of faculty to industry for study and discussions or delivering lectures on the subject of mutual interests.
- Visits of industry executives and practicing engineers to the institute for seeing research work and laboratories, discussions and delivering lectures on Industrial Practices, trends and experiences.
- Memoranda of Understanding between the Institute and the Industries to bring the two sides emotionally and strategically closer.
- B.E. Projects/ Dissertation work in industries under joint guidance of the faculty and experts from industries.
- Short term assignment to faculty members in industries.
- Visiting Faculty/Professors from Industries.
- R & D Laboratories sponsored by Industries at the Institute.
- Scholarships/Fellowships Instituted by Industries at the Institute for students.
- Practical Training of the Students in Industries.



MECHANICAL ENGINEERING

Mechanical Engineering Department has Qualified and Experienced Faculty in the Field of Thermal Engineering, Design, Production CAD/CAM and Robotics. The Faculty can Provide the Following:-

- Design of Process Equipment like Condenser, Heat Exchanger, Evaporator and Cooling Tower.
- Design of the Electric Overhead Travelling Cranes, Pressure Vessel.
- Process Automation and CAD/CAM.
- Faculty can impart training on CNC Machine.
- Faculty providing consultancy in Optimization Techniques for Industrial Equipment and Human Resources, S/W proficiency in MATLAB, MINITAB, TURBO CAD Six Sigma Training.
- Artificial Neural Network.
- Six Sigma Training and Data Analysis, Data Entrepreneurship. Department has Fully Equipped with Modernized Laboratories having Latest Equipment such as:-
- Strength of Material Lab is Equipped with Universal Testing Machine, Torsion Testing Machine, Rockwell cum Brinell Hardness Testing Machine etc.
- Mechanical Measurement & Metrology is equipped with Profile Projector, Displacement Measurement Tutor using LVDT, Pressure Measurement Tutor using Pressure Transducer, Strain Measurement Tutor using Strain Gauge, Torque Measurement Tutor specification, Temperature Measurement Tutor with RTD.
- CAD/CAM is required with AutoCAD, NX-4, Solid Edge, Nastran.

The Testing can be performed in the Following Machine :

- Universal Testing Machine : Tension, Compression, Shear.



Electrical Engineering

Electrical engineering department has qualified and experience faculty in the field of high voltage, Power System, Digital Electronics, Power Electronics, Control System. The faculty can design

Power circuit Design

Commissioning and servicing of Electrical Equipments

Layout of Electrical Control Design

Design of Resistance box etc.

Panel design

Wiring of equipments

Department has fully equipped with modernized laboratories having latest Equipments such as:-

Electrical Machine laboratories having no of AC/DC motor, generator sets single phase and 3phase transformers, single and three phase energy meters for conducting various equipments.

In addition to this the departments has 2 nos regulated DC power supply ,one no 50 A DC power supply set, one no 30A DC power supply set 44KVA DG set for maintain ing the power supply to the institution in case of power failure.

The testing can be performed in the following machine:-

Induction machine Testing

Transformer oil testing

Cable testing

Calibration of ammeter voltmeter wattmeter



E&TC ENGINEERING

E&TC Department provided following Services, Facilities and Experts in different areas:

Services

Electronics component testing. (Diode, Transistor, Capacitor, resistor, Transformer)

Signal characteristic can be measured. (frequency, Amplitude, Phase of analog and digital signal)

We can make electronic card. (PCB)

Panel Wiring (Transformer rectifier)

Project can be done based on electronic devices, microcontroller, microprocessor, VLSI and VHDL.

Facilities

C.R.O. (20Khz to 60 Mhz) & D.S.O.- for observing output.

Function generator (sine, square and triangle wave)

Triple power supply.

Bread board for designing any circuit.

PCB lab- for drilling, etching, cutting, soldering, disordering and also dark room for film development.

Multimeter (analog & digital)- for testing and mmt.

Software like MATLAB, TINAPRO, VHDL, CROSS ASSEMBLER (8085,8086), Ultiboard, CommSim.



Experts in different areas

Microwave & Antennas- Smart Antennas, Strip Antennas, Dielectric Antennas, Symmetrical and Asymmetrical & Straight dipole Antennas.

Embedded system design- Data acquisition system, Data monitoring system, Automatic control system, ARM Processor

VLSI/VHDL

DSP/DIP- Image enhancement, Image compression



COMPUTER SCIENCE & ENGINEERING

Computer science & engineering of MPCCET right from its approval in 1998 has been a strong pillar in success of the Institute. CSE of MPCCET offer.

- 1.) Department has fully equipped computer labs with high configuration computer system, colored printers, internet facility, adequate facilities for H/W PCB designing & assembling of Computer and Multimedia support.
- 2) MTECH, GATE faculties having expertise in the platforms C++, VB,SQL,MATLAB etc. providing Assistance in ongoing projects on N/W security ,CN,DIP, Data Mining ,software engineering , Mobile Computing.
- 3.) Timely Vocational, Industrial and educational training given to students to make them able to simulate live projects by interacting with industries.
- 4.) Faculty engaged in organizing Guest Lecture from industries and other institute.


**INDUSTRIAL VISIT****SESSION 2019-20**

Sl. No	Company visited	Date	No. of Students participated	Branch & Semester
1	Gangrel Hydro Electric Power Station, Gangrel Dhamtari C.G.	09/09/2019	50+03 faculty	Electrical Engg. 3 rd , 5 th & 7 th Semester

Sl. No	Company visited	Date	No. of Students participated	Branch & Semester
1	Jindal Steel & Power Heavy Machinery Division, Raipur	04/10/2019	50+03 faculty	Mechanical Engg. 3 rd , 5 th & 7 th Semester

Sl. No	Company visited	Date	No. of Students participated	Branch & Semester
2	Gangrel Hydro Electric Power Station, Gangrel Dhamtari C.G.	20/11/2019	50+03 faculty	Mechanical Engg. 3 rd , 5 th & 7 th Semester

Sl. No	Company visited	Date	No. of Students participated	Branch & Semester
1	36 INC, Raipur	30/09/2019	50+03 faculty	CSE & ET&T 3 rd , 5 th & 7 th Semester


PRAMOD KUMAR BAGHMAR
COORDINATOR III CELL



BRIEF REPORT
ON
TEQIP-III of CSVTU Sponsored Industrial Visit to
Gangrel Hydro Electric Project

09th Sept, 2019

Submitted
TO
TEQIP – III Cell
Chhattisgarh Swami Vivekanand Technical University, Bhilai, Chhattisgarh,
India

Prepared
By
Mr. Ashish Dewangan
Coordinator of Industrial Visit Program

Submitted
By



Department of Electrical Engineering
Christian College of Engineering & Technology
Bhilai, Chhattisgarh



Acknowledgement

Christian College of Engineering & Technology heartily appreciate and gratefully acknowledge to TEQIP – III cell of Chhattisgarh Swami Vivekanand Technical University (CSVТУ), Bhilai for monitoring and providing full financial support to make this Industrial Visit to Gangrel Hydro Electric Project a great success.

We convey our regards, gratitude and happily acknowledge to Dr. Pankaj Kumar Gupta, Coordinator TEQIP – III cell of CSVТУ for his direct support and cooperation to make this Industrial Visit a grand success.

We express our esteem respect and appreciatively acknowledge the bighearted support and cooperation of CCET management Dr. Joseph Mar Dionysius, Chairman and Fr. George. C Varughese, Executive Vice Chairman, without their prop up the Industrial Visit could not be completed at all.

We heartily acknowledge the exceptional contribution and constant guide of Dr. (Mrs.) Dipali Soren, Principal of CCET, who puts her bird view from the day of initiation to the end of the program.

We also convey my gratitude, admiration and thankfully acknowledge to all of our colleagues, staff and all family members of CCET for their direct involvement in this the program.

Last but not the least we also favorably acknowledge to all the Officers and Staff of Gangrel Hydro Electric Project who spare their valuable time and share their expertise knowledge amongst the participants to make this Industrial Visit a grand success.



BRIEF REPORT

ON

Industrial Visit to Gangrel Hydro Electric Project

Introduction and Objective of the Visit:

Gangrel Dam, also known as the R.S. Sagar Dam, is located in Chhattisgarh, India. It is built across the Mahanadi River. It is located in Dhamtari district, about 15 km from dhamtari and about 90 km from Raipur. It is the longest dam in Chhattisgarh. This dam supplies year round irrigation, allowing farmers to harvest two crops per year. The dam also supplies 4x2.5 MW of hydro-electric power capacity. The geographical location is at Latitude 20°37'02.60" N and Longitude 81°33'22.47" E. The total Capacity of the plant is 10MW, which consist of 4 units, each of 2.5 MW capacities.

The turbine is M/S alstom make vertical full Kaplan with automatically adjustable guide vans and runner blades. The rated output is 2650KW, rated speed 375 rpm and rated discharge is 16.277m³/sec for a single unit. The rated head is 18 meter. Full reservoir level is 348.70m and minimum is 336.21m. The generated power is evacuated through 33KV Gangrel and Chitod feeders.

Parts of a Hydroelectric Plant

Most conventional hydroelectric plants include four major components (see graphic below):

1. **Dam:** It raises the water level of the river to create falling water. Also controls the flow of water. The reservoir that is formed is, in effect, stored energy.
2. **Turbine:** The force of falling water pushing against the turbine's blades causes the turbine to spin. A water turbine is much like a windmill, except the energy is provided by falling water instead of wind. The turbine converts the kinetic energy of falling water into mechanical energy.
3. **Generator:** Connected to the turbine by shafts and possibly gears so when the turbine spins it causes the generator to spin also. It Converts the mechanical energy from the turbine into electric energy. Generators in hydropower plants work just like the generators in other types of power plants.
4. **Transmission lines:** Conduct electricity from the hydropower plant to homes and business.



The students of Electrical Engineering Department of Christian College Of Engg and Technology visited Chhattisgarh State Power Generation Company Ltd (CSPGCL), Hydro Power plant Gangrel on 9th September 2019 sponsored by TEQIP-III. The main objective behind this industrial tour was to make students aware about the Power system networks, Generation and transmission equipments. On 9th September 2019 students of 3rd, 5th and 7th Semester Electrical dept. visited the 10 MW Hydro Power Generation located at Gangrel Dhamtari along with Mr. Ashish Dewangan, Mr. SR Dewangan, Muna Biswal, Mr. Devendra Sahu (Asst.Prof.) Electrical Dept. Hydro Power Generation Gangrel has 10 MW capacity and is responsible for supplying electricity to nearby state grids. Mr. M. Dani, Assistant engineer, CSEB showed the Turbine working section and Relay section to the students. While guiding the tour of the control room, he said that any fault at any part of the substation will be indicated by a buzzer- alarm in the control room. The students of Electrical dept. were grateful to the CSPGCL and CCET management including Executive Vice Chairman, Rev. Fr. George C. Varughese and the Principal, Dr Dipali Soren, Dr. Ritesh Dash, HOD of Electrical Department and faculty co-coordinators for organizing and making the trip memorable.

Venue of Visit:

Gangrel Hydro Project, dhamtari

Chhattisgarh

Schedule of Visit:

9th September 2019

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(A Unit of Chhattisgarh Undertaking)
राज्य विद्युत जनरेटिंग कंपनी लिमिटेड

CIN: U01000 IN 2005 0000000



No 03-01 Gangrel 1172

Raipur, dt. 06/09/2019

To,

The Principal
Christian College of Engineering & Technology,
Bhilai

Kind attn. : Dr. (Mrs.) Dipali Soren.

Sub: - Regarding permission to visit 4X2.5 MW Gangrel Hydel Power Plant.

Ref:- Your letter no : CCET/2019/482 date 31.08.2019.

In connection to above subject, permission is hereby granted for 60 students (as per your list) Electrical Engineering, Deptt. of Christian college of Engineering & Technology, Bhilai along with 3 nos. of faculty member's of your institute to visit Gangrel HEP on date 9th Sept. 2019. Please ensure that the student and faculty member's should take all safety precautions and advice to follow the safety rules & instructions issued by site authorities during the visit of Hydro Electric Power Plant Gangrel.

EXECUTIVE DIRECTOR (O&M:GEN)
CSPGCL, Raipur

Copy to:-

The Assitant Engineer, Hydro Electric Plant Gangrel, Disst Dhamtari (C.G.)

-Please extend your co-operation in the matter, to the visitors& also ensure that at a time 20 visitors are go inside the power house .(MO 9993797808).

34 Students with 4 Nos. of faculty members visited in 4x2.5 MW Gangrel H.E.P. CSPGCL on dt. 09/09/2019

Executive Director (O&M:Gen.), 5th Floor, Vilhyut Sewa Bhavan, Dangania Raipur
Phone : 0771-2574421; Fax : 0771-2574425; mail : ceeo@genweb.gov.in; web site : WWW.CSPGCL.GOV.IN
Assistant Engineer, 4x2.5 MW Hydel Plant, CSPGCL, Gangrel, Distt. Dhamtari (C.G.)

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(Incorporated in India)
E. N. S. N. D. S. T. P. G. Co. Ltd.

1. **THE CHAIRMAN**
 2. **THE VICE CHAIRMAN**
 3. **THE SECRETARY**
 4. **THE TREASURER**
 5. **THE MEMBERS**

CPCL

No. 03-01, Gangrel/1172

Feb.

Rajpur, dt. 06/09/2019

**The Principal
Christian College of Engineering & Technology,
Bhilai**

Kind attn. : Dr. (Mrs.) Dipali Soren.

Subj: - Regarding permission to visit 4X2.5 MW Gangrel Hydel Power Plant.
Ref:- Your letter no : CCET/2019/482 date 31.08.2019.

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EXECUTIVE DIRECTOR (O&M:GEN)
CSPGCL, Raipur

Copy to:-

The Assistant Engineer, Hydro Electric Plant Gangrel, Distt Dhamtari (C.G.)

-Please extend your co-operation in the matter, to the visitors & also ensure that at a time 20 visitors are go inside the power house. (MO 9993797808).

Executive Director (D&M/Cen.), 5th Floor, Vaidyut Sewa Bhavan, Durgam Cheruvu - 500 013
Phone: 0771-2574421; Fax: 0771-2574425; mail: comsec@tech.gov.in; web site: www.cesh.gov.in

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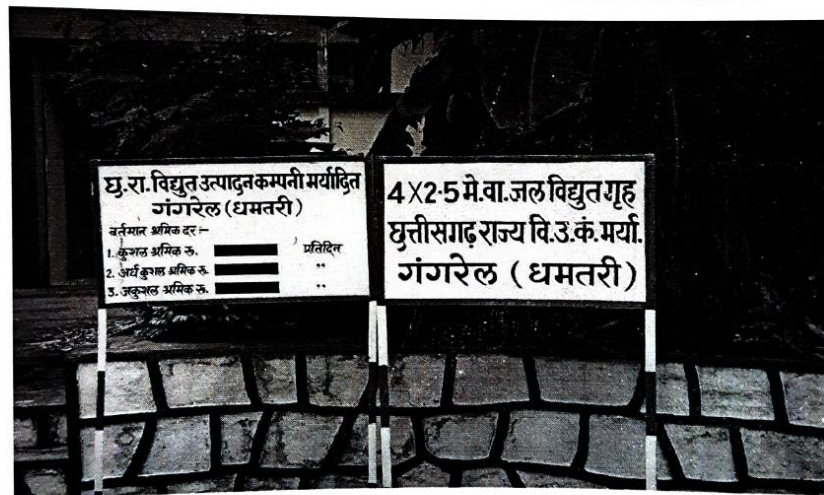
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CRITERION 2

QIM 2.3.1 Student centric methods



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SECTION 2

QIM 2.3.1 Student centric methods



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BRIEF REPORT
ON
TEQIP-III of CSVTU Sponsored Industrial Visit to
Jindal Steel & Power, Raipur
4th October, 2019

Submitted

To

TEQIP – III Cell
Chhattisgarh Swami Vivekanand Technical University, Bhilai, Chhattisgarh,
India

Prepared

By

Mr. Hrishabh Singh Bais

Coordinator of Industrial Visit Program

Submitted

By



Department of Mechanical Engineering
Christian College of Engineering & Technology
Bhilai, Chhattisgarh



Acknowledgement

Christian College of Engineering & Technology heartily appreciate and gratefully acknowledge to TEQIP – III cell of Chhattisgarh Swami Vivekanand Technical University (CSVTU), Bhilai for monitoring and providing full financial support to make this Industrial Visit to Jindal Steel & Power a great success.

We convey our regards, gratitude and happily acknowledge to Dr. Pankaj Kumar Gupta, Coordinator TEQIP – III cell of CSVTU for his direct support and cooperation to make this Industrial Visit a grand success.

We express our esteem respect and appreciatively acknowledge the bighearted support and cooperation of CCET management Dr. Joseph Mar Dionysius, Chairman and Fr. George. C Varghese, Executive Vice Chairman, without their prop up the Industrial Visit could not be completed at all.

We heartily acknowledge the exceptional contribution and constant guide of Dr. (Mrs.) Dipali Soren, Principal of CCET, who puts her bird view from the day of initiation to the end of the program.

We also convey my gratitude, admiration and thankfully acknowledge to all of our colleagues, staff and all family members of CCET for their direct involvement in this the program.

Last but not the least we also favorably acknowledge to all the Officers and Staff of Jindal Steel & Power who spare their valuable time and share their expertise knowledge amongst the participants to make this Industrial Visit a grand success.

**BRIEF REPORT****ON****Industrial Visit to Jindal Steel & Power****Introduction and Objective of the Visit:**

JSPL's heavy machinery division at Raipur caters to all the requirements of equipment and spares of steel, cement, mining and power plants of the group and other similar industries. Following the current expansion of working area (by over 9,000 square meter of working shed area), the division has strengthened its platform to address the needs of similar industries in India and across the world.

Led by Mr. Naveen Jindal, the youngest son of the legendary Shri O.P. Jindal, the company produces economical and efficient steel and power through backward and forward integration. JSPL's business operations span across the states of Chhattisgarh, Odisha and Jharkhand in India, where it operates some of India's most advanced steel manufacturing and power generation capacities of global scale. JSPL has created cutting-edge capacities to produce upto 9.95 Million Tonne Per Annum (MTPA) Iron through a judicious mix of Direct Reduced Iron (DRI), Blast Furnace and Hot Briquetted Iron (HBI) Routes catering to its 11.6 MTPA* Liquid Steelmaking capacities across three locations in India and abroad. The company has a well-spread out installed finished steel capacity of 6.55 MTPA prudently spread over Bar Mills, Plate Mills, Rail and Universal Beam Mill (RUBM), Medium & Light Structural Mill (MLSM), and Wire Rod Mill. JSPL's captive iron ore mines at Tensa, Odisha have a production capacity of 3.11 MTPA. The company owns and operates combined power generation capacities of 5034 MW including the 3400 MW O.P. Jindal Super Thermal Power complex at Tamnar, Chhattisgarh.

Products made by the Jindal Steel & Power heavy machinery division Raipur are:

1. Rail
2. Parallel flange beams and columns
3. Plates and coils
4. Angles and channels
5. Jindal panther TMT rebars
6. Wire rods
7. Round bars
8. Fabricated sections
9. Semi finished products
10. Pressure vessels
11. Assembly of machine parts



The students of Mechanical Engineering Department of Christian College Of Engg and Technology visited Jindal Steel & Power on 4th October, 2019 sponsored by TEQIP-III. The main objective behind this industrial tour was to make students aware about the fabrications and assembly of various machining components by different processes e.g. Casting, Welding, Surface finishing, Heat treatment, Fitting, Moulding, etc.. On 4th October, 2019 students of 3rd, 5th and 7th Semester Mechanical department visited the Jindal Steel & Power Heavy Machinery division, Raipur along with Mr. Hrishabh Singh Bais, Mr. Lalit Kumar Sahu, Mr. Sumit Agrawal of Mechanical Engineering Department. The students of Mechanical department were grateful to the Jindal Steel & Power and CCET management including Executive Vice Chairman, Rev. Fr. George C. Varghese and the Principal, Dr. Dipali Soren, Dr. P. S. Rao, HOD of Mechanical Department and faculty co-coordinators for organizing and making the trip memorable.

Venue of Visit:

**Jindal Steel & Power Heavy Machinery Division, Raipur
Chhattisgarh**

Schedule of Visit:

4th October, 2019

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By

TEQIP – III, CSVTU, Bhilai



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ccet@ccetbhilai.ac.in

www.ccetbhilai.ac.in

Formerly Known as

MPC CET

Ref. No/CCET/2019/563

Date- 24-Sep-2019

To,

The Training officer/ HR Dept.
Jindal Pvt. Ltd., Raipur (C.G.)

OK Permitted.
[Signature]

Subject - Regarding Permission for Industrial Visit in your organization

Respected Sir,

We are glad to inform you that our college is 2nd oldest engineering college in Bhilai. As the curriculum of the B.E. students there is an Industry-Institute-Interaction program to gain the practical knowledge over the theoretical one. To fulfilling the curriculum of the students, we wish to arrange an industrial visit for our Mechanical Engineering students to your esteemed organization to learn the actual working environment of the industry.

We are having around 50 interested candidates in the 3rd, 5th and 7th semester, who wish to visit your industry. We will be highly obliged for your permission to visit on 04.10.2019. Expecting a positive response from your end as early as possible.

Thanking you,

[Signature]
24.9.19

Mr. Harishabh Singh Bais
Industry-Institute-Interaction cell
Dept. Of Mechanical Engineering
CCET, Bhilai

[Signature]
24/9/19
Dr. Dipali Soren
Principal
CCET, Bhilai
Principal
Christian College
of Engg. & Tech., Bhilai

PHANOS MAR THEODOSIUS ROAD, KAILASH NAGAR, NEAR INDUSTRIAL ESTATE, BHILAI, C.G. PIN: 490026 Fax : 0788 298 5266 Tel: 0788 298 8659 J&J JR
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CRITERION 2

QIM 2.3.1 Student centric methods



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**BRIEF REPORT
ON
TEQIP-III of CSVTU Sponsored Industrial Visit to
Gangrel Hydro Electric Project
20th November, 2019**

**Submitted
To
TEQIP – III Cell
Chhattisgarh Swami Vivekanand Technical University, Bhilai, Chhattisgarh,
India**

**Prepared
By
Mr. Hrishabh Singh Bais
Coordinator of Industrial Visit Program**

**Submitted
By**



**Department of Mechanical Engineering
Christian College of Engineering & Technology
Bhilai, Chhattisgarh**

Criterion 2

QIM 2.3.1 Student centric methods



Acknowledgement

Christian College of Engineering & Technology heartily appreciate and gratefully acknowledge to TEQIP – III cell of Chhattisgarh Swami Vivekanand Technical University (CSVTU), Bhilai for monitoring and providing full financial support to make this Industrial Visit to Gangrel Hydro Electric Project a great success.

We convey our regards, gratitude and happily acknowledge to Dr. Pankaj Kumar Gupta, Coordinator TEQIP – III cell of CSVTU for his direct support and cooperation to make this Industrial Visit a grand success.

We express our esteem respect and appreciatively acknowledge the bighearted support and cooperation of CCET management Dr. Joseph Mar Dionysius, Chairman and Fr. George. C Varughese, Executive Vice Chairman, without their prop up the Industrial Visit could not be completed at all.

We heartily acknowledge the exceptional contribution and constant guide of Dr. (Mrs.) Dipali Soren, Principal of CCET, who puts her bird view from the day of initiation to the end of the program.

We also convey my gratitude, admiration and thankfully acknowledge to all of our colleagues, staff and all family members of CCET for their direct involvement in this the program.

Last but not the least we also favorably acknowledge to all the Officers and Staff of Gangrel Hydro Electric Project who spare their valuable time and share their expertise knowledge amongst the participants to make this Industrial Visit a grand success.

Criterion 2

QIM 2.3.1 Student centric methods



BRIEF REPORT

ON

Industrial Visit to Gangrel Hydro Electric Project

Introduction and Objective of the Visit:

Gangrel Dam, also known as the R.S. Sagar Dam, is located in Chhattisgarh, India. It is built across the Mahanadi River. It is located in Dhamtari district, about 15 km from Dhamtari and about 90 km from Raipur. It is the longest dam in Chhattisgarh. This dam supplies year-round irrigation, allowing farmers to harvest two crops per year. The dam also supplies 4x2.5 MW of hydro-electric power capacity. The geographical location is at Latitude 20°37'02.60" N and Longitude 81°33'22.47" E. The total Capacity of the plant is 10MW, which consist of 4 units, each of 2.5 MW capacities.

The turbine is M/S alstom make vertical full Kaplan with automatically adjustable guide vane and runner blades. The rated output is 2650KW, rated speed 375 rpm and rated discharge is 16.277m³/sec for a single unit. The rated head is 18 meters. Full reservoir level is 348.70m and minimum is 336.21m. The generated power is evacuated through 33KV Gangrel and Chitod feeders.

Parts of a Hydroelectric Plant

Most conventional hydroelectric plants include four major components (see graphic below):

1. **Dam:** It raises the water level of the river to create falling water. Also controls the flow of water. The reservoir that is formed is, in effect, stored energy.
2. **Turbine:** The force of falling water pushing against the turbine's blades causes the turbine to spin. A water turbine is much like a windmill, except the energy is provided by falling water instead of wind. The turbine converts the kinetic energy of falling water into mechanical energy.
3. **Generator:** Connected to the turbine by shafts and possibly gears so when the turbine spins it causes the generator to spin also. It Converts the mechanical energy from the turbine into electric energy. Generators in hydropower plants work just like the generators in other types of power plants.
4. **Transmission lines:** Conduct electricity from the hydropower plant to homes and business.



The students of Mechanical Engineering Department of Christian College Of Engg and Technology visited Chhattisgarh State Power Generation Company Ltd (CSPGCL), Hydro Power plant Gangrel on 20th November 2019 sponsored by TEQIP-III. The main objective behind this industrial tour was to make students aware about the Power system networks, Generation and transmission equipment's. On 20th November 2019 total 43 students of 3rd and 5th Semester Mechanical dept. visited the 10 MW Hydro Power Generation located at Gangrel Dhamtari along with Mr. Hrishabh Singh Bais, Mr. Manmohan Soni, Mr. Ganpat Rakesh, (Asst.Prof.) and Mr. Sajjo (Assistant Demonstrator) Mechanical Dept. Hydro Power Generation Gangrel has 10 MW capacity and is responsible for supplying electricity to nearby state grids. Mr. M. Dani, Assistant engineer, CSEB showed the Turbine working section and Relay section to the students. While guiding the tour of the control room, he said that any fault at any part of the substation will be indicated by a buzzer- alarm in the control room. The students of Mechanical dept. were grateful to the CSPGCL and CCET management including Executive Vice Chairman, Rev. Fr. George C. Varughese and the Principal, Dr Dipali Soren, Dr. P. S. Rao, HOD of Mechanical Department and faculty co-coordinators for organizing and making the trip memorable.

Venue of Visit: Gangrel Hydro Project, Dhamtari, Chhattisgarh

Schedule of Visit: 20th November 2019

Sponsored

by
TEQIP – III, CSVTU, Bhilai



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CHHATTISGARH STATE POWER GENERATION CO. LTD.

छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड

(A Govt. of Chhattisgarh Undertaking)

(छत्तीसगढ़ सरकार का एक उपक्रम)

CIN:U40108CT2003SGC015821



No. 03-01/ Gangrel/ 1497

Raipur, dt. 20.11.2019

To,

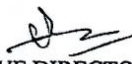
**The Principal
Christian College of Engineering & Technology,
Bhilai**

Kind attn. : Dr. (Mrs.) Dipali Soren.

Sub: - Regarding permission to visit 4X2.5 MW Gangrel Hydel Power Plant.

Ref:- Your letter no : CCET/ADMIN/2019/675 date 08.11.2019.

In connection to above subject, permission is hereby granted for 50 students (as per your list) Mechanical Engineering, Deptt. of Christian college of Engineering & Technology, Bhilai along with 3 nos. of faculty member's of your institute to visit Gangrel HEP on date 20.11.2019. Please ensure that the student and faculty member's should take all safety precautions and advice to follow the safety rules & instructions issued by site authorities during the visit of Hydro Electric Power Plant Gangrel.


**EXECUTIVE DIRECTOR (O&M:GEN)
CSPGCL, Raipur**

Copy to:-

**The Assistant Engineer, Hydro Electric Plant Gangrel, Disst Dhamtari (C.G.)
-Please extend your co-operation in the matter, to the visitors & also ensure that at a time 20 visitors are go inside the power house. (MO 9993797808).**

**Executive Director (O&M:Gen.), 5th Floor, Vidhyut Sewa Bhavan, Danganla Raipur - 492 013
Phone : 0771-2574421; Fax : 0771-2574425; mail : ceom.gen@cseb.gov.in; web site : www.cseb.gov.in**

Registered Office : 3rd Floor, Vidhyut Sewa Bhavan, Danganla Raipur - 492 013; CIN No. U40108CT2003SGC015821



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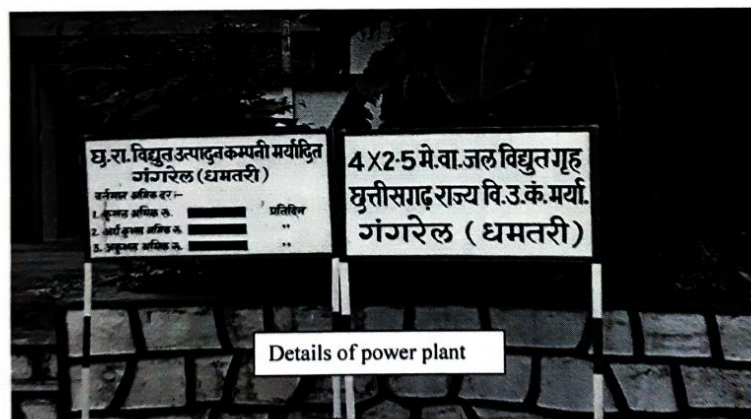
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Assistant Engineer is giving safety instructions before visiting inside of the power plant



Details of power plant

CRITERION 2

QIM 2.3.1 Student centric methods



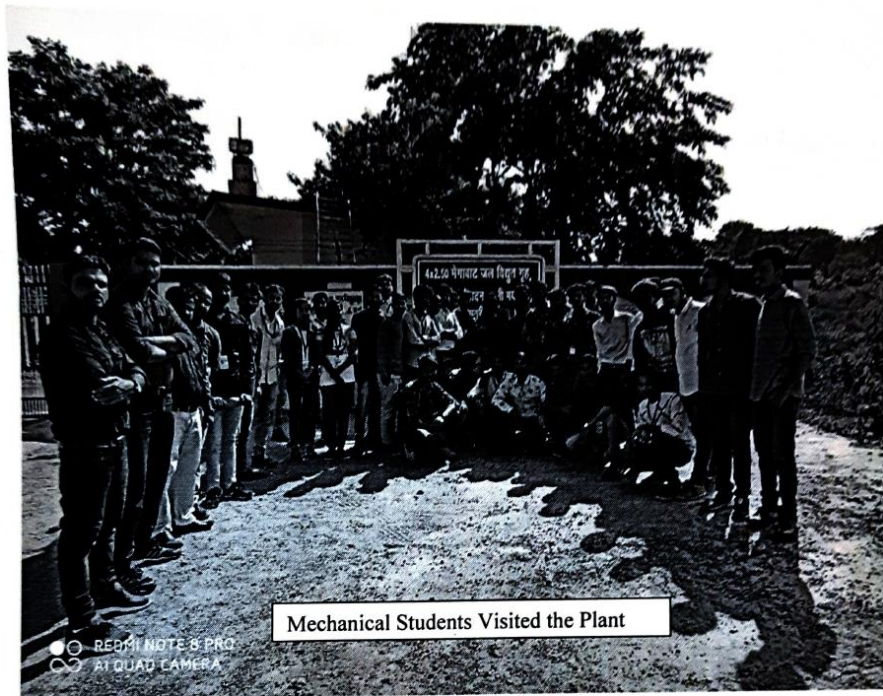
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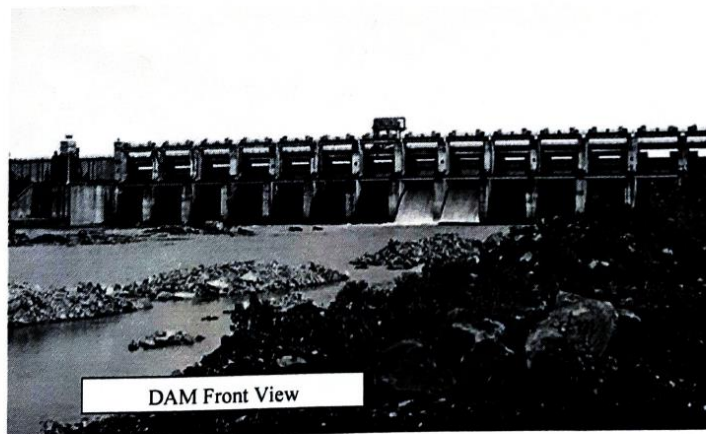
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Mechanical Students Visited the Plant



DAM Front View

CRITERION 2

QIM 2.3.1 Student centric methods



Industrial Visit of CSE students at 36 INC, Raipur

CCET students of 5th semester, Computer Science & Engineering and Electronic and telecommunication visited 36 INC, Raipur as part of their industrial tour on 30/09/19. The group of students was accompanied by Mr. Ashish Mishal, Mr. Yogesh Tamrakar (Assistant Professor CSE) & Mr. Neju (ETC dept). Students got chance to witness various technological aspects of Fab Lab of 36 INC. Demonstrated working of advanced devices like 3D Scanner, Vinyl Cutter, CNC Router, 3D Printer and Laser Cutter, they also got live experience of 3D Printer.

They came across through various live actions based on the concepts which they used to study in their curriculum, it was a whole day program which included visit to all the departments of 36 INC and demonstration at many departments on how they handle and deal with various situations. Instructor's at Fab Lab commandingly conducted all the demonstration and explained all the concepts very nicely. The visit was quite knowledge awakening and interactive one where all the queries raised by students were nicely answered by the authorities presented.

Students expressed their heartiest thanks to all the authorities Mr. Swikar, Ms. Shiwangi Lal and Mr. Shubham Dixena and all 36 INC Team. College Management also extends gratitude to 36 INC management team for allowing the students of CCET to their arena and let them aware with the latest happenings going on in the current technological Era.





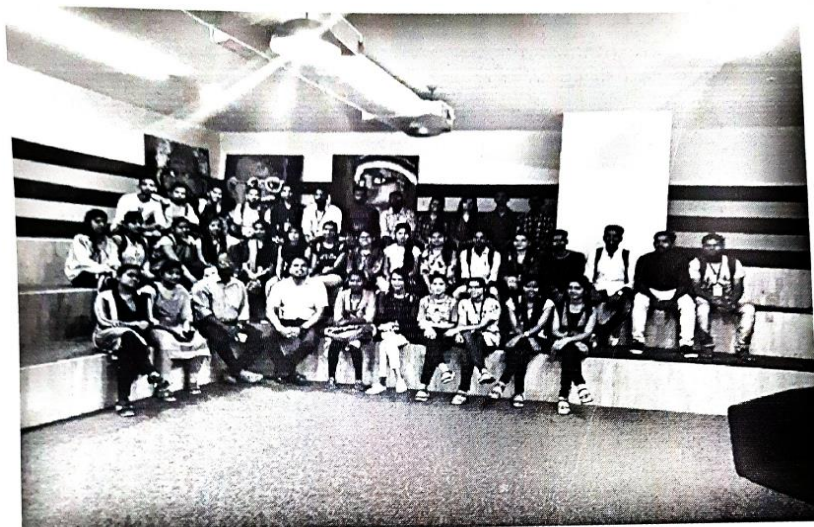
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Criterion 2

QIM 2.3.1 Student centric methods

**List of industrial visit conducted on 2018-19****Department of Mechanical Engineering**

Sl. no	Company visited	Date	No. of students participated	Semester	Attendance
1	NSPCL BHILAI 3	07.09.18	60	3 rd , 5 th , 7 th	
2	Jindal Machineries, Raipur	24.09.18	36	5 th , 7 th	
3	Jaiswal Neco Ltd, Raipur	26.09.18	36	5 th , 7 th	
4	Classic Technomech P Ltd	07.02.19	33	4 th , 6 th	

Department of Computer Science & Engineering

Sl. no	Company visited	Date	No. of students participated	Semester	Attendance %
1	36INC, Raipur	20.02.19	35	6 th	71.42 %
2	Energy park, Raipur	15.02.19	36	4 th	76.59 %

Department of Electrical Engineering

Sl. no	Company visited	Date	No. of students participated	Semester	Attendance
1	400KV substation Khedamara	25 .09.2018	28	5th&3rd	60.86%
2					
3					



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Department of Electronics & Telecommunications Engineering

Sl. no	Company visited	Date	No. of students participated	Semester	Attendance
1	400KV substation Khedamara	25.09.2018	17	3 RD & 5 TH	70.8%
2	Karranala, Bairaj	18.03.2018	14	4 TH & 6 TH	63.63%
3					

CRITERION 2

QIM 2.3.1 Student centric methods



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CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY, BHILAI

Roll List For Industrial Visit On Hindal Steel & Power Limited, Raipur (C.G.)

Year: 2018
Semester: 5th
Branch: Mechanical

For the Session of July - Dec. 2018
As on date: 19-Sep-18

Class Roll No.	University Roll No.	Name of Student	Status
1	301103716001	ADISH GRACE SAMUEL	Regular
2	301103716003	AKASH GUPTA	Regular
3	301103716004	AMAN RANA	Regular
4	301103716005	AMIR HASSAN ANSARI	Regular
5	301103716006	AMIT KUMAR UMARVAISHYA	Regular
6	301103716007	ANURAG EKKA	Regular
7	301103716008	ASHISH KUMAR DEWANGAN	Regular
8	301103716010	CHANDAN PASWAN	Regular
9	301103716011	DENIS PRATIK TOPPO	Regular
10	301103716013	JASPREET KAUR RANDHAWA	Regular
11	301103716014	KAMAL KISHOR	Regular
12	301103716015	MAHVANT SINGH	Regular
13	301103716017	MANI ALFRED SABU	Regular
14	301103716018	MD SHADAB ALAM	Regular
15	301103716020	PIYUSH KUMAR	Regular
16	301103716021	PRASARDEEP TIGGA	REGULAR
17	301103716022	PRASHANT PANDAY	Regular
18	301103716023	RAJ KUMAR SEN	Regular
19	301103716024	SAMUEL MCSIS	Regular
20	301103716025	SANJU MANNA	Regular
21	301103716026	SD MUSTAKIM HASHIMI	Regular
22	301103716027	SHINE ABRAHAM JOHN	Regular
23	301103716028	SHUBHAM YADAV	Regular
24	301103716029	VIKAS SHARMA	Regular
25	301103716030	VINAY KUMAR PATEL	Regular
26	301103716032	ARINSHER KIRKETTE	REGULAR
27	301103716033	AMIT KUSHWAHA	Regular
28	301103716034	DILEPAK KUMAR SINGH	Regular
29	301103716035	RAHUL TURKEY	Regular
30	301103716036	SHUBHAM SAG	Regular
31	301103716037	VIKAS KUMAR MAURYA	Regular
32	3113715006	ABHISHEK CHILSH	Regular
33	301103717301	JUNAID ALAM	Regular
34	3113714058	MD. ABID KHAN	REGULAR
35	3113714115	KISHAN KUMAR SINGH	REGULAR

Total No. of Students - 34

PRINCIPAL

(24)



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Roll List For Industrial Visit On Jindal Steel & Power Limited, Raipur (C.G.)

Year: 11th

Semester: 7th

Branch: Mechanical - A

For the Session of July - Dec. 2018

As on date 19 Sep-18

Class Roll No.	University Roll No.	Name of Student	Status
1	3113715001	A ANISHI	
2	3113715002	ABDUL RASHID ALIM	
3	3113715003	ABDUL WASHIT	
4	3113715005	ADITHYAN GRI	
5	3113715006	ADITHYAN KUMAR BABA	
6	3113715007	ADITHYAN TARA	
7	3113715008	ALHASSAN ANSARI	Ab. D. 10/10
8	3113715010	AMAN KUMAR MAHTO	REGULAR
9	3113715011	AMARJEET BANJARI	8/10
10	3113715012	AMIT LAKRA	
11	3113715013	AMIT SINGH	
12	3113715014	ANKIT PATEL	
13	3113715015	ANUPAM JOSHI	
14	3113715017	ANUPAM JAISWAL	
15	3113715018	ASHISH DEWANGAN	
16	3113715019	AVINASH DEWANGAN	
17	3113715020	BHARAT KUMAR	
18	3113715021	CHANDAN KUMAR	
19	3113715022	CHHAGAN MANGARI	
20	3113715023	CHIRANJEEV AGRAWAL	
21	3113715024	DAYANAND SAHU	
22	3113715025	DEEPAK KUMAR (G.S. PANDEY)	
23	3113715027	DEEPAK LAL VERMA	8/10
24	3113715028	DEV SAGAR SAG	
25	3113715029	GAURAV KUMAR DILLIWAR	
26	3113715030	HARSHIT SINGH THAKUR	
27	3113715031	HIMANSHU SINGH	
28	3113715032	JATINDER A MAHAJAN	
29	3113715033	KHILASHI KUMAR	
30	3113715034	KISHOR KUMAR	
31	3113715035	LOKESH GAIRWAD	8/10
32	3113715036	MANISH KUMAR	MS-10
33	3113715037	MAYANK CHANDRAKAR	
34	3113715038	MIDHATEE KHAN	
35	3113715039	MRIDUL KUMAR SHRIVASTAVA	
36	3113715040	MUKESH KUMAR DEWANGAN	
37	3113715041	NARESH KUMAR NAMDEV	
38	3113715042	NAVNEET PAL	
39	3113715043	NEHAL VERMA	
40	3113715044	NIHAL KUMAR SINGH	
41	3113715045	NIKET VERMA	8/10
42	3113715046	NISHANT SHERWAR	DETAINED
43	301103716301	KULSHWAR THAKUR	
44	3113714031	DUSHYANT CHANDRAKAR	REGULAR
45	3113715047	PANDEY U. D. S. S. S.	DETAINED

Total No. of Students - 43

HOD

PRINCIPAL

CRITERION 2

QM 2.3.1 Student centric methods



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CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY, BHILAI
Roll List for Industrial Visit On Jindal Steel & Power Limited, Raipur (C.G.)
Year : 1st
Semester : 7th
Branch : Mechanical II
For the Session of July - Dec, 2018
At on date : 19-Sep-18

Class Roll No.	University Roll No.	Name of Student	Status
1	3113715048	PANKAJ MAURYA (RUPAKMAURYA)	
2	3113715049	PANKAJ MAURYA (SUDHAKUMAR)	
3	3113715050	PAULMIT TRIVEDI	
4	3113715051	PRANJAN SAGI	
5	3113715052	PRATIK SHAI	
6	3113715053	RAGHAV SHARMA	
7	3113715054	RAHUL KUMAR VERMA	
8	3113715055	RAJESH KUMAR VERMA	
9	3113715056	RAJENDR KUMAR	
10	3113715057	RAM KRISHNA VENTHAKARMA	
11	3113715058	RAVI KUMAR BARNWAL	
12	3113715059	ROHIT SHIVASTAVA	
13	3113715060	RODAN V PHEIP	
14	3113715061	ROVINS KULUR	
15	3113715062	S GURDIPAR RAO	
16	3113715063	SACHIN CHAUHAN	
17	3113715064	SAHEL KUMAR SWAIN	
18	3113715065	SANGEEL KUMAR SINGH	
19	3113715066	SANJEEV KUMAR YADAV	
20	3113715067	SAPAN SAHU	
21	3113715068	SEBITH ASHAWAN	
22	3113715069	S LASHIKANT	
23	3113715070	SHIVA KUMAR	
24	3113715071	SHIVAM SINGH GADHARWAR	
25	3113715072	SIGNMIT YADAV	
26	3113715073	SHUBHAM SAHU	
27	3113715074	SHUBHAM TIRLEY	
28	3113715075	SHYAMBAR KUMAR KANSHI	
29	3113715076	SIDDEHANT SEVY SCOTT	
30	3113715077	SONU K SAMUEL	
31	3113715078	SOURABH SINGH	
32	3113715079	SUNJIT YADAV	
33	3113715080	TOMESHWAR SAHU	
34	3113715081	TUFIL AHMED	
35	3113715082	VAIBHAV CHAUHAN	
36	3113715083	VIKRAM GUPTA	
37	3113715084	VIKRAM KUMAR	
38	3113715085	VIVEK PRATAP SINGH	
39	3113715086	ZUBIN RAUL CHACKU PARAMBIL	
40	3113715087	PARASMEET	
41	3113715088	PRAYESH SINGH THAKUR	
42	3113715089	PHUPENDRA	
43	3113715090	KANWAL SINGH	
44	3113715091	DINESHWAR KUMAR SAHU	
45	3113715092	GULSHAN PRADHAN	

Total No. of Students - 45

HOD

PRINCIPAL

Criterion 2

QIM 2.3.1 Student centric methods



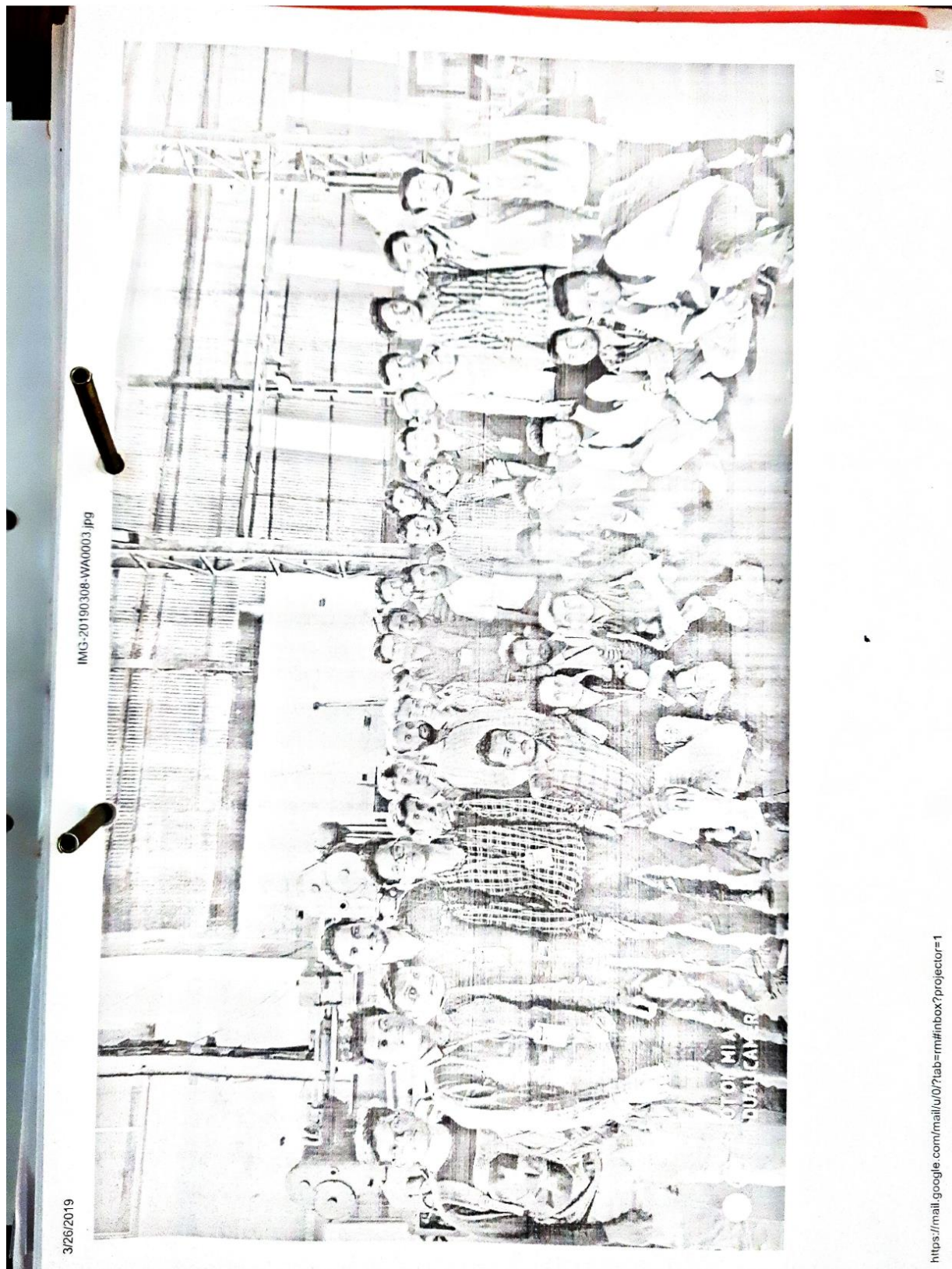
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QIM 2.3.1 Student centric methods



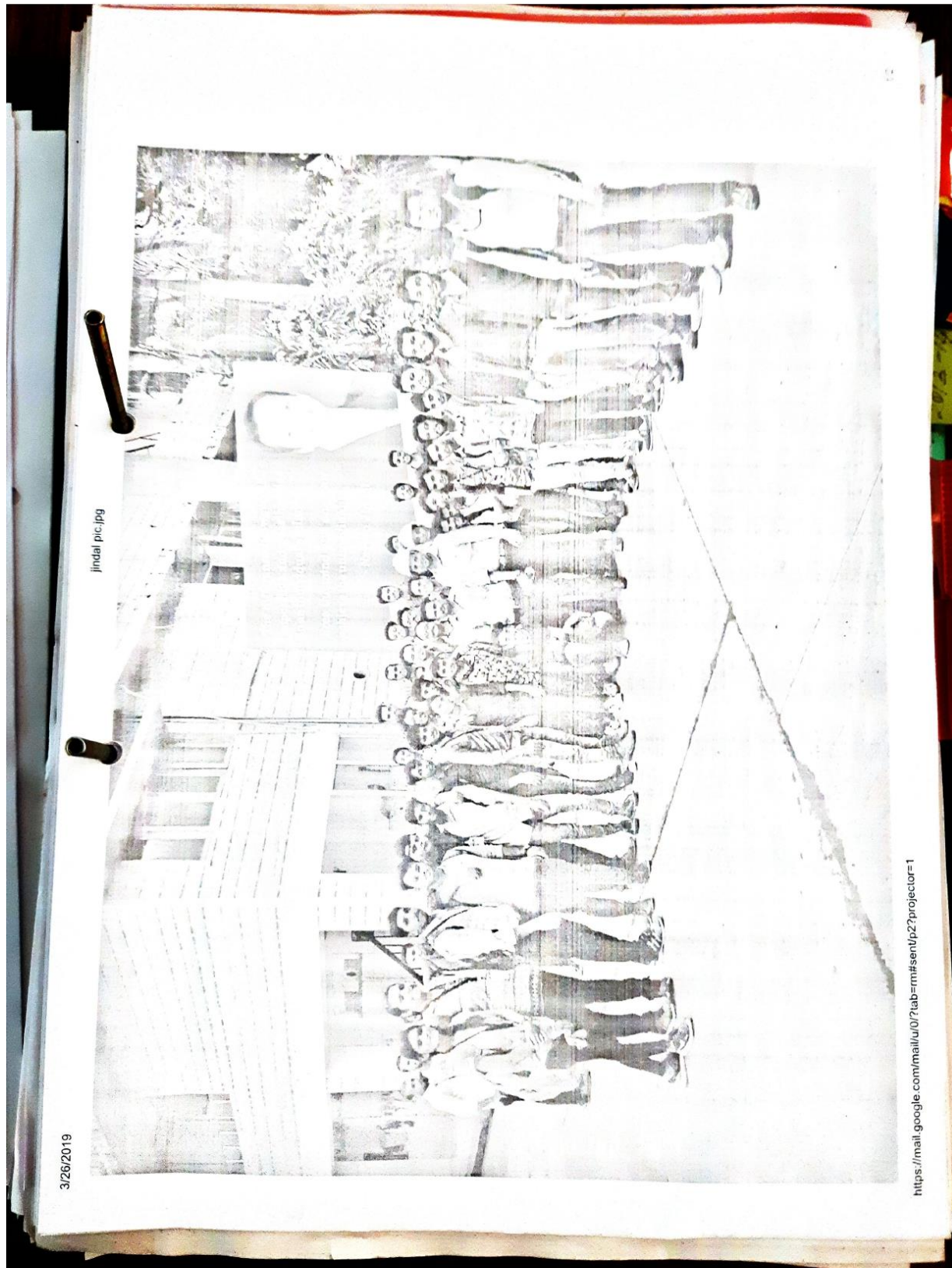
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QIM 2.3.1 Student centric methods



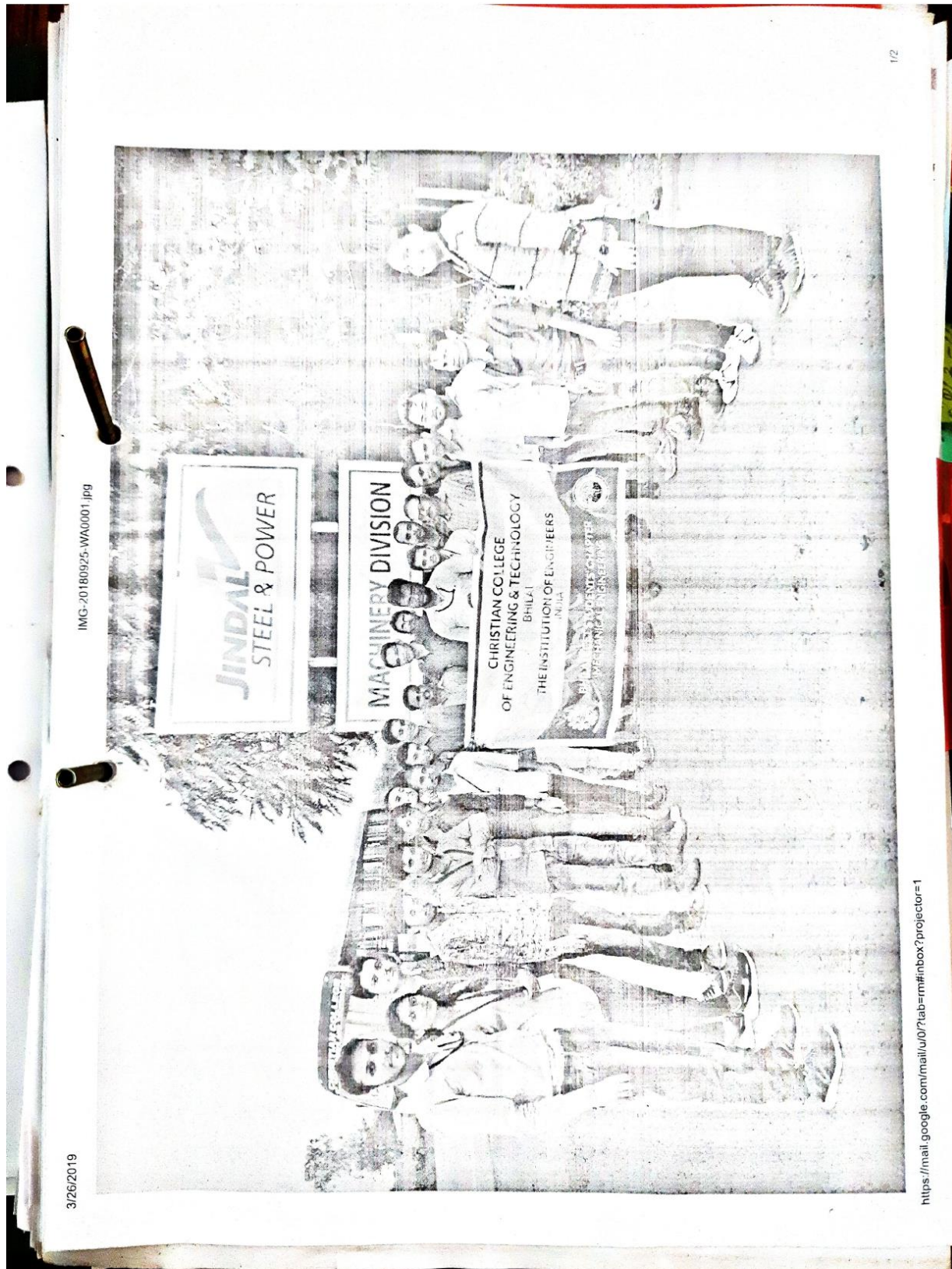
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CRITERION 2

QIM 2.3.1 Student centric methods

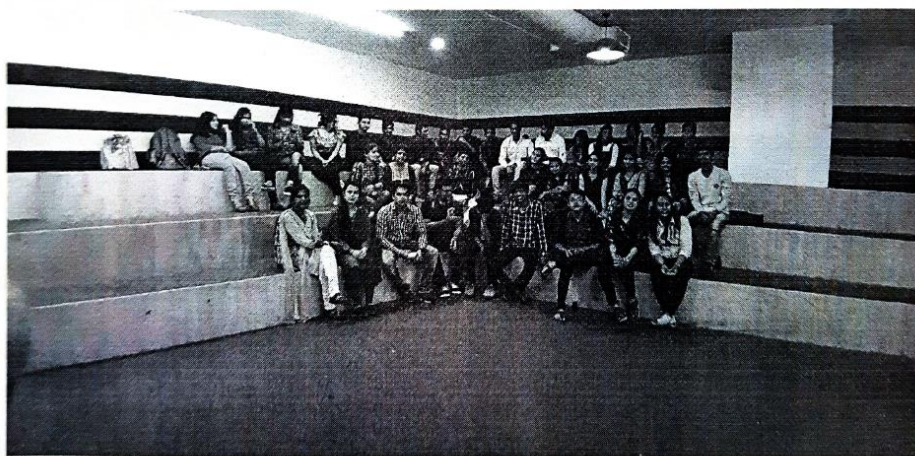


Industrial Visit of CSE students at 36 INC, Raipur

CCET students of 6th semester, Computer Science & Engineering visited 36 INC, Raipur as part of their industrial tour on 20/02/19. The group of students was accompanied by Mr. Ashish Mishal, Mrs. Kajal Verma (Assistant Professor CSE) & Mrs. K .Reena (CSE dept). Students got chance to witness various technological aspects of Fab Lab of 36 INC. Demonstrated working of advanced devices like 3D Scanner, Vinyl Cutter, CNC Router, 3D Printer and Laser Cutter

They came across through various live actions based on the concepts which they used to study in their curriculum, it was a whole day program which included visit to all the departments of 36 INC and demonstration at many departments on how they handle and deal with various situations. Instructor's at Fab Lab commandingly conducted all the demonstration and explained all the concepts very nicely. The visit was quite knowledge awakening and interactive one where all the queries raised by students were nicely answered by the authorities presented.

Students expressed their heartiest thanks to all the authorities at 36 INC. College Management also extends gratitude to 36 INC management team for allowing the students of CCET to their arena and let them aware with the latest happenings going on in the current technological Era.





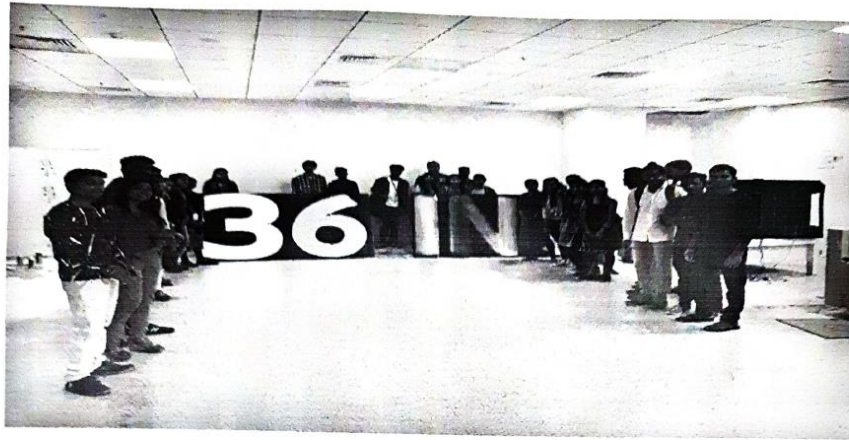
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Dr. Sitendra Tamrakar

H.O.D., CSE, CCET

CRITERION 2

QIM 2.3.1 Student centric methods



**Industrial Visit of CSE and ET&T students at Science City and Energy Park,
Raipur**

CCET students of 4th semester (Computer Science & Engineering and Electronics and Tele Comm) visited Energy Park & Science City, Raipur as part of their industrial tour on 15/02/19. The group of students was accompanied by Mr. Yogesh Tamrakar, Mrs. Neha Soni, Ms. D. Janet (Assistant Professor CSE) & Mr. Jaynath Thakur (E & TC). Students got chance to witness various technological aspects of energy. They came across through various live actions based on the concepts which they used to study in their curriculum, it was a whole day program which included visit to all the departments of Energy Park and demonstration at many departments on how they handle and deal with various situations. Instructor's at Energy Park commandingly conducted all the demonstration and explained all the concepts very nicely. The visit was quite knowledge awakening and interactive one where all the queries raised by students were nicely answered by the authorities presented.

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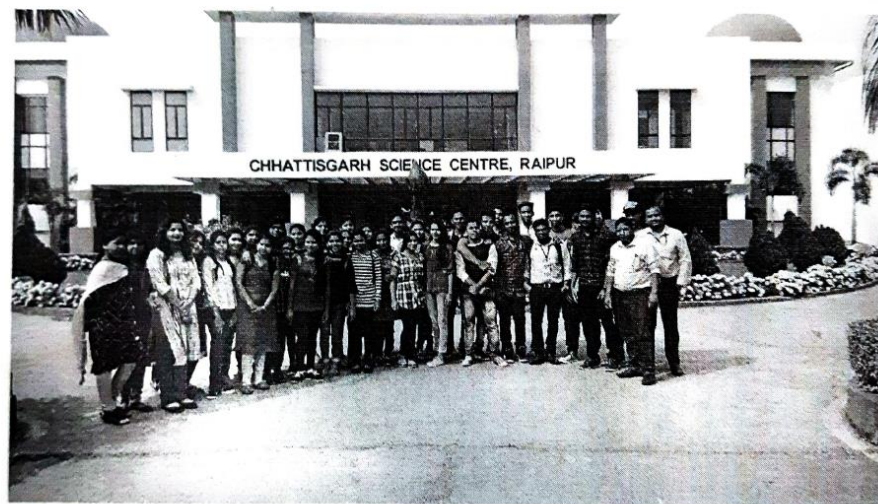
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Dr. Sitendra Tamrakar

H.O.D., CSE, CCET

Criterion 2

QIM 2.3.1 Student centric methods



दादा और नाना-नानी को पुरस्कृत किया गया। सीईओ अरूप मुखोपाध्याय ने सभी बच्चों को सराहा।

कॉलेज के स्टूडेंट्स ने देखा पानी से बिजली उत्पादन

भिलाई (वि.)। क्रिश्चियन कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी के इलेक्ट्रिकल इंजीनियरिंग विभाग के स्टूडेंट छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड के हाइड्रो पावर प्लांट गंगरेल का दौरा किया।

इस औद्योगिक दौरे के पीछे मुख्य उद्देश्य छात्रों को पावर सिस्टम नेटवर्क, जेनरेशन और ट्रांसमिशन उपकरणों के बारे में जागरूक करना था। तीसरे और पांचवें और सातवें वें सेमेस्टर इलेक्ट्रिकल विभाग के छात्रों ने गंगरेल धमतरी में स्थित 10 मेगावाट हाइड्रो पावर जनरेशन किया। इस दौरे का नेतृत्व इलेक्ट्रिकल इंजीनियरिंग विभाग के शिक्षकों ने किया।

पावर सिस्टम नेटवर्क, जेनरेशन व ट्रांसमिशन उपकरणों को जाना

यह विद्युत विभाग पास के राज्य ग्रिड को बिजली की आपूर्ति के लिए जिम्मेदार है। सीएसईबी के सहायक अभियंता एम दानी ने छात्रों को टरबाइन काम करने वाले खंड और रिले अनुभाग को दिखाया नियंत्रण कक्ष के दौरे का मार्गदर्शन कर रहे हुए उन्होंने कहा कि सब स्टेशन के किसी भी हिस्से पर किसी भी गलती को कंट्रोल रूम में बजर-अलार्म द्वारा इंगित कि जाएगा। संस्था के कार्यकारी उपाध्य फादर जॉर्ज, सी वर्गीस और प्रिंसिपल डॉ दीपाली सोरेन ने छात्रों को सराहा।



छत्तीसगढ़ बिजली कंपनी के गंगरेल डेम धमतरी स्थित हाइड्रो पावर प्लांट पहुंचे स्टूडेंट

च रहे देशभर से लोग
हो जायेगी



गर्ल्स कॉलेज में 'कविता पोस्टर प्रदर्शनी'

दुर्ग (वि.)। शासकीय पाठन कन्या स्नातकोत्तर महाविद्यालय दुर्ग में हिन्दी दिवस के अवसर पर 'कविता पोस्टर प्रदर्शनी' का आयोजन किया गया। छात्राओं ने स्वरचित एवं प्रख्यात हिन्दी कवियों की कविताओं को पोस्टर के माध्यम से प्रदर्शित किया। मिर्जापुर मण्डल ने प्रदर्शनी का अवलोकन किया।



कार्यक्रम
सभागार
प्रयोजित
के 21वें
म का
वेयरमेन
परिक्टर
शमुख,
अनुराग
स्थीयुट
परिक्टर
ने मां
क्ष पुष्प
त कर

सृजन
ने तीज
कलाश नगर
ख्य अतिथि
शशि सिंह
तिमिति की
। समारोह
खेलकूट

व अन्य गतिविधियां रखी गई।
विजेताओं को पुरस्कृत भी किया
गया। कार्यक्रम में महिलाओं ने तीज
कवीन बनने परंपरिक नृत्य, वेशभूषा,
सवाल-जवाब के राउंड में हिस्सा
लिया। मोनिका विश्वकर्मा को तीज
कवीन का खिताब दिया गया। फर्स्ट
रनरअप वंदना विश्वकर्मा एवं सेकंड

रनरअप नीलम शर्मा थी। मंच
संचालन रेनु विश्वकर्मा ने किया। इस
अवसर पर रीता शर्मा, रेनु विश्वकर्मा,
आरती शर्मा, रेखा शर्मा, सुचित्रा
शर्मा, रीना विश्वकर्मा, सुनीता शर्मा,
अनीता विश्वकर्मा, संगीता
विश्वकर्मा सहित सृजन महिला
समिति की सदस्य मौजूद थी।

व्याख्याता के
रूप में कोरबा
जिला पंचायत में सम्मानित किया
गया। उन्हें झाल, श्रीफल और
प्रशस्ति पत्र भेंटकर सम्मानित किया
गया। यह सम्मान उन्हें कोरबा के
डीडी सतीश कुमार पांडेय ने दिया।
भायलक्ष्मी साहित्यकार डॉ
राघवेन्द्र कुमार राज की पुत्री हैं।
राजिम, मीना, चित्ररेखा, अंजली,
नीता, कल्पना, महेंद्र, उमाशंकर,
अयोध्या, भोज, लक्ष्मीकांत,
दिव्यदेव, अभिषेक मोक्ष, आदित्य,
भूमिका ने भायलक्ष्मी की इस
उपलब्धि की सराहना की है।

क्रिश्चियन कॉलेज ने अपने छात्रों के लिए किया हाइड्रो पावर प्लांट में इंडस्ट्रियल विजिट

भिलाई @ पत्रिका • क्रिश्चियन
कॉलेज ऑफ इंजीनियरिंग एंड
टेक्नोलॉजी के इलेक्ट्रिकल
इंजीनियरिंग विभाग के छात्रों ने
टीईक्यूआईपी-3 द्वारा प्रायोजित
छत्तीसगढ़ स्टेट पावर जनरेशन
कंपनी लिमिटेड (सीएसपीजीसीएल)
हाइड्रो पावर प्लांट गंगरेल का दौरा
किया।

इस औद्योगिक दौरे के पीछे मुख्य
उद्देश्य छात्रों को पावर सिस्टम
नेटवर्क, जनरेशन और ट्रांसमिशन
उपकरणों के बारे में जागरूक करना



था। 5वें और 7वें सेमेस्टर
इलेक्ट्रिकल विभाग के छात्रों ने
गंगरेल धमतरी में स्थित 10 एमडब्ल्यू
हाइड्रो पावर जनरेशन का दौरा किया,
इस दौरे का नेतृत्व इलेक्ट्रिकल
इंजीनियरिंग विभाग के शिक्षकों ने

किया। यह विद्युत विभाग पास के
राज्य ग्रिड को बिजली की आपूर्ति के
लिए जिम्मेदार है। सीएसईवी के
सहायक अभियंता एम दानी ने छात्रों
को टर्बाइन काम करने वाले खंड और
रिले अनुभाग को दिखाया।

भिर
हाय
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201
कार्य
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में सा



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If You Aim High, We Provide The Means

का निर्मित रूप जिसे हम इतिहास के नाम से जानते हैं, उससे बात की जाती है, किम के अध्यक्ष प्राचार्य डॉ. हंसा

डॉ. नीलम गांधी विभागाध्यक्ष वाणिज्य व धन्यवाद ज्ञापन डॉ. सुनीता वर्मा विभागाध्यक्ष हिन्दी ने दिया।

17 वर्ष बालक टीम में सहूल मिश्रा, राज बहादुर, लक्ष्मी खेतार, वाय

चेतन लाल, शशांक चौधरी, अलक्षय चौधरी शामिल हैं। 17 वर्ष बालक वर्ग में करण वर्मा, वैभव बोहरा, उत्कर्ष

राजनारायण, उज्ज्वल लक्ष्मण साहू, वैदिका शर्मा, कान्हा कार्वा, आर्या

विहारी, आदिति सोना शामिल हैं- 19 वर्ष बालिका वर्ग में साक्षी सावा, हरीता

वीणा साहू शामिल हैं।

विभाजन ने हुआ छात्रों ने किया हाइड्रो पॉवर प्लांट का विजिट



नवी पुर्जों को इस सफलता पर श्रुत किया, ईईई बाबा के गाथाक्ष डॉ. नवीन गोयल ने यक्त करते हुए इसका श्रेय T को महानत एवं अपने गियों को दिया है, प्रतिभा के पर आईपी मिश्रा चेयरमैन जी एजुकेशनल सोसाइटी, मेमश्रा प्रेसीडेंट एवं

मिलानेनगर, क्रिश्चियन कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी के इलेक्ट्रिकल इंजीनियरिंग विभाग के छात्रों ने हाइड्रोआईपी-3 द्वारा प्रायोजित छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड

जागरूक करना था, 9 सितंबर 2019 को तीसरे और 5 वें और 7 वें सेमिस्टर इलेक्ट्रिकल विभाग के छात्रों ने गंगरेल धमरी में स्थित 10 एमडब्ल्यू हाइड्रो पावर जनरेशन का दौरा किया, इस दौरे का नेतृत्व इलेक्ट्रिकल इंजीनियरिंग विभाग के शिक्षकों ने किया।

यह विद्युत विभाग पास के राज्य ग्रिड को विजली की आपूर्ति के लिए और प्रसिद्ध है, सीएसईवी के सहायक छात्रों को शुभकामनाएं दी

अभिषेक एम. दानी ने छात्रों को टर्बाइन काम करने वाले खंड और मिले अनुभाग का दिखाया, नियंत्रण कक्ष के दौरे का मार्गदर्शन करते हुए उन्होंने कहा कि सवस्टेशन के किसी भी हिस्से पर किसी भी गलती को कंट्रोल रूम में बजर अलार्म द्वारा इंगित किया जाता है, कार्यकारी

उपाध्यक्ष फादर जॉर्ज सी. वर्गीस और प्रिंसिपल, डॉ. दीपाली सोरेन ने छात्रों को शुभकामनाएं दी

ग, मिलानेनगर, क्रिश्चियन कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी के इलेक्ट्रिकल इंजीनियरिंग विभाग के छात्रों ने हाइड्रोआईपी-3 द्वारा प्रायोजित छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड

सीएसपीसीएल हाइड्रो पावर प्लांट गंगरेल का दौरा किया, इस औद्योगिक दौरे के पीछे मुख्य उद्देश्य छात्रों को पावर सिस्टम गैटवर्क, जनरेशन और ट्रांसमिशन-उपकरणों के बारे में

जागरूक करना था, 9 सितंबर 2019 को तीसरे और 5 वें और 7 वें सेमिस्टर इलेक्ट्रिकल विभाग के छात्रों ने गंगरेल धमरी में स्थित 10 एमडब्ल्यू हाइड्रो पावर जनरेशन का दौरा किया, इस दौरे का नेतृत्व इलेक्ट्रिकल इंजीनियरिंग विभाग के शिक्षकों ने किया।

यह विद्युत विभाग पास के राज्य ग्रिड को विजली की आपूर्ति के लिए और प्रसिद्ध है, सीएसईवी के सहायक छात्रों को शुभकामनाएं दी

अभिषेक एम. दानी ने छात्रों को टर्बाइन काम करने वाले खंड और मिले अनुभाग का दिखाया, नियंत्रण कक्ष के दौरे का मार्गदर्शन करते हुए उन्होंने कहा कि सवस्टेशन के किसी भी हिस्से पर किसी भी गलती को कंट्रोल रूम में बजर अलार्म द्वारा इंगित किया जाता है, कार्यकारी

उपाध्यक्ष फादर जॉर्ज सी. वर्गीस और प्रिंसिपल, डॉ. दीपाली सोरेन ने छात्रों को शुभकामनाएं दी

मनाया गया स्वच्छता पखवाड़ा, स्कूली बच्चों ने पढ़ा स्वच्छता का पाठ

नहाप्रबंधक बिश्वरूप दास ने किया विशिष्ट कृषि वितीय पोषण प्रकोष्ठ का उद्घाटन



भिलाईनगर, बैंक ऑफ बाईरो के महाप्रबंधक, मुख्य समन्वयक बिश्वरूप दास एक दिवसीय दूर प्रवास पर रहे, इस दौरान श्री दास ने बैंक ऑफ बाईरो के संस्थापक महाराजा स्याजीराव गालकवाड के चित्र पर माल्यार्पण एवं दीप प्रज्वलन का कार्यक्रम का शुभारंभ की, इस अवसर पर उन्होंने क्षेत्रीय कार्यालय में फंड एवं एग्री

समन्वयों ग्रुप के स्वीकृति पर त्वरित कार्रवाही हेतु गठित विशिष्ट कृषि वितीय पोषण प्रकोष्ठ (एस.ए.एफ.सी.) का उद्घाटन किया, छत्तीसगढ़ एक कृषि प्रधान राज्य है वहां कृषि आधारित इंस्टीट्यूट जैसे आईस मिल, डेयरी, दाल मिल आदि जैसी से विकास कर रही है, इसके चलते मिछले कुछ सालों में इन उद्योगों में ग्रुप को मग भी बढ़ी है, उक्त परिप्रेक्ष्य में विशेष रूप से 25 लाख से अधिक के कृषि आधारित ग्रुप के लिए समर्पित विशिष्ट कृषि वितीय पोषण प्रकोष्ठ किसानों के त्वरित ग्रुप स्वीकृति में सहायक होगी, दूर क्षेत्र में उक्त प्रकोष्ठ के खुलने से अब उद्यमी एवं किसान सहजता से फंड एवं नॉन फंड वेस्ट ग्रुप प्राप्त कर सकेंगे, कार्यक्रम में क्षेत्रीय प्रमुख डॉ. आर. के. मोहंती, उपक्षेत्रीय प्रमुख अरविन्द काटकर एवं प्रदीप कुमार यादव

जिससे अपडेट होना आवश्यक है। विषय की ओर मार्गदर्शन किया और अपने अनुभव बताए।

इंजीनियरिंग छात्रों ने किया हाइड्रो पावर प्लांट का इंडस्ट्रियल विजिट, जाना पावर सिस्टम का नेटवर्क

सिटी रिपोर्टर | भिलाई

क्रिश्चियन कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी के इलेक्ट्रिकल इंजीनियरिंग विभाग के छात्रों ने छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड, हाइड्रो पावर प्लांट गंगरेल का दौरा किया। इसका मुख्य उद्देश्य छात्रों को पावर सिस्टम नेटवर्क, जनरेशन और ट्रांसमिशन उपकरणों के बारे में जागरूक करना था।

तीसरे, 5वें और 7 वें सेमेस्टर इलेक्ट्रिकल विभाग के छात्रों ने गंगरेल धमतरी में स्थित 10 MW



छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड गंगरेल का दौरा किया।

हाइड्रो पावर जनरेशन को देखा। इस दौरे का नेतृत्व इलेक्ट्रिकल इंजीनियरिंग विभाग के शिक्षकों ने किया। सीएसईबी के सहायक अभियंता एम दानी ने छात्रों को

टर्बाइन काम करने वाले खंड और रिले अनुभाग को दिखाया। कार्यकारी उपाध्यक्ष, फादरजॉर्ज सी, वर्गीस और प्रिंसिपल, डॉ. दीपाली सोरेन ने छात्रों को प्रेरित किया।

Criterion 2

QIM 2.3.1 Student centric methods



इंजीनियरिंग छात्रों ने किया हाइड्रो पावर प्लांट का इंडस्ट्रियल विजिट, जाना पावर सिस्टम का नेटवर्क सिटी रिपोर्ट | भिलाई

कैशियन कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी के इलेक्ट्रिकल इंजीनियरिंग विभाग के छात्रों ने छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड, हाइड्रो पावर प्लांट गंगरेल का दौरा किया। इसका मुख्य उद्देश्य छात्रों को पावर सिस्टम नेटवर्क, जनरेशन और ट्रांसमिशन उपकरणों के बारे में जागरूक करना था। तीसरे, डब्ल्यू और 7 वें सेमेस्टर इलेक्ट्रिकल विभाग के छात्रों ने गंगरेल धमतरी में स्थित 10 MW हाइड्रो पावर जनरेशन को देखा। टर्बाइन काम करने वाले खंड इस दौर का नेतृत्व इलेक्ट्रिकल और रिले अनुभाग को दिखाया। इंजीनियरिंग विभाग के शिक्षकों कार्यकारी उपाध्यक्ष, फादर जॉर्ज सी, ने किया। सीएसईवी के सहायक वर्गीस और प्रिंसिपल, डॉ. दीपावती अभियंता एम दानी ने छात्रों को सोने ने छात्रों को प्रेरित किया।

हाइड्रो पावर जनरेशन को देखा। टर्बाइन काम करने वाले खंड इस दौर का नेतृत्व इलेक्ट्रिकल और रिले अनुभाग को दिखाया। इंजीनियरिंग विभाग के शिक्षकों कार्यकारी उपाध्यक्ष, फादर जॉर्ज सी, ने किया। सीएसईवी के सहायक वर्गीस और प्रिंसिपल, डॉ. दीपावती अभियंता एम दानी ने छात्रों को सोने ने छात्रों को प्रेरित किया।

छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड गंगरेल का दौरा किया।

इसरो के इंटरनेशनल प्रोग्राम में प्रतिभा का हुआ वयन

भिलाई श्री शंकराचार्य टेक्निकल कैम्पस में इलेक्ट्रिकल एंड इलेक्ट्रॉनिक्स इंजीनियरिंग ब्रांच की छात्रा प्रतिभा साहू का चयन इसरो के ग्रेजुएट इंटरशिप प्रोग्राम में हुआ है। प्रतिभा साहू इंद्र ब्रांच से होनास में उत्तीर्ण हुई है। प्रतिभा इसरो के चयन को लेकर काफी उत्साहित है। प्रतिभा के पिता जीडी साहू सरकारी बैंक राजनांदगांव में कार्यरत है। इंद्र ब्रांच के विभागाध्यक्ष डॉ. नवीन गोयल ने हर्ष व्यक्त करते हुए इसका श्रेय प्रतिभा की मेहनत एवं अपने सहयोगियों को दिया। चयन पर संस्था के चैयरमैन आईएम मिश्रा, प्रिंसिपल जय मिश्रा, डायरेक्टर डॉ. पीवी देशमुख ने हर्ष व्यक्त किया है।

गर्भस मौर्य का चयन प्रतिभा साहू सरकारी बैंक राजनांदगांव में कार्यरत है। इंद्र ब्रांच के विभागाध्यक्ष डॉ. नवीन गोयल ने हर्ष व्यक्त करते हुए इसका श्रेय प्रतिभा की मेहनत एवं अपने सहयोगियों को दिया। चयन पर संस्था के चैयरमैन आईएम मिश्रा, प्रिंसिपल जय मिश्रा, डायरेक्टर डॉ. पीवी देशमुख ने हर्ष व्यक्त किया है।

Criterion 2

QM 2.3.1 Student centric methods



इंजीनियरिंग छात्रों ने किया हाइड्रो पावर प्लांट का इंडस्ट्रियल विजिट, जाना पावर सिस्टम का नेटवर्क

सिटी रिपोर्टर | भिलाई

क्रिश्चियन कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी के इलेक्ट्रिकल इंजीनियरिंग विभाग के छात्रों ने छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड, हाइड्रो पावर प्लांट गंगरेल का दौरा किया। इसका मुख्य उद्देश्य छात्रों को पावर सिस्टम नेटवर्क, जनरेशन और ट्रांसमिशन उपकरणों के बारे में जागरूक करना था।

तीसरे, 5वें और 7 वें सेमेस्टर इलेक्ट्रिकल विभाग के छात्रों ने गंगरेल धमतरी में स्थित 10 MW



छत्तीसगढ़ स्टेट पावर जनरेशन कंपनी लिमिटेड गंगरेल का दौरा किया।

हाइड्रो पावर जनरेशन को देखा। टर्बाइन काम करने वाले खंड इस दौरे का नेतृत्व इलेक्ट्रिकल इंजीनियरिंग विभाग के शिक्षकों ने किया। सीएसईबी के सहायक अभियंता एम दानी ने छात्रों को

Criterion 2



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CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY

Managed By St. Thomas Mission, Bhilai

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SAMPLE INTERNSHIP CERTIFICATES

Criterion 2

QIM 2.3.1 Student centric methods



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" R.S "

Mobile : +917000430754

SWASTI ENGINEERING WORKS

Machining ,Electrical, Fabrication & Job Works

(Indraprast Nagar Industrial Estate Bhilai (C.G))

Ref No . SW / EW / 2023013

Date . 22 / 09 / 2023

CERTIFICATE OF VOCATIONAL TRAINING

This is to certify that Miss. Nikita Sahu S/o Shri Ashok Sahu
pursuing (4 Sem.) , her B. Tech in Electrical Engineering from Christian College of
Engineering & Technology Kailash Nagar I.E Bhilai ,successfully undergone the vocational
training in Project Base Training Electrical Works Control Department of our Company from
21th Aug. 2023 to 21th Sep. 2023 (30 days Training)

During her nature, we have found that she was very hardworking and sincere.

We wish that she will achieve all the success in her future assignments.

For SWASTI ENGG. WORKS Pvt. Ltd.

(Edaris)

DY. GENERAL MANAGER (WORKS)



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POWER GENERATION TRAINING INSTITUTE

CHHATTISGARH STATE POWER, GENERATION COMPANY LIMITED

KORBA EAST



(A Government of Chhattisgarh Undertaking)
(A Successor Company of CSEB)



CERTIFICATE

SL.No. 702

This is to Certify that Shri/Ku RAGINI RATHORE Son/Daughter of
Shri CHHAT LAL RATHORE Student of C.C.E.T. - BHILAI (CG.)
BRANCH - ELECT. ENGG.
has completed the Vocational Training w.e.f. Date 29.08.2023 to 27.09.2023.
Total Present 30 Days (THIRTY DAYS) 04 WEEKS Days at our Thermal
Power Station Successfully.

Date: 29.09.2023

PLACE : KORBA

CHIEF ENGINEER (TRG)
PGTI, CSPGCL, KORBA EAST

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QIM 2.3.1 Student centric methods



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छत्तीसगढ़ स्टेट पावर डिस्ट्रीब्यूशन कम्पनी लिमिटेड
(छत्तीसगढ़ शासन का एक उपक्रम)
CSPDCL कार्यालय कार्यपालन यंत्री (सं./सं.) संभाग बेमेतरा
CIN: U40108CT2003SG015822
Website: www.cspdcl.co.in Email ID : geom.bemetera@cspc.co.in

क्रमांक / 10-33 / रथा 10 / 2434

बेमेतरा, दिनांक

// प्रमाण पत्र //

14 SEP 2023

प्रमाणित किया जाता है कि कु./हरभजन वघेल पिता श्री नरेश वघेल ने कंपनी के आदेश क्रमांक No/CCT/2023/252-Dt.14.08.2023 के तहत व्यवसायिक प्रशिक्षण (VOCATIONAL TRAINING) दिनांक 21.08.2023 से 10.09.2023 तक इस संभाग में पूर्ण किया।

कार्यपालन यंत्री (संचा/संघा) संभाग
छ.स्टेट पॉ.डि.कं.लिमि.बेमेतरा

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ॐ नमः श्री कृष्ण ॐ

Subject to Durg Jurisdiction



PARAMOUNT SALES

Industrial Electrical & Electronics Solutions
PLOT NO - 99F, INDUSTRIAL ESTATE, BHILAI, (C.G.)
PHONE NO: - 4038132, MOBILE - 94252-92102

E-mail - psalesbhilai@gmail.com

Web - www.paramountbhilai.com

CPRI APPROVED COMPANY :- SHORT CKT CAPACITY 65KA FOR 1 SEC AS PER IS 8623-1 & IP65 PROTECTION AS PER IS 13947-1
GSTIN NO. - 22ALLPP2013Q1ZY A MSME UNIT - PANEL MANUFACTURING SINCE 2004 MSME UAM NO - CG05B0006814

REF. NO. :- PS/23-24/202/R1

DATE :- 18/09/2023

CERTIFICATE OF TRAINING

TO WHOM SO EVER IT MAY CONCERN

THIS IS TO CERTIFY THAT **MR. HIMANSHU SHARMA**, S/O **VISHWAMBHAR NATH SHARMA** HE IS STUDENT OF (5 SEM.) **B. TECH. IN ELECTRICAL ENGINEERING** FROM **CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY** KAILASH NAGAR I E BHILAI. HE IS SUCCESSFULLY UNDERGONE HIS INDUSTRIAL TRAINING PROGRAM ELECTRICAL WORK DEPARTMENT AT OUR ORGANIZATION FOR 3 WEEKS FROM 22/08/2023 TO 12/09/2023.

DURING HIS TRAINING WE HAVE FOUND HIM HARD WORKING AND SINCERE.

WE WISH HIM GOOD LUCK FOR HIS BRIGHT AND PROSPEROUS FUTURE.

FOR PARAMOUNT SALES

RAVIKANT SINHA
MANAGER

PARAMOUNT SALES

Manufacturer of :-
Power Control Center, Motor Control Center, Power Distribution Board, APFC Panel, MLDB, SLDB, DRIVE Panel, Local Control Station, Meter Boxes, Metering Panels, Control Desk, Junction Boxes And Lighting DBs, "EASY GROUND" Chemical Earthing Electrodes.
SERVICING JOBS :-
RETROFITTING OF ANY ACBs & SFUs & PANEL MODIFICATIONS, ACB SERVICING AND ANY TYPE OF ELECTRICAL SOLUTIONS ETC.
PRODUCTS DEAL WITH :-

Supporting



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S K Associates Bhilai

INTERNSHIP CERTIFICATE

This is to certify that

SHIWANI SONWANI

From

CCET Bhilai

Has successfully completed a 1-month
internship program in

Installation of Substation

From 29th Aug to 27th Sept 2023

Ak Singh

A K Singh

Authorized Signatory

Criterion 2

QIM 2.3.1 Student centric methods



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S K Associates Bhilai

INTERNSHIP CERTIFICATE

This is to certify that

SATYAM BHARTI

From

CCET Bhilai

**Has successfully completed a 1-month
internship program in**

Installation of Substation

From 29th Aug to 27th Sept 2023

A K Singh

A K Singh

Authorized Signatory

Criterion 2

QIM 2.3.1 Student centric methods



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Deltiin India Tech Private Limited

Certificate of Internship



This internship program certificate is awarded to

G Ramu

For his/her completion of the internship program at Deltiin India Tech Pvt Ltd from 10th July to 8th August 2023



Dr Arun Patokar
CEO

Deltiin India Tech Private Limited

Certificate of Internship



This internship program certificate is awarded to

Ashish Parsad Arya

For his/her completion of the internship program at Deltiin India Tech Pvt Ltd from 10th July to 8th August 2023



Dr Arun Patokar
CEO

Criterion 2

QIM 2.3.1 Student centric methods



Established in 1998

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Certificate

This is to certify that

SULTANA KHATUN

participated in Industrial Training conducted on

Data Structure With Java

from **10-Jul-2023** to **25-Aug-2023**

He/She has completed the training successfully.

He/She bears a good moral character to the best of my knowledge and belief.

We wish him/her all the success for his / her future
assignment and responsibilities.

Certificate No. :- **10798**


Director
Piyush Jain

Head Office : 106, D Block, Om-Parisar, Durg (C.G.)
Branch Office : B/492, Cross Street-25, Second Floor, Smriti Nagar, Bhilai (C.G.)
website : www.sensible-computers.com, email : piyush.jain@sensible-computers.com



Established in 1998

CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY

Managed By St. Thomas Mission, Bhilai

Approved by AICTE and Affiliated to CSVTU, Bhilai

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Certificate

This is to certify that

SANDEEP SIKDAR

participated in Industrial Training conducted on

Data Structure With Java

from **10-Jul-2023** to **25-Aug-2023**

He/She has completed the training successfully.

He/She bears a good moral character to the best of my knowledge and belief.

We wish him/her all the success for his / her future
assignment and responsibilities.

Certificate No. :- **10796**


Director
Piyush Jain

Head Office : 106, D Block, Om-Parisar, Durg (C.G.)
Branch Office : B/492, Cross Street-25, Second Floor, Smriti Nagar, Bhilai (C.G.)
website : www.sensible-computers.com, email : piyush.jain@sensible-computers.com

Criterion 2

QIM 2.3.1 Student centric methods



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Certificate

This is to certify that

NUTAN

participated in Industrial Training conducted on

HTML, CSS, MYSQL, PHP, JAVA SCRIPT

from **28/07/2023** to **28/08/2023**

He/She has completed the training successfully.

He/She bears a good moral character to the best of my knowledge and belief.

We wish him/her all the success for his / her future
assignment and responsibilities.

Certificate No. :- **10795**


Director
Piyush Jain

Head Office : 106, D Block, Om-Parisar, Durg (C.G.)

Branch Office : B/492, Cross Street-25, Second Floor, Smriti Nagar, Bhilai (C.G.)

website : www.sensible-computers.com, email : piyush.jain@sensible-computers.com



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CERTIFICATE OF EXCELLENCE

THIS CERTIFICATE IS AWARDED TO

SCALER
Topics

Preeti Jangade

In recognition of the completion of the Vocational Training : **Python Course for Beginners With Certification : Mastering the Essentials**

Following are the the learning items, which are covered in this Vocational Training :

121 Video Tutorials 16 Modules 10 Challenges

Start Date : 15.07.2023

End Date : 15.08.2023

Anshuman Singh

Co-founder **SCALER**



Criterion 2

QM 2.3.1 Student centric methods



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Date : 20 September 2023

LOGIXHUNT



Certificate of Completion

This is to certify that **Mr Manash Dewangan** has completed his Vocational Training in **Front-End Web Designing** with **Logixhunt** from **August 2023** to **September 2023** with great enthusiasm and hard work. We believe that his hard work, dedication and enthusiasm will be a great asset to his career going forward. We wish him all the best for his future endeavours.

Co-ordinator

Mr. Harsh Agrawal
Design Team Lead, Logixhunt



Co-ordinator

Mr. Pramod Shukla
C.E.O. & Founder, Logixhunt

Head Office :
Plot No-03, Maitri Kunj, Risal, Bhilai, Chhattisgarh (490006)

Branch Office :
3rd Floor, Brij Tower, Sunadar Nagar, Raipur, Chhattisgarh(492013)

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CERTIFICATE OF INTERNSHIP



THE FOLLOWING AWARD IS GIVEN TO

Poonam

For his/her outstanding completion of the internship program at Redeem Industries, IDA,
Rampur, Warangal, Telangana from 16th August to 31st August 2023.



**Bio-Degradable
Bags**



Mr. P Arun Kumar
Manager



Criterion 2

QIM 2.3.1 Student centric methods



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CERTIFICATE OF INTERNSHIP



THE FOLLOWING AWARD IS GIVEN TO

Amit Sahu

For his/her outstanding completion of the internship program at Redeem Industries, IDA,
Rampur, Warangal, Telangana from 16th August to 31st August 2023.



**Bio-Degradable
Bags**



Mr. P Arun Kumar
Manager



Criterion 2

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- Sub -Station Structures & Line Material Structures
- GI Earthing, Flats / Strips & Earthing Electrodes
- Gratings & Other Fabrication Job as per Drawing & Specification



Ref No. RECPL/2023/09

Date:13/08/2023

CERTIFICATE

This is certify that Mr. Vishnu ram seventh semester student of B.Tech (Electrical engineering) of C.C.E.T. Bhilai collage /institute has undergone project base Training from 17/07/2023 to 12/08/2023 project Report on failure analysis of AC motor's Complete.

His Performance during the training period has been Excellent

Raipur ,
Dated 13/08/2023



Vyas Narayan

Correspondence Address : 11 - A, MAHARSHI DEBENDRA ROAD, 1ST FLOOR, ROOM No.104, KOLKATA - 700007 (W.B)
PHONE : (033) 2274 8472 / 2274 0886, FAX : (033) 2659 0251, E-MAIL : rukmanimva@yahoo.co.in, WEBSITE : www.rukmani.net.in

Works & Registered Office : (UNIT NO.1), VILLAGE - KHARIAL, NEAR MOTHER DAIRY, GATE NO.3, P.O : DANKUNI COAL COMPLEX - 712 310.
DIST. HOOGHLY (W.B), PHONE : (033) 2659 3118, FAX : (033) 2659 0251, E-MAIL : maruthikabra@gmail.com, maruthi@rukmani.net.in

Works : (UNIT NO.2), URLA INDUSTRIAL AREA, URLA SARORA ROAD, (NEAR CSEB SUB. STATION, URLA), RAIPUR - 493 221 (C.G)
PHONE : (0771) 3250889, FAX : (0771) 232 2092, E-MAIL : sushilkabra123@yahoo.co.in CIN - U31901WB1995PTC074797

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“ R.S ”

Mobile : +917000430754

SWASTI ENGINEERING WORKS

Machining ,Electrical, Fabrication & Job Works

(Indraprast Nagar Industrial Estate Bhilai (C.G)

Ref No . SW / EW / 2023005

Date . 30 / 08 / 2023

CERTIFICATE OF VOCATIONAL TRAINING

This is to certify that Mr. Tribhuwan Sahu S/o Shri Narayan Sahu
pursuing (6 Sem.) , his Electrical Engineering of Christian College of Engg. & Technology
Kailash Nagar I.E Bhilai ,successfully undergone the Vocational training in Project Base Training
Electrical Works Control Department of our Company form 15th July 2023 to 29th Aug. 2023
(45 days Training)

During his nature we have found him hard working and sincere.

We wish him all the success in his future assignments.

For SWASTI ENGG. WORKS Pvt. Ltd.



(Edaris)

DY. GENERAL MANAGER (WORKS)

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GSTIN - 22AADCC5773E1ZX

CHHATTISGARH STATE POWER TRANSMISSION CO. LTD.

(A GOVT. OF CHHATTISGARH UNDERTAKING)



O/O EXECUTIVE ENGINEER, SUBSTATION DIVISION BHILAI

BHILAI-3, DISTT. - DURG, CHHATTISGARH, PIN NO. 490021

WEBSITE:- WWW.CSPC.CO.IN, E-MAIL:- EESSTRANS.BHILAI@CSPC.CO.IN, PHONE :- 0788 - 2281283, FAX :- 0788 - 2281283

NO. 10-72/BHL/ 1153

BHILAI DTD: 12/03/23

CERTIFICATE

THIS IS TO CERTIFY THAT MR./MISS VAIBHAV LAKSHMI DUBEY STUDENT OF CHRISTIAN COLLEGE OF ENGINEERING & TECHNOLOGY, BHILAI HAS SUCCESSFULLY COMPLETED HIS/HER VOCATIONAL TRAININGS ON "220/132/33 KV SUBSTATION EQUIPMENTS" IN ACCORDANCE TO ORDER OF O/O ED (HR) CSPTCL RAIPUR ORDER NO. 01-01/ORDER/AM-II/3973, RAIPUR DTD. 31.07.2023 FROM 01.08.2023 TO 31.08.2023 SUB-STATION DIVISION, CHHATTISGARH STATE POWER TRANSMISSION CO. LTD. BHILAI-3.

WE WISH HER A GREAT SUCCESS IN PROFESSIONAL JOURNEY.


Executive Engineer
S/S Dn. CSPTCL Bhilai
EXECUTIVE ENGINEER

SUB-STATION DN. CSPTRANS.CL BHILAI

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ALUMNI INTERACTION

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ALUMNI TALKS

1.

- TOPIC- **STORY OF AN ENTREPRENEUR**
- DATE AND TIME - **25TH NOVEMBER AT 2 pm**
- RESOURCE PERSON - **Mr.SHIJU PLAVILA**
- OBJECTIVES- **TO MOTIVATE STUDENTS TO BECOME AN ENTREPRENEUR**
- COORDINATOR - **Dr. PREETI NANDKUMAR & Ms.RICHA SAHU**
- BRIEF REPORT-

CCET Alumnus shares his journey of becoming Entrepreneur

Institution' Innovation Council Under Startup Cell in association with R&D Cell of Christian College of Engineering and Technology (CCET) BHILAI, organized a talk on the “Story of an Entrepreneur”. Young Entrepreneur Mr.Shiju .P, managing director of ACE VISION METAL AND STEEL WORKS LLC, in Dubai who is an alumnus of Mechanical Engineering Branch of CCET shared his journey of starting his own startup. Shiju.P.Raju is an accomplished and result driven engineering professional with more than 17 years of extensive experience in managing local and international construction projects within time and budgetary constraints. He is equipped with record of success on process improvement, combined and demonstrated abilities in defining innovative solutions and methodologies for safe, cost efficient and smooth project operations. He motivated the students with success mantra to always use your time. Maintain quality in dealing, in character and all the things which we perform. If we succeed every mistake it helps to become legendary. He emphasized to learn from our mistakes. He gave thrust to make goal clear in life and plan accordingly to achieve success.

CCET startup cell organised this expert talk with an objective to create awareness, to explore business opportunities to students of engineering courses by bringing together experts from industries, government agencies in order to provide ideas and information for becoming an

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entrepreneur as an alternative career option and also to highlight the merits of pursuing such an option. It will also explore the possible business opportunities and create all necessary awareness to start a new project on his own or with the help of government procedures. This cell primarily works to support, encourage, and to create platform to new and young entrepreneurs. Program started with the word of blessings from Fr. Dr. P.S.Varghese, Executive Vice Chairman. Dr Dipali Soren, Principal welcomed the CCET alumnus. The program was anchored by Ms Divyani. IIC Startup Cell Faculty Coordinators Dr. Preeti Nand Kumar and Ms.Richa Sahu along with student coordinator organised the session.

- **OUTCOME-** Students felt motivated and determined to start their own startups and they got the proper guidance by the speaker.
- **PHOTO –**



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- POSTER-

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KAILASH NAGAR, INDUSTRIAL ESTATE, BHILAI, C.G. INDIA-490026

3rd OLDEST PRIVATE COLLEGE IN

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(Ministry of HRD Initiative)

CCET

MoE's INNOVATION CELL
(GOVERNMENT OF INDIA)

ACE VISION
STEEL & BUILDING WORKS

MR. SHIJU PLAVILA

Date & Time
25th November
@ 2.00 pm

**Institution's Innovation Council
In Association With R&D Cell
CCET presents A Session On
Story Of An Entrepreneur**

**Institution's Innovation Council
(Startup cell)**

Register Now

Faculty Coordinator:
Dr. Preeti Nand Kumar
Ms. Richa Sahu

Join Us **Google Meet**
<https://meet.google.com/gfp-cxqg-ekw>

Student Coordinator :
Mr. Ashish Saini (CSE)

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A

REPORT ON

RESEARCH METHODOLOGY

DATE AND TIME- 14-07-2023 , 1 PM

RESOURCE PERSON -DR.ACHALA JAIN

OBJECTIVES - To GUIDE AND MOTIVATE

STUDENTS TO ENGAGE IN RESEARCH

ACTIVITIES

COORDINATOR- DR.SHAILENDRA VERMA

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- **REPORT-**

The Guest Lecture on Research Methodology organized for M.Tech students and Research Scholars aimed to provide them with insights into both theoretical and practical aspects of conducting research. The lecture, which spanned a day, was presided over by Prof. Dr. Achala Jain, an esteemed personality currently serving as the Professor of SSTC Bhilai and holding various other eminent positions in her career. Dr. Jain initiated the session on a thought-provoking note, emphasizing that research should be seen as an action, representing the translation of knowledge into practical applications. She instilled a sense of respect and value for the process of research, stressing its potential to contribute significantly to societal development. According to her, a well-conducted research study has the power to address pressing social issues and should be relevant in the context of contemporary challenges. Throughout the lecture, Dr. Jain highlighted the essential attributes and responsibilities of a critical scholar in conducting high-quality research. Scientific fidelity, objectivity, and the ability to edit and refine the research document were among the key characteristics she emphasized. She also emphasized the importance of properly acknowledging the sources from which relevant ideas and information were derived, thus promoting academic integrity and avoiding plagiarism.

To elucidate these concepts, Dr. Jain used relevant and practical illustrations, and examples. This approach helped the students gain a deeper understanding of the discussed concepts and their application in real-world scenarios. By using these practical examples, she made the session engaging and relatable for the audience.

Overall, the Guest Lecture on Research Methodology provided the students pursuing M.Tech and Research Scholars with valuable insights and guidance on conducting research effectively. The session not only focused on theoretical knowledge but also equipped the students with the practical tools and principles necessary to excel in their research endeavors. The lecture by Prof. Dr. Achala Jain left a lasting impact on the attendees, motivating them to approach research with dedication, integrity, and a strong commitment to contributing meaningfully to the advancement of knowledge and society as a whole.

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- OUTCOME-Students got a clear idea about how to conduct their research work.



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ALUMNI MEET 2022

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Alumni meet 2022 conducted

Online Alumni meet was conducted on 23rd July 2022. More than 150 Alumni joined the meeting. Next Alumni Meet (Off line in College Campus) is scheduled on 22nd October 2022. Office bearers were nominated by the college for the session 2022-23 as follows:

President



Mr. Kashish Shukla

Secretary



Mr. Mushtaq Alam

Treasurer



Dr. Achala Jain



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ICT TOOLS

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Classroom Details

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GPS Map Camera

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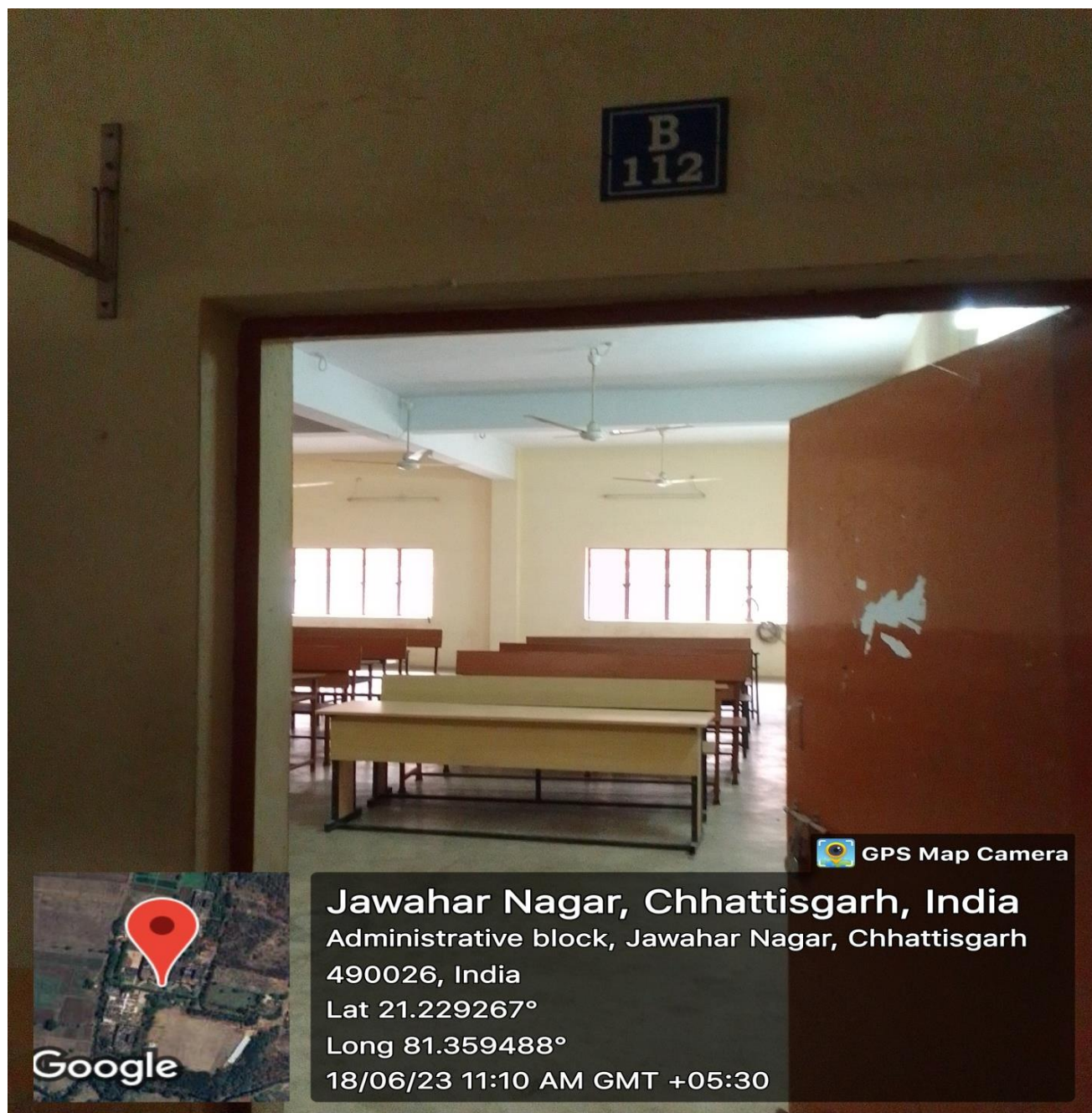
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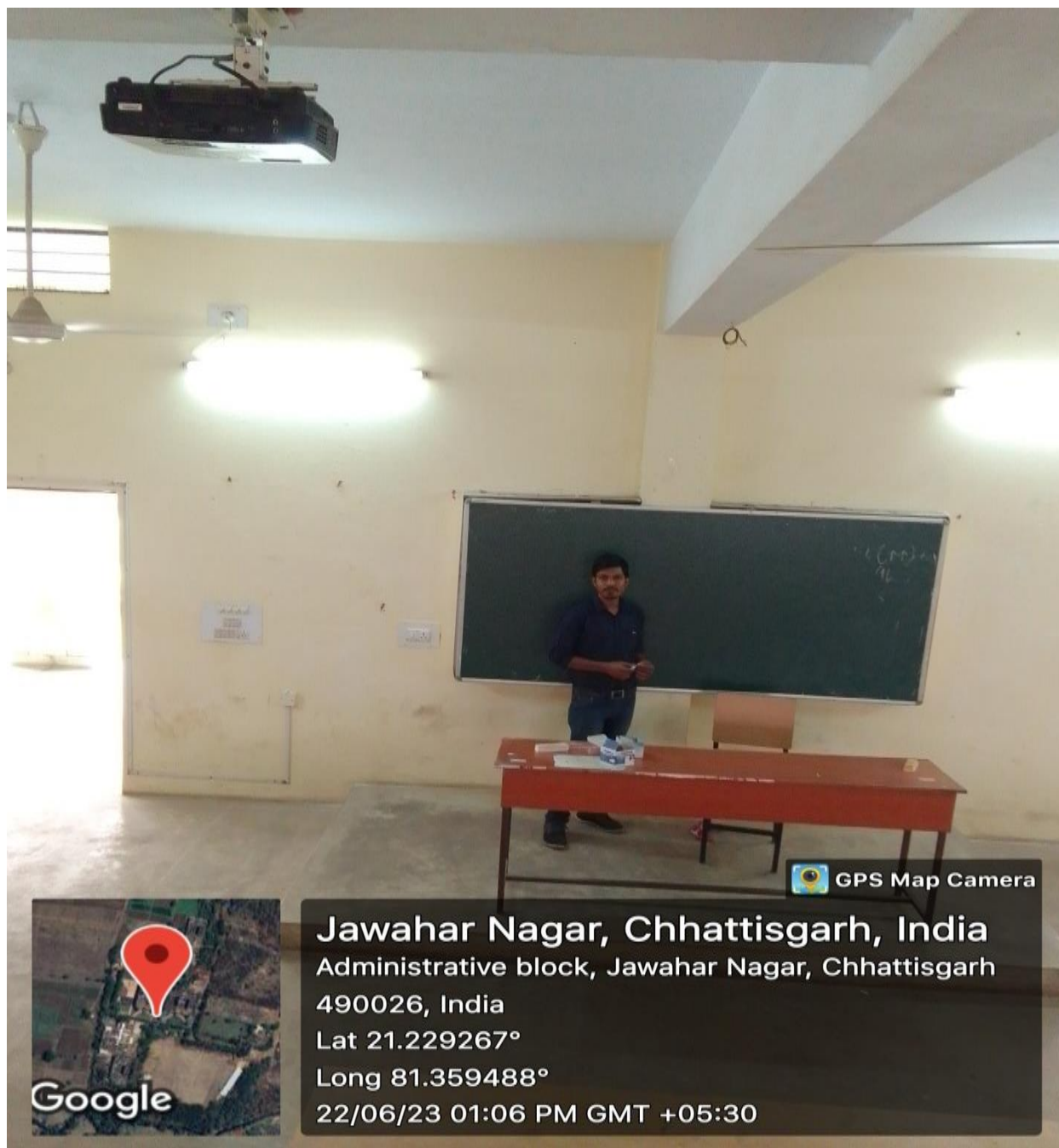
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Room No B-104Mech. 1 Classroom

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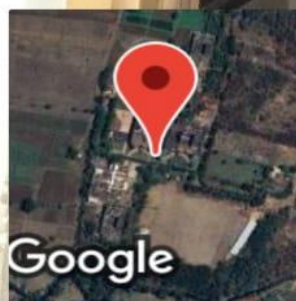
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Room No A- 203 Electrical Classroom

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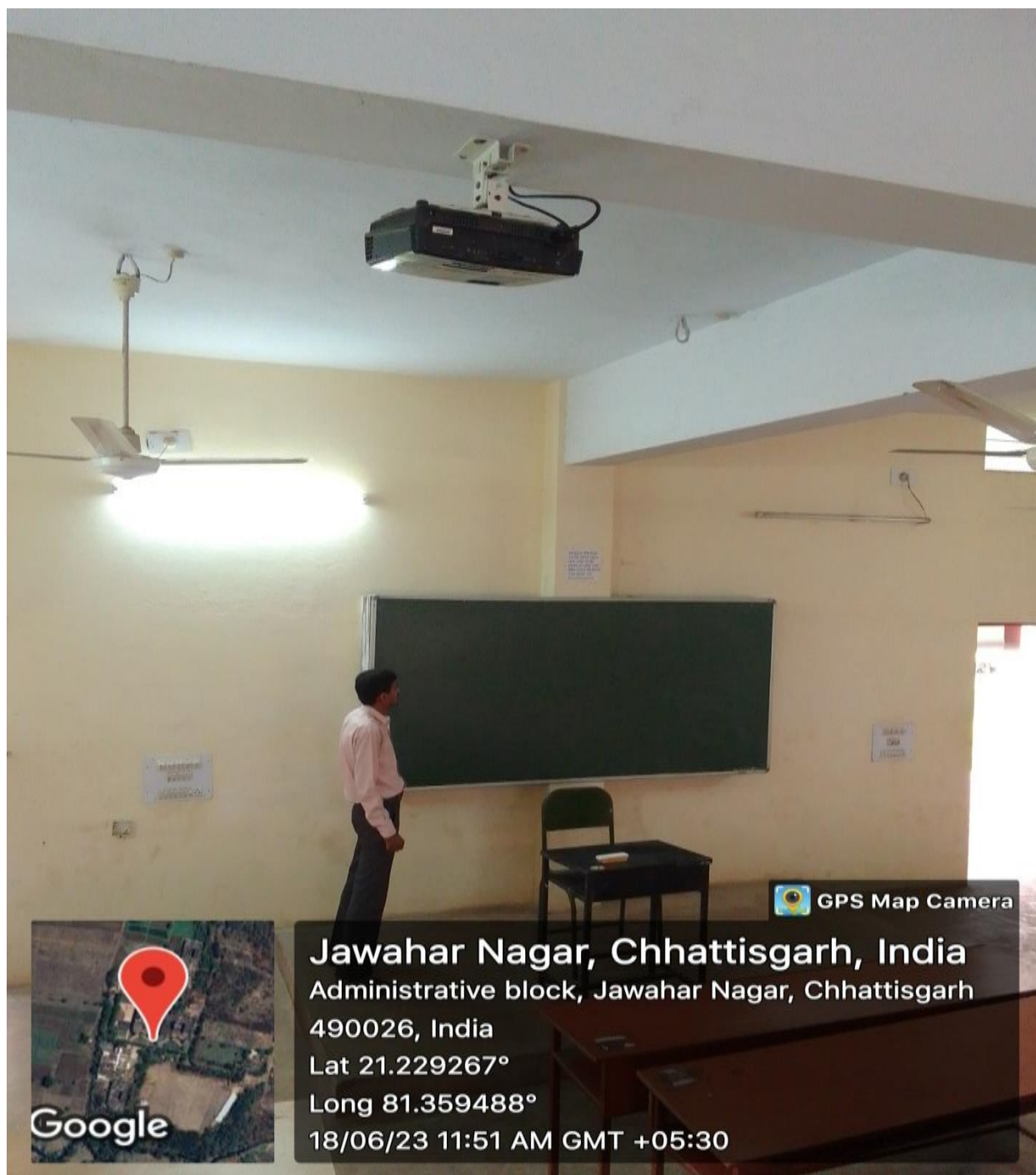
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Room No B-204 CSE Classroom 1

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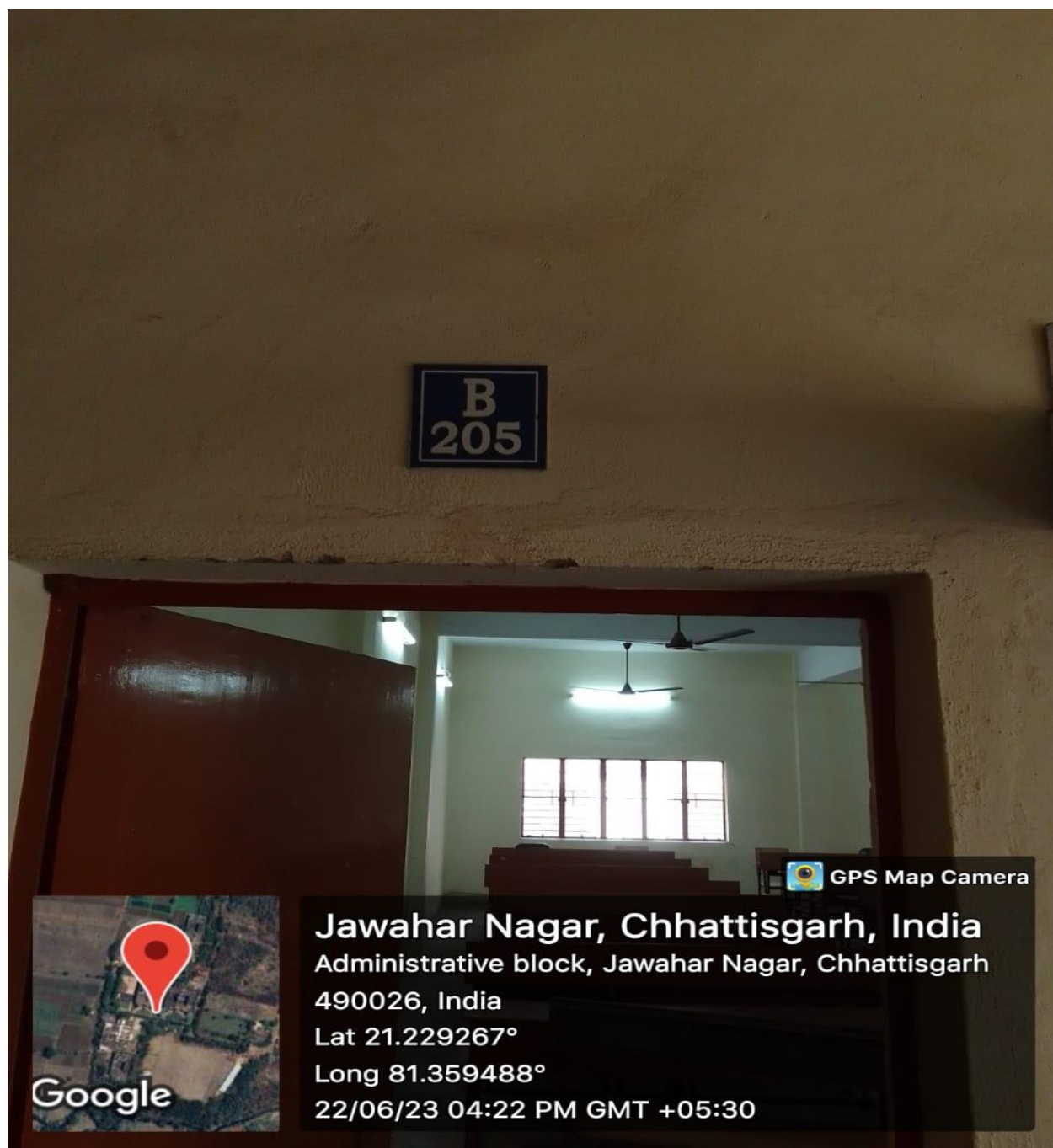
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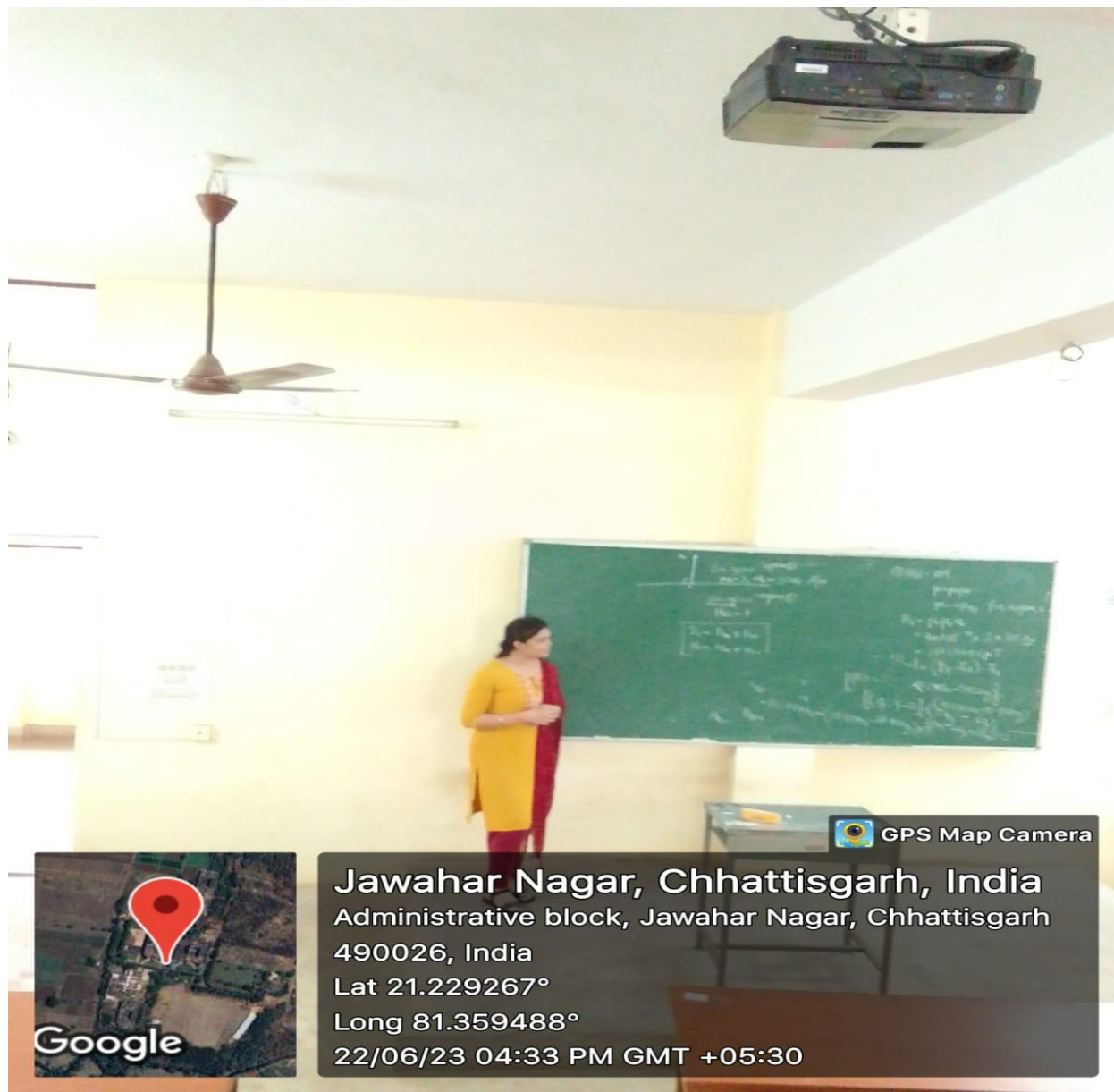
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Room No B- 205 CSE Classroom 2

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Room No B-106Mech 3 Classroom

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Room No B-105 Mech 2 Classroom

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Room No B-114 Electronics 1 Classroom

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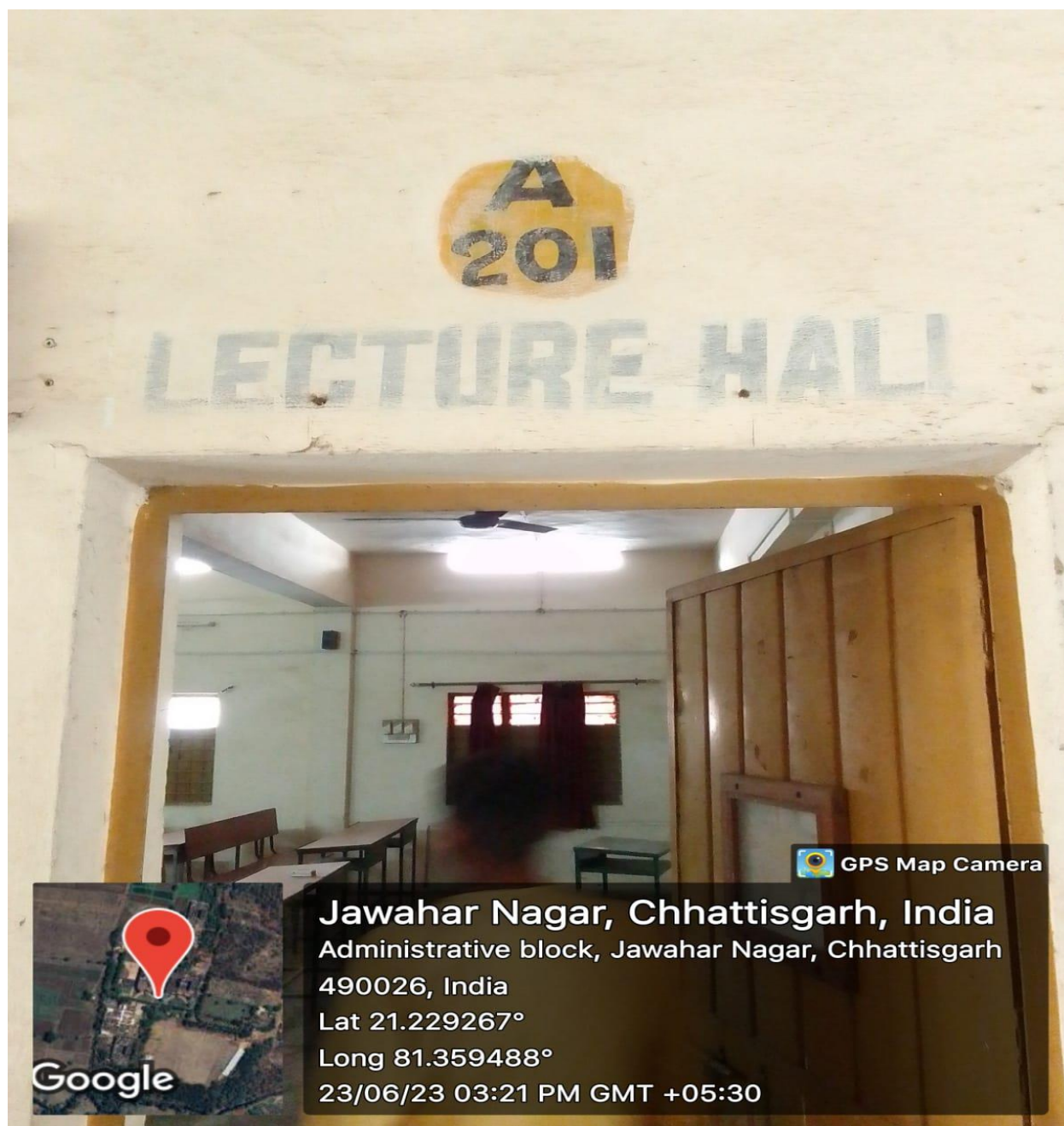
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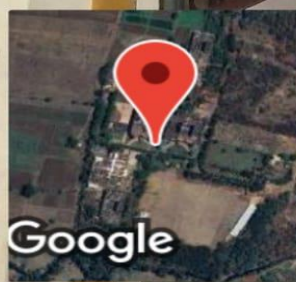
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Room No A- 201 Electrical Classroom

Criterion 2

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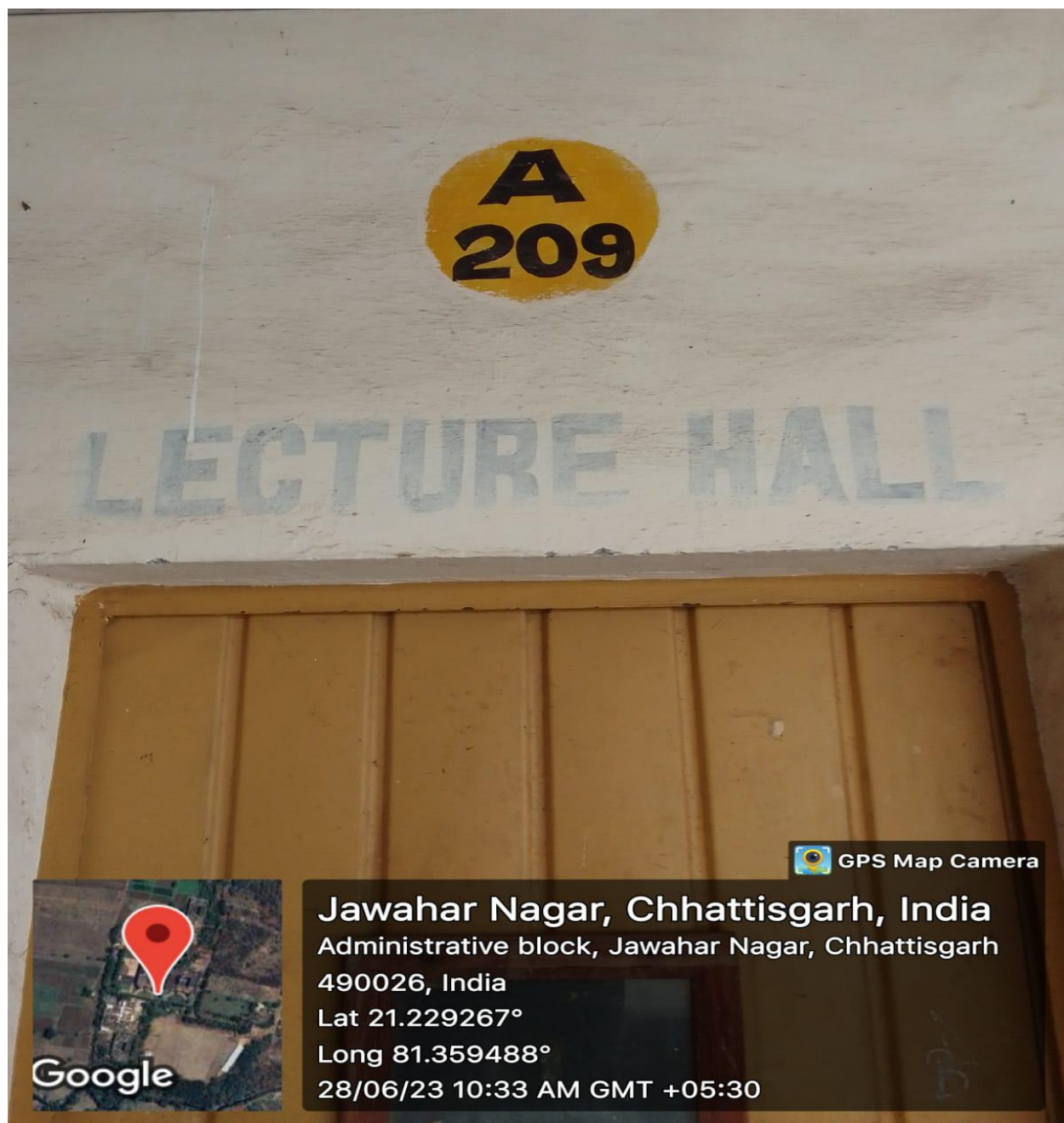
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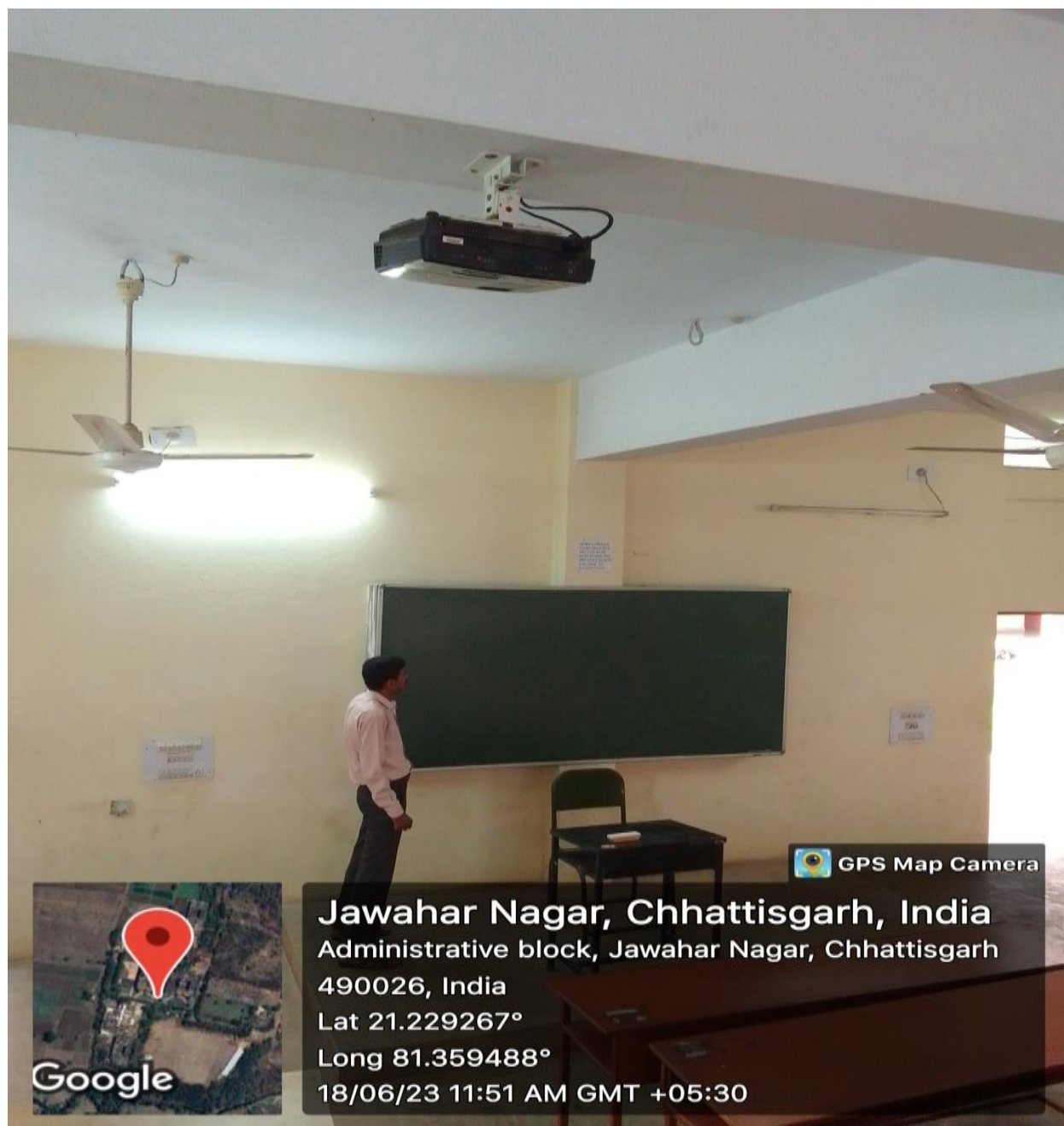
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Room No A- 209 First Year Classroom

Criterion 2

QIM 2.3.1 Student centric methods



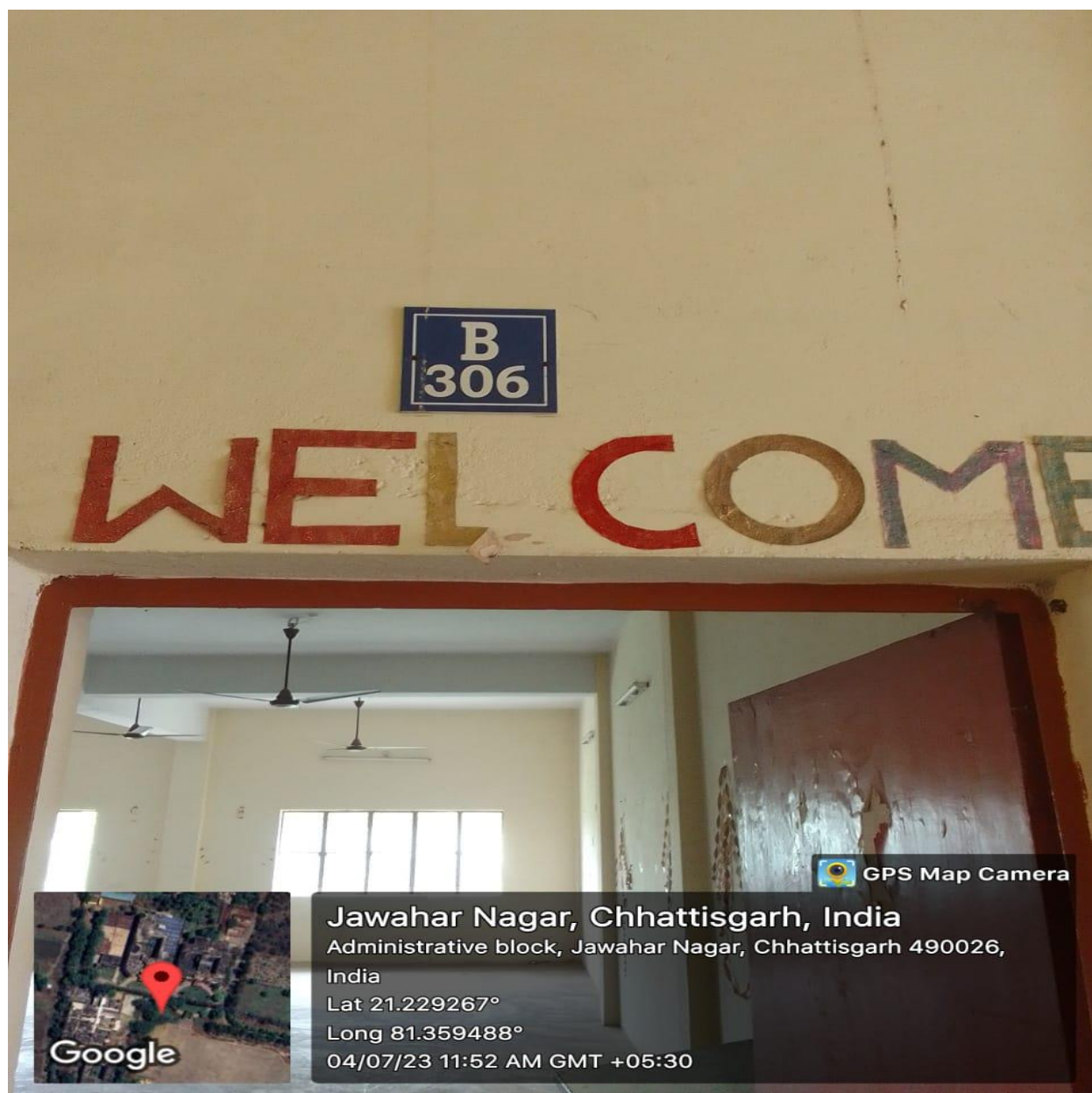
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Room No B-306 ET Tutorial Room

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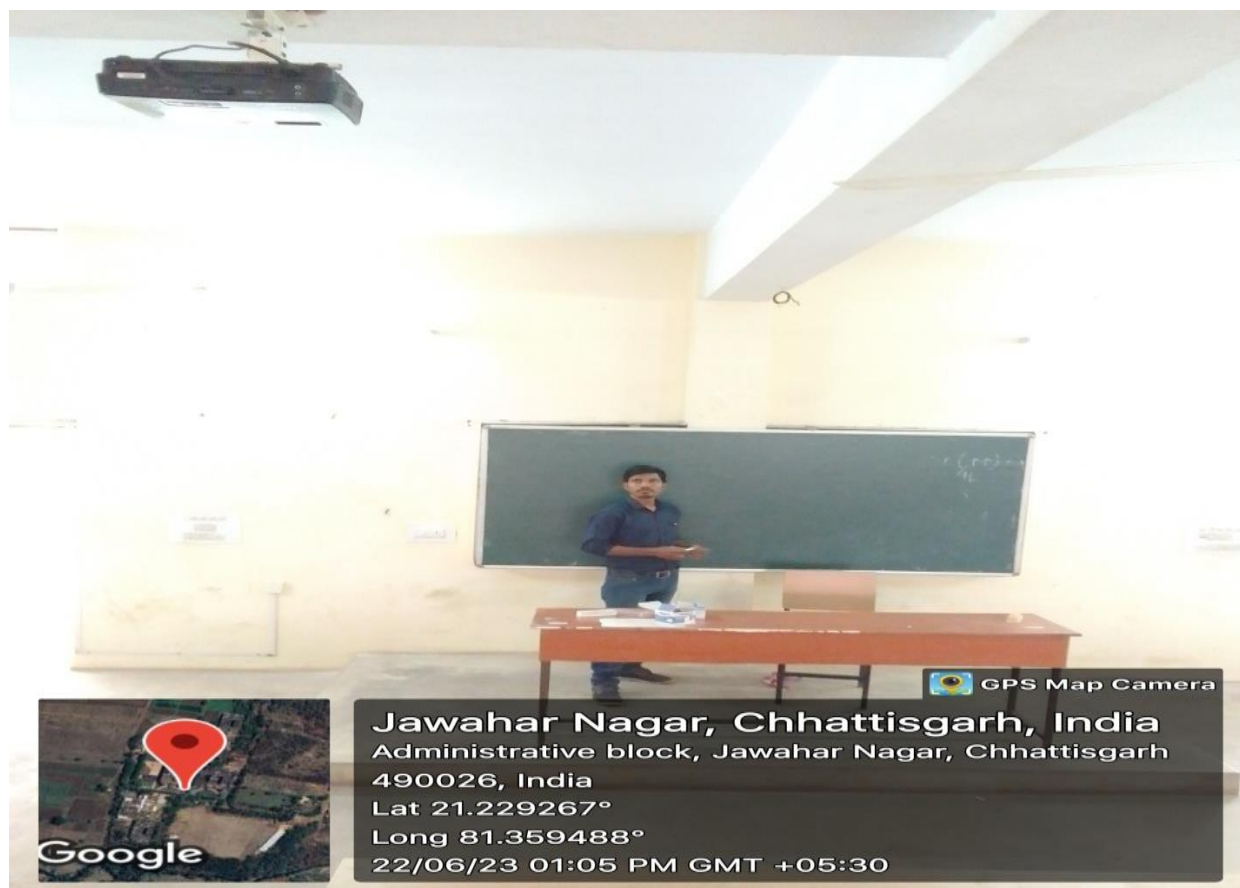
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Room No B-212 Mtec. Nano Classroom

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Criterion 2

QM 2.3.1 Student centric methods



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Room No B-206 CSE Classroom 3

Criterion 2

QM 2.3.1 Student centric methods



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Room No A- 210 First Year Classroom



Criterion 2

QM 2.3.1 Student centric methods



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Room No B-211 Mtech Nano Classroom

Criterion 2

QM 2.3.1 Student centric methods



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Criterion 2

QM 2.3.1 Student centric methods



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Room No B-304 Electronics 2 Classroom



Criterion 2

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Room No A- 211First Year Classroom

Criterion 2

QM 2.3.1 Student centric methods



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Criterion 2

QM 2.3.1 Student centric methods



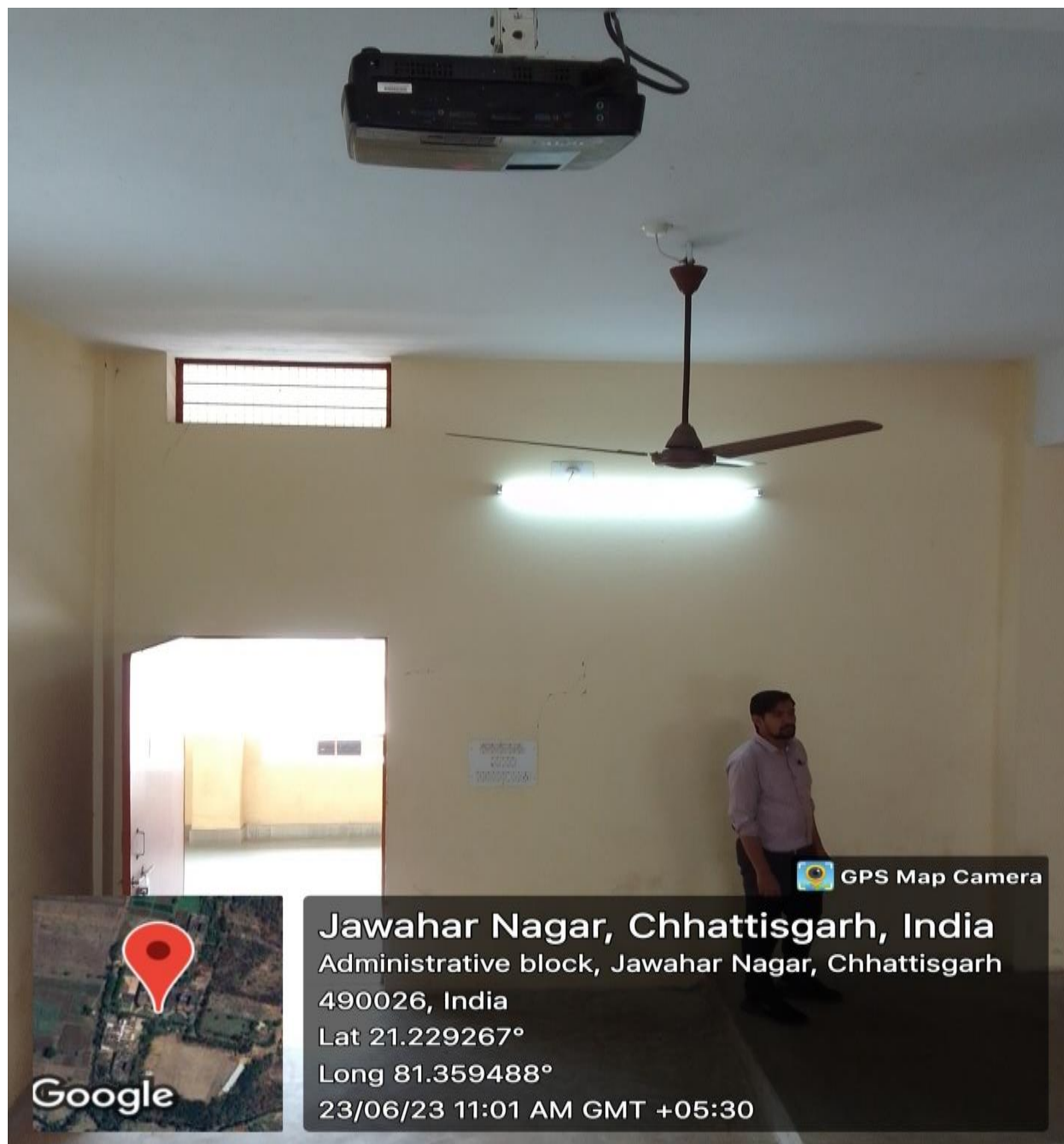
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Room No B-305 Electronics 3 Classroom

Criterion 2

QM 2.3.1 Student centric methods



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Administrative block, Jawahar Nagar, Chhattisgarh

490026, India

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GPS Map Camera

Criterion 2

QM 2.3.1 Student centric methods



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Room No A-204 Electrical Classroom

Criterion 2

QM 2.3.1 Student centric methods



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Criterion 2

QIM 2.3.1 Student centric methods



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Room No A-301 AMtech. High Voltage Classroom

Criterion 2

QM 2.3.1 Student centric methods



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Criterion 2

QM 2.3.1 Student centric methods



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Room No A-301 BMtech. High Voltage Classroom

Criterion 2

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Laboratory Details

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Room No B-214 CSE Lab 5

Criterion 2

QM 2.3.1 Student centric methods



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Criterion 2

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Room No B-214 CSE Lab 6

Criterion 2

QM 2.3.1 Student centric methods



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Criterion 2

QM 2.3.1 Student centric methods



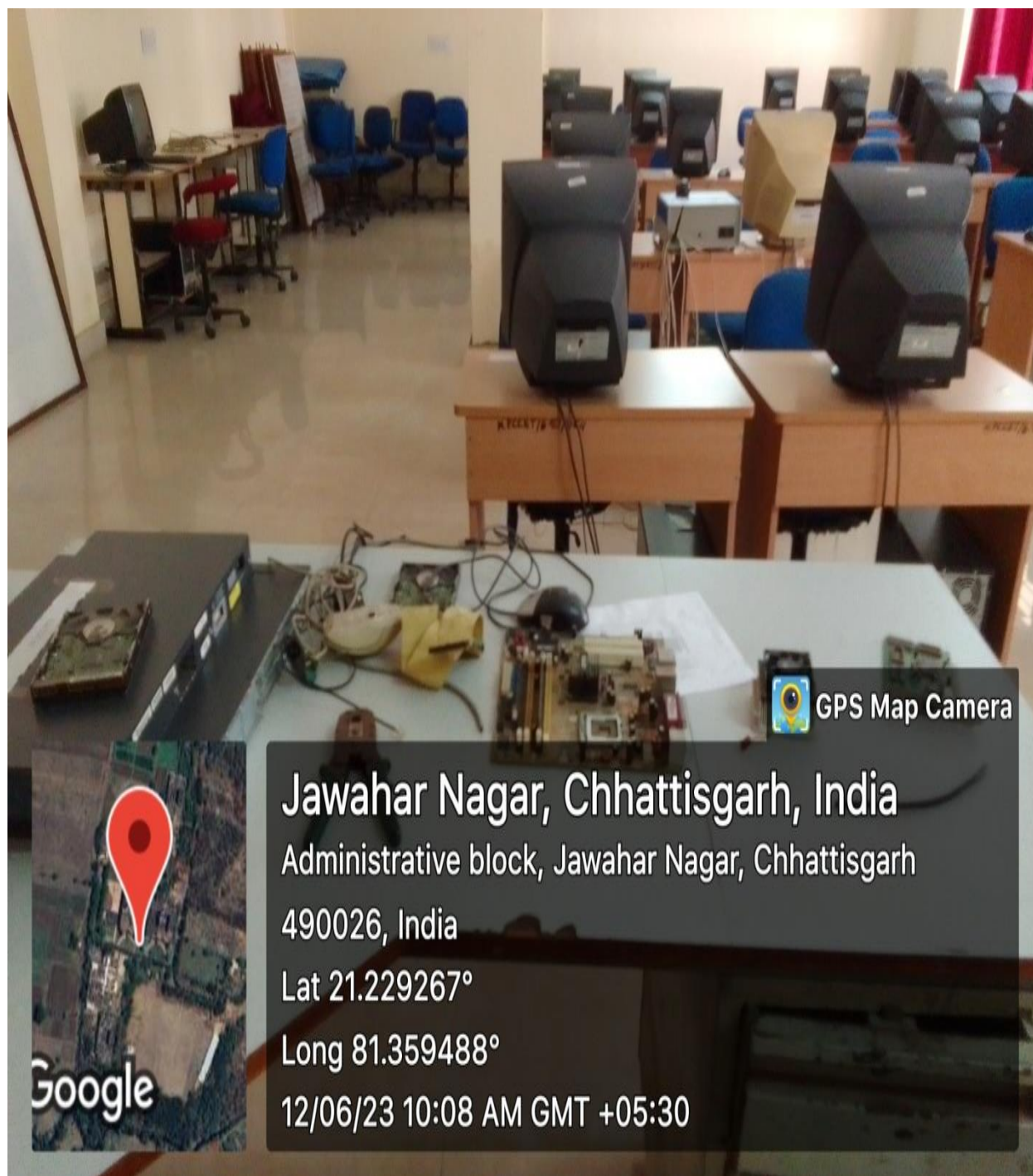
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GPS Map Camera

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Google

Room No B-213 CSE Lab 4

Criterion 2

QM 2.3.1 Student centric methods



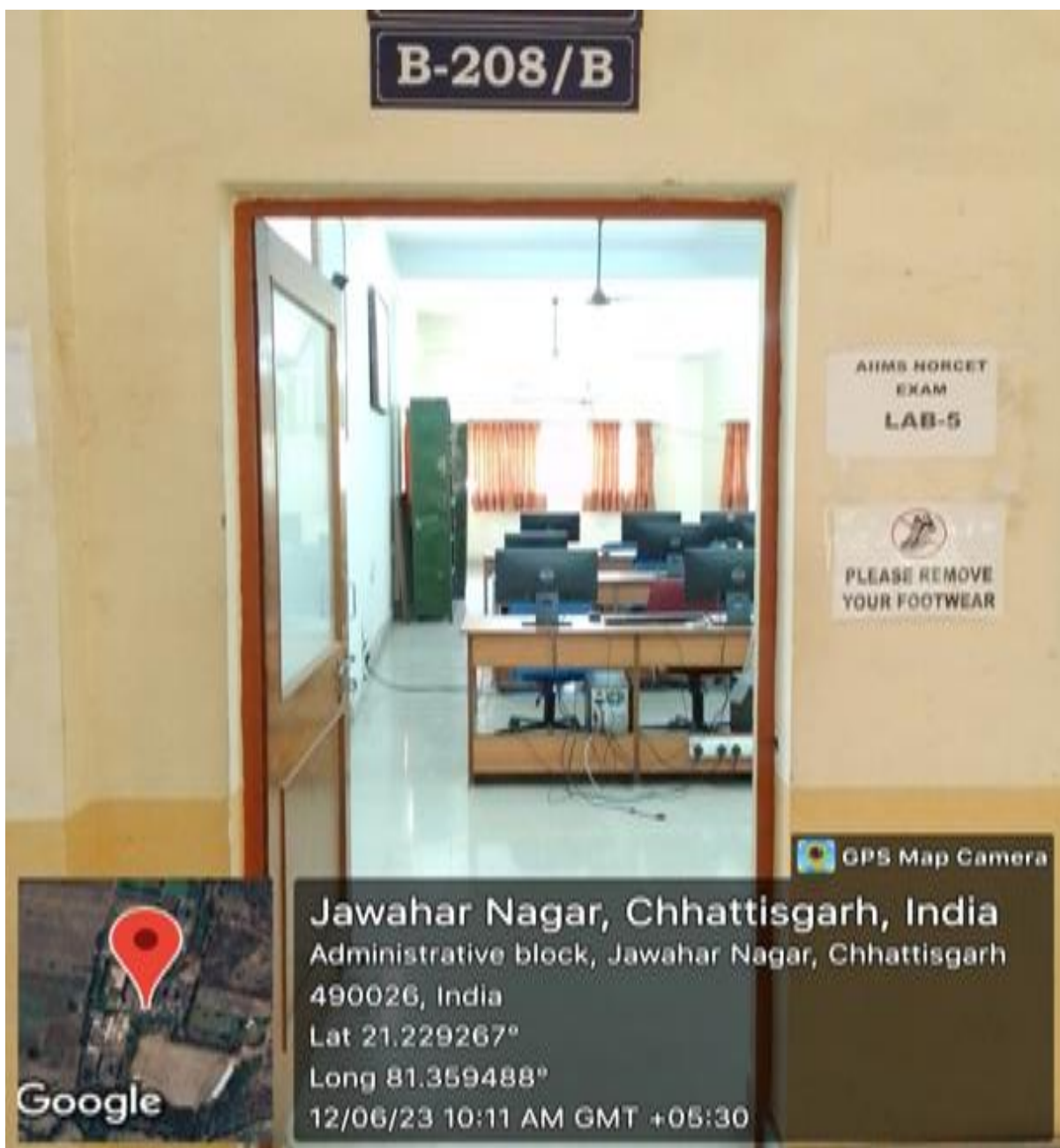
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Criterion 2

QM 2.3.1 Student centric methods



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Room No B-208/B CSE Lab 2

Criterion 2

QIM 2.3.1 Student centric methods



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Criterion 2

QM 2.3.1 Student centric methods



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Room No B-208/A CSE Lab 1

Criterion 2

QM 2.3.1 Student centric methods



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Room No B-209 CSE Lab 3

Criterion 2

QM 2.3.1 Student centric methods



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QM 2.3.1 Student centric methods



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Room No B-307 ET Lab 1

Criterion 2

QM 2.3.1 Student centric methods



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GPS Map Camera

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Administrative block, Jawahar Nagar, Chhattisgarh

490026, India

Lat 21.229267°

Long 81.359488°

12/06/23 10:30 AM GMT +05:30

Criterion 2

QM 2.3.1 Student centric methods



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GPS Map Camera

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Room No B-308 ET Lab 2 & 3

Criterion 2

QM 2.3.1 Student centric methods



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Criterion 2

QM 2.3.1 Student centric methods



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Room No B-309 ET Lab 4

Criterion 2

QIM 2.3.1 Student centric methods



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Criterion 2

QIM 2.3.1 Student centric methods



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Room No B-310 ET Lab 6

Criterion 2

QM 2.3.1 Student centric methods



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Criterion 2

QM 2.3.1 Student centric methods



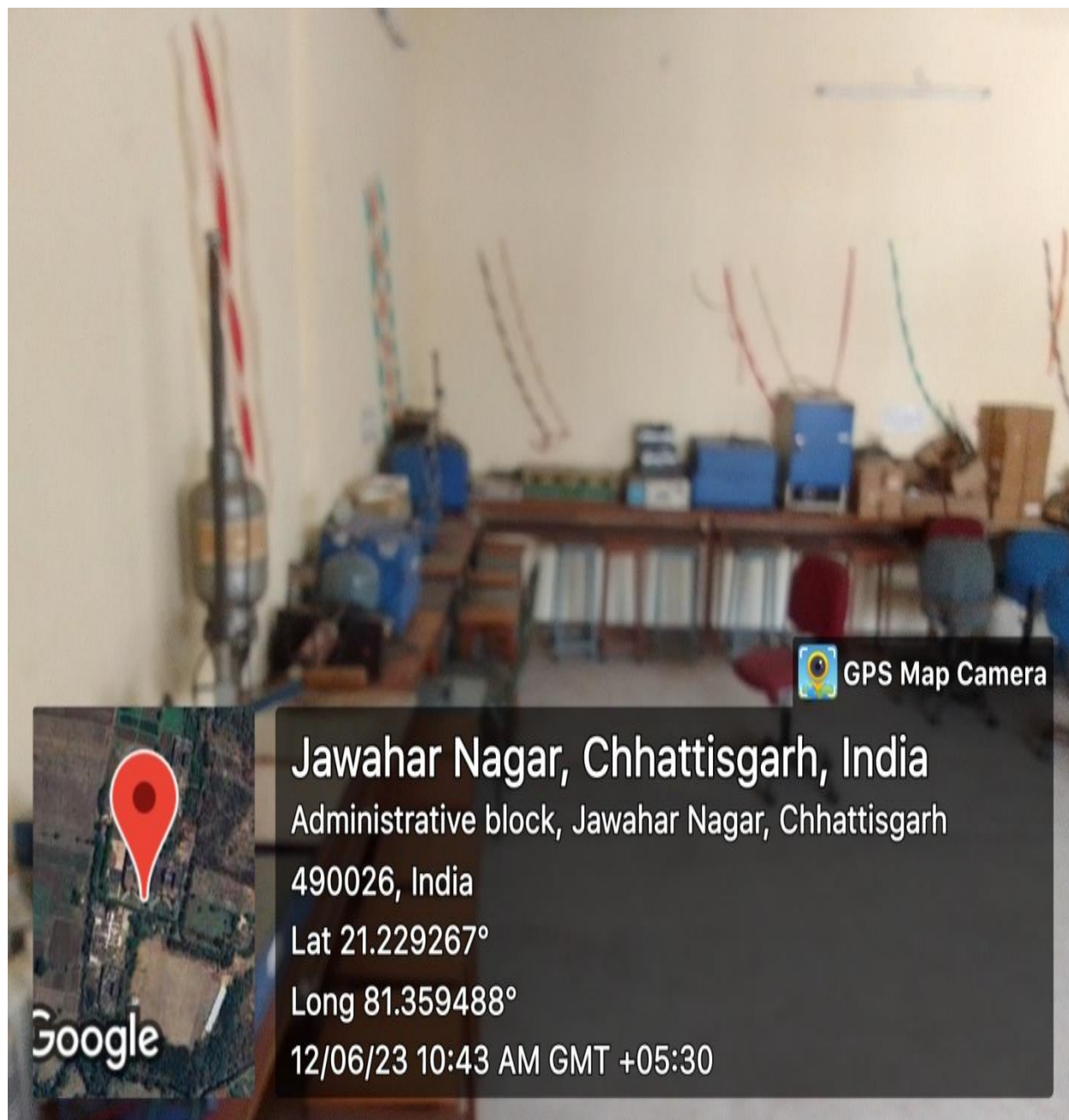
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Room No A-112 Control & Microprocessor Lab

Criterion 2

QM 2.3.1 Student centric methods



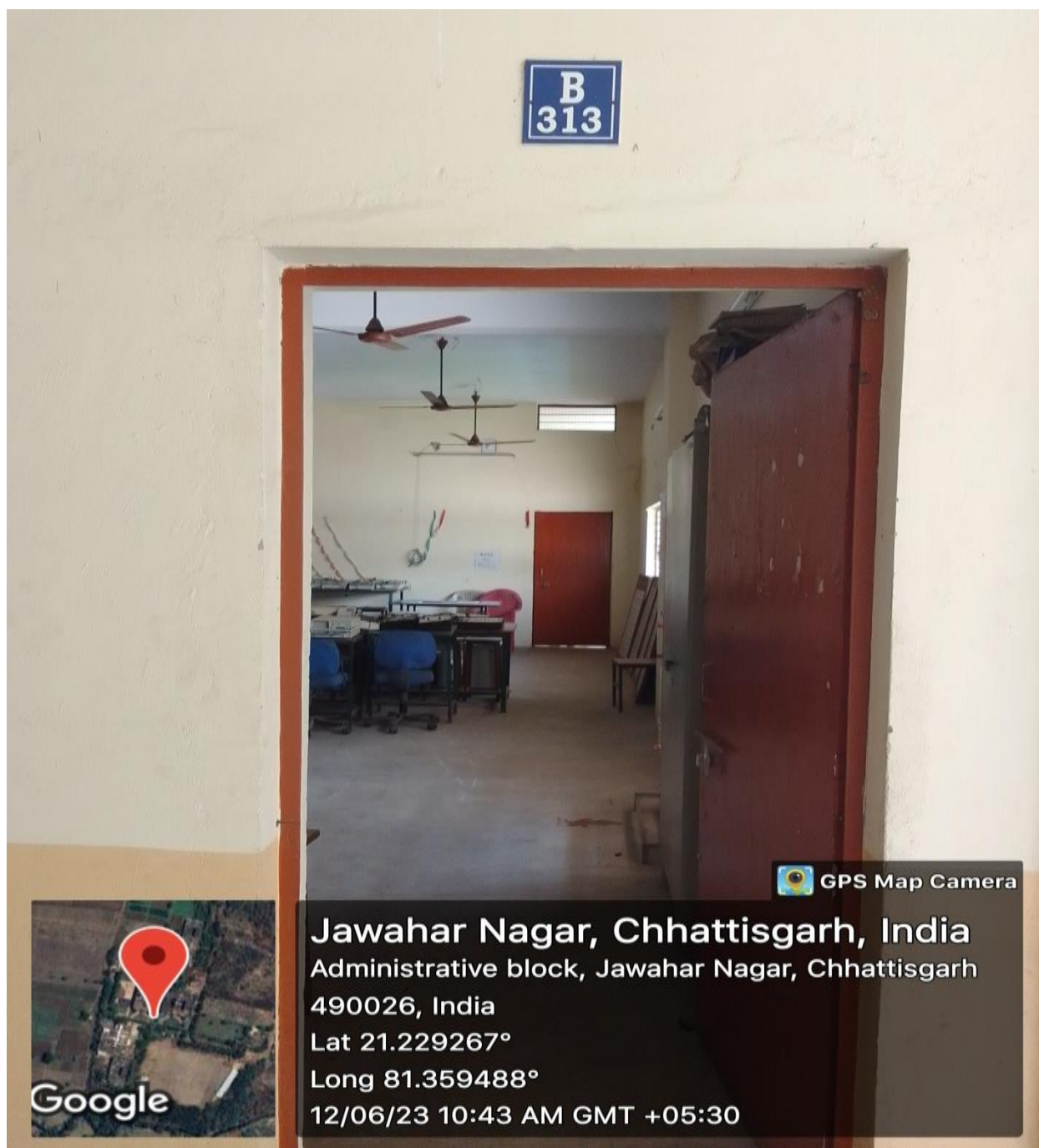
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Criterion 2

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GPS Map Camera

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Room No B-313 ET Lab 5

Criterion 2

QM 2.3.1 Student centric methods



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490026, India
Lat 21.229267°

Criterion 2

QIM 2.3.1 Student centric methods



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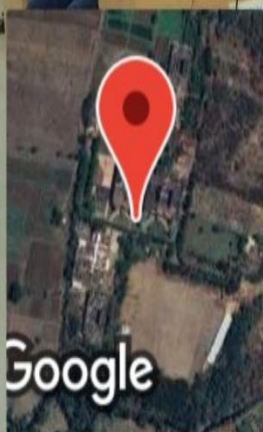
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GPS Map Camera



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Room No B-109 Common Center Common Facility

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Criterion 2

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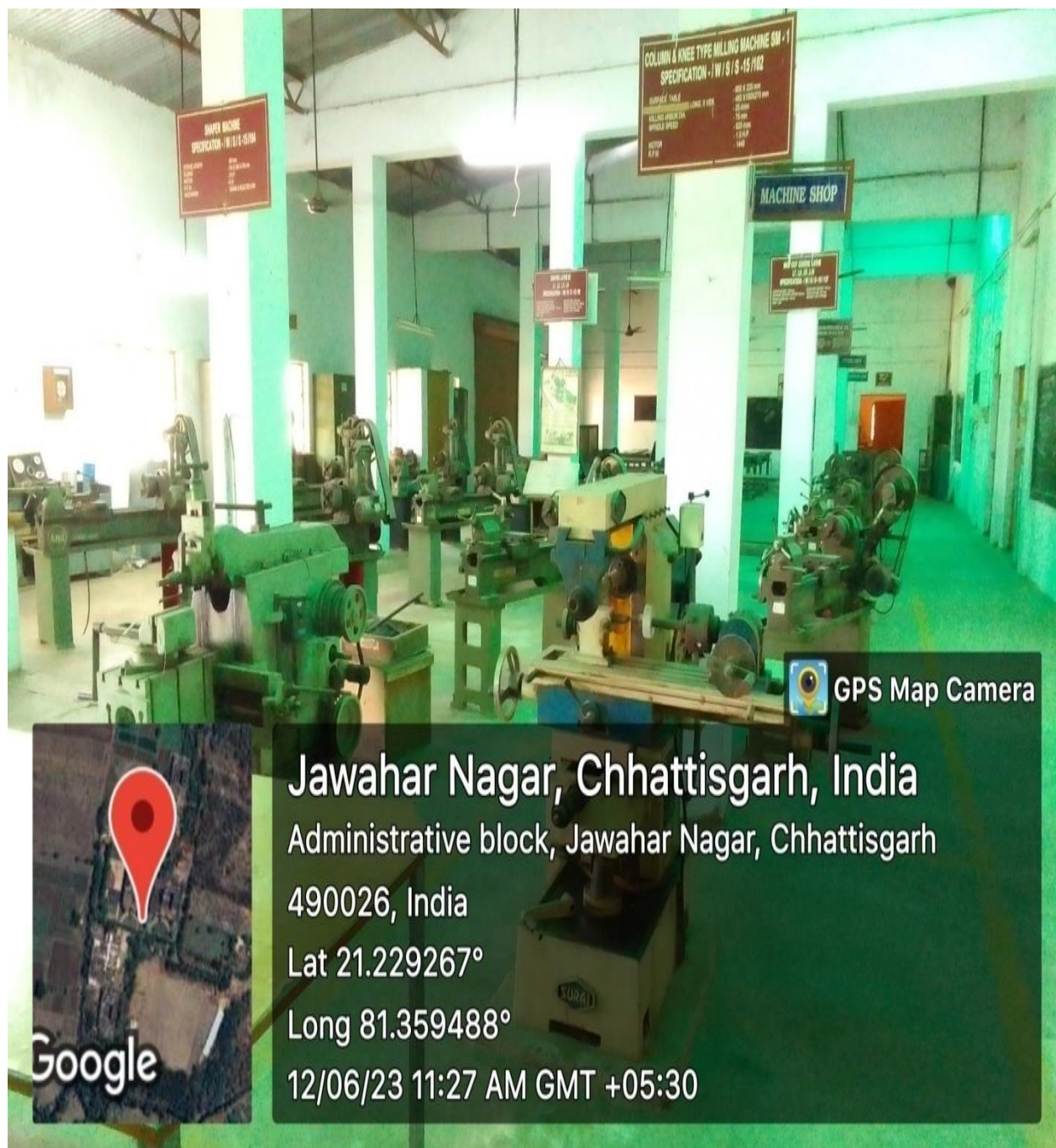
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Mechanical Workshop

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Room No C - 104 Basic Civil Lab

Criterion 2

QIM 2.3.1 Student centric methods



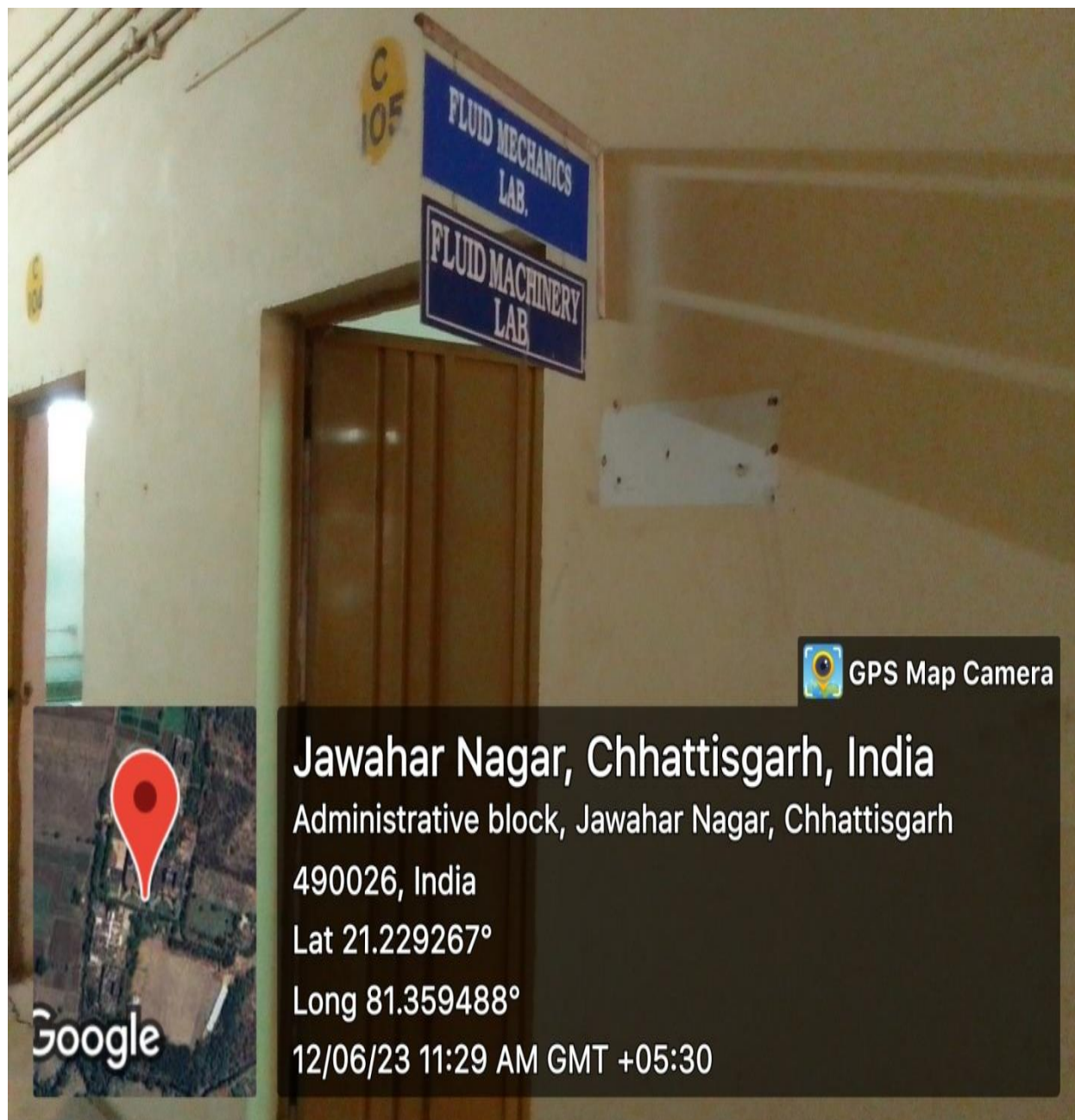
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Criterion 2

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Lat 21.229267°

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Criterion 2

QIM 2.3.1 Student centric methods



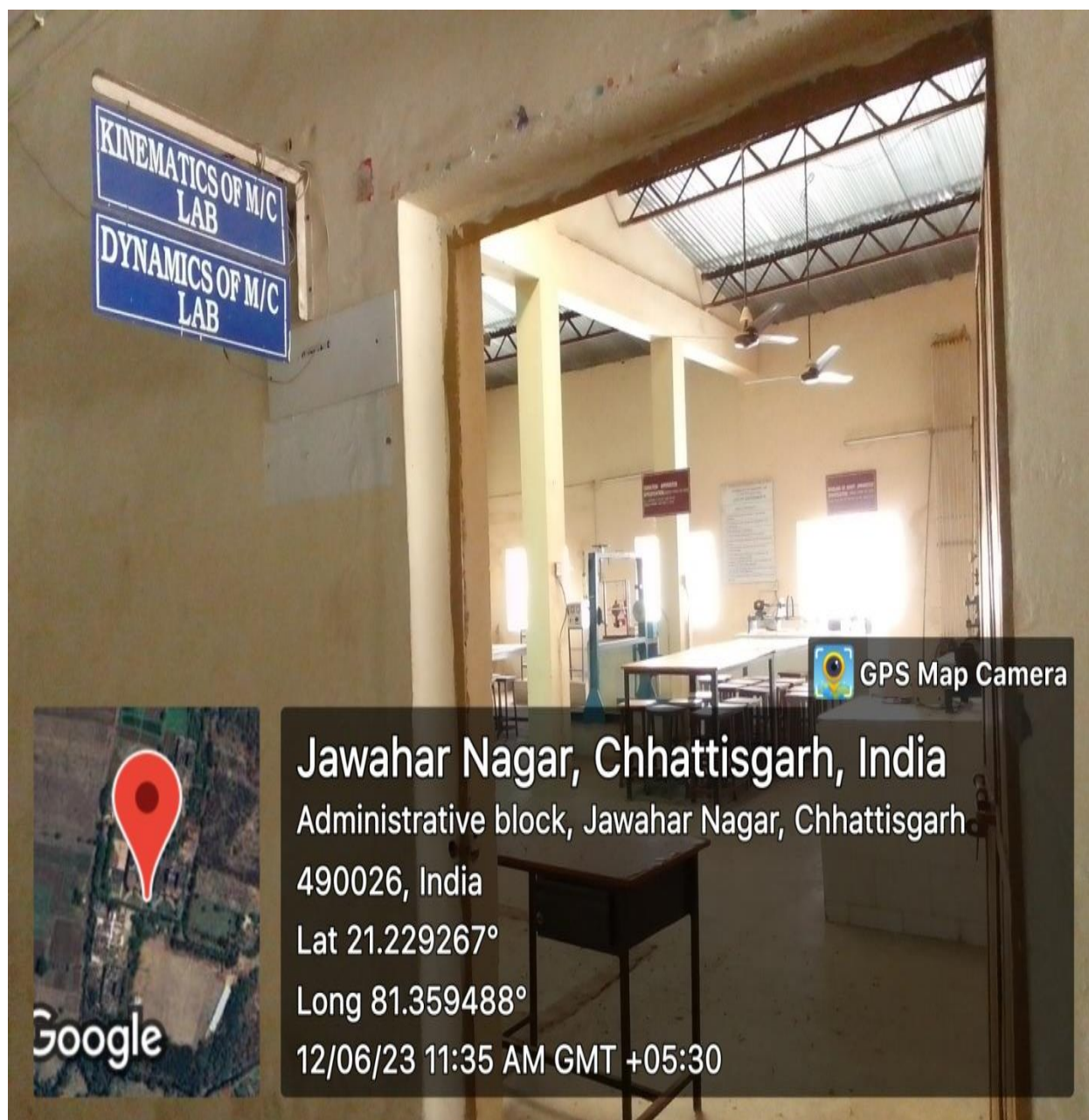
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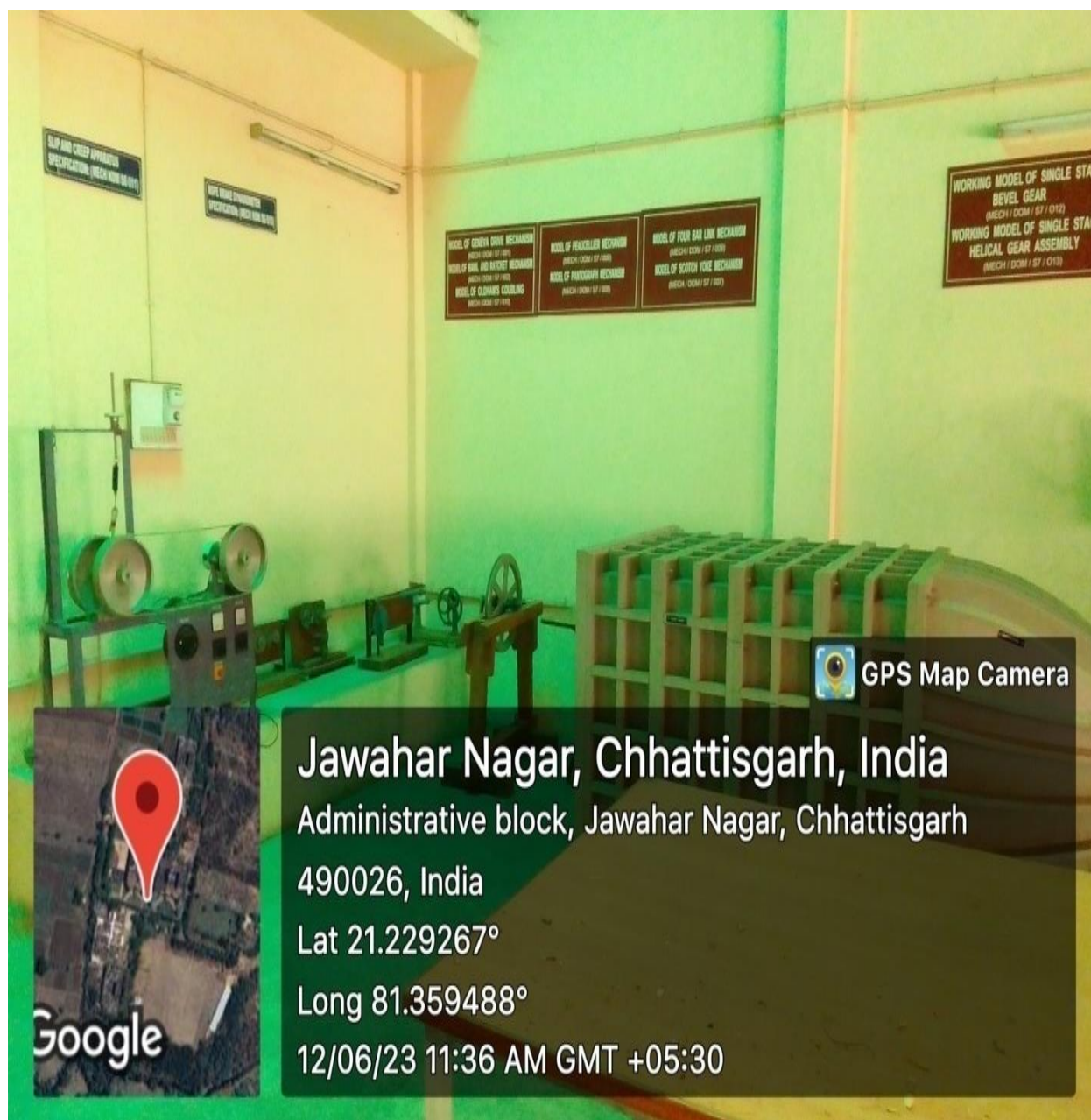
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Room No C- 106 Mech Lab

Criterion 2

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Room No C - 107 Mech Lab

Criterion 2

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Criterion 2

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Room No C - 201 Mech Lab

Criterion 2

QM 2.3.1 Student centric methods



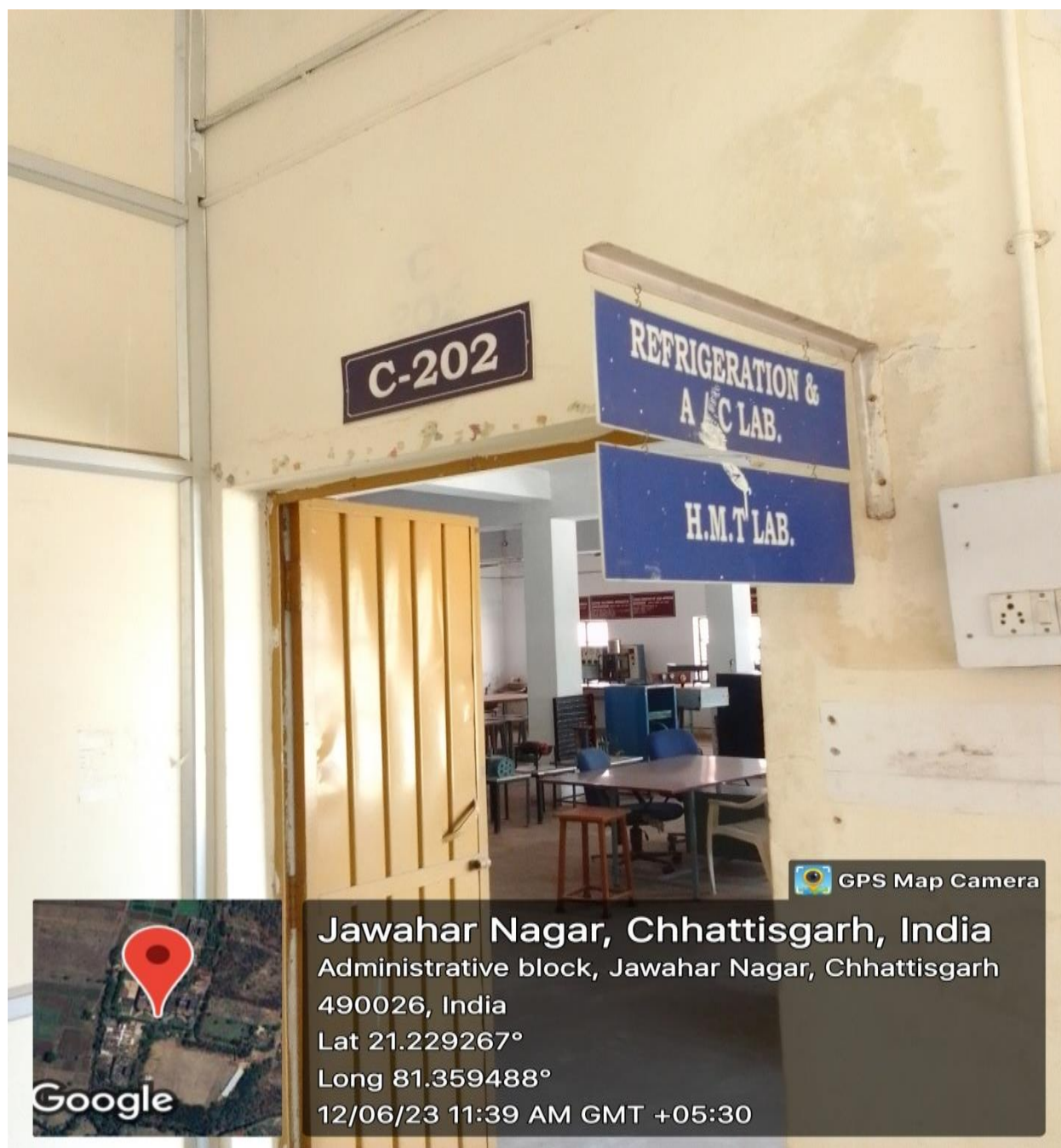
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Room No C-202 Mech Lab

Criterion 2

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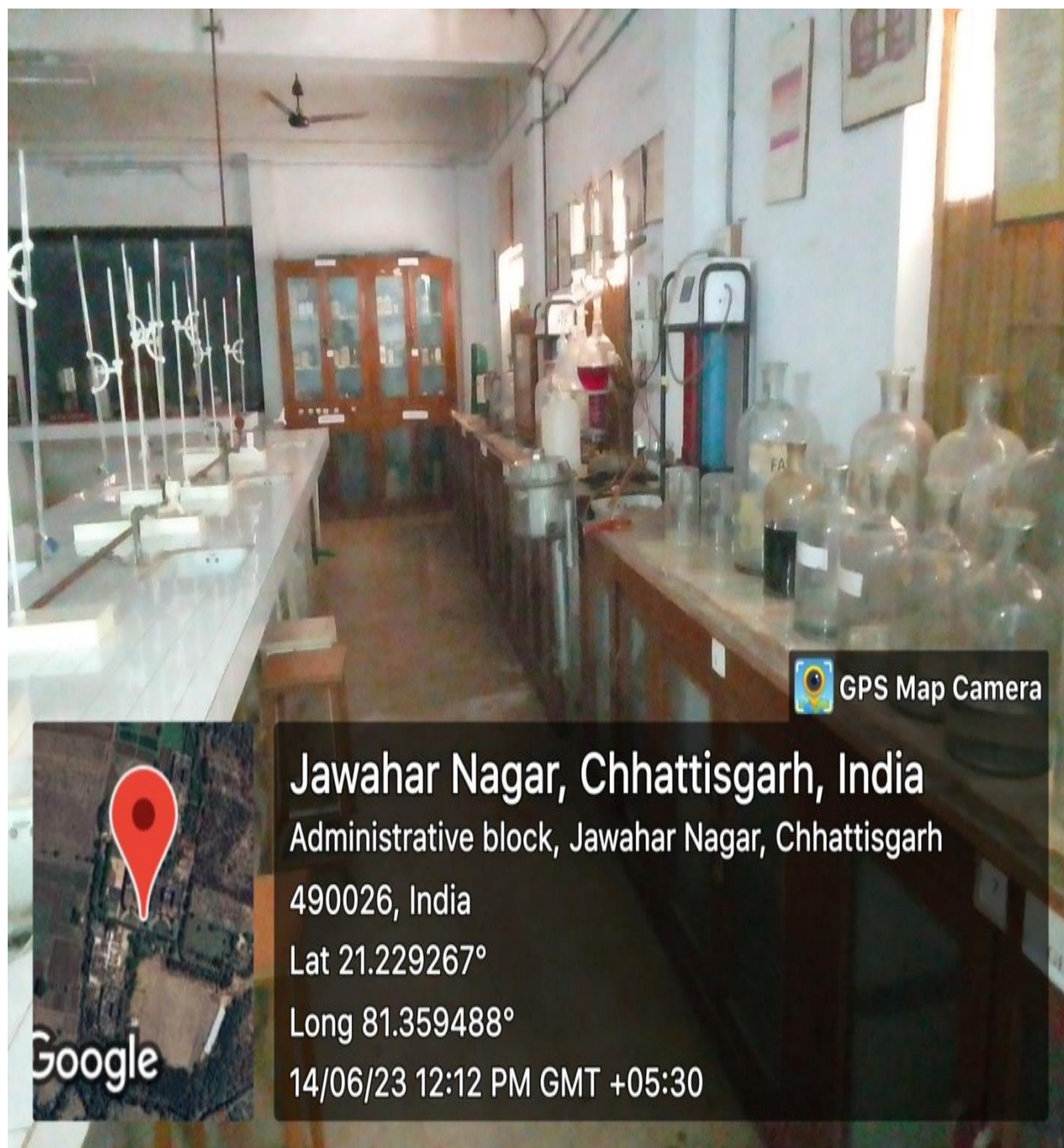
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Room No A - 104 Chem Lab

Criterion 2

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Room No A - 105 Chem Lab

Criterion 2

QM 2.3.1 Student centric methods



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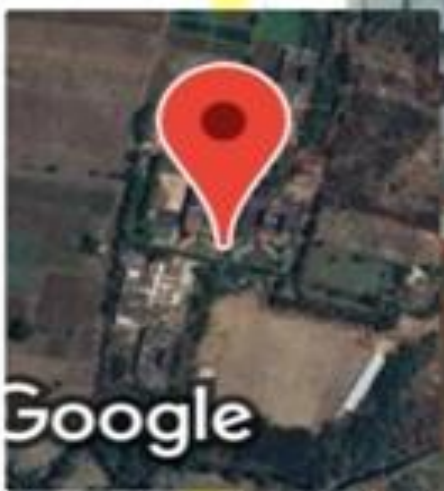
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**A
110**

ELECTRICAL MACHINE LAB



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490026, India
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Long 81.359488°
14/06/23 12:15 PM GMT

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QM 2.3.1 Student centric methods



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Room No A - 110 Machine 1 Lab

Criterion 2

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Criterion 2

QIM 2.3.1 Student centric methods



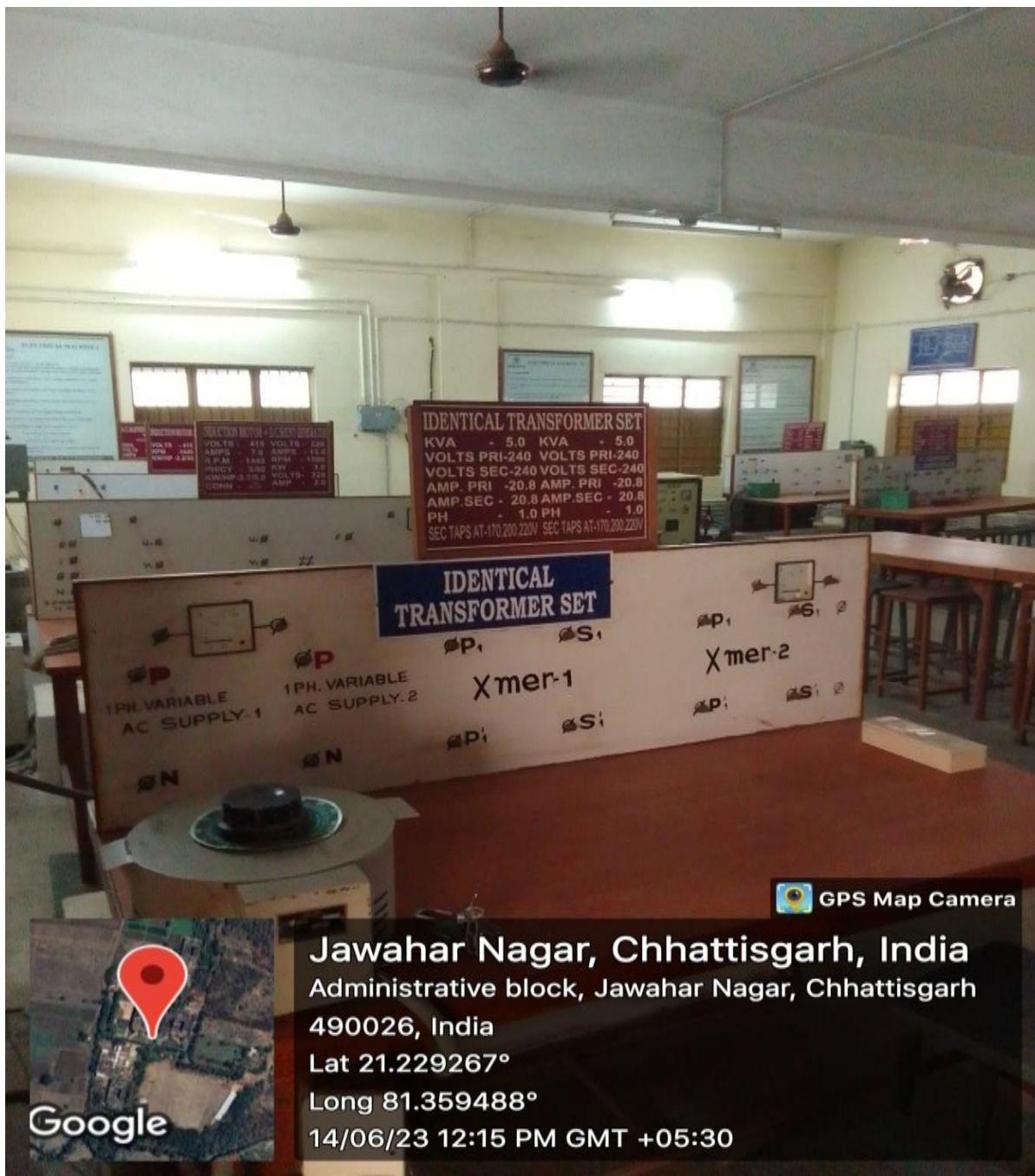
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Room No A - 111 Machine 2 Lab

Criterion 2

QIM 2.3.1 Student centric methods



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Room No A - 212 Physics Lab

Criterion 2

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A
213



Criterion 2

QIM 2.3.1 Student centric methods



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Room No A - 213 Physics Lab

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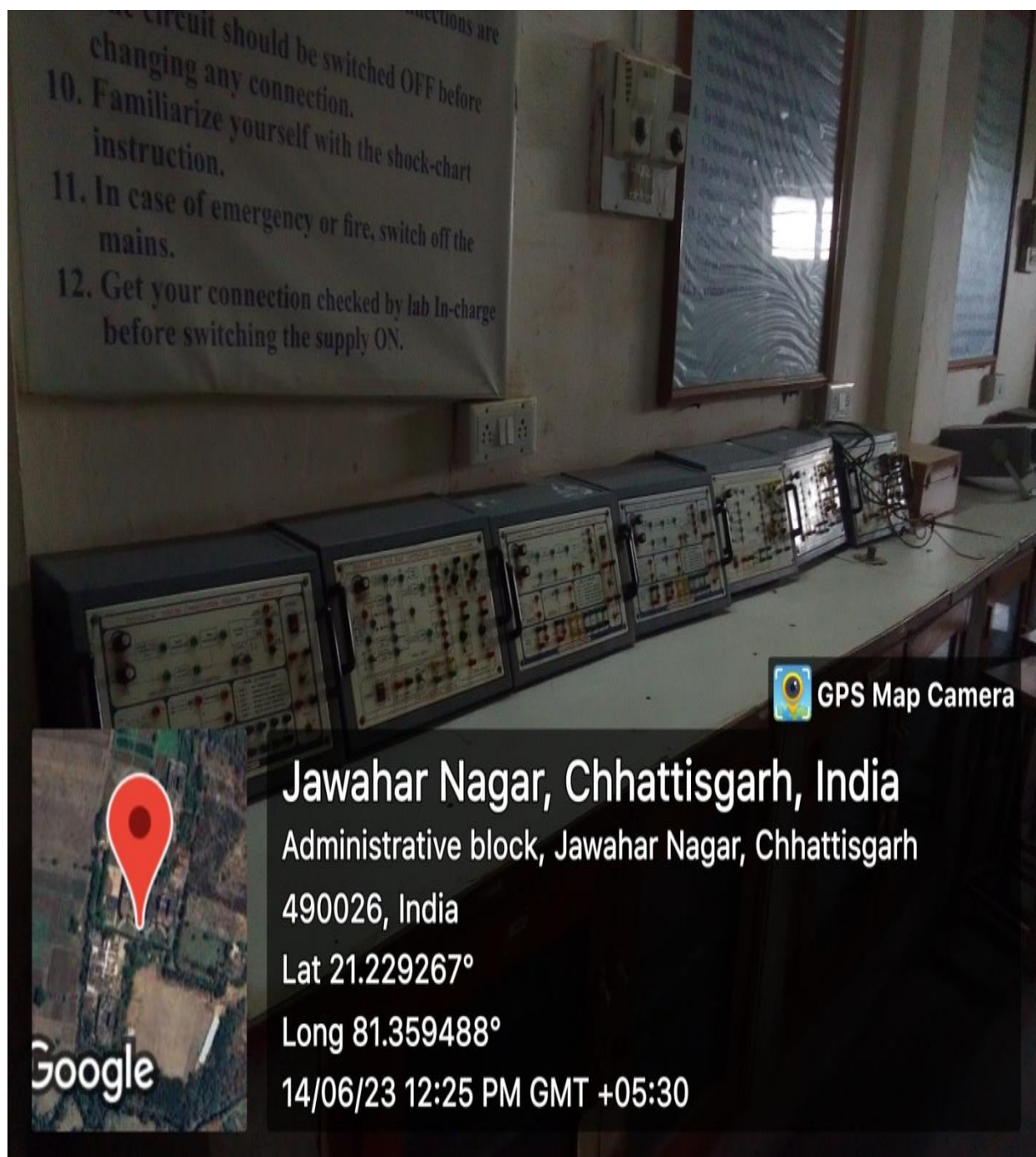
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GPS Map Camera

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Administrative block, Jawahar Nagar, Chhattisgarh

490026, India

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Long 81.359488°

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Room No A - 311 Analog and Digital Lab

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490026, India

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GPS Map Camera

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Room No A – 304 PS 1 & PS 2 Lab

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Room No A - 315 Language Lab Central Facility

Criterion 2

QM 2.3.1 Student centric methods



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Room No A-314 Computer Lab

Criterion 2

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Room No A-312 EEE and Circuit Lab

Criterion 2

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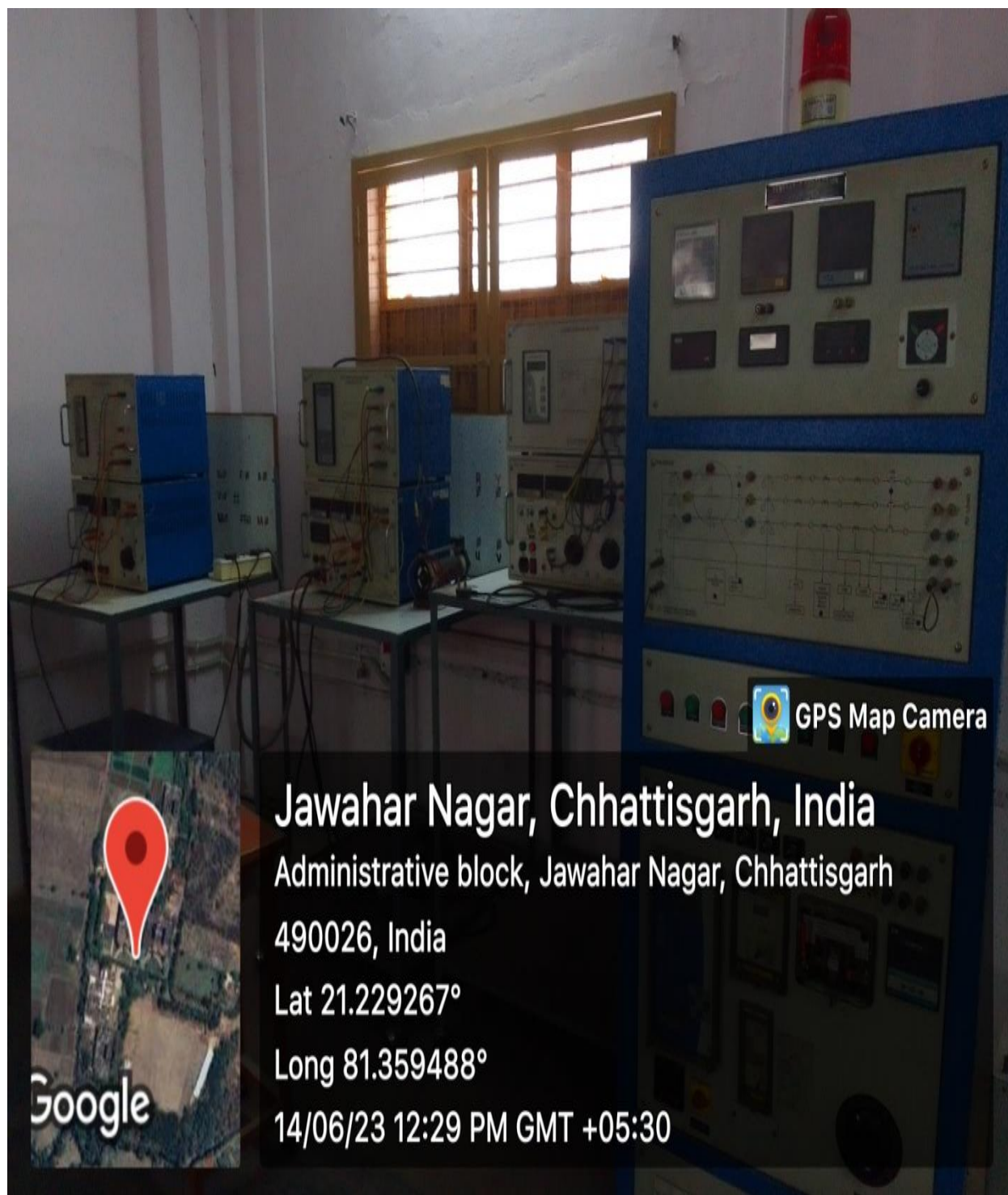
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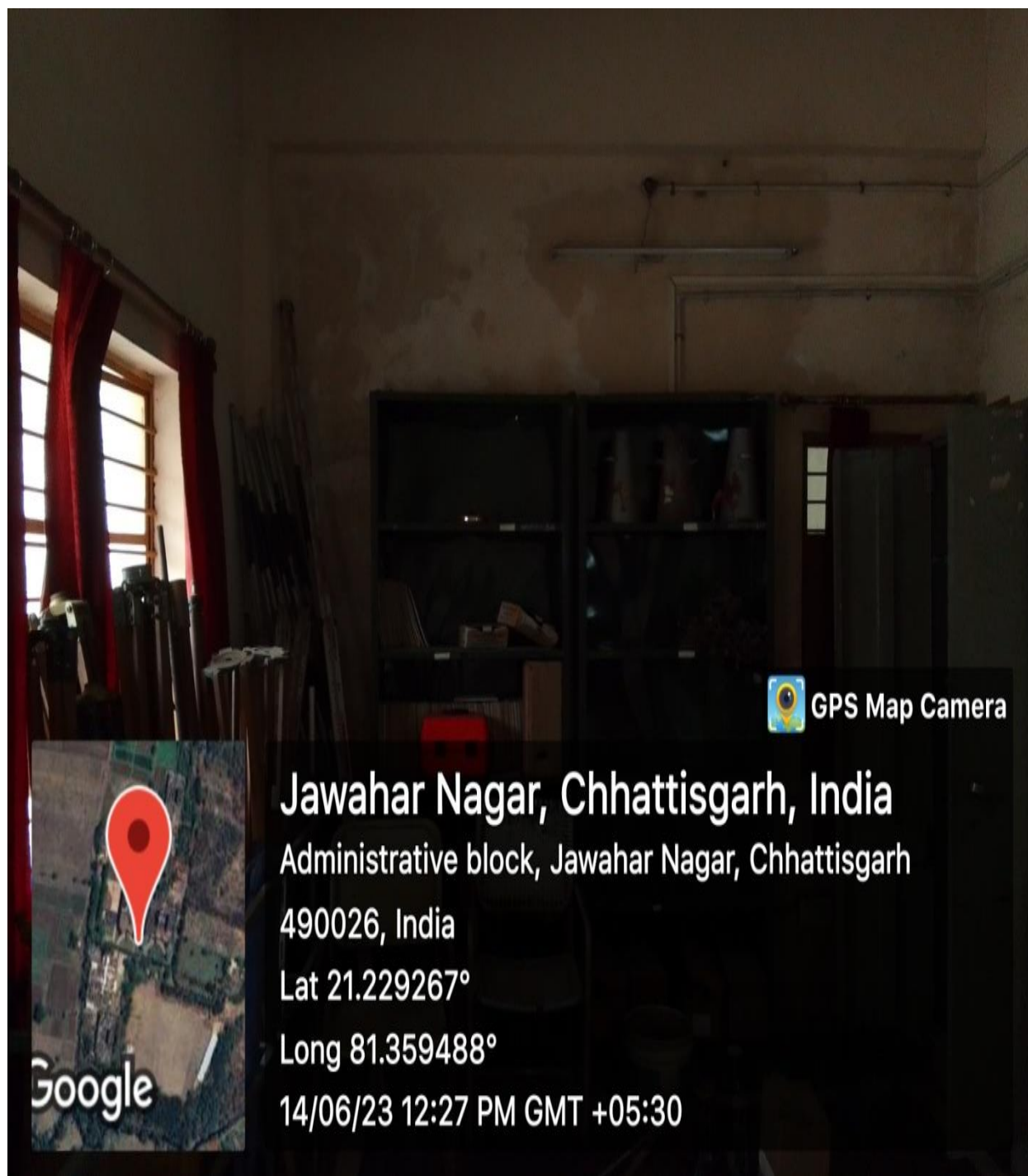
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Room No A - 307 Girls Common Room

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Room No B- 314 ET Seminar Room

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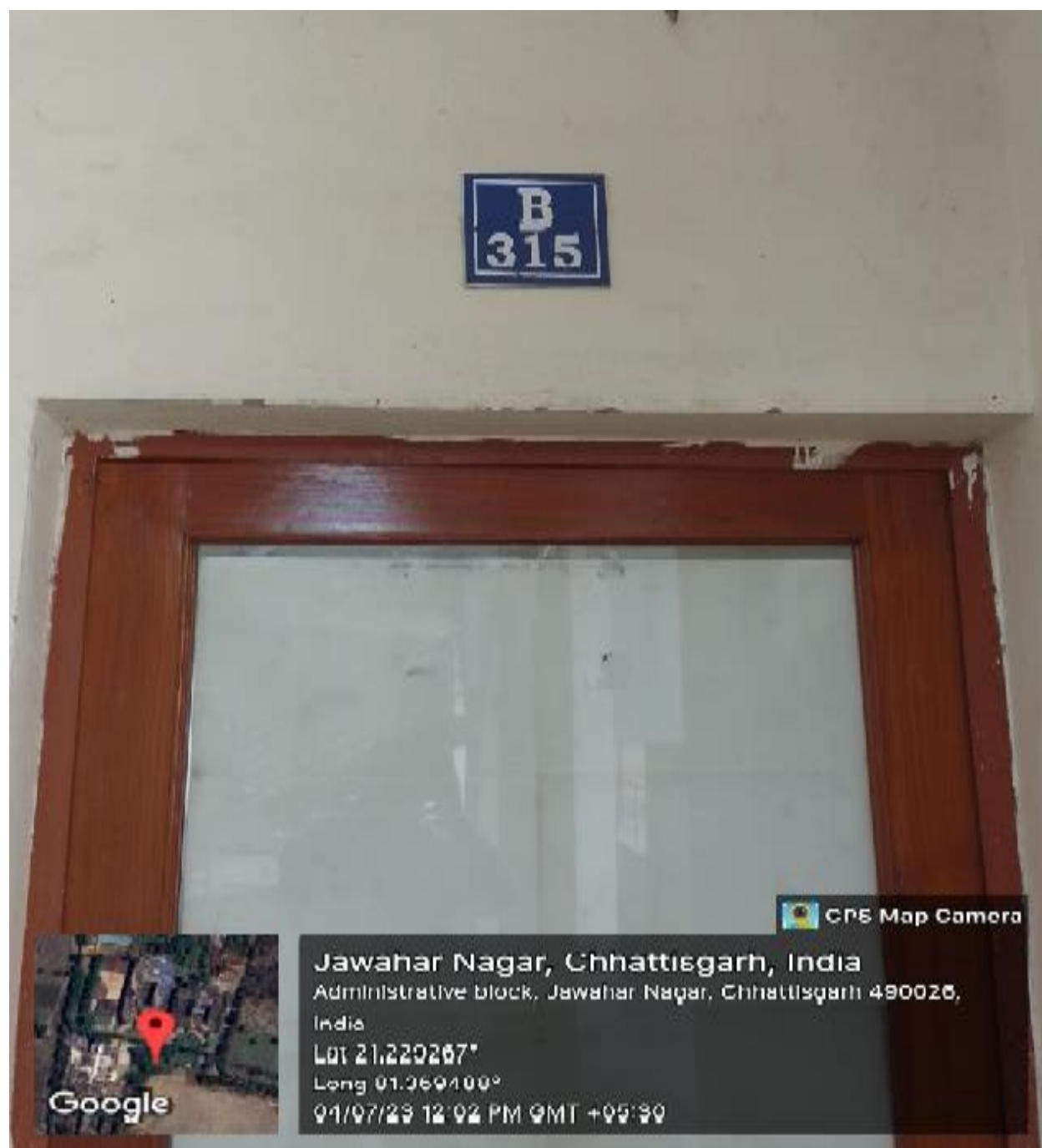
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Room No B- 203 Seminar Hall CSE

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Room No A-316 Class Room Tutorial First Year

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Room No A-317 Class Room Tutorial Electrical

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QM 2.3.1 Student centric methods



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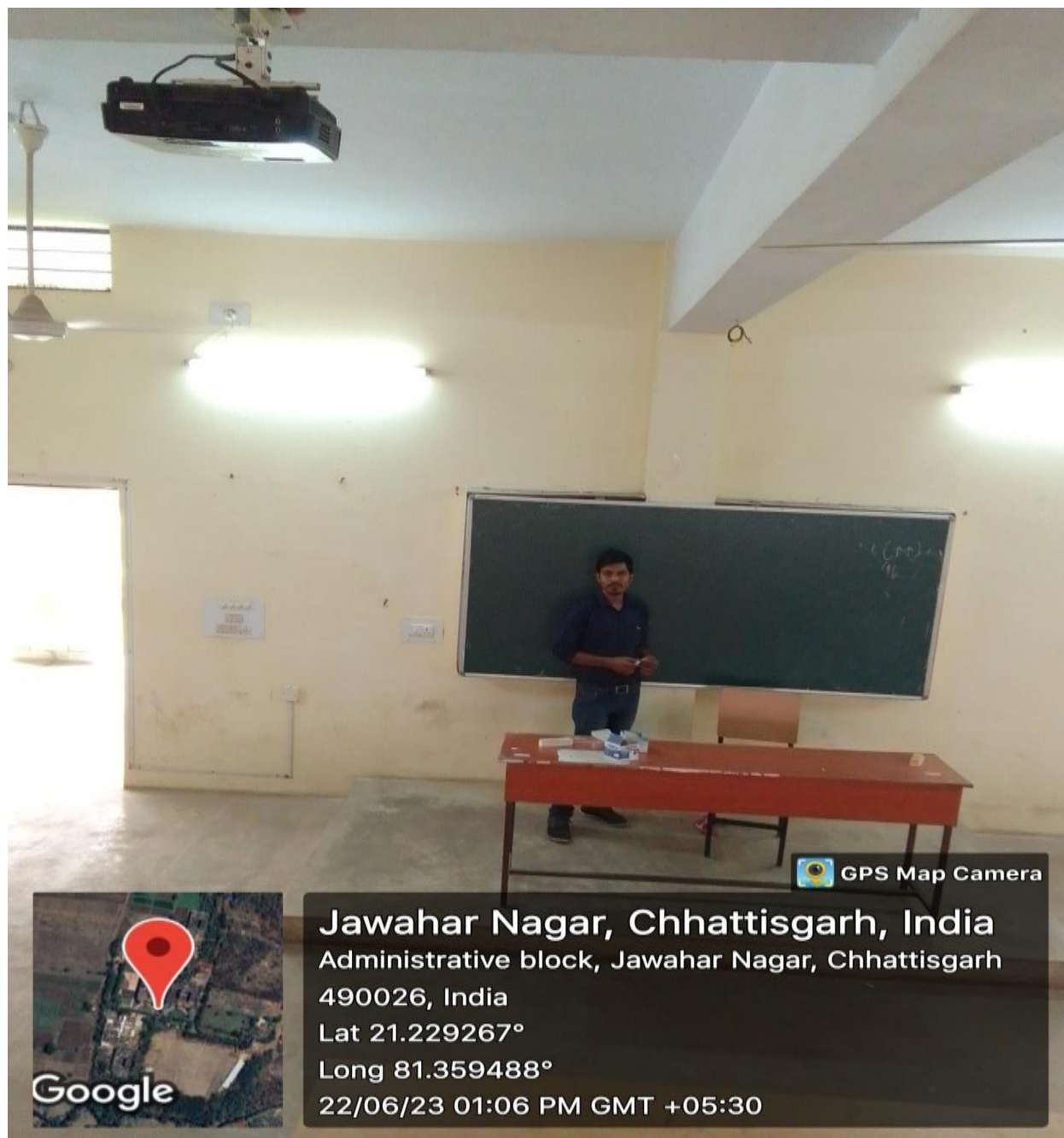
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Room No B-114 Class Room Tutorial Mechanical

Criterion 2

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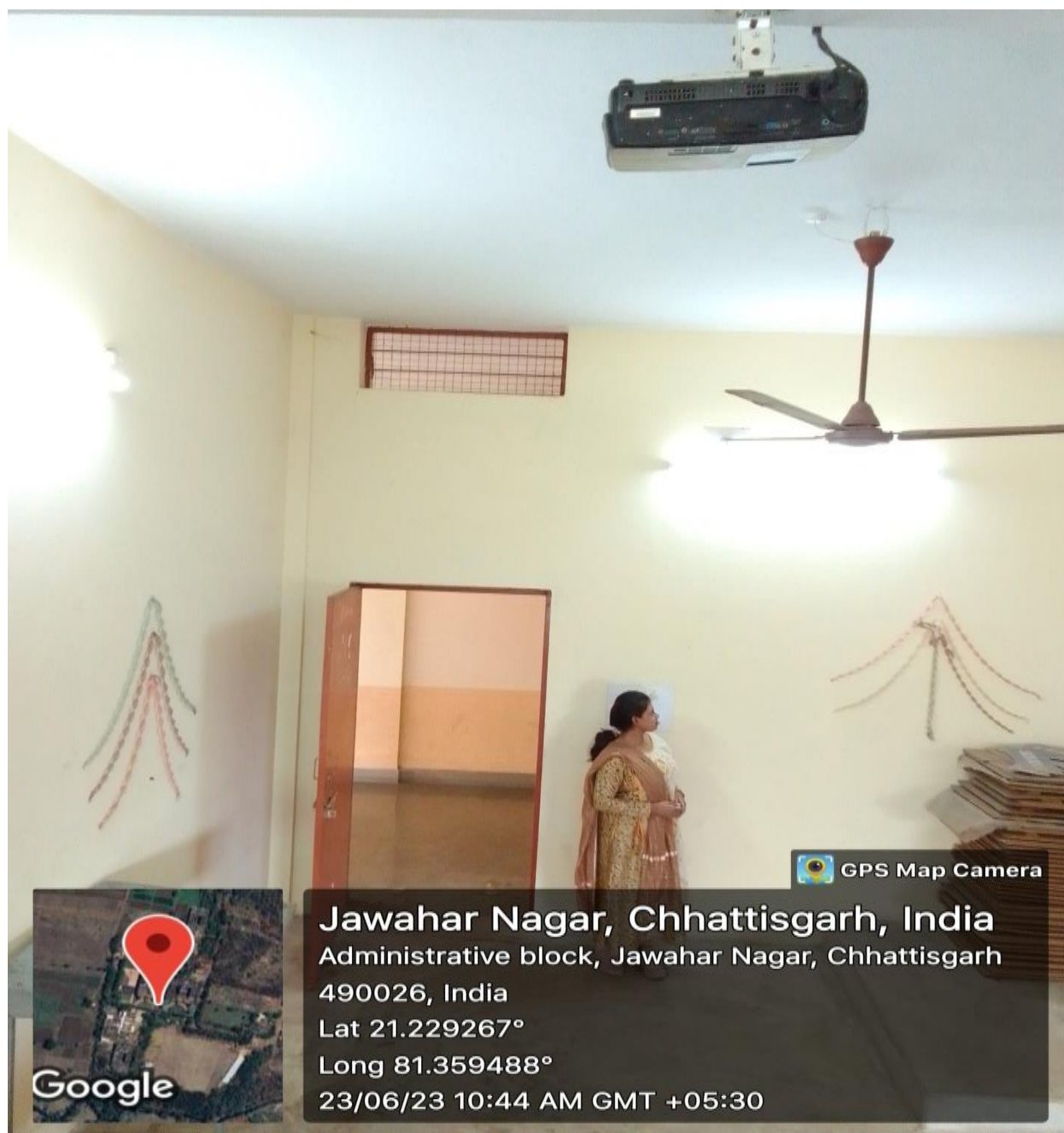
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Room No B-210 CSE Tutorial Room

Criterion 2

QM 2.3.1 Student centric methods