



(ESTD.1956)  
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## C.M.DUBEY POST GRADUATE COLLEGE

### BILASPUR (C.G.)

(Accredited 'B+' by NAAC)

An Affiliated College of Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur(C.G.)

Mobile: 8269333155

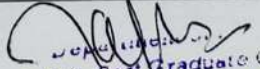
Mobile: 9755982500

Website: [www.cmdpgcollege.ac.in](http://www.cmdpgcollege.ac.in)

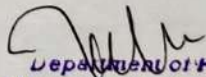
E-Mail: [principal@cmdpgcollege.ac.in](mailto:principal@cmdpgcollege.ac.in)

#### Details of Project Report of M.Sc Physics IV Sem.(Session 2022-2023)

S.NO.	NAME OF STUDENT	NAME OF PROJECT	NAME OF SUPERVISOR
1	AFSIN BANO	MAINS BOX HEAT MONITOR	DR. K.K. JAIN
2	AJAY KUMAR	GAS LEAKAGE DETECTOR ALARM	DR. D. K. CHAKRABORTY
3	ANAD KUMAR	HUMAN AND CAR SPEED DETECTION	DR. VINIT NAYAR
4	ASHISH BHARATDUWAJ	MULTI PORT POWER SUPPLY	DR. K. K. JAIN
5	ASHUTOH MALI	2 STAGE COUPLED TRANSISTOR AMPLIFIER	DR. D. K. CHAKRABORTY
6	AYUSH KUMAR SARKAR	COMPARATIVE STUDY OF 2D AND 3D STRUCTURED GERMANIUM CARBIDE MATERIALS(GeC) BY NANODCAL SIMULATION SOFTWARE	DR. VINIT NAYAR
7	AYUSHI KULMITRA	FOOTSTEP POWER GENERATOR	DR. VINIT NAYAR
8	CHINMAY TIWARI	CONVERSION OF SOUND ENERGY INTO ELECTRICAL ENERGY	DR. K.K. JAIN
9	DEEPAK GARHTIYA	45W AUDIO POWER AMPLIFIER	DR. D. K. CHAKRABORTY
10	DEBASHISH PATEL	BIDIRECTIONAL VISITORS COUNTER WITH AUTOMATIC LIGHTING SYSTEM	DR. K. K. JAIN
11	DIPANSHI LAKRA	ADJUSTABLE DELAY TIMER	DR. D. K. CHAKRABORTY
12	GAGANDEEP SINGH ARORA	PULSE WIDTH MODULATION	DR. VINIT NAYAR
13	GAJENDRA PAL CHANDRA	DESIGN AND CONSTRUCTION OF FM TRANSMITTER AND RECEIVER	DR. D. K. CHAKRABORTY
14	HARISH KUMAR SAO	SYNTHESIS AND LUMINESCENCE CHARACTERIZATION OF Dy <sup>3+</sup> DOPED LaCaBO <sub>3</sub> PHOSPHOR	DR. VINIT NAYAR
15	ISHWAR PRASAD DANSENA	SOLAR MOBILE CHARGER	DR. D. K. CHAKRABORTY
16	KHEMPRABHA	SOME PROPERTIES OF ZINCBLLENDE(ZnS)BY NANODCAL SOFTWARE	DR. VINIT NAYAR
17	LAXMI	STUDIES ON THE EXPERIMENTAL TRAINING BOARD DESIGNED SPECIFICALLY FOR THE STUDY OF FET AMPLIFIER	DR. D. K. CHAKRABORTY
18	MANISH PATEL	SINGLE AXIS SOLAR TRACKING SYSTEM	DR. K. K. JAIN
19	MANJUL KIRAN YADAV	ARDUINO BASED SMART BLIND STICK	DR. K. K. JAIN
20	MARUF ALI	ARDUINO FUNCTION GENERATOR	DR. VINIT NAYAR
21	NAMAN KUMAR	QUADRATURE OSCILLATOR USING OPERATIONAL AMPLIFIER	DR. K. K. JAIN
22	NITESH KUMAR	HYBRID INVERTER WITH SOLAR BATTERY CHARGING	DR. K. K. JAIN

  
C.M.D Post Graduate Coll.  
Bilaspur (C.G.) 495001

NO.	NAME OF STUDENT	NAME OF PROJECT	NAME OF SUPERVISOR
23	PAYAL DAHIYA	SELF-SWITCHING POWER SUPPLY	DR. K. K. JAIN
24	POOJA CHANDRA	AMPLITUDE SHIFT KEYING WITH PULSE GENERATOR	DR. D. K. CHAKRABORTY
25	PRIYANKA YADAV	AIR POLLUTION MONITORING SYSTEM	DR. VINIT NAYAR
26	RAMA WADYAKAR	SMART AND INTELLIGENT SHOES	DR. K.K. JAIN
27	REENA CHANDRA	SMART CAR PARKING SYSTEM USING ARDUINO UNO	DR. K. K. JAIN
28	SADANANI GUPTA	PROPERTIES OF GRAPHENE NANORIBBONS(GNRs) USING NANODCAL SOFTWARE	DR. VINIT NAYAR
29	SAUMYA SAHU	ARDUINO RFID TOLL TAX SYSTEM	DR. D. K. CHAKRABORTY
30	SONALI VISHWAKARMA	DUAL POWER SUPPLY 12V	DR. K. K. JAIN
31	SUNAYNA TOPPO	AUTOMATIC LIGHT INTENSITY CONTROLLER BY EXTERNAL LIGHT SENSING	DR. D. K. CHAKRABORTY
32	TANISHA RATHORE	RECTIFIERS	DR. D. K. CHAKRABORTY
33	TRILESHWAR SINGH RAJPUT	A STUDY ON TIME SYNCHRONISATION OF TWO CLOCKS	DR. VINIT NAYAR
34	VANDANA DENSIL	DECIMAL COUNTER	DR. D. K. CHAKRABORTY
35	VED PRAKASH	OVERVOLTAGE AND UNDERVOLTAGE PROTECTION SYSTEM	DR. K. K. JAIN
36	VIKAS GAVEL	PURITY ASSESSMENT OF $\text{CuCr}_2\text{Se}_4$ POLYCRYSTALLINE MATERIAL THROUGH X-RAY DIFFRACTION ANALYSIS	DR. VINIT NAYAR
37	YAMINI KASHYAP	SOME PROPERTIES OF GaAs NANOPARTICLE BY NANODCAL SOFTWARE	DR. VINIT NAYAR
38	YASH KUMAR YADAV	REGULATED POWER SUPPLY	DR. K. K. JAIN
39	YASHWANT KUMAR SIDAR	MULTIVIBRATORS	DR. K. K. JAIN
40	YOGESHWARI CHANDRA	FREQUENCY SHIFT KEYING	DR. VINIT NAYAR

  
 Department of Physics  
 C.M.D Post Graduate College  
 Bilaspur (C. G.) 495001

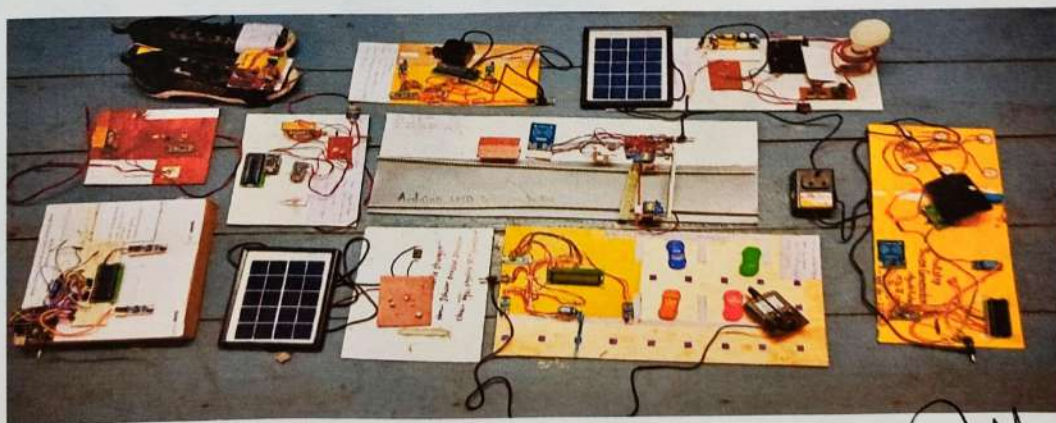


## PROJECT REPORT

The students of M.Sc. Physics in the 4<sup>th</sup> semester perform project work according to the curriculum prescribed by the affiliating university. The broad category of projects includes nano material and device simulation using NANODCAL/rescue software, programmed ARDUINO based projects, monitoring system, automatic counters, smart and intelligent systems, synthesis and characterization of luminescent phosphors and curriculum-based projects. A brief summary of the various projects is given below.

A "FOOTSTEP POWER GENERATION" has been proposed using piezoelectric sensor. It utilizes ARDUINO-UNO, which is a micro controller board based on the FT mega 328P. Other component/module unit used in this project are RFID, READER, RC522 used for contactless multi communication, relay module mini power bank circuit, piezoelectric material, RFID-TAG And LCD Display. A smart parking system has been proposed which utilizes an IOT module that is used to monitor and signalize the state of availability of single parking space. For this a ultrasonic range detector sensors used along with ARDUINO. The ARDUINO waveform generator project focuses on creating a flexible and cost effective device capable of generating various waveforms. Smart sticks for blind by using ARDUINO-NANO and ultrasonic sensor unit and voice command module has been developed. RFID based automated toll collection system using ARDUINO-AT mega328 tracks information for entry at the toll gate. A hybrid inverter with solar battery charger has been designed which can use both electrical as well solar energy to charged the storage battery. An Automatic light intensity controller by external light sensing using ARDUINO-NANO monitors the light level and control the output accordingly. Smart and Intelligent shoes was designed using IOT along with an android app. A gas leakage detector, Human and car speed detector, Counter for bidirectional visitors where assembled. NanoDCAL and Rescue software were used to simulate Nano material and devices such as GaAs, GeC(2D & 3D), Graphene nano ribbons, Zinc blend. LiCaBO<sub>3</sub> dopped with Dy<sup>3+</sup> phosphor was investigated for its thermo-luminescence properties. The purity of copper chromium selenide poly crystalline material was investigated by using XRD analysis by comparison of the observed results with the standard reference data. Some curriculum-based project were also perform such as main box heat monitor, multiport power supply, 2stage coupled transistor amplifier, multi vibrators, Frequency shift keying, Decimal counter.

### Project Submitted by students



Department of Physics  
J.M.D Post Graduate Coll.  
Bilaspur (C.G.) 495001



# "AIR POLLUTION MONITORING SYSTEM"

Name - Priyanka Yadav  
Class - MSc IX Sem (Physics)  
Roll No - 2105336  
College - C.M.D. P.G. College

## Project: Air Pollution Monitoring System

# Project: Solar Mobile Charger

## "Solar Mobile charger"

Name - Ishwar Prasad Dangene  
Class - MSc. physics II<sup>nd</sup> semester

# Project: Light Intensity Control by external Light Sensing

NAME - SUDHAKAR  
CLASS - MSc IX Sem (Physics)  
ROLL NO - 2105345  
SEMESTER - 2020-21  
COLLEGE - C.M.D. P.G. COLLEGE

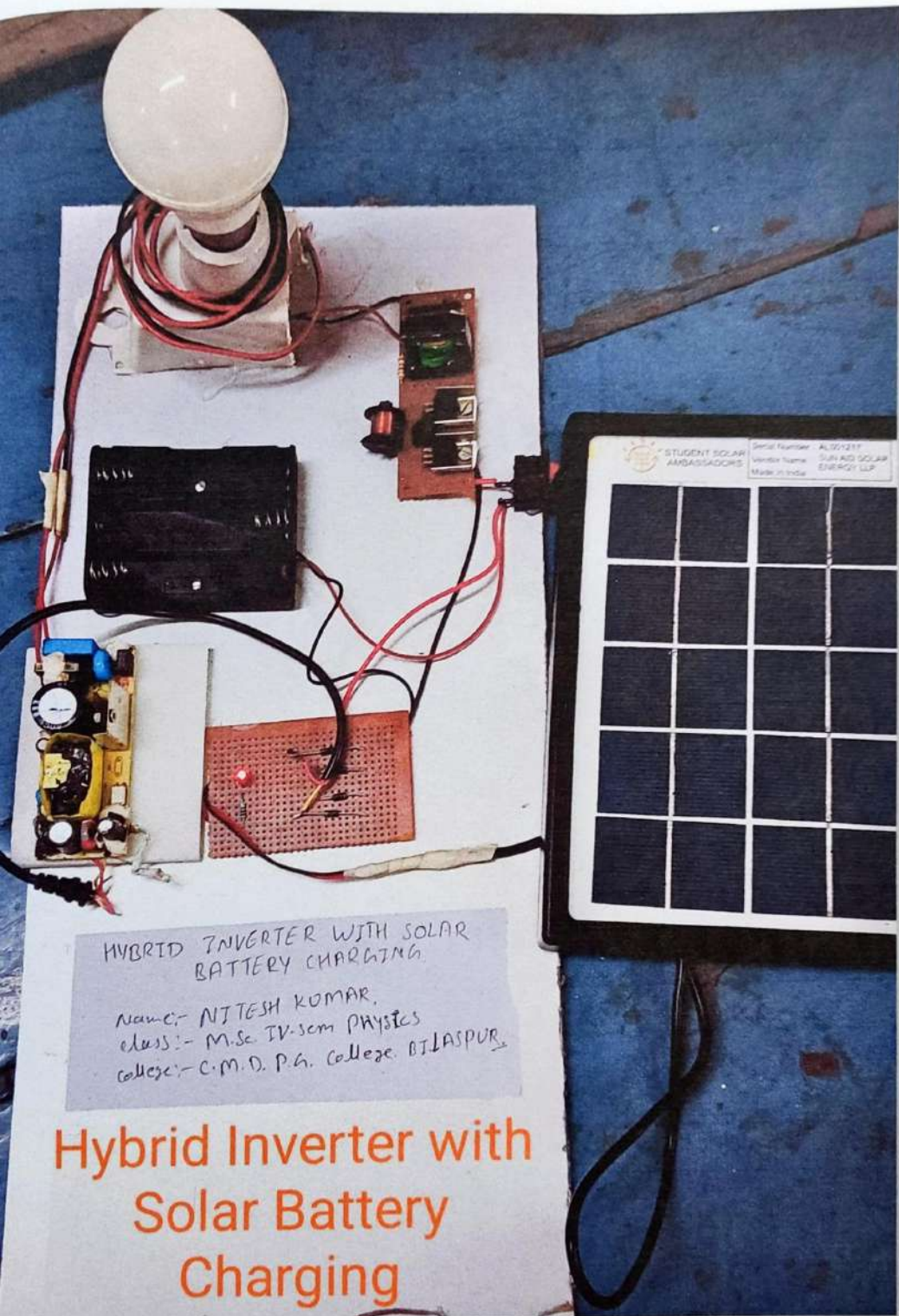
# BIDIRECTIONAL VISITOR COUNTER WITH AUTOMATIC LIGHTING SYSTEM

NAME - DEVASHISH PATEL  
CLASS - MSc 4<sup>th</sup> SEM  
(PHYSICS)  
ROLL NO. 2105321  
ENROLL NO 2018037919

## Bi-Direction Visitors Counter

Department of Physics  
C.M.D. Post Graduate College  
Bilaspur (C. G.) 495008





**A PROJECT REPORT ON**  
**“PROPERTIES OF GRAPHENE**  
**NANORIBBONS(GNRs) USING NanoDCAL**  
**SOFTWARE”**



**C.M.D. P.G. COLLEGE**  
**ATAL BIHARI VAJPAYEE VISHWAVIDYALAYA**  
**BILASPUR (C.G.)**

In Partial Fulfillment for The Degree Of

**MASTER OF SCIENCE IN PHYSICS**

SESSION : 2022-2023

SUBMITTED BY

**SADANANI GUPTA**

M.Sc. IV SEM PHYSICS

**Enrollment No: 2021019727**

**Roll No: 2105339**

UNDER THE GUIDANCE OF  
**Dr.VINIT NAYAR**

Department Of Physics  
C.M.D. P.G. COLLEGE



C.M.D. P.G. COLLEGE BILASPUR (C.G.)

DEPARTMENT OF PHYSICS

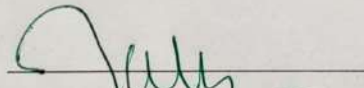
**“ CERTIFICATE ”**

This is to certify that **SADANANI GUPTA** ( Enrollment No. **2021019727....** Roll no. **2105339...**) has completed her project work **“PROPERTIES OF GRAPHENE NANORIBBONS (GNRs) USING NanoDCAL SOFTWARE”** for the partial fulfillment of Degree of Master of Science in Physics under my supervision.



Supervisor

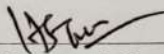
Department of Physics  
C.M.D.P.G.COLLEGE  
Bilaspur (C.G.)



Forwarded by

HEAD

Department of Physics  
C.M.D. P.G. COLLEGE  
Bilaspur (C.G.)



Signature of External Examiner

**A PROJECT REPORT ON**  
**ARDUINO BASED SMART BLIND STICK**



**C.M.D. P.G. COLLEGE BILASPUR**  
**ATAL BIHARI VAJPAYEE UNIVERSITY**  
**BILASPUR (C.G.)**

In partial fulfillment for the degree  
**MASTER OF SCIENCE IN PHYSICS**  
**SESSION: 2022-2023**

**SUBMITTED BY**  
**MANJUL KIRAN YADAV**  
**M.Sc PHYSICS**  
**Enrollment No: 2021019724**  
**Roll No: 2105330**

**UNDER THE GUIDANCE OF**  
**Dr. K.K JAIN**  
**Department of Physics**  
**C.M.D. P.G. COLLEGE**  
**Bilaspur (C.G.)**

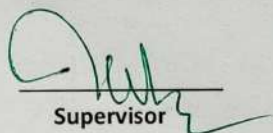


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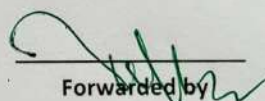
DEPARTMENT OF PHYSICS

CERTIFICATE

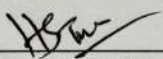
This is to certify that the thesis entitled, "Arduino Based Smart blind stick" submitted by MANJUL KIRAN YADAV ( Enrollment No. 2021019724 , Roll No. 2105330) in the partial fulfillment for the requirements for the award of Master of Science Degree in Physics at Department of Physics, C.M.D. P.G. College Bilaspur, Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.), INDIA is an authentic work carried out by him under my supervision and guidance.

  
Supervisor

Department of physics  
C.M.D.P.G. COLLEGE  
BILASHPUR(C.G.)

  
Forwarded by  
Head

Department of physics  
C.M.D.P.G. COLLEGE  
BILASHPUR(C.G.)  
**HEAD**  
Department of Physics  
C.M.D. Post Graduate College  
Bilaspur (C.G.)

  
Signature of External Examiner

**A PROJECT REPORT ON**  
**“ SOME PROPERTIES OF GaAs NANOPARTICLE BY**  
**NANODCAL SOFTWARE ”**



**C.M.D. P.G. COLLEGE**  
**ATAL BIHARI VAJPAYEE VISHWAVIDYALAYA**  
**BILASPUR (C.G.)**

**In Partial Fulfillment for The Degree Of**  
**MASTER OF SCIENCE IN PHYSICS**  
**SESSION : 2022-2023**

**SUBMITTED BY**  
**YAMINI KASHYAP**  
**M.SC IV SEM PHYSICS**  
**Enrollment No: 2018037280**  
**Roll No: 2105348**

**UNDER THE GUIDANCE OF**

**Dr.VINIT NAYAR**  
**Department Of Physics**  
**C.M.D. P.G. COLLEGE**



C.M.D. P.G. COLLEGE

C.M.D. P.G. COLLEGE BILASPUR (C.G.)

DEPARTMENT OF PHYSICS

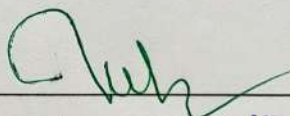
**“ CERTIFICATE ”**

This is to certify that **YAMINI KASHYAP** ( Enrollment No. 2018037280 Roll no. 2105348) has completed her project work “SOME PROPERTIES OF GaAs NANOPARTICLE BY NANODCAL SOFTWARE” for the partial fulfillment of Degree of Master of Science in Physics under my supervision.



Supervisor

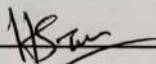
Department of Physics  
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Bilaspur (C.G.)



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Department of Physics  
Head, Post Graduate College  
Bilaspur (C.G.)

Department of Physics  
C.M.D. P.G. COLLEGE  
Bilaspur (C.G.)



Signature of External Examiner

A PROJECT REPORT ON

***“Comparative Study Of 2-D And 3-D Structured  
Germanium Carbide Materials (GeC) By NanoDCAL  
Simulation Software”***



C.M. DUBEY P.G. COLLEGE  
ATAL BIHARI VAJPAYEE VISHWAVIDYALAYA  
BILASPUR (C.G.)

In Partial Fulfillment for The Degree Of

**MASTER OF SCIENCE IN PHYSICS**

SESSION: 2022-2023

SUBMITTED BY  
AYUSH KUMAR SARKAR  
M.Sc. IV SEM PHYSICS  
Enrollment No: 2021019716  
Roll No: 2105317

**UNDER THE GUIDANCE OF**

**DR. VINIT NAYAR**

Department Of Physics

C.M. DUBEY P.G. COLLEGE, BILASPUR



## **“CERTIFICATE”**

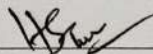
This is to certify that **Ayush Kumar Sarkar** (Enrollment no. 2021019716 Roll no. 2105317) has completed his project work *“Comparative Study Of 2-D And 3-D Structured Germanium Carbide Materials (GeC) By NanoDCAL Simulation Software”* for the partial fulfillment of Degree of Master of Science in Physics under my supervision.



Supervisor  
Dr Vinit Nayar  
Department of Physics  
C.M. DUBEY P.G. COLLEGE  
Bilaspur (C.G.)



Forwarded by  
Dr. Dipak Kumar  
Department of Physics  
C.M. D. Post Graduate College  
Bilaspur (C.G.)  
Head of Department  
Department of Physics  
C.M. DUBEY P.G. COLLEGE  
Bilaspur (C.G.)



Signature of External Examiner





(ESTD.1956)

**OFFICE OF THE PRINCIPAL**  
**C.M.DUBEY POST GRADUATE COLLEGE,**  
**BILASPUR (C.G.)**

(Accredited "B+" by NAAC)

An Affiliated College of Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Phone : +91 7752-225177

Mob. No.: +91 6262333158

Website : [www.cmdpgcollege.ac.in](http://www.cmdpgcollege.ac.in)

E-mail : [principal@cmdpgcollege.ac.in](mailto:principal@cmdpgcollege.ac.in)

Ref No.: CMD/465

Date: 28/06/23

**REPORT ON "INTERNAL PROJECT WORK"**

**DEPARTMENT OF MICROBIOLOGY**

**SESSION – 2022-23**

In the curriculum of the Microbiology in the 4<sup>th</sup> semester there is option for the students to choose External or Internal (minor) project work.

If students opt for External project work then they skip their theory papers and two lab works and have to perform their project of six month outside our affiliated university by the recommendation of Principal. After six months they are assessed and evaluated according to their work by the external examiner which is nominated by the university. If students opt Internal project work then they have to do a minor research project work at local level which are all based on the availabilities of the requirement of the project provided our institute.

The curriculum has been designed to enable the students for their research. This curriculum will fulfil the needs of the students towards research. To have students with creative power and capabilities in microbiology in order to apply advance techniques for maintaining the accuracy in diagnostic approach.

In the session 2022-2023, 14 students were present in the fourth semester. For the selection of the topic for internal project work the overall performance of the students, their practical approach, their learning capabilities all are taken into consideration. Students had been provided the topics which was facilitated in the college. The teacher helped the students in selection of their research topic. The role of the teacher is like a mentor who guides the students in a proper way. The motivation of teacher is very important for the student in their research work.



For research purpose different areas of microbiology can be explored by the students such as:

- Molecular biology
- Agricultural biology
- Applied microbiology
- Medical microbiology
- Food microbiology
- Industrial microbiology
- Environmental microbiology
- Nanotechnology
- Biochemistry
- Pharmacology

After the completion of their research they complied all the documents, their research findings and prepared a research report as dissertation. On the basis of their dissertation assessment of the students are done. This Assessment increases the quality of the student.

Evaluation of the student's internal project work is done which is mandatory part of the curriculum. It uses methods and measures to judge student learning and understanding of the project for the purpose of grading and reporting. Evaluation of the student is done by the External Examiner appointed by the university. Students gave Power Point presentations for their project and viva-voce is taken by external examiner. The marks given by the examiner reflects in their result. This internal project work was a starting platform for the students for their future research work.

*Sundit*  
**Head**  
HOD OF MICROBIOLOGY  
Dept. of Microbiology  
C.M. Dubey P.G. College  
Bilaspur (C.G.)  
BILASPUR (C.G.)

*S. N.*  
**PRINCIPAL (In-charge)**  
C.M.DUBEY P.G.COLLEGE  
BILASPUR (C.G.)  
**Incharge Principal**  
C.M. Dubey P.G. College  
Bilaspur (C.G.)





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An Affiliated College of AtalBihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

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Mob. No.: +91 6262333158

E-mail : [principal@cmdpgcollege.ac.in](mailto:principal@cmdpgcollege.ac.in)

RefNo.: CMD/465

Date 28/06/23

**DEPARTMENT OF MICROBIOLOGY**

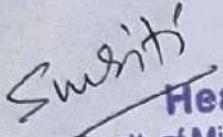
**Title of Internal Project**


Session – 2022-23

S.No.	Student's Name	Topic
1	Anjali Bhagat	"Phytochemical Analysis and Antimicrobial Activity of Clitoria Ternatea leaf Extract Against the Pathogenic Microbes"
2	Kiran Patel	"Isolation and Identification of non-fermentation gram negative organism from pus and count of antibiotics antimicrobial susceptibility"
3	Neha Yadav	"Identification of non-fermenters from urine specimen and to observe pseudomonas Acinetobacter (Gram negative bacteria)"
4	Pallavi Darshan	"Identification of coagulase negative staphylococci in blood culture"
5	Riya Bhardwaj	"Bacterial profile and their antibiotic susceptibility pattern on clinically diagnosed urinary tract infection"
6	Sandeep Banjare	"Comparison of HBsAG in Rapid test and ELISA test"
7	Tarini Dewangan	"Development of Alternative probiotic drink from KIWI and qualitative analysis of developed juice"
8	Prachi Pandey	In partial fulfillment of the requirement for the award of degree of
9	Sony Yadav	A study on antibacterial activity using green particles and the synthesis of copper nano particles from botanical extracts
10	Shweta Tiwari	Preparation of nano particles material from phytochemicals of costus igneus (insulin) leaves and antimicrobial activities check on Staphylococcus aureus"



11	Diksha Jani	'Applicaton of nano material synthesis from Selaenicerus Undatus (Dragon fruit) and their antimicrobial activity against Klebsiella'
12	Piyush Kesharwani	"Bacteriology profile and antibiotic susceptibility test in blood culture isolate in tertiary care hospital"
13	Sadhana Xalxo	"Screening of physical growth condition and food spoilage microbial analysis from spoil Banana"
14	Shagufta Khan	A one month study on microbiological profile of respiratory samples.

  
**Head**  
 Deptt. of Microbiology  
 C.M. Dubey P.G. College  
 Bilaspur (C.G.)  
**HOD OF MICROBIOLOGY**  
**C.M.DUBEY P.G. COLLEGE**  
**BILASPUR (C.G.)**

  
**Incharge Principal**  
 PRINCIPAL (In-charge)  
 C.M. Dubey P.G. College  
 Bilaspur (C.G.)  
**C.M.DUBEY P.G.COLLEGE**  
**BILASPUR (C.G)**







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E-mail : [principal@cmdpgcollege.ac.in](mailto:principal@cmdpgcollege.ac.in)

**REPORT ON "INTERNAL PROJECT WORK"**

**DEPARTMENT OF BIOTECHNOLOGY**

**SESSION – 2022-2023**

In the curriculum of the Biotechnology in the 4<sup>th</sup> semester there is option for the students to choose External and Internal project work.

If students opt for external project work then they skip their theory papers and two lab works and have to perform their project of six month outside our affiliated university by the recommendation of Principal. After six months they are assessed and evaluated according to their work by the external examiner which is nominated by the university. If students opt internal project work then they have to do research project work at local level which are all based on the availabilities of the requirement of the project provided our institute.

The curriculum has been designed to enable the students for their research. This curriculum will fulfil the needs of the students towards research. To have students with creative power and capabilities in biotechnology order to apply advance techniques for maintaining the accuracy in diagnostic approach.

In the session 2022-2023, 14 students were present in the fourth semester. For the selection of the topic for internal project work the overall performance of the students, their practical approach, their learning capabilities all are taken into consideration. Students had been provided the topics which were facilitated in the college. The faculty helped the students in selection of their research topic. The role of the faculty is like a mentor who guides the students in a proper way. The faculty's motivation is very important for the student's in their research work.

For research purpose the different areas of biotechnology can be explored by the students such as:


- **Molecular biology**
- **Applied microbiology**
- **Plant biotechnology**
- **Medical biotechnology**
- **Food biotechnology**
- **Industrial biotechnology**
- **Environmental biotechnology**
- **Biochemistry**

After the completion of their research they compiled all the documents, their research findings and prepared a result report as per dissertation work done. By taking the assessment faculty tries to improve the student's path towards learning. Assessment increases the quality of the student.

Evaluation of the student's internal project work is done which is mandatory part of the curriculum. It uses methods and measures to judge student learning and understanding of the project for the purpose of grading and reporting. Evaluation of the students is done by the External Examiner appointed by the university. Students gave power point presentations for their project and viva-voce is taken by external examiner. The marks given by the examiner reflects in their result. This internal project work was a starting platform for the students for their future research work. This will guide students for doing PhD and other research projects in future ahead.

  
**Head**  
Deptt. of Biotechnology  
C.M. Dubey P.G. College  
Bilaspur (C.G.)  
**HEAD**

**DEPARTMENT OF BIOTECHNOLOGY**  
**C.M.D.P.G. COLLEGE**  
**BILASPUR (C.G.)**

  
**PRINCIPAL (In-charge)**  
**C.M.DUBEY P.G.COLLEGE**  
**BILASPUR (C.G.)**  
**Incharge Principal**  
C.M. Dubey P.G. College  
Bilaspur (C.G.)