



Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

Criteria 3 - Research, Innovations and Extension

3.5.1. Number of functional MoUs/linkages with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years

MoUs, faculty exchange and collaborative research Index:

Sr. No	Name of the institution / industry with whom the MoU	Year of signing MoU	Duration of MoU	Page No.
1	GOVERNMENT GENERAL DEGREE COLLEGE, LALGARH, JHARGRAM W.B., 721516	2019	10 Yrs	3-9
2	Government General Degree College, Kalna-I	2019	5 Yrs	10-17
3	Bajaj Finserv Limited	2021	3 Yrs	18-33
4	Government General Degree College, at Pedong, Kalimpong, Pin-734311, W.B. India.	2021	5 Yrs	34-49
5	Gorubathan Government College, Lower Fagu, Kalimpong, 735231, W.B. India	2022	5 Yrs	50-58
6	Indira Gandhi National Open University (IGNOU)	2022	1 Yrs	59
7	Banarhat Kartik Oraon Hindi Government College Binnaguri, Jalpaiguri, West Bengal, Pin-735203, India	2022	5 Yrs	60-67
8	Youth Computer Training Institute for Skill Development, Bassdroni, Kol-70, W. B. India	2022	6 Months	68-78
9	Brainware University, Ramkrishnapur Road, Barasat, Kol-125, W.B. India	2022	3 Yrs	79-85
10	Eastern Himalayan Foundation, Darjeeling, West Bengal, India	2022	3 Yrs	86-96
11	Acharya Prafulla Chandra Roy Government College, Himachal Bihar Phase 1, Matigara, Siliguri, Matigara, West Bengal 734010	2023	5 Yrs	97-100
12	Indira Gandhi National Open University (IGNOU), Darjeeling Center, At Darjeeling Govt. College	2023	1 Yrs	101
13	Kalimpong College, Kalimpong, W. B. Pin-734301	2023	5 Yrs	102-110


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Collaborative Research Activities Index:

Sr. No	Name of the institution / industry with whom the Collaborative Research with contact details	Name of the Activity	Page No.
14	Indian Institute of Tropical Meteorology (An Autonomous Institute of the Ministry of Earth Sciences, Government of India) Dr. Homi Bhabha Road, Pune 411 008, India	Collaborative Research Activity	111
15	Burdwan University, Burdwan, 713104, W.B. India.	Collaborative Research Activity	112-113
16	Chemical Signal and Lipidomics Laboratory, Department of Botany, Centre of Advanced Study, University of Calcutta, Kolkata, 700019, India	Collaborative Research Activity	114-115
17	Dept. of Botany, Saldiha College, Saldiha-722 173, Bankura, West Bengal, India.	Collaborative Research Activity	116-117
18	Dept. of Zoology, School of Life Sciences, Sikkim University, Gangtok, Sikkim-737 102.	Collaborative Research Activity	118
19	Department of Chemistry, Jadavpur University, Jadavpur, Kolkata 700032, India	Collaborative Research Activity	119-121
20	Dept. of Geography and Environment Management, Vidyasagar University, Medinipur, W. B. 721102, India.	Collaborative Research Activity	122
21	Department of Botany, Govt. General Degree College, Keshiary, Tilaboni-Mahisamura, Paschim Midnapur-721135.	Collaborative Research Activity	123
22	Department of Tea Science, North Bengal University, Darjeeling- 734013, West Bengal, India	Collaborative Research Activity	124-126
23	Department of Physics, Aliah University, Newtown Campus, Kolkata - 700156, India.	Collaborative Research Activity	127-128
24	Dept. of Geography, University of Gour Banga, Malda, West Bengal, India	Collaborative Research Activity	129-131
25	Variable Energy Cyclotron Centre, 1/AF Bidhan Nagar, Kolkata 700064, India.	Collaborative Research Activity	132
26	Dept. of Chemistry, University of Kalyani, Kalyani 741235, India and Dept. of Chemistry, JIS College of Engineering, Kalyani 741235, India	Collaborative Research Activity	133-134
27	Department of Botany, Rajiv Gandhi University, Rono Hills, Doimukh, Arunachal Pradesh 791112, India.	Collaborative Research Activity	135-136
28	Regional office, Eastern Himalaya-Northeast India, Ashoka Trust for Research in Ecology and the Environment, Gangtok, Sikkim, India.	Collaborative Research Activity	137
29	Ecology and Toxicology Laboratory, Department of Zoology, University of North Bengal, Darjeeling- 734013, West Bengal, India.	Collaborative Research Activity	138


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2019-20

1. Memorandum of understanding between **GOVERNMENT GENERAL DEGREE COLLEGE, LALGARH, JHARGRAM W.B., 721516** and **Darjeeling Govt. College, Lebong Cart Road, Richmond Hill, P.O. -North Point, Dist. -Darjeeling, PIN -734101, West Bengal.**



GOVERNMENT OF WEST BENGAL
GOVERNMENT GENERAL DEGREE COLLEGE, LALGARH, JHARGRAM W.B.

Office of the Principal

P.O.: LALGARH: DIST.: JHARGRAM: e-mail:principal@lalgarhgovtcollege.org: Mob. No.:9474756866

Memo No.:

Date: 18.09.2019

MEMORANDUM OF UNDERSTANDING (MoU)

Between

GOVERNMENT GENERAL DEGREE COLLEGE, LALGARH, JHARGRAM W.B., 721516

and

**Darjeeling Govt. College, Lebong Cart Road, Richmond Hill, P.O. -North Point,
Dist. -Darjeeling, PIN -734101, West Bengal**

This agreement between Govt. Gen. Degree College at Lalgarh (GGDC Lalgarh), Jhargram, W.B., 721516 and Darjeeling Govt. College, Darjeeling, West Bengal, 734101 is signed on the **18th September, 2019.**

Objectives, Scope, and Major Activities:

Both institutions agree to encourage the development of the following types of activities.

1. Visits and formal exchanges of faculty, students and administrators in specific areas of education, research and outreach programme if required with the information and permission taken from HE Department, Govt. Of W.B.
2. Establishment of cooperation in the Under Graduate education, PG Education and research. Short term training and FDP through library as well as laboratory resources.
3. To organize joint conferences, seminars, webinars, symposia or other scientific meetings on subjects of mutual interest.
4. Exchange of academic information and materials as and when required.
5. Explore the possibilities for developing joint research programs and collaborations including extension work.


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6. Field and camp for students and faculties even social activates if any.
7. Different inter College programmes like outdoor and indoor games even transfer of knowledge from different sources if required on yoga and life skills.


General terms and Conditions:

1. **Duration of MOU:** This MOU will be effective from the date of agreement and will have an initial duration of **10 (ten)** years. The MOU may be extended with the consent of both the parties.
2. **Confidentiality:** Both the colleges will maintain confidentiality about the terms and conditions of the agreement.
3. **Termination of MOU:** This MOU may be terminated at any time with a 15 days prior notice from either of the parties.
4. **Modification:** Any alteration / modification to the MOU may be done with mutual consent of both the parties. Involvement of new departments/activities may be done from time to time with mutual consent of both the colleges.

For Darjeeling Govt. College, Darjeeling., W.B.

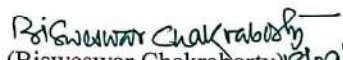

(Dr. P. C. Lama) 18/09/2019
Officer-in-Charge
Darjeeling Govt. College


In Witness of:


IQAC-Coordinator
Darjeeling Govt. College

IQAC CO-ORDINATOR
Darjeeling Government College
DARJEELING

For GGDC Lalgarh, Jhargram, W.B.


(Bisweswar Chakraborty) 18/09/2019
Officer-in-Charge
GGDC Lalgarh, Jhargram
Jhargram - 721516


IQAC Coordinator, 18/09/19
GGDC Lalgarh
IQAC Co-Ordinator
Government General Degree College Lalgarh


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Memo No.:

Date: 17.02.2023

To
Dr. Prantik Hazra
Asst. Prof. of Zoology
Darjeeling Govt. College
Darjeeling, W.B.


Sub.: Invited talk On World Wetland Day 2023 on 24.02.2023

Respected Sir,

As per the discussion with our Co-ordinator, IQAC and Head, Dept. of Botany, GGDC Lalgarh, Jhargram you have been selected as resource person to deliver a talk in connection with "Observation of World Wetland Day-2023" at virtual room (Google meet) on 24.02.2023 (7.45 p.m. to 8:15 p.m.) for one and half hour lecture with National Level status through e- mode on voluntary basis.

Hoping your kind response to make it complete.

Thanking You,
Yours faithfully,


(Asst. Prof. Bisweswar Chakraborty)
Officer-in-Charge,
Govt. General Degree College,
Lalgarh, Jhargram-721516

Officer - in - Charge
Govt. General Degree College Lalgarh



Officer-in-Charge
Darjeeling Govt. College



Forwarded

To
The Officer-in-charge
Darjeeling Govt. College

for necessary information in
connection with Mob.

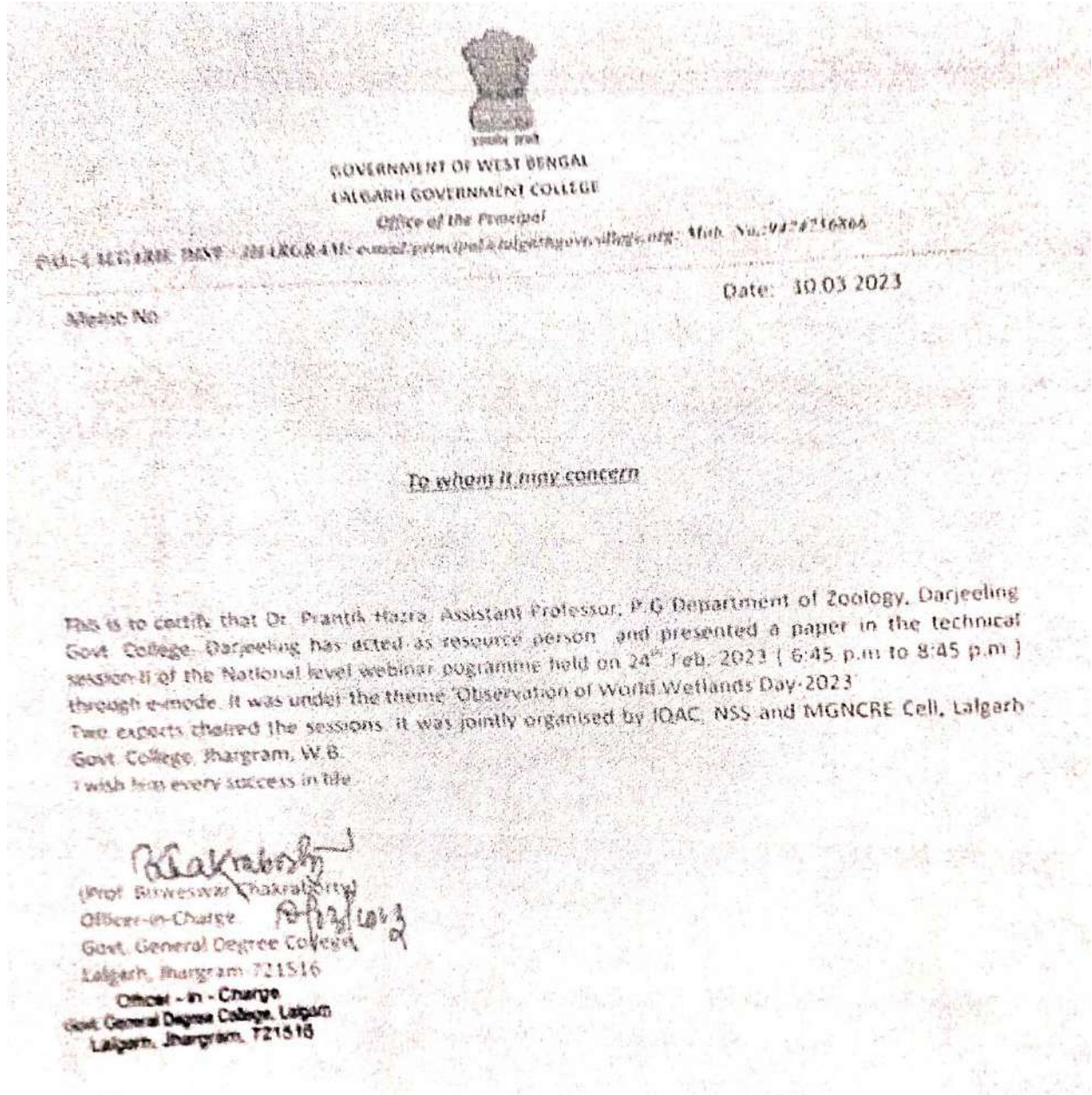
 22/02/23



सत्यमेव जयते

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LALGARH GOVERNMENT COLLEGE
Office of the Principal

P.O.: LALGARH; DIST.: JHARGRAM; e-mail: principal@lalgarhgovtcollege.org; Mob. No.: 9474756866

Date: 03.01.2023

To,


Nirmalya Shee,
Assistant Professor,
PG Department of Zoology,
Darjeeling Government College,
Darjeeling: W.B.

Sub: MoU related Invitation letter to deliver a talk at Seminar Hall of GGDC Lalgarh, Jhargram on 13/01/2023 for all B.A./B.Sc Students.

Respected Sir,

As per the information received from our IQAC, Darjeeling Govt. College, Darjeeling, I have the honour to inform you that we are arranging a seminar talk to our B.A./B.Sc. students on 13.01.2023 at 3:00 p.m. onwards. The theme is 'Aquarium Fish' for all to make the campus green and clean. Teachers and students will be present on that day. Hope that you will be kind enough to do this needful. Your presence is highly solicited. Thanking You.

Sincerely Yours,


(Asst. Prof. Bisweswar Chakraborty)
Officer-in-Charge, Officer-in-Charge
Govt. General Degree College, Government General Degree College, Lalgarh
Lalgarh, Jhargram-721516 Lalgarh, Jhargram, 721516

Copy to: Coordinator, IQAC, Darjeeling Govt. College, Darjeeling & GGDC Lalgarh, Jhargram,
Guard File, TCS of GGDC Lalgarh


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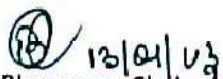
P.O.: LALGARH; DIST.: JHARGRAM; e-mail: principal@lalgarhgovtcollege.org; Mob. No.: 9474756866

Date: 13.01.2023

To whom it may concern

This is to certify that, Nirmalya Shee, Assistant Professor, PG Department of Zoology, Darjeeling Government College, Darjeeling, W.B. has delivered a talk at our College under the head "Aquarium Fish" to the audience (teachers and students) at College hall room on 13.01.2023 at 3:00 p.m. In the said programme, 40 students and 11 teachers were attended. It was an invited talk in connection with MoU between two Govt. Colleges of West Bengal. We appreciate his valued lecture for future extension work.

We wish him every success in life.



(Asst. Prof. Blsweswar Chakraborty)
Officer-in-Charge,
Govt. General Degree College,
Lalgarh, Jhargram-721516

Officer-in-Charge
Government General Degree College, Lalgarh
Lalgarh, Jhargram, 721516


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Date: 10.06.2024

To whom it may concern

This is to certify that, Nirmalya Shee, Assistant Professor, PG Department of Zoology, Darjeeling Government College, Darjeeling; W.B. has delivered a talk at our College under the head "*Environmental Impact Assessment*" to the audience (teachers and students) at College hall room on 10.06.2024 at 3:00 p.m. In the said programme, 25 students and 05 teachers were attended. It was an invited talk in connection with MoU between two Govt. Colleges of West Bengal.

We appreciate his valued lecture for future extension work.

We wish him every success in life.

Bisweswar Chakraborty
(Asst. Prof. Bisweswar Chakraborty)
Officer-in-Charge, 10/06/24
Govt. General Degree College,
Lalgarh, Jhargram-721516
Officer-in-Charge
Government General Degree College, Lalgarh
Lalgarh, Jhargram, 721516

Principals
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2. Memorandum of understanding between GOVERNMENT GENERAL DEGREE COLLEGE, Kalna-1 and Darjeeling Govt. College, Lebong Cart Road, Richmond Hill, P.O. -North Point, Dist. - Darjeeling, PIN -734101, West Bengal On 20.09.2019.



पश्चिम बंगाल पश्चिम बंगाल WEST BENGAL

31AB 819479

The Memorandum of Understanding (hereinafter called the MOU) is entered into on this the 20th Day of September 2019 (Two Thousand Nineteen)

By and Between

GOVERNMENT GENERAL DEGREE COLLEGE, KALNA-I, The First Party represented herein by its Officer-in-Charge/Principal as Representative and Competent Authority (Hereinafter referred as "First Party", the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors – in office, administrators and assigns)

DARJEELING GOVERNMENT COLLEGE, The Second party and represented herein by the Officer-in-Charge/Principal as Representative and Competent Authority (Hereinafter represented as "Second Party", the institution which expression, unless excluded by or repugnant to the subject or context shall include its successors – in office, administrators and assigns)

(First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party')

WHEREAS

A) FIRST PARTY is a Government Higher Educational Institution named:

i) Government General Degree college, Kalna-I, Purba Bardhaman-713405

B) First Party and Second Party believe that collaboration and cooperation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The parties intent to cooperate and focus their efforts in cooperation within the area of Higher Education, Research and Development, provide opportunity for global experience, and to facilitate


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Darjeeling Govt. College





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advancement of knowledge on the basis of reciprocity, best effort, mutual benefit, and frequent interactions.

D) Both Parties being legal entities in themselves desire to sign this MOU for advancing their mutual interests.

E) Darjeeling Government College, Darjeeling, West Bengal 734101 the Second Party is a Government Higher educational Institute of West Bengal under the aegis of the Department of Higher Education, Government of West Bengal and is engaged in imparting higher education by running under graduate Honours programmes in various science arts and commerce streams along with post graduate programme in Nepali, English, Zoology and Botany at present with rights, possibility and extension thereafter.

F) The Second Party presently functions from its own campus at Darjeeling, West Bengal 734101 and will continue to do so until further order from the Department of Higher Education, Government of West Bengal. It has no other branch, wing, subsidiaries or extensions existing at present.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISE SET FORTH IN THIS MOU, THE PARTIES HERE TO AGREE AS FOLLOWS:

Clause-I
CO-OPERATION

1.1 Both the Parties are united by common interest and objectives, and they shall establish channels of communication and co-operation that will promote and advance -

- Joint research projects and publications, including work by undergraduate and post graduate students at the partner institutions;
- Faculty and student exchanges based on reciprocity;
- Reciprocal placement of students and co-ops, when possible;
- Team taught courses, including online courses;
- Visits by faculty, professional staff and students;
- Exchange of information on teaching, learning material and other literature relevant to their educational and research programmes;
- Joint organization of short-term continuing education programmes on topics of mutual interest and to invite each other's faculty to participate therein;
- Joint organization of seminars, conferences, or workshops on topics of mutual interest and to invite each other's faculty to participate therein; and
- Any other joint venture for academic enrichment of both the colleges on prior agreement of the Principals of both the Colleges;
within the Institution and its related wings.

1.2 Both the Parties shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.

1.3 First Party and Second Party must respect each other's intellectual property and the disputes if any, relating to any aspect of academic cooperation, Principals of both the College will jointly resolve the dispute in a spirit of independence, mutual respect, and shared responsibility.

1.5 Both the Parties mutually agreed not to include any financial transaction during the execution of this MOU.

1.6 Neither Party shall be held responsible for non-fulfillment of their respective obligation under this MOU due to circumstances beyond their control but not limited to pandemic, war, flood etc. If such condition continues beyond six months, the parties shall then mutually decide about the future course of action.

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1.7 Nothing in this MOU shall be constructed to make either party a partner, an agent or legal representative of the other for any purpose. Now onwards both the party may mention the name and LOGO of the other in their documents as "COLLABORATOR" for purpose as may be required subject to communication by the user to the other party in writing beforehand.

1.8 This MOU unless terminated by mutual written agreement will continue for 5 years after the effective date specified in the opening paragraph and can be renewed through mutual interest. Either Party shall have the right to unilaterally terminate this MOU upon 90 days prior written notice to the other party.

Agreed:

For
Government General Degree College, Kalna-I
Purba Bardhaman-713405

Officer-in-Charge
Govt. General Degree College, Kalna-I

Authorized Signatory
Government General Degree College, Kalna-I
Purba Bardhaman-713405
Ph: 9474781824
E-mail: gov.collegekalna1@gmail.com
Website: www.ggdck.ac.in

Witness - 1

Co-ordinator, IQAC
Government General Degree College at Kalna-1

For
Darjeeling Government College
Darjeeling -734101

Officer-in-Charge
Darjeeling Govt. College

Authorized Signatory
Darjeeling Government College
Darjeeling -734101
Ph: 7908899361
E-mail: dgc.principal@gmail.com
Website: www.darjeelinggovernmentcollege.com

Witness - 2

Dr. Sherap Bhutia (W.B.E.S.)
Associate Professor & Head
Department of Geography
Darjeeling Government College
Government of West Bengal

Officer-in-Charge
Darjeeling Govt. College





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GGDC Kalna-I

Memorandum of Understanding was signed between Government General Degree College, Kalna-I and Darjeeling Govt. College on 20/09/2019

P. Prasad
Officer-in-Charge
Darjeeling Govt. College





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Government of West Bengal Darjeeling Government College	
Declaration of MoU related activities	
Name of the College:	Darjeeling Government College
Name of the Collaborating Organization/ Institute	Government General Degree College, Kalna-I
Start Date :	20/09/2019
Duration :	5 Years
Purpose of the MoU :	Faculty exchange and collaborative research work
Collaborative activities Carried Out:	
Programme 1	Special Class on " Programme Outcome and Course Outcome"
A Report on the collaborative activities has also been attached.	

Government of West Bengal Government General Degree College, Kalna-I	
<u>Summary Report of Programme I</u>	
Name of the Programme :	Special Class on " Programme Outcome and Course Outcome"
Objective :	To orient faculties and students on latest NEP 2020 recommended OBE based CO-PO preparation
Target Participants :	Students and faculties of Darjeeling Government College
Venue :	Darjeeling Government College
Date :	16/09/2022
Expected Outcome :	Faculties will be able to implement the NEP recommendation of OBE through CO-PO formation and will be able to guide students about the latest trend and how that is going to be beneficial for them.
Report : On 16 th of September, 2022 Smt. Neetu Chettri of Government General Degree College Kalna-I delivered a special lecture on " Programme Outcome and Course Outcome " at Darjeeling Government College for the orientation of faculties and students on the Outcome Based Education and particularly on CO-PO formation. The programme started with welcoming her in the college and then she had an interactive presentation with the faculties of DGC on the said topic. Programme ended with a vote of thanks.	


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Date: 01/09/22

To
Smt. Neetu Chettri
Assistant Professor in Education
Government General Degree College, Kalna-I
Purba Bardhaman

Madam,

This is to request you to kindly take a special class on "Programme Outcome and Course Outcome" at Darjeeling Government College on 16/09/2022 as a part of the Faculty Exchange Program under the Memorandum of Understanding (MoU) between Government General Degree College Kalna-I and Darjeeling Government College.

We would be grateful if you kindly agree to deliver the special lecture on the above mentioned date.

Warm Regards,

Officer-in-Charge
Darjeeling Govt. College

Officer-in-Charge
Darjeeling Government College

Officer-in-Charge
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Date: 16/09/22

TO WHOM IT MAY CONCERN

This is to certify that Smt. Neetu Chettri, Assistant Professor in Education, Government General Degree College, Kalna-I, Purba Bardhaman has taken a special class on "Programme Outcome and Course Outcome" Darjeeling Government College on 16/09/2022 as a part of the Faculty Exchange Program under the Memorandum of Understanding (MoU) between Government General Degree College Kalna-I and Darjeeling Government College.

We are thankful for her valuable time shared with our students and wish her all the success in life.

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Special lecture on " Programme Outcome and Course Outcome" by Smt. Neetu Chettri, GGDC Kalna-I

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2021-22

3. Memorandum of understanding between Bajaj Finserv with GOVERNMENT GENERAL DEGREE COLLEGE, Kalna-1 and Darjeeling Govt. College, Lebong Cart Road, Richmond Hill, P.O. -North Point, Dist. -Darjeeling, PIN -734101,



1st Nov 2021

Dear Sir/Madam,

Greetings from Bajaj Finserv!

Please find enclosed One set of duly stamped and signed by both parties MOU for your records.

Looking forward to a very successful partnership in making our Students employable.

Thanks and Regards,

Archana

Archana Bhat
CPBFI-Training Operations
Bajaj Finserv

Bajaj Finserv Limited

Office: 6th Floor, Bajaj Finserv Corporate Office, Off Pune-Ahmednagar Road,
gar, Pune - 411 014, Maharashtra, India
Office: Mumbai - Pune Road, Akurdi, Pune - 411 035, Maharashtra, India

Tel: +91 20 30405700
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www.bajajfinserv.in
Corporate ID No: L65923PN2007PLC130075

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Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter referred to as the "MOU") is made and executed on this 27th day of August 2021 at Pune.

BETWEEN

Darjeeling Government College, a college/Institute recognized under Section 2(f) and 12 (B) of the UGC Act 1956 and having address at: Leborg cart road Darjeeling, 734101, Karnataka, India

Through its Principal

(hereinafter referred to as "PARTNER INSTITUTE")




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AND

BAJAJ FINSERV LIMITED, a company registered under the provisions of the Companies Act, 1956, having its registered office at: Bajaj Auto Ltd Complex, Mumbai-Pune Road, Pune 411 035

AND

BAJAJ FINANCE LIMITED, a company registered under the provisions of the Companies Act, 1956, having its registered office at: Akurdi, Pune 411 035

Through President (Legal and Taxation) – Bajaj Finserv Limited

(Bajaj Finserv Limited and Bajaj Finance Limited hereinafter referred to as "FINSERV")

The expressions "PARTNER INSTITUTE" and "FINSERV" shall, collectively be referred to as "Parties" and individually as "Party".

WHEREAS:

- A. PARTNER INSTITUTE established in 1948 by Darjeeling Government College is affiliated to University of North Bengal.
- B. Bajaj Finserv Limited is the holding company for financial services businesses of the Bajaj Group;
- C. Bajaj Finance Limited is a Non-Banking Finance Company registered with Reserve Bank of India.
- D. FINSERV, as part of its Corporate Social Responsibility (CSR) activities, desires to create employment opportunities for educated youth in the Banking, Finance and Insurance Sector through a customized training programme encompassing product knowledge, communication and other soft skills, which is expected to benefit fresh graduates, especially those belonging to economically weaker sections of the society;
- E. FINSERV, in partnership with some of the leading educational institutes, has designed and developed a customized programme viz. Certificate Programme in Banking, Finance and Insurance (hereinafter referred to as CPBFI).
- E. The PARTNER INSTITUTE has expressed its willingness to partner with FINSERV to conduct CPBFI for its students and alumni, on terms and conditions set out herein below;
- F. FINSERV has accepted the offer of the PARTNER INSTITUTE and agreed to partner with the PARTNER INSTITUTE for conducting CPBFI, on terms and conditions set out below.

NOW THIS AGREEMENT WITNESSETH AND IT IS AGREED BY AND BETWEEN THE PARTIES AS UNDER:

1. Purpose/Objective of CPBFI:

The objective of CPBFI is to impart practical knowledge and essential skills to final year graduation students and fresh graduates, especially those belonging to economically weaker sections of the society, with a view to create employment opportunities for them in the Banking, Finance and Insurance Companies.




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2. Scope of CPBFI:

- i. FINSERV has appointed different training institutes as Official Training Partners for conducting CPBFI (hereinafter referred to as CPBFI Official Training Partners).
- ii. FINSERV and the PARTNER INSTITUTE, through one of the CPBFI Official Training Partners, shall conduct, for the eligible students and alumni of the PARTNER INSTITUTE, a Certificate Programme in Banking, Finance and Insurance viz. CPBFI, covering industry overview and product knowledge relevant for roles in banks, NBFCs, life insurance and general insurance companies, communication and other workplace skills. CPBFI shall be conducted through classroom training (hereinafter referred to as CPBFI-CLASSROOM), online training (hereinafter referred to as CPBFI-ONLINE) or a combination of classroom and online training (hereinafter referred to as CPBFI-BLENDED).

3. Responsibilities of the Parties:

- i. The PARTNER INSTITUTE shall be responsible for mobilizing students for the CPBFI Programme by spreading awareness about CPBFI and its potential benefits for the prospective students. FINSERV shall, if requested by PARTNER INSTITUTE, at its discretion, support the awareness campaigns by participating in the student meetings, parent meetings and design of publicity material such as posters, leaflets etc.
- ii. The PARTNER INSTITUTE shall be responsible for providing necessary infrastructure facilities for conducting classroom sessions of CPBFI-CLASSROOM and CPBFI-BLENDED, specifically (a) one class room, equipped with a projector, a sound system and a white-board with a seating capacity of at least 45 students, (b) one computer room, equipped with computers having MS Office software and high-speed internet connection, with a seating capacity of at least 25 students, for conducting the online assessment tests (c) one assembly hall with a capacity of around 60 persons and 3 interview rooms, for one day per batch, for conducting CPBFI HR Workshop. PARTNER INSTITUTE shall also provide basic stationery required for training purposes such as marker pens, chart sheets, chalks etc.
- iii. The PARTNER INSTITUTE shall appoint a Coordinator for every CPBFI batch, with following responsibilities;
 - a. To motivate and encourage students to extract maximum benefit from CPBFI.
 - b. To provide necessary support to the CPBFI Official Training Partner for planning and conducting the program.
 - c. To conduct online pre-assessment and post-assessment tests for every batch.
 - d. To ensure that the classes are conducted as per pre-defined schedule.
 - e. To ensure that all students are regularly attending the classes.
 - f. To maintain daily attendance of students.
 - g. To attend few classes as an observer and provide feedback to FINSERV about the training quality.
 - h. To ensure discipline and good conduct from the students.
 - i. To support FINSERV team to conduct CPBFI HR Workshop for every batch.
 - j. To submit required college information as per Annexure 3 to FINSERV coordinator.
- iv. The PARTNER INSTITUTE shall issue an appointment letter to the Coordinator as per format prescribed in Annexure 4 of this MOU. The PARTNER INSTITUTE shall submit the appointment letter, duly authorized by the Principal of the PARTNER INSTITUTE and accepted by the Coordinator, to FINSERV before commencement of every CPBFI Batch.
- v. FINSERV shall be responsible to design and continuously improve the CPBFI programme structure, including adding or deleting courses, changing pedagogy or modifications to the programme duration.





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- vi. FINSERV shall be responsible to arrange faculty, with requisite expertise and experience, through any of its CPBFI Official Training Partners. FINSERV shall provide necessary details of the concerned CPBFI Official Training Partner to the PARTNER INSTITUTE at least 2 weeks before start of every batch. FINSERV shall be responsible to arrange the online training platform for conducting CPBFI-ONLINE and CPBFI-BLENDED.
- vii. FINSERV and the PARTNER INSTITUTE, shall be responsible for award of "Certificate of Completion" at the completion of CPBFI to all successful candidates who meet eligibility criteria viz. requisite attendance and credits in the examinations conducted during CPBFI.
- viii. FINSERV, as part of its CSR, shall bear the full cost of faculty deployed by its CPBFI Official Training Partner, to ensure that CPBFI is affordable to students belonging to economically weaker sections of the society.
- ix. FINSERV along with its chosen academic partner/s, shall conduct an online examination at the end of CPBFI. Only students who pass this examination and have requisite attendance shall be eligible to receive the "Certificate of Completion". This examination shall be in addition to all other examinations conducted by the CPBFI Official Training Partner during CPBFI.
- x. The PARTNER INSTITUTE shall display the FINSERV name and logo prominently in all marketing and publicity material, notices for students and all other internal and external communications, in paper form or otherwise, relating to CPBFI.
- xi. Any other use of FINSERV brand names by the PARTNER INSTITUTE shall require prior written consent from FINSERV.
- xii. The PARTNER INSTITUTE shall provide to FINSERV, necessary information about all the students of CPBFI, in the format specified by FINSERV in Annexure 1. FINSERV shall be free to contact the students directly for the purpose of monitoring the impact of CPBFI and the career progression of students.
- xiii. The PARTNER INSTITUTE shall not conduct CPBFI or a programme with identical course structure except in partnership with FINSERV.
- xiv. The PARTNER INSTITUTE shall be solely responsible to comply with regulations of University Grants Commission or any other authority regulating educational activities in India. The PARTNER INSTITUTE agrees that FINSERV shall not have any liability including monetary or otherwise, in the event of any regulatory action taken against the PARTNER INSTITUTE in respect of conducting this programme. The PARTNER INSTITUTE agrees to fully compensate FINSERV in case an action is taken against FINSERV by any such regulatory authority in respect of conduct of CPBFI by the PARTNER INSTITUTE under this MOU.
- xv. The PARTNER INSTITUTE shall be solely responsible for payment of GST or any other taxes that may be applicable, in respect of fees collected by the PARTNER INSTITUTE for CPBFI and FINSERV shall not have any liability towards the same. The PARTNER INSTITUTE agrees that FINSERV shall not have any liability, monetary or otherwise, in the event of any action is taken against the PARTNER INSTITUTE by any tax authorities. The PARTNER INSTITUTE agrees to fully compensate FINSERV in case any action is taken against FINSERV by any such tax authority in respect of conduct of CPBFI by the PARTNER INSTITUTE under this MOU.
- xvi. The PARTNER INSTITUTE shall submit the information specified in Annexure 3 before commencement of every batch to FINSERV.




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4. Batch Strength:

The parties agree that, each batch shall consist of minimum 45 and maximum 60 students. FINSERV and the PARTNER INSTITUTE may mutually decide to start a batch with less than 45 students.

5. Term of the MOU:

The term of this MOU is for a period commencing from signing of this MoU till end of March 31, 2024, except Clause 3(xiii) and Clause 14, which shall continue to be in force for a further period of 3 years from the date of termination of this MOU. The parties may decide to further extend the term of this MOU by mutual consent on such terms and conditions as may be agreed between them.

6. Course fees:

- i. PARTNER INSTITUTE shall charge a non-refundable fee of Rs. 1000 (Rupees One Thousand only) plus applicable GST and other taxes, to each of the students of CPBFI towards the course fees. The fee payable by each student shall not be less than Rs. 1,000 (Rupees one thousand only) plus applicable taxes and shall not exceed Rs. 3,000 (Rupees three thousand) plus applicable taxes. The fees specified here shall be valid for two years from signing of this MOU. The fees shall be reviewed on completion of this period and parties may mutually agree to revise the same from time to time.
- ii. On successful completion of every batch (i.e. If the overall attendance of the students is in excess of 75%) of CPBFI-CLASSROOM and CPBFI-BLENDED, FINSERV shall pay an amount of Rs. 500 (Rupees Five Hundred only) per student to the PARTNER INSTITUTE as a fee subsidy. The fee subsidy shall be paid by FINSERV within 2 weeks from completion of every batch and submission of bank account information as per Annexure 3. The method for calculating the overall attendance in respect of CPBFI batches, is included in Annexure 2.
- iii. The PARTNER INSTITUTE has agreed to suitably remunerate the coordinator and other staff members for their effort towards successful conduct of CPBFI Batch.
- iv. The PARTNER INSTITUTE, may at its own discretion, waive the fees of students from economically weaker sections, provided the number of such students does not exceed 15% of total enrolment in the respective batch.
- v. The PARTNER INSTITUTE shall ensure that no student shall be allowed to attend CPBFI without paying the full fees except those permitted under sub-clause iv above.
- vi. The PARTNER INSTITUTE shall submit to FINSERV, before commencement of any batch, extracts of bank statement or copies of cash receipts or a letter from the Principal or Vice-Principal confirming collection of fees from every participant.

7. Duration and contents of CPBFI:

- i. CPBFI shall commence from August 2021. The said Programme will involve training of about 100 hours.
- ii. The PARTNER INSTITUTE has agreed to mobilize, on best effort basis, at least 40 students in first academic year and at least 80 students from second academic year onwards. The PARTNER INSTITUTE shall decide the batch schedule and timings and inform the schedule to FINSERV at least 45 days before commencement of the batch.



[Signature]
5



[Signature]

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- iii. FINSERV shall arrange to make the faculty available as per the schedule informed by the PARTNER INSTITUTE.
- iv. Detailed schedule of the lectures and practical shall be given in advance to students before commencement of CPBFI.

8. Place of teaching:

- i. The CPBFI classroom teaching and practical shall be conducted at Darjeeling Government College, Darjeeling by the CPBFI Official Training Partner, for up to four hours a day on such days, dates and at such timings as may be mutually decided between the parties.

9. Eligibility for CPBFI:

- i. Any student who is studying in the final year of Graduation Programme or pursuing any post-graduation programme shall be eligible to apply for admission to CPBFI.
- ii. Additionally, any fresh graduate i.e. a graduate with less than 2 years of work experience or no work experience, shall also be eligible to apply for admission to CPBFI.
- iii. Only candidates who are less than 27 years old, on the date of application, are eligible to apply for admission to CPBFI.
- iv. The PARTNER INSTITUTE shall select the final list of candidates for admission based on the criteria mutually agreed upon by the PARTNER INSTITUTE and FINSERV from time to time.

10. Discipline and right to expel:

- i. The students of CPBFI-CLASSROOM and CPBFI-BLENDED shall be subject to rules of discipline/code of conduct of the PARTNER INSTITUTE during course period. In case of CPBFI – ONLINE, the students shall be subject to rules of discipline/code of conduct of the CPBFI Official Training Partner.
- ii. If the concerned CPBFI Official Training Partner observes a breach of code of conduct by any student, it shall immediately report the same to the CPBFI Coordinator for necessary action.
- iii. If any participant commits breach of code of conduct of the PARTNER INSTITUTE, the faculty shall have full authority to expel such student for the remaining duration of CPBFI.

11. Faculty:

- i. FINSERV shall be solely responsible for arranging, through a CPBFI Official Training Partner, faculty, with requisite industry and teaching experience, and conducting CPBFI efficiently and effectively. The PARTNER INSTITUTE shall not be responsible for making any payments to the faculty of the CPBFI Official Training Partner.
- ii. Some of the lectures of CPBFI may be conducted by the experts from FINSERV as per the understanding between the parties. However, the PARTNER INSTITUTE shall not be liable to pay any amounts to FINSERV towards the said lectures and no amounts shall be deducted from the amounts payable to the PARTNER INSTITUTE.



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12. Certification:

FINSERV and the PARTNER INSTITUTE shall issue a "Certificate of Completion" in "Certificate Programme in Banking, Finance and Insurance" to the eligible students of CPBFI-CLASSROOM and CPBFI-BLENDED. The certificates shall be printed by FINSERV and shall carry the logos of FINSERV, the PARTNER INSTITUTE and the concerned CPBFI Official Training Partner.

FINSERV shall issue a "Certificate of Completion" in "Certificate Programme in Banking, Finance and Insurance" to the eligible students of CPBFI-ONLINE. The certificates shall be in digital format and shall carry the logos of FINSERV, the PARTNER INSTITUTE and the concerned CPBFI Training Partner.

13. Further Agreements:

The parties agree that, they may mutually discuss and enter into further agreements, if needed.

14. Confidentiality:

- i. The Parties agree to maintain strict secrecy and confidentiality regarding any and all Confidential Information exchanged or to be exchanged between them in relation to this MOU.
- ii. The PARTNER INSTITUTE agrees that all the course material provided by FINSERV or the CPBFI Official Training Partner, including but not limited to CPBFI structure, curriculum, lesson plans and evaluation methods, shall be deemed to be Confidential Information.
- iii. The PARTNER INSTITUTE agrees that any of FINSERV's technical or business or other information including information given for development of any case studies / development of any program modules / contents, made available by FINSERV or its personnel to the PARTNER INSTITUTE shall be deemed to be Confidential Information.
- iv. The PARTNER INSTITUTE agrees to restrict access and disclosure of Confidential Information to such of their employees, agents, vendors, and contractors strictly on a "need to know" basis, to maintain confidentiality of the Information disclosed to it in accordance with this clause.
- v. Information and material disclosed and provided by each party to the other party in pursuance of or in connection with performance of its obligation under this MOU shall, at all times, remain the sole and exclusive property of the disclosing Party.

15. Intimation about cancellation/postponement of CPBFI:

- i. If due to any cogent reasons, it appears to the PARTNER INSTITUTE that it is unable to arrange any batch as per schedule, the PARTNER INSTITUTE shall intimate about its inability to FINSERV at least 30 days in advance and the parties shall decide further schedule of CPBFI by mutual consent. FINSERV may decide to complete such batches through online classes.
- ii. However, if such postponement or cancellation is necessitated due to any last minute, unforeseen and unavoidable circumstances like Act of God, civil commotion, strike, bandh, disruption of traffic, epidemic, war, aggression, change in Government Policy or any other similar circumstances, the PARTNER INSTITUTE shall intimate the change in schedule as early as possible after such circumstances as stated above have arisen. In such circumstances, the PARTNER INSTITUTE shall not be held liable for payment towards any loss or damages caused to FINSERV due to delay in its schedule.



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iii. If for any reason, FINSERV, decides to discontinue support for CPBFI, It shall give a written notice to the PARTNER INSTITUTE, 30 days in advance. Such notice shall not impact any batch which is already In progress on the date of notice and the terms of this MOU shall continue to apply to the running batches.

16. Amendment/Termination:

- i. Any amendment to the terms of this MOU can only be made by mutual consent of the parties.
- ii. This MOU may be terminated by either party, for breach of terms and conditions of the present MOU or otherwise, by a written notice of at least one (1) month in advance. Such notice of termination shall not interfere with the batches underway at the relevant time. Such batches shall be allowed to continue until their conclusion.
- iii. Both the parties agree that Finserv shall have the right of terminating this MOU without any notice to the PARTNER INSTITUTE, if the PARTNER INSTITUTE charges a fee exceeding the amount prescribed under Clause 6(i) of this MOU. In such event, the batches underway at the relevant time, may also be terminated by FINSERV, unless the PARTNER INSTITUTE refunds the excess fee charged to every student of the batch.

17. Applicable Law and Dispute Settlement:

- i. This MOU shall be governed by the Laws of India.
- ii. Any dispute arising between the parties in connection with or arising out of the performance of mutual obligations under this MOU shall be resolved by mutual discussion and consultation. If the dispute remained unresolved even after 30 days, then the dispute shall be referred to the Principal of Darjeeling Government College and Mr. V. Rajagopalan, President (Legal and Taxation), Bajaj Finserv Limited. The decision of the principal of Darjeeling Government College and Mr. Rajagopalan shall be final and binding on both parties.

18. Originals:


This MOU is executed in counterparts, each of which shall be deemed to be original and retained by each of the Parties but together they shall constitute one and the same MOU.


IN WITNESS WHEREOF, the Parties hereto have put their hands the day, month and the year first hereinabove mentioned.


For Darjeeling Government College


For Bajaj Finance Limited

For Bajaj Finserv Limited

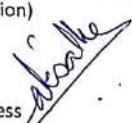

Name: Dr Projjwal Chandra Lama
Designation: Principal


Name: V. Rajagopalan
Designation: President (Legal and Taxation)


Name: V. Rajagopalan
Designation: President (Legal and Taxation)


Witness
Full Name: PRASSAWAL PRADHAN
Designation: ASSISTANT PROFESSOR
DEPT. OF COMMERCE,
DARJEELING GOVT. COLLEGE


Witness
Full Name: Ajay Sathe
Designation: Group Head –
Customer Experience and CSR


Witness
Full Name: Ajay Sathe
Designation: Group Head –
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Annexure 1: Format for submission of student information

The PARTNER INSTITUTE shall provide the following information in respect of every student of CPBFI

1. **Full Name:**
2. **Gender:**
3. **Academic qualification:** If already graduate mention the degree. If pursuing graduation, mention the degree for which studying.
4. **Status:** Mention "Complete" if the candidate is already a graduate. Mention "Pursuing" in case of final year students.
5. **Date of Birth:** in DD/MM/YYYY format
6. **Mobile Number:**
7. **Email Address:**

Annexure 2: Methodology for Calculating Overall Attendance of the Batch

The steps and formula for calculating overall attendance are as under.

1. **Enrollment:** Number of students who have registered and paid fees for CPBFI
2. **Drop-outs:** Number of students who stopped attending CPBFI during the batch
3. **Regular students:** Enrollment minus Drop Out
4. **Total available student days:** Number of regular students multiplied by total duration of CPBFI (number of days. E.g. 40 days)
5. **Actual student days:** Sum of days attended by each regular student.
6. **Overall attendance (%) = Actual Student Days / Available Student Days X 100**

Example: In a CPBFI batch 43 students registered and paid fees. By end of first week 3 students stopped attending the batch. The batch was conducted for 40 days. Out of the 40 regular students – 10 attended every class, 15 attended for 35 days, 10 attended for 33 days and 5 attended by 30 days. Overall attendance will be calculated as under.

Enrollment: 43

Drop-out: 3

Regular students: 40

Available days: 40 X 40 i.e. 1600

Actual days: (10 X 40) + (15 X 35) + (10 X 33) + (5 X 30) = 400 + 525 + 330 + 150 = 1405

Overall attendance: (1405 / 1600) X 100 = 87.81%



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Annexure 3: Information required by FINSERV before commencement of every batch

Sr.	Information Required
1	Basic information about the PARTNER INSTITUTE viz. Name Year of establishment Name of the educational society Contact details Website URL NAAC rating Total number of students (by stream) Total final year students (by stream)
2	Coordinator Details viz. Name Designation Department (Commerce/Science etc.) Contact details: Mobile and Email Address
3	Bank Details for payment of subsidy viz. Beneficiary Name: Bank Account number: Bank Account Type: (Saving/current) Bank Name: Branch: IFSC Code: Permanent Account Number of the college (PAN): Please provide scanned copy of a cancelled cheque and PAN Card along with the above information
4	High resolution logo of the college for printing on the Certificate/CPBFI brochures etc. Ai, JPEG, PNG, PDF Format. The image should be high resolution.
5	Brief write up about the institute – for inclusion on CPBFI website, CV book etc.



Handwritten signature



Handwritten signature

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Report on Certificate Programme in Banking, Finance, and Insurance (CPBFI)

Program Coordinator- Prajjawal Pradhan, W.B.E.S
Assistant Professor, H.O.D
Department of Commerce
Darjeeling Government College

Dated: 29th May 2023

Introduction: The Certificate Programme in Banking, Finance, and Insurance (CPBFI) conducted in our college, in collaboration with Bajaj Finserv Limited, aimed at providing comprehensive training to graduates, especially first-generation graduates, across India. The programme, spanning from September 6th, 2021, to October 21st, 2021, and from August 23rd, 2022, to October 6th, 2022, was designed to enhance employability for the Banking, Financial Services, and Insurance (BFSI) sector.


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Programme Overview: CPBFI, a 100-hour training programme, was meticulously structured by Bajaj Finserv to equip participants with the necessary skills and knowledge required for various roles in banks, finance companies, and insurance companies. The programme focused on preparing participants for customer-facing roles in sales, service, and operations, which offer substantial career opportunities and growth prospects.

Course Structure:

Course 1: Managing Self - SwaRoop

- Self-awareness and self-belief
- Emotion regulation and decision-making
- Rational and irrational beliefs
- Coping with daily challenges

Course 2: Communication and Workplace Skills

- Communication fundamentals and barriers
- Listening, empathy, and non-verbal expression
- Effective verbal, telephonic, and written communication
- Giving and receiving feedback, persuasion, and influencing skills
- Working in teams and job interview techniques

Course 3: Overview of Retail Banking

- Introduction to banking and branch banking
- Understanding customer needs and banking products
- Transaction processing, customer service, and compliance
- Future trends in banking and inclusive banking
- Introduction to Non-Banking Financial Companies (NBFCs) and corporate banking

Course 4: Overview of Insurance

- Importance and evolution of insurance
- Insurance products, distribution channels, and selling techniques
- Insurance operations, customer service, and ethics
- Future trends in insurance and inclusive insurance
- Profitability drivers for insurance companies



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Mock Interviews: The programme also included mock interviews conducted by corporate recruiters, providing participants with invaluable practical experience and feedback to enhance their interview performance and readiness for the job market.

Serial NO.	Batch No	Period from	Period to	No of students enrolled	No of students completed
1.	1 st Batch (303) online 2021-2022	06.09.2021	21.10.2021	60	09
2.	2 nd Batch (545) 2022-2023	23.08.2022	06.10.2022	54	22

Outcomes: The CPBFI programme yielded significant outcomes, including:

- Enhanced employability of participants for roles in the BFSI sector
- Improved skills in communication, teamwork, and customer service
- Comprehensive understanding of banking, finance, and insurance operations
- Practical experience and feedback from mock interviews to boost confidence and readiness for job interviews.

Conclusion: The Certificate Programme in Banking, Finance, and Insurance conducted in our college, in collaboration with Bajaj Finserv Limited, proved to be an invaluable opportunity for participants to enhance their employability and skills for the BFSI sector. By providing comprehensive training and practical experience, the programme contributed to the professional development and career advancement of participants, thereby fulfilling its objective of making graduates job-ready for the dynamic field of banking, finance, and insurance.


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NOTICE

Date: **23.8.2021**

Dear Students,

We are pleased to inform you that Bajaj Finserv Limited is organizing an online Certificate Programme in Banking, Finance, and Insurance (CPBFI).

Programme Details:

- **Title:** Certificate Programme in Banking, Finance, and Insurance (CPBFI)
- **Duration:** From 06.09.2021 – 21.10.2021 (100 hours)
- **Mode:** Online

Course Offerings:

- **Course 1: Managing Self - SwaRoop**
- **Course 2: Communication and Workplace Skills**
- **Course 3: Overview of Retail Banking**
- **Course 4: Overview of Insurance**

Who Can Participate: This programme is open to all final year male and female students who wish to enhance their knowledge in Banking, Finance and Insurance.

Contact Information: For any queries or assistance regarding the programme, please feel free to contact Mr. Prajjawal Pradhan, (8637326214) Assistant Professor, Program Coordinator.

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Government of West Bengal
Office of the Principal
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Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

NOTICE

Date: 03.8.2022

Dear Students,

We are pleased to inform you that Bajaj Finserv Limited is organizing an online Certificate Programme in Banking, Finance, and Insurance (CPBFI).

Programme Details:

- **Title:** Certificate Programme in Banking, Finance, and Insurance (CPBFI)
- **Duration:** From 23.08.2022– 06.10.2022 (100 hours)
- **Mode:** Offline

Course Offerings:

- **Course 1: Managing Self - SwaRoop**
- **Course 2: Communication and Workplace Skills**
- **Course 3: Overview of Retail Banking**
- **Course 4: Overview of Insurance**

Who Can Participate: This programme is open to all final year male and female students who wish to enhance their knowledge in Banking, Finance and Insurance.

Contact Information: For any queries or assistance regarding the programme, please feel free to contact Mr. Prajjawal Pradhan, (8637326214) Assistant Professor, Program Coordinator.

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Darjeeling-734 101, West Bengal, INDIA

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4. Memorandum of understanding between Government General Degree College at Pedong, Kalimpong, Pin-734311 with Darjeeling Govt. College, Darjeeling. Pin-734101 on 29.11.2021



GOVERNMENT OF WEST BENGAL

Office of the Principal
Darjeeling Government College
Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com



MEMORANDUM OF UNDERSTANDING

* This Memorandum of Understanding (hereinafter called as the 'MOU') is entered into On The 29th Day of November Two Thousand and Twenty One by and between

Darjeeling Government College, Lebong Cart Road, Darjeeling, PIN 734101

And

Government General Degree College at Pedong, P.O. Pedong, Kalimpong PIN-734 311

Principals
Officer-in-Charge
Darjeeling Govt. College

Officer-in-Charge
Government General Degree College
at Pedong

Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101 and Government General Degree College at Pedong, P.O. Pedong, Kalimpong PIN-734 311, being two academic Institute of Higher Education Department, Government of West Bengal share common values of interest in the academic circle. Both the Institute recognizes their strength in the field of Science, Social Science, Skill Development and Value Education.

Darjeeling Government College and Government General Degree College at Pedong, therefore agree to establish a program for academic cooperation in the areas of mutual interest and in accordance with terms and conditions set forth in this memorandum of Understanding (MOU) for a period of five years.

Objectives

- 1) Exchange of faculty and students on to a reciprocal basis, students at Undergraduate, Graduate levels for limited periods of time for purpose of education.
- 2) Organize various workshops on Entrepreneurship Development.
- 3) Conduct practical trainings on Entrepreneurship Development.
- 4) Jointly organizes seminars, conferences or workshops on topics of mutual interest and to invite each other's faculty to participate therein.
- 5) Help each other arrange the placement of trained students.
- 6) Exchange students to participate on internship program on science and Social Sciences.

Principals
Officer-in-Charge
Darjeeling Govt. College





NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CO-OPERATION

Exchange of Scientific and Technical Material

Darjeeling Government College and Government General Degree College at Pedong will exchange information on educational programs and teaching/ learning material and other literature relevant to their educational programs.

Joint Conferences, Workshops and Short-term courses

Darjeeling Government College and Government General Degree College at Pedong agree to identify and invite faculty members from other institution to participate in conferences, workshops and short term courses.

Student Exchange

Darjeeling Government College and Government General Degree College at Pedong agree that student exchange will be guided by principles listed below. A home institution refers to the institution where a student is a full time student and from where he/she is expected to graduate. A host institution refers to an institution that receives a student for a brief period of time to undertake predetermined program of study or research.

- a) Exchange students will be selected by mutual agreement between the home institution and the host institution.
- b) An exchange student will continue to be treated as full time student at his/her home institution.
- c) An exchange student will be considered as full "exchange": student at the host institution.
- d) His/ her program of study at the host institution will be determined by mutual consultation between his/her academic advisor at the home institution and his/her "interim" academic advisor identified by the host institution.
- e) The host institute will evaluate an exchange student's performance in each course or module, award a letter grade or marks and issue a letter to that effect.
- f) The home institution may award to the exchange student credits earned at a host institution, but only after the home institution has established correspondence between courses taken at the host institution vis-a vis those offered at the home institution.
If an exchange student has undertaken research then the host institution will evaluate the exchange student's performance in the research and issue a letter to that effect, together with a technical "report" of the research carried out.
- h) The exchange students will continue as usual to pay tuition and other fees at their home institution.

SCOPE OF THE MOU

1. Both the Higher Educational Institute (HEI) believes that close cooperation between the two would be a major benefit to the student community to enhance their skills and knowledge.



Handwritten signature and stamp of the Officer-in-Charge, Government General Degree College, Pedong.

Handwritten signature of the Officer-in-Charge, Darjeeling Govt. College.

Vertical stamp: Officer-in-Charge, Darjeeling Govt. College



Handwritten signature and printed name of the Officer-in-Charge, Darjeeling Govt. College.





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2. Exposure provided to students through this association will build confidence and prepare the students to have a smooth transition from academic to working career.
3. The students will enrich themselves with the knowledge through the program on the emerging technologies in order to bridge the gap in skill and make them ready for industry.
4. The students of the two HEI through this association will build their mutual value added knowledge, ethics and responsibility towards environment and society.

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Darjeeling Govt. College

Officer-in-Charge
Government General Degree Coll.
at Pedong

VALIDITY

1. The validity of the agreement is five years from the date of agreement and may be continued thereafter suitable review of the agreement.
2. Either institution may terminate the MOU by giving written prior notice to the other institution three months in advance. Once terminated, Darjeeling Government College and Government General Degree College at Pedong will be responsible for any losses, financial or otherwise, which the other Institutions may suffer. However, Darjeeling Government College and Government General Degree College at Pedong will ensure that all activities in progress are allowed to complete successfully.

AGREED:

Principals
29/11/21
Officer-in-Charge
Darjeeling Govt. College

Principal / Officer- In-Charge,
Darjeeling Government College,
Darjeeling, PIN 734101

Principals
Officer-in-Charge
Government General Degree Coll.
at Pedong

Principal / Officer- In-Charge,
Government General Degree College at Pedong
Kalimpong, PIN-734 311



Witness 1: *Shuti*
29/11/2021

Witness 2: *Shuti*
29/11/2021

Principals
Officer-in-Charge
Darjeeling Govt. College





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Office of the Principal
Darjeeling Government College
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DARJEELING GOVERNMENT COLLEGE
Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com


Memo No:

Date: 12.09.2022

TO WHOM IT MAY CONCERN

This is to certify that Smt. **Puja Gurung**, Assistant Professor,, Department of Political Science, Government General Degree College at Pedong has delivered a special lecture on **12.09.2022** to the students of the Department of Political Science at Darjeeling Government College on the topic, "**Relevance of Gandhian Thought in Modern Times.**" as a part of faculty exchange and sharing of academic information in connection with the MoU signed on **29.11.2021** between **Darjeeling Government College**, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and **Government General Degree College at Pedong**, P.O. Pedong, District-Kalimpong, Pin-734301, W.B.




Officer- In-Charge
Darjeeling Government College
Darjeeling, Pin-734101


Officer-in-Charge
Darjeeling Govt. College





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Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com

Memo No:

Date: 03.05.2023



TO WHOM IT MAY CONCERN

This is to certify that Smt. **Babin Bala Moktan**, Assistant Professor, Department of History, Government General Degree College at Pedong, Kalimpong, has delivered a special lecture on 03.05.2023 to the students of the Department of History at Darjeeling Government College on the topic, “**Silk Route: Indo-Tibetan Connection**” as a part of faculty exchange and sharing of academic information in connection with the MoU signed on 29.11.2021 between **Darjeeling Government College**, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and **Government General Degree College at Pedong**, P.O. Pedong, District-Kalimpong, Pin-734301, W.B.

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Darjeeling, PIN 734101

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Darjeeling Govt. College





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DARJEELING GOVERNMENT COLLEGE
Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com


Memo No:

Date: 15.03.2022

TO WHOM IT MAY CONCERN

This is to certify that Shri. **John Kapil Chettri**, Assistant Professor,, Department of Political Science, Government General Degree College at Pedong has delivered a special lecture on 15.03.2022 to the students of the Department of Political Science at Darjeeling Government College on the topic, “**Basic Structure of the Indian Constitution: Some reflections**” as a part of faculty exchange and sharing of academic information in connection with the MoU signed on 29.11.2021 between **Darjeeling Government College**, Lebung Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and **Government General Degree College at Pedong**, P.O. Pedong, District-Kalimpong, Pin-734301, W.B.




Officer- ~~in-Charge~~ **in-Charge**
Darjeeling ~~Government College~~ **Government College**,
Darjeeling, PIN 734101


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Darjeeling Govt. College





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Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com


Memo No:

Date: 08.04.2022

TO WHOM IT MAY CONCERN

This is to certify that Smt. **Rippandi Lepcha**, Assistant Professor., Department of English, Government General Degree College at Pedong has delivered a special lecture on **08.04.2022** to the students of the Post Graduate, Department of English at Darjeeling Government College on the topic, “**Interplay between Memory and Textuality : Analysing Contemporary Indian Writing in English**” as a part of faculty exchange and sharing of academic information in connection with the MoU signed on **29.11.2021** between **Darjeeling Government College**, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and **Government General Degree College at Pedong**, P.O. Pedong, District-Kalimpong, Pin-734301, W.B.




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Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com

Memo No:

Date: 03.05.2023

TO WHOM IT MAY CONCERN

This is to certify that Smt. **Babin Bala Moktan**, Assistant Professor, Department of History, Government General Degree College at Pedong, Kalimpong, has delivered a special lecture on 03.05.2023 to the students of the Department of History at Darjeeling Government College on the topic, "**Silk Route: Indo-Tibetan Connection**" as a part of faculty exchange and sharing of academic information in connection with the MoU signed on 29.11.2021 between **Darjeeling Government College**, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and **Government General Degree College at Pedong**, P.O. Pedong, District-Kalimpong, Pin-734301, W.B.




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Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com

Memo No. 307(U)/C-2/23

Date: 05.07.2022

SUMMARY OF THE ACTIVITIES CONDUCTED UNDER THE MOU
BETWEEN
DARJEELING GOVERNMENT COLLEGE
AND
GOVERNMENT GENERAL DEGREE COLLEGE AT PEDONG

Certified that a MoU was signed on 29.11.2021 for an initial period of 05 (five) years (ie., valid up to 28.11.2026) Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and Government General Degree College at Pedong, P.O. Pedong, District- Kalimpong, Pin-734301, W.B.

The MoU is functional and the list of activities conducted under the aforesaid MoU till 30.06.2022 is as follows.

Sl No	Type of activity	Academic Year	Date (s) of activity		Brief description of the activity
			From	To	
1	Faculty Exchange	2021-2022	15.03.2022	15.03.2022	Special Lecture on “Basic Structure of the Indian Constitution: Some reflections” was delivered at Darjeeling Government College by Shri. John Kapil Chettri, Assistant Professor of Political Science, Government General Degree College at Pedong.
2	Faculty Exchange	2021-2022	08.04.2022	08.04.2022	Special Lecture on “ Interplay between Memory and Textuality : Analysing Contemporary Indian Writing in English” was delivered at Darjeeling Government College by Smt. Rippandi Lepcha, Assistant Professor of English, Government General Degree College at Pedong.

Outcome of the MoU: The students and faculty members of both the colleges have been highly benefitted through lectures and subsequent interactive sessions through the aforesaid faculty Exchange programmes under the MoU.




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Darjeeling, 73410




Officer-in-Charge
Darjeeling Govt. College



Figure: Some photographs of Shri. John Kapil Chettri, Assistant Professor, Department of Political Science, Government General Degree College at Pedong on the topic, “Basic Structure of the Indian Constitution: Some reflections” at Darjeeling Govt. College



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Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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(0354) 2254019
Email : dgc.principal@gmail.com

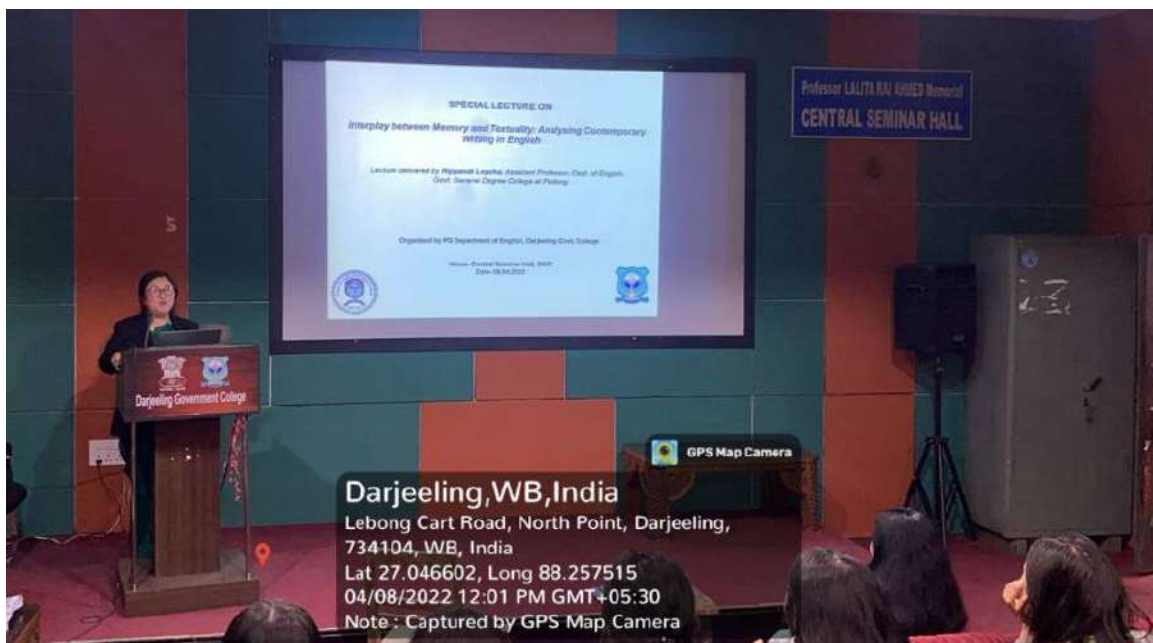


Figure: Some photographs of **Rippandi Lepcha**, Assistant Professor, Department of English, Government General Degree College at Pedong has delivered a special lecture on the topic, “ Interplay between Memory and Textuality: Analysing Contemporary Indian Writing in English” at Darjeeling Govt. College

Rippandi Lepcha
Officer-in-Charge
Darjeeling Govt. College





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Darjeeling-734 101, West Bengal, INDIA

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GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
GOVERNMENT GENERAL DEGREE COLLEGE
AT PEDONG,
DIST. KALIMPONG- 734311

Memo No. 101(A)/PGL/M-11/2022

Date: 04.07.2022

SUMMARY OF THE ACTIVITIES CONDUCTED UNDER THE MOU
BETWEEN
GOVERNMENT GENERAL DEGREE COLLEGE AT PEDONG
AND
DARJEELING GOVERNMENT COLLEGE

Certified that a MoU was signed on 29.11.2021 for an initial period of 05 (five) years (ie., valid up to 28.11.2026) Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101,W.B. and Government General Degree College at Pedong, P.O. Pedong, District-Kalimpong, Pin-734311, W.B.

The MoU is functional and the list of activities conducted under the aforesaid MoU till 30.06.2022 is as follows.

Sl No	Type of activity	Academic Year	Date (s) of activity		Brief description of the activity
			From	To	
1	Faculty Exchange	2021-2022	28.03.2022	28.03.2022	Special Lecture on “Women and Human Rights” was delivered at Government General Degree College at Pedong by Dr. Ambika Thami, Assistant Professor of Political Science, Darjeeling Government College
2	Faculty Exchange	2021-2022	23.04.2022	23.04.2022	Special Lecture on “Introduction to Greek Theatre and its Various Elements” was delivered at Government General Degree College at Pedong by Smt. Shikha Tamang, Assistant Professor of English, Darjeeling Government College

Outcome of the MoU: The students and faculty members of both the colleges have been highly benefitted through lectures and subsequent interactive sessions through the aforesaid faculty Exchange programmes under the MoU.



[Signature]
Officer-in-Charge
Government General Degree College at Pedong
Pedong, PIN 734311, Kalimpong
Officer-in-Charge
Government General Degree College at Pedong

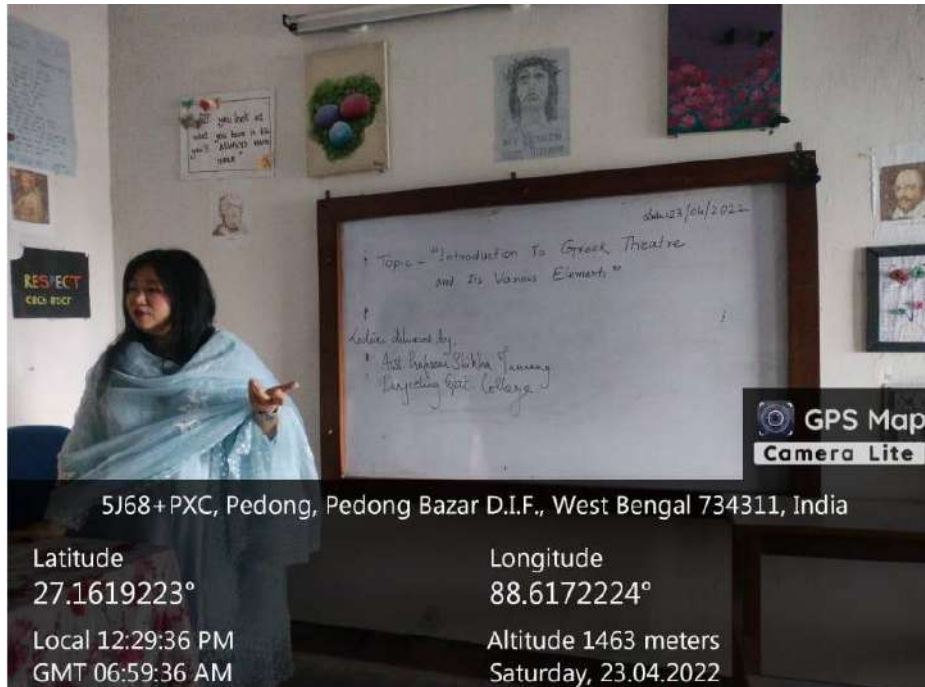
[Signature]
Officer-in-Charge
Darjeeling Govt. College





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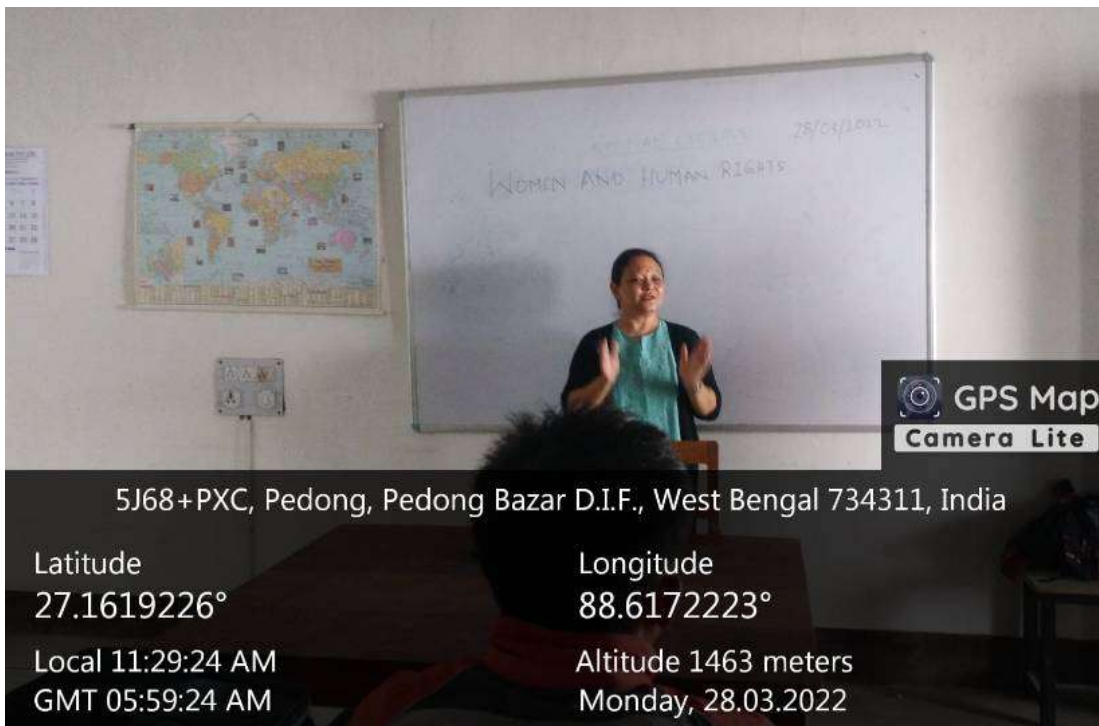
Bijay Kumar
Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
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Darjeeling-734 101, West Bengal, INDIA

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P. Prasad
Officer-in-Charge
Darjeeling Govt. College





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GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
GOVERNMENT GENERAL DEGREE COLLEGE
AT PEDONG.
DIST. KALIMPONG- 734311

Memo No: 135(A)PGC/M-11/23

Date: 05.07.2023

SUMMARY OF THE ACTIVITIES CONDUCTED UNDER THE MOU
BETWEEN
GOVERNMENT GENERAL DEGREE COLLEGE AT PEDONG
AND
DARJEELING GOVERNMENT COLLEGE

Certified that a MoU was signed on 29.11.2021 for an initial period of 05 (five) years (ie., valid up to 28.11.2026) Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101,W.B. and Government General Degree College at Pedong, P.O. Pedong, District-Kalimpong, Pin-734311, W.B.

The MoU is functional and the list of activities conducted under the aforesaid MoU till 30.06.2023 is as follows.

Sl No	Type of activity	Academic Year	Date (s) of activity		Brief description of the activity
			From	To	
1	Faculty Exchange	2022-2023	10.11.2022	10.11.2022	Special Lecture on “Research Methodology” was delivered at Government General Degree College at Pedong by Dr. Dipti Tamang, Assistant Professor of Political Science, Darjeeling Government College

Outcome of the MoU: The students and faculty members of both the colleges have been highly benefitted through lectures and subsequent interactive sessions through the aforesaid faculty Exchange programmes under the MoU.



[Signature]
Officer-in-Charge

Government General Degree College at Pedong
Pedong, PIN 734311, Kalimpong

Officer-in-Charge
Government General Degree College
at Pedong

[Signature]

Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
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Email : dgc.principal@gmail.com

5. Memorandum of understanding between Gorubathan Government College, Lower Fagu, Kalimpong, 735231 with Darjeeling Govt. College, Darjeeling. Pin-734101 on 06/04/2022.



GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
GORUBATHAN GOVERNMENT COLLEGE
AT GORUBATHAN, P.O.-FAGU
DIST.-KALIMPONG 735231



Phone No: 94770-50062, 98754-72976; Web: www.gorubathangc.co.in; Email id: gdc.gbn@gmail.com

MEMORANDUM OF UNDERSTANDING



This Memorandum of Understanding (hereinafter called as the 'MOU') is entered into on the 6th Day of April Two Thousand and twenty two by and between

Gorubathan Government College, Lower Fagu , Kalimpong PIN-735231
AND

Darjeeling Government College, Lebong Cart Road, District- Darjeeling, PIN 734101

Gorubathan Government College, Lower Fagu ,Kalimpong PIN-735231, and Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101 being two academic Institute of Higher Education Department Government of West Bengal share common values of interest in the academic circle. Both the Institute recognizes their strength in the field of Science, Social Science, Skill Development and Value Education.

Gorubathan Government College, Lower Fagu ,Kalimpong PIN-735231and Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101 therefore agree to establish a program for academic cooperation in the areas of mutual interest and in accordance with terms and conditions set forth in this memorandum of Understanding (MOU).

Officer-in-Charge
Darjeeling Govt. College





**Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA**

Phone / Fax: (0354) 2254078
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Email : dgc.principal@gmail.com



Objectives

- (1) Exchange of faculty and students on to a reciprocal basis, students at undergraduate and Post-Graduate levels for limited periods of time for purpose of education.
- (2) Organize various workshops on Entrepreneurship Development.
- (3) Conduct practical trainings on Entrepreneurship Development.
- (4) Jointly organize seminars, conferences or workshops on topics of mutual interest and to invite each other's faculty to participate therein.
- (5) Help each other arrange the placement of trained students.
- (6) Exchange students to participate on internship program on science and Social Sciences.

Charge
 G. Subhadra
 Government College
 Darjeeling, West Bengal
 PIN-735231

Charge
 Officer-in-Charge
 Darjeeling Govt. College

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CO-OPERATION

Exchange of Scientific and Technical Material

Gorubathan Government College, Lower Fagu , Kalimpong PIN-735231 and Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101 will exchange information on educational programs and teaching/ learning material and other literature relevant to their educational programs.

Joint Conferences, Workshops and Short-term courses

Gorubathan Government College, Lower Fagu , Kalimpong PIN-735231 and Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101 agree to help identify and invite faculty members from other institution to participate in conferences, workshops and short term courses.

Student Exchange

Gorubathan Government College, Lower Fagu , Kalimpong PIN-735231 and Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101 , agree that student exchange will be guided by principles listed below. A home institution refers to the institution where a student is a full time student and from where he/she is expected to graduate.


 Officer-in-Charge
 Darjeeling Govt. College





**Government of West Bengal
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Darjeeling Government College
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Email : dgc.principal@gmail.com



A host institution refers to an institution that receives a student for a brief period of time to undertake a predetermined program of study or research.

- (a) Exchange students will be selected by mutual agreement between the home institution and the host institution.
- (b) An exchange student will continue to be treated as full time student at his/her home institution.
- (c) An exchange student will be considered as full "exchange": student at the host institution.
- (d) his/ her program of study at the host institution will be determined by mutual consultation between his/her academic advisor at the home institution and his/her "interim" academic advisor identified by the host institution.
- (e) The host institute will evaluate an exchange student's performance in each course or module, award a letter grade or marks and issue a letter to that effect.
- (f) The home institution may award to the exchange student credits earned at a host institution, but only after the home institution has established correspondence between courses taken at the host institution vis-a vis those offered at the home institution.
- (g) If an exchange student has undertaken research then the host institution will evaluate the exchange student's performance in the research and issue a letter to that effect, together with a technical "report" of the research carried out.
- (h) The exchange students will continue as usual to pay tuition and other fees at their home institution.

Handwritten signature

Gorurathan C. Dasgupta P/734101

Handwritten signature

Office-in-Charge Darjeeling Govt. College

SCOPE OF THE MOU

- (1) Both the Higher Educational Institute (HEI) believes that close cooperation between the two would be a major benefit to the student community to enhance their skills and knowledge.
- (2) Exposure provided to students through this association will build confidence and prepare the students to have a smooth transition from academic to working career.
- (3) The students will enrich themselves with the knowledge through the program on the emerging technologies in order to bridge the gap in skill and make them ready for industry.
- (4) The students of the two HEI through this association will build their mutual value added knowledge, ethics and responsibility towards environment and society.

Handwritten signature
Office-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

सत्यमेव जयते

VALIDITY

(1) The validity of the agreement is five years from the date of agreement and may be continued thereafter suitable review of the agreement.

(2) Either institution may terminate the MOU by giving written notice to the other institution six months in advance. Once terminated, Gorubathan Government College, Lower Fagu , Kalimpong, PIN-735231 and Darjeeling Government College, Leborg Cart Road, Darjeeling, District- Darjeeling, PIN 734101 will be responsible for any losses financial or otherwise, which the other Institutions may suffer. However Gorubathan Government College, Lower Fagu Kalimpong, PIN-735231 and Darjeeling Government College, Leborg Cart Road, Darjeeling, District- Darjeeling, PIN 734101 will ensure that all activities in progress are allowed to complete successfully.

AGREED:

Pratap
Gorubathan Government College,
Kalimpong

Pratap
Officer-in-Charge
Darjeeling Govt. College

Pratap 06/04/2022
(Dr. Pratap Kumar Sen)
Officer- In-Charge,
Gorubathan Government College
Kalimpong -735231

Officer-in-Charge
Gorubathan Government College
Gorubathan, Kalimpong
Pin-735231

Witness 1:

Arijit Goswami



Pratap 06/04/2022
(Dr. Projjwal Chandra Lama)
Officer- In-Charge,
Darjeeling Government College
District- Darjeeling, PIN 734101



Witness 2:

Chandran Rishi
06/04/2022

Pratap
Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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GOVERNMENT OF WEST BENGAL

Office of the Principal
Darjeeling Government College
Darjeeling - 734 101, West Bengal, INDIA

Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com




Memo No: 147/P-PS/23

Date: 14.04.2023

TO WHOM IT MAY CONCERN

This is to certify that Mr. **Pratit Tamang**, Assistant Professor of Political Science, Gorubathan Government College, Fagu, Kalimpong PIN- 735231 has delivered a special lecture on **17.04.2023** to the students of the Department of Political Science at, Darjeeling Government Leborg Cart Road, District- Darjeeling, PIN 734101, the topic, "**Right to Health as a fundamental right with special reference to Article 21**" as a part of faculty exchange and sharing of academic information in connection with the MoU signed on **06.04.2022** between **Gorubathan Government College**, Fagu, Kalimpong PIN- 735231 and **Darjeeling Government College**, Leborg Cart Road, District- Darjeeling, PIN 734101


Officer-in-Charge
Darjeeling Government College,
Leborg Cart Road, District- Darjeeling, PIN 734101




Officer-in-Charge
Darjeeling Govt. College





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Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
GORUBATHAN GOVERNMENT COLLEGE
AT GORUBATHAN, P.O.-FAGU
DIST.-KALIMPONG 735231



Phone No: 94770-50062, 98754-72976; Web: www.gorubathangdc.co.in; Email id: gdc.gbn@gmail.com

Date: 30.06.2023

SUMMARY OF THE ACTIVITIES CONDUCTED UNDER THE MOU
BETWEEN
GORUBATHAN GOVERNMENT COLLEGE
AND
DARJEELING GOVERNMENT COLLEGE

Certified that a MoU was signed on 06.04.2022 for an initial period of 05 (five) years (ie., valid up to 05.04.2027) Gorubathan Government College, Lower Fagu, Kalimpong PIN -735231 and Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101 The MoU is functional and the list of activities conducted under the aforesaid MoU till 30.06.2023 is as follows.

Sl No	Type of activity	Academic Year	Date (s) of activity		Brief description of the activity
			From	To	
1	Faculty Exchange	2022-2023	10.05.2022	10.05.2022	Special Lecture on “नेपाली भाषाको वर्णविन्यास” was delivered at Gorubathan Government College by Dr. Bhupen Tamang, Assistant Professor, Post-Graduation Dept. of Nepali, Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101

Outcome of the MoU: The students and faculty members of both the colleges have been highly benefitted through lectures and subsequent interactive sessions through the aforesaid faculty Exchange programmes under the MoU.

Ben
Officer in Charge,
Gorubathan Government College
P.O Fagu, Kalimpong.



Officer-in-Charge
Gorubathan Government College,
Gorubathan, Kalimpong
Pin-735231

P. Prasad
Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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Email : dgc.principal@gmail.com



GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
GORUBATHAN GOVERNMENT COLLEGE
AT GORUBATHAN, P.O.-FAGU
DIST.-KALIMPONG 735231



Phone No: 94770-50062, 98754-72976; Web: www.gorubathangdc.edu.in; Email id: gdc_ghn@gmail.com

Memo No: 248A/GGC/2022

Date: 19/05/2022

TO WHOM IT MAY CONCERN

This is to certify that Dr. Alina Pradhan, Associate Professor,, Department of Political Science, Darjeeling Government College, has delivered a special lecture on **19.05.2022** to the students of the Department of Political Science at Gorubathan Government College on the topic, “**Search for Identity :The case of the Gorkhaland Movement**” as a part of faculty exchange and sharing of academic information in connection with the MoU signed on **06.04.2022** between **Gorubathan Government College**, Lower Fagu , Kalimpong, PIN-735231 and **Darjeeling Government College**, Leborg Cart Road, Darjeeling, District- Darjeeling, PIN 734101.

Dem

Officer in Charge
Gorubathan Government College
Gorubathan, Kalimpong.

Officer-in-Charge
Gorubathan Government College,
Gorubathan, Kalimpong
Pin-735231



P. Pradhan

Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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सत्यमेव जयते

GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
GORUBATHAN GOVERNMENT COLLEGE
AT GORUBATHAN, P.O.-FAGU
DIST.-KALIMPONG 735231



Phone No: 94770-50062, 98754-72976; Web: www.gorubathangdc.co.in; Email id:ggdc.gbn@gmail.com

Memo No: 244C/GGC/2022

Date: 10/05/2022

TO WHOM IT MAY CONCERN

This is to certify that Dr. Bhupen Tamang, Assistant Professor,, Post-Graduation Department of Nepali, Darjeeling Government College, has delivered a special lecture on 10.05.2022 to the students of the Department of Nepali at Gorubathan Government College on the topic, “नेपाली भाषाको वर्णविन्यास” as a part of faculty exchange and sharing of academic information in connection with the MoU signed on 06.04.2022 between **Gorubathan Government College**, Lower Fagu , Kalimpong, PIN-735231 and **Darjeeling Government College**, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101

Officer in Charge
Gorubathan Government College
Gorubathan, Kalimpong.

Officer-in-Charge
Gorubathan Government College,
Gorubathan, Kalimpong
Pin-735231



Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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(0354) 2254019
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सत्यमेव जयते

GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
GORUBATHAN GOVERNMENT COLLEGE
AT GORUBATHAN, P.O.-FAGU
DIST.-KALIMPONG 735231



Phone No: 94770-50062, 98754-72976; Web: www.gorubathanngdc.co.in; Email id: gdc_glb@gmail.com

Date: 30.06.2023

SUMMARY OF THE ACTIVITIES CONDUCTED UNDER THE MOU
BETWEEN
GORUBATHAN GOVERNMENT COLLEGE
AND
DARJEELING GOVERNMENT COLLEGE

Certified that a MoU was signed on **06.04.2022** for an initial period of **05 (five) years** (ie., valid up to **05.04.2027**) **Gorubathan Government College, Lower Fagu , Kalimpong PIN - 735231 and Darjeeling Government College, Lebung Cart Road, District- Darjeeling, PIN 734101**

The MoU is functional and the list of activities conducted under the aforesaid MoU till **30.06.2023** is as follows.

Sl No	Type of activity	Academic Year	Date (s) of activity		Brief description of the activity
			From	To	
1	Faculty Exchange	2022-2023	19.05.2022	19.05.2022	Special Lecture on "Search for Identity : The case of the Gorkhaland Movement" was delivered at Gorubathan Government College by Dr. Alina Pradhan , Associate Professor of Political Science, Darjeeling Government College, Lebung Cart Road, District- Darjeeling, PIN 734101
2	Faculty Exchange	2022-2023	17.04.2023	17.04.2023	Special lecture on "Right to Health as a fundamental right with special reference to Article 21" was delivered at Darjeeling Government College, Lebung Cart Road, District- Darjeeling, PIN 734101. By Mr. Pratit Tamang , Assistant Professor of Political Science, Gorubathan Government College.

Outcome of the MoU: The students and faculty members of both the colleges have been highly benefitted through lectures and subsequent interactive sessions through the aforesaid faculty Exchange programmes under the MoU.



P. Sen
Officer in Charge,
Gorubathan Government College
P.O Fagu, Kalimpong
Officer-in-Charge
Gorubathan Government College,
Gorubathan, Kalimpong
Pin-735231

P. Sen
Officer-in-Charge
Darjeeling Govt. College





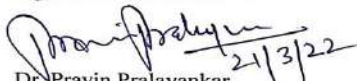
Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

6. Memorandum of understanding between Indira Gandhi National Open University (IGNOU) with Darjeeling Govt. College, Darjeeling. Pin-734101.



A MoU was signed in between Indira Gandhi National Open University (IGNOU) and Darjeeling Govt. College in the year 1991. According to the MoU, a Study Centre of IGNOU is running at Darjeeling Govt. College as IGNOU Darjeeling Govt. College Study Centre with LSC Code 2811 for Post Graduation, Graduation, Diploma and Certificate programme since 1992 to till date under IGNOU Regional Centre Siliguri with RC Code-45 following all the rules and regulations of IGNOU.


21/3/22

Dr. Pravin Pralayankar
Regional Director (I/c)
IGNOU Regional Centre, Siliguri
Siliguri

श्रेणीय केन्द्र, सिलीगुड़ी
Regional Centre, Siliguri

१७/१२ जे.सी. बोस रोड, सुभाष पल्ली, सिलीगुड़ी - ७३४००१
17/12 J.C. Bose Road, Subhas Pally, Siliguri - 734001
फोन/Phone : 0353-252 6818, ई-मेल/e-mail : rcsiliguri@ignou.ac.in

इन्दिरा गांधी राष्ट्रीय मुक्त विश्वविद्यालय
इन्दिरा गाँधी राष्ट्रीय मुक्त विश्वविद्यालय
Indira Gandhi National Open University
वेबसाइट / website : www.rcsiliguri.ignou.ac.in


Officer-in-Charge
Darjeeling Govt. College





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Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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Email : dgc.principal@gmail.com

7. Memorandum of understanding between Banarhat Kartik Oraon Hindi Government College Binnaguri, Jalpaiguri, West Bengal, 735203 with Darjeeling Govt. College, Darjeeling. Pin-734101



GOVERNMENT OF WEST BENGAL

OFFICE OF THE PRINCIPAL
Banarhat Kartik Oraon Hindi Govt. College

Moraghat, P.O. Banarhat, Dist. Jalpaiguri, W.B., Pin - 735203,

Phone : 03563-201003

E-mail : bkohgcollege@gmail.com
ggdchm@gmail.com

Website : www.hindigovernmentcollegebanarhat.in

Memo No.

Date

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter called as the 'MOU') is entered into
On The 14th Day of July, Two Thousand and Twenty Two by and between

Darjeeling Government College, Lebong Cart Road, Darjeeling, PIN 734101
And

Banarhat Kartik Oraon Hindi Government College
Binnaguri, Jalpaiguri, West Bengal, 735203

Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, PIN 734101 and Banarhat Kartik Oraon Hindi Government College, Binnaguri, Jalpaiguri, West Bengal, 735203, being two academic Institute of Higher Education Department, Government of West Bengal share common values of interest in the academic circle. Both the institute recognizes their strength in the field of Science, Social Science, Skill Development and Value Education.

Darjeeling Government College and Banarhat Kartik Oraon Hindi Government College, Banarhat, therefore agree to establish a program for academic cooperation in the areas of mutual interest and in accordance with terms and conditions set forth in this memorandum of Understanding (MOU) for a period of five years.

Objectives

- 1) Exchange of faculty and students on to a reciprocal basis, students at Undergraduate, Graduate levels for limited periods of time for purpose of education.
- 2) Organize various workshops on Entrepreneurship Development.
- 3) Conduct practical trainings on Entrepreneurship Development.
- 4) Jointly organizes seminars, conferences or workshops on topics of mutual interest and to invite each other's faculty to participate therein.
- 5) Help each other arrange the placement of trained students.
- 6) Exchange students to participate on internship program Social Sciences.

S.M. Rakibuz Zaman
Officer In-Charge
B.K.O. Hindi Govt. College
Banarhat, Jalpaiguri

[Signature]
14/7/22
Officer-in-Charge
Darjeeling Govt. College

[Signature]
Officer-in-Charge
Darjeeling Govt. College





**Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA**

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CO-OPERATION

Exchange of Scientific and Technical Material

Darjeeling Government College and Banarhat Kartik Oraon Hindi Government College, Banarhat will exchange information on educational programs and teaching/ learning material and other literature relevant to their educational programs.

Joint Conferences, Workshops and Short-term courses

Darjeeling Government College and Banarhat Kartik Oraon Hindi Government College, Banarhat agree to help identify and invite faculty members from other institution to participate in conferences, workshops and short term courses.

Student Exchange

Darjeeling Government College and Banarhat Kartik Oraon Hindi Government College, Banarhat agree that student exchange will be guided by principles listed below. A home institution refers to the institution where a student is a full time student and from where he/she is expected to graduate. A host institution refers to an institution that receives a student for a brief period of time to undertake a predetermined program of study or research.

S.M. Rakibuz Zaman

**Officer-In-Charge
B.K.O. Hindi Govt. College
Banarhat, Jalpaiguri**

- a) Exchange students will be selected by mutual agreement between the home institution and the host institution.
- b) An exchange student will continue to be treated as full time student at his/her home institution.
- c) An exchange student will be considered as full "exchange": student at the host institution.
- d) His/ her program of study at the host institution will be determined by mutual consultation between his/her academic advisor at the home institution and his/her "interim" academic advisor identified by the host institution.
- e) The host institute will evaluate an exchange student's performance in each course or module, award a letter grade or marks and issue a letter to that effect.
- f) The home institution may award to the exchange student credits earned at a host institution, but only after the home institution has established correspondence between courses taken at the host institution vis-a vis those offered at the home institution.
- g) If an exchange student has undertaken research then the host institution will evaluate the exchange student's performance in the research and issue a letter to that effect, together with a technical "report" of the research carried out.
- h) The exchange students will continue as usual to pay tuition and other fees at their home institution

P. Prasad
**Officer-in-Charge
Darjeeling Govt. College**



P. Prasad
**Officer-in-Charge
Darjeeling Govt. College**





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

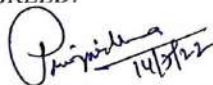
SCOPE OF THE MOU

1. Both the Higher Educational Institute (HEI) believes that close cooperation between the two would be a major benefit to the student community to enhance their skills and knowledge.
2. Exposure provided to students through this association will build confidence and prepare the students to have a smooth transition from academic to working career.
3. The students will enrich themselves with the knowledge through the program on the emerging technologies in order to bridge the gap in skill and make them ready for industry.
4. The students of the two HEI through this association will build their mutual value added knowledge, ethics and responsibility towards environment and society.

VALIDITY

1. The validity of the agreement is five years from the date of agreement and may be continued thereafter suitable review of the agreement.
2. Either institution may terminate the MOU by giving written prior notice to the other institution three months in advance. Once terminated, Darjeeling Government College and Banarhat Kartik Oraon Hindi Government College, Banarhat will be responsible for any losses, financial or otherwise, which the other Institutions may suffer. However, Darjeeling Government College and Banarhat Kartik Oraon Hindi Government College, Banarhat, will ensure that all activities in progress are allowed to complete successfully.

AGREED:


14/07/22

Principal / Officer- In-Charge,
Darjeeling Government College,
Darjeeling, PIN 734101
Officer-in-Charge
Darjeeling Govt. College




14/7/22

Principal / Officer- In-Charge,
Banarhat Kartik Oraon Hindi Government
Binnaguri, Jalpaiguri, West Bengal, 735203
Officer In-Charge
B.K.O. Hindi Govt. College
Banarhat, Jalpaiguri

Witness 1:


14/07/22

Witness 2:




Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
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Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com

Memo No. 279(2) | N-5 | 23

Date: 03.07.2023

SUMMARY OF THE ACTIVITIES CONDUCTED UNDER THE MOU
BETWEEN
DARJEELING GOVERNMENT COLLEGE
AND
BANARHAT KARTIK ORAON HINDI GOVERNMENT COLLEGE

Certified that a MoU was signed on 14.07.2022 for an initial period of 05 (five) years (ie., valid up to 13.07.2027) between Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and Banarhat Kartik Oraon Hindi Government College, Binnaguri, District-Jalpaiguri, Pin-735203, W.B.

The MoU is functional and the list of activities conducted under the aforesaid MoU till 30.06.2023 is as follows.

Sl No	Type of activity	Academic Year	Date (s) of activity		Brief description of the activity
			From	To	
1	Faculty Exchange	2022-2023	11.11.2022	11.11.2022	Special Lecture on “A Discussion on the Ideal State in Plato’s Republic” was delivered at Darjeeling Government College, by Smt. Neelam Sampang, Assistant Professor of Political Science, Banarhat Kartik Oraon Hindi Government College .

Outcome of the MoU: The students and faculty members of both the colleges have been highly benefitted through lectures and subsequent interactive sessions through the aforesaid faculty Exchange programmes under the MoU.




Officer- in-Charge
Darjeeling Government College
Darjeeling, 734101

Officer-in-Charge
Darjeeling Govt. College


Officer-in-Charge
Darjeeling Govt. College





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GOVERNMENT OF WEST BENGAL
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DARJEELING GOVERNMENT COLLEGE
Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com

Memo No.

Date: 11.11.2022

TO WHOM IT MAY CONCERN

This is to certify that Smt. Neelam Sampang, Assistant Professor, Department of Political Science, Banarhat Kartik Oraon Hindi Government College, has delivered a special lecture on 11.11.2022 to the students of the Department of Political Science at Darjeeling Government College on the topic, "A Discussion on the Ideal State in Plato's Republic" as a part of faculty exchange and sharing of academic information in connection with the MoU signed on 14.07.2022 between Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and Banarhat Kartik Oraon Hindi Government College, Binnaguri, District- Jalpaiguri, Pin-735203, W.B.



Officer-in-Charge
Darjeeling Government College
Darjeeling, PIN 734101

Officer-in-Charge
Darjeeling Govt. College

Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
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Figure: Some photographs of Smt, **Neelam Sampang** Assistant Professor of Political Science, between Banarhat Kartik Oraon Hindi Government College has delivered a Special Lecture on **14.07.2022** to the students of the Department of Humanities at Darjeeling Government College on the topic, **“A Discussionon the Ideal State in Plato’s Republic”**.


Officer-in-Charge
Darjeeling Govt. College





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Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
BANARHAT KARTIK ORAON HINDI GOVERNMENT COLLEGE
MORAGHAT, P.O. BINNAGURI, DIST- JALPAIGURI, PIN-735203, WEST BENGAL
PH. NO.- 8617555784, Email:bkohgcollege@gmail.com
Web: http://bkohindigovernmentcollege.ac.in

Memo No: 195A/BKOHGC/23

Date: 11.07.2023

SUMMARY OF THE ACTIVITIES CONDUCTED UNDER THE MOU
BETWEEN
BANARHAT KARTIK ORAON HINDI GOVERNMENT COLLEGE
AND
DARJEELING GOVERNMENT COLLEGE

Certified that a MoU was signed on 14.07.2022 for an initial period of 05 (five) years (ie., valid up to 13.07.2027) between Banarhat Kartik Oraon Hindi Government College, Banarhat, District- Jalpaiguri, Pin-735203, W.B. and Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101,W.B.
The MoU is functional and the list of activities conducted under the aforesaid MoU till 30.06.2023 is as follows.

Sl No	Type of activity	Academic Year	Date (s) of activity		Brief description of the activity
			From	To	
1.	Faculty Exchange	2022-2023	03.08.2022	03.08.2022	Special Lecture on "Legacy and Influence of Bertolt Brecht on Modern Theatre" was delivered at Banarhat Kartik Oraon Hindi Government College, by Smt. Priyanka Rai, Assistant Professor, Department of English, Darjeeling Government College.
2.	Faculty Exchange	2022-2023	10.03.2023	10.03.2023	Special Lecture on "Indian Democracy: An Assessment" was delivered at Banarhat Kartik Oraon Hindi Government College, by Smt. Namrata Pariyar, Associate Professor, Department of Political Science, Darjeeling Government College.

Outcome of the MoU: The students and faculty members of both the colleges have been highly benefitted through lectures and subsequent interactive sessions through the aforesaid faculty Exchange programmes under the MoU.

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Banarhat Kartik Oraon Hindi Government College
Banarhat, District- Jalpaiguri, Pin-735203

Officer In-Charge
B.K.O. Hindi Govt. College
Banarhat, Jalpaiguri

Officer-in-Charge
Darjeeling Govt. College





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Darjeeling-734 101, West Bengal, INDIA

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GOVERNMENT OF WEST BENGAL.
OFFICE OF THE PRINCIPAL
BANARHAT KARTIK ORAON HINDI GOVERNMENT COLLEGE
MORAGHAT, P.O. BINNAGURI, DIST- JALPAIGURI, PIN-735203, WEST BENGAL
PH. NO.- 8617555784, Email:bkohgcollege@gmail.com
Web: <http://bkohindigovernmentcollege.ac.in>

Memo No: 195A/BKOHGC/22

Date: 03.08.2022

TO WHOM IT MAY CONCERN

This is to certify that Smt. Priyanka Rai, Assistant Professor, Department of English, Darjeeling Government College, has delivered a Special Lecture on 03.08.2022 to the students of the Department of English at Banarhat Kartik Oraon Hindi Government College on the topic, "Legacy and Influence of Bertolt Brecht on Modern Theatre" as a part of faculty exchange and sharing of academic information in connection with the MoU signed on 14.07.2022 between Banarhat Kartik Oraon Hindi Government College, Binnaguri, District- Jalpaiguri, Pin-735203, W.B. and Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B.

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Banarhat Kartik Oraon Hindi Government College
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Officer In-Charge
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Banarhat, Jalpaiguri

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PH. NO.- 8617555784, Email:bkohcollege@gmail.com
Web: <http://bkohindigovernmentcollege.ac.in>

Memo No: 81A/BKOHIGC/23

Date: 10.03.2023

TO WHOM IT MAY CONCERN

This is to certify that Smt. Namrata Pariyar, Associate Professor, Department of Political Science, Darjeeling Government College, has delivered a Special Lecture on 10.03.2023 to the students of the Department of Political Science at Banarhat Kartik Oraon Hindi Government College on the topic, "Indian Democracy: An Assessment" as a part of faculty exchange and sharing of academic information in connection with the MoU signed on 14.07.2022 between Banarhat Kartik Oraon Hindi Government College, Binnaguri, District- Jalpaiguri, Pin-735203, W.B. and Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B.

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Banarhat Kartik Oraon Hindi Government College
Banarhat, District- Jalpaiguri, Pin-735203

Officer In-Charge
B.K.O. Hindi Govt. College
Banarhat, Jalpaiguri

Officer-in-Charge
Darjeeling Govt. College





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8. Memorandum of Understanding (MOU) between Youth Computer Training Institute for Skill Development, Bassdroni, Kol-70 with Darjeeling Govt. College, Darjeeling. Pin-734101



Memorandum of Understanding

This MOU is made on 1st October'22 at Darjeeling

Between

Youth Computer Training Institute for Skill Development

a unit of *Sukanya Samridhhi Foundation*, a nonprofit company with operations in India.
Having Head office Near Bansdroni Super Market, Bansdroni, Kolkata, 700070.

and

Darjeeling Government College

Darjeeling - Jorethang Rd, Chauk Bazaar, Darjeeling, West Bengal 734101

This Memorandum of Understanding (MOU) sets for the terms and understanding between the YCTISD and the (partner) for providing livelihood for under privileged students.

Background of YCTISD:

Youth Computer Training Institute for Skill Development is unit of SUKANYA SAMRIDDHI FOUNDATION, a nonprofit company with operations in India. Registered as Autonomous Body, Under Govt. Of West Bengal based on Central Govt. TR Act, 1882, Govt. Of India (Registration No- IV-01257). Registered Under Trade Mark Registry Act, 1999, Govt. Of India, Registered under MHRD (CR Act), Govt. Of India.

YCTISD has worked with national agencies, corporations and community-based organizations to offer sustainable digital livelihood programs for impoverished youth residing in the rural and peri-urban areas of West Bengal. YCTISD aims at building sustainable livelihoods of such communities and enhance economic empowerment through employability programs in digital services sector.

Program Deliverable

Darjeeling Government College would provide students to YCTISD. With this collaboration YCTISD aims to impart market aligned skill and career development training program for the unemployed youth and women towards successful placement of the trained students. In case of future batches, same clauses as prescribed herein will be followed.

These modules would be included in the course curriculum:

1. Certificate in English Communication and Digital Literacy, Duration 100hrs.
2. Certificate in English Communication and IT, Duration 120hrs.


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Beneficiaries' profile:

Minimum age for the target group is 18 years and maximum age is 30 years. Minimum educational qualification is 12th pass and each of the students must have Android phone with Internet connection.

Training Methodology:

YCTISD Certified trainers will conduct all the classes under digital livelihoods program follows a technology-driven, methodology that has evolved based on employer and student feedback, team evaluation, and impact studies conducted externally and internally, YCTISD team continuously tries to align with changing job markets, digital trends, and the state of the training technology worldwide.

Training Location:

Training will be conducted through Online or Offline as per the availability of classroom and IT Lab in the Partner premises. For offline classes partner would provide the following:

1. Theory classroom space, with suitable seating arrangement for 20 students at a time.
2. Computers Lab with Internet connection for IT practical classes.

Student Exit Profile:

After successfully completion, students will get certification from YCTISD & our training and placement partner Anudip and who are willing to take job, they will get the placement assistance in IT-ITES sectors in different job roles like Back Office Executive, Data Entry Operator, Customer Care Executive and Retail Executive, Tele-Sales, inhouse sales etc. The Job will be based in any part of the country depending on employer's specifications.

Duration:

This MOU is valid from (01/10/2022) to (31/03/2023). The duration of the MOU may be extended in mutual consent on expiry of this agreement.


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Termination:

Either party may terminate this Memorandum of Understanding by giving 30 days' prior notice. This MOU is effective till March of this Financial Year.

For YCTISD

Chairman 
Name: Kavi Narayan
Address: Darjeeling

For Darjeeling Government College

Principal 
Name: Officer-in-Charge
Address: Darjeeling Govt. College




Officer-in-Charge
Darjeeling Govt. College





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Report on Youth Computer Training Institute for Skill Development, (Anudip Foundation Skill), Bassdroni, Kol-70 and Career Development Centre Programme

Program Coordinator- Prajjawal Pradhan, W.B.E.S
Assistant Professor, H.O.D
Department of Commerce
Darjeeling Government College

Dated: 25th June 2023

Programme: Certificate in English Communication and Digital Literacy

Introduction: The Anudip Foundation Skill and Career Development Centre conducted a comprehensive programme on Certificate in English Communication and Digital Literacy at our college. The programme, spanning multiple batches from January 17th, 2023, to May 10th, 2023, aimed at equipping participants with essential soft skills and digital literacy competencies for personal and professional growth.

Programme Overview: The Certificate in English Communication and Digital Literacy programme was designed to provide participants with a holistic skill development experience. Each batch, consisting of 80 hours of training, focused on two primary areas: soft skill training and digital literacy.

Soft Skill Training:

- Relocation for a better life and time management
- Communicative English and developing discipline
- Understanding office work culture, writing resumes, and interview skills
- Goal setting, current IT trends, and requirements
- Self-introduction and types of interviews
- Interview techniques

Digital Literacy:

- Introduction to computers and hardware
- Computer software and operating systems
- Working with Windows and Mac operating systems
- Microsoft Excel: Formatting, formulas, functions, VLOOKUP, and HLOOKUP
- Getting started with Microsoft Word: Formatting text
- Introduction to the internet, online activity, and remote access
- Email: Creating a Gmail account and basic email functionality


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Programme Dates:

Serial NO.	Batch No	Period from	Period to	No of students enrolled	No of students completed
1.	Batch 1 2022-2023 ANP-C4195	17.01.2023	14.03.2023	16	16
2.	Batch 2 2022-2023 ANP-C4196	17.01.2023	15.03.2023	14	14
3.	Batch 3 2022-2023 ANP-C4197	17.01.2023	14.03.2023	06	06
4.	Batch 4 2022-2023 ANP-C4577	20.02.2023	12.04.2023	20	20
5.	Batch 5 2022-2023 ANP-C4578	27.02.2023	12.04.2023	23	23
6.	Batch 6 2022-2023 ANP-C5115	14.03.2023	10.05.2023	21	21

Outcomes: The Certificate in English Communication and Digital Literacy programme yielded significant outcomes:

- Participants gained proficiency in communicative English and digital literacy skills, enhancing their employability.
- Improved soft skills such as time management, discipline, and office work culture understanding facilitated participants' professional growth.
- Enhanced knowledge of IT trends, resume writing, and interview techniques prepared participants for job opportunities in the digital era.


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- Practical training in digital tools and applications equipped participants to navigate the modern workplace effectively.

Conclusion: The Certificate in English Communication and Digital Literacy programme by Anudip Foundation Skill and Career Development Centre provided participants with a valuable opportunity to acquire essential soft skills and digital literacy competencies. By addressing the diverse needs of participants, the programme contributed to their holistic skill development and readiness for the challenges of the modern workforce.



P. Prasad
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NOTICE

Date: 12.01.2023

Dear Students,

We are pleased to inform you that Anudip Foundation Skill and Career Development Centre is organizing an offline programme on “Certificate in English Communication and Digital Literacy”.

Programme Details:

- **Title:** Certificate in English Communication and Digital Literacy
- **Objective:** Equipping participants with essential soft skills and digital literacy competencies for personal and professional growth
- **Duration:** From 17.01.2023– 14.03.2023
- **Mode:** Offline

Course Offerings:

- **Soft Skills Training**
- **Digital Literacy**

Who Can Participate: This programme is open to all students who wish to enhance their skills in IT and related areas. Participation is highly encouraged as it offers valuable opportunities for skill development and empowerment.

Contact Information: For any queries or assistance regarding the programme, please feel free to contact Mr. Prajjawal Pradhan,(8637326214) Assistant Professor, Program Coordinator.



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NOTICE

Date: 13.02.2023

Dear Students,

We are pleased to inform you that Anudip Foundation Skill and Career Development Centre is organizing an offline programme on “Certificate in English Communication and Digital Literacy”.

Programme Details:

- **Title:** Certificate in English Communication and Digital Literacy
- **Objective:** Equipping participants with essential soft skills and digital literacy competencies for personal and professional growth
- **Duration:** From 20.02.2023– 12.04.2023
- **Mode:** Offline

Course Offerings:

- **Soft Skills Training**
- **Digital Literacy**

Who Can Participate: This programme is open to all students who wish to enhance their skills in IT and related areas. Participation is highly encouraged as it offers valuable opportunities for skill development and empowerment.

Contact Information: For any queries or assistance regarding the programme, please feel free to contact Mr. Prajjawal Pradhan,(8637326214) Assistant Professor, Program Coordinator.



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NOTICE

Date: 01.03.2023

Dear Students,

We are pleased to inform you that Anudip Foundation Skill and Career Development Centre is organizing an offline programme on “Certificate in English Communication and Digital Literacy”.

Programme Details:

- **Title:** Certificate in English Communication and Digital Literacy
- **Objective:** Equipping participants with essential soft skills and digital literacy competencies for personal and professional growth
- **Duration:** From 14.03.2023 - 10.05.2023
- **Mode:** Offline

Course Offerings:

- **Soft Skills Training**
- **Digital Literacy**

Who Can Participate: This programme is open to all students who wish to enhance their skills in IT and related areas. Participation is highly encouraged as it offers valuable opportunities for skill development and empowerment.

Contact Information: For any queries or assistance regarding the programme, please feel free to contact Mr. Prajjawal Pradhan,(8637326214) Assistant Professor, Program Coordinator.



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9. Memorandum of Understanding (MOU) between Brainware University, Ramkrishnapur Road, Barasat, Kol-125, Darjeeling Government College, Darjeeling. Pin-734101



Ref: BWU/PR/12082022/01
Date: 12. 08. 2022.

To
The Principal
Darjeeling Govt. College
Lebong Cart Road,
P.O. Dist.- Darjeeling,
Pin- 734101

Dear Sir,

Greetings for the day ! Hope this will find you good.

I on behalf of Brainware University; Kolkata, Indiatake the privilege to go for a warm connect. Brainware University; Kolkata formed by a Gazette Notification of the Govt. of West Bengal (The West Bengal Act XXXI of 2015) is one of the leading UGC approved private university in West Bengal, offering in total 65+ programs in graduate, postgraduate and Ph.D. programs.

To know more about us, I would request you to kindly click on to our official website <https://www.brainwareuniversity.ac.in>

We had 10K students enrolled under our multi-disciplinary academic session last year and in 2021 we offered 98% placement in reputed brands from our proactive placement team.

Now we intend to go for a tie up which includes MOU, both ends students and faculties exchange programs, internship, collaboration seminar/webinar, conference etc. aiming to ignite our passion for encouraging our students for research and development prior to entering the professional world. It includes student training and visits, University curriculum enrichment, research and development, student skill development. And at the same time your institute also gets the opportunity to go for spot talent hunt for further research and development vis a vis another research window to flourish new. These MoUs can be considered as starting point for high quality academic-academic partnership development.

It would be highly solicited if we can have a discussion regarding the same. I would request you to kindly go through the attachment containing the features of our concern departments.

BRAINWARE UNIVERSITY

Barasat Campus : 398, Ramkrishnapur Road, Barasat, Near Jagadighata Market, Kolkata, West Bengal 700125
Phone : +91 7044447723

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Darjeeling Govt. College





सत्यमेव जयते

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I would request you to kindly find the attachments containing the highlights of our university and proposed MoU.

Looking forward to an alternative reply at your earliest convenience and hoping to benefit immensely by the vast ocean of talent and expertise of your multifaceted institute.

With best regards

Thanking You,

Mrinal Bhattacharya
Mrinal Bhattacharya

Head – Campus to Corporate Cell
Brainware University , Kolkata

Ph :9007098890

Email: tpo@brainwareuniversity.ac.in

Mrinal Mohan Bhattacharya
Training & Placement Officer
Brainware University
Barasat, Kolkata- 700125

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পশ্চিমবঙ্গ পশ্চিম বঙ্গাল WEST BENGAL

AE 838633

Memorandum of Understanding (MoU)

THIS MEMORANDUM OF UNDERSTANDING (hereinafter called as the 'MoU') is made on this ^{9th} day of ~~September~~ ^{September}, 2022 at Kolkata, West Bengal.

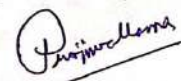
BETWEEN

BRAINWARE UNIVERSITY having its campus at 393-Ramkrishnapur Road (Near Jagadighata Kazipara Market), P.S. Barasat, Kolkata – 700 125, hereinafter referred to as the "UNIVERSITY", represented by Ms. Mahua Pal in the capacity of Registrar (which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include its successors-in-office, administrators, executors, legal representatives and permitted assigns) as the FIRST PARTY.

AND

DARJEELING GOVERNMENT COLLEGE having its campus at Leborg Cart Road, Richmond Hill, P.O. & District- Darjeeling, Pin – 734101, West Bengal being represented by principal namely Dr. P. C. Lama hereinafter referred to as "Academic Partner" or SECOND PARTY.


Registrar
Brainware University
Barasat, Kolkata- 700125


Officer-in-Charge
Darjeeling Govt. College
Darjeeling, West Bengal-734101


Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
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First Party and Second Party are hereinafter jointly referred to as 'Parties' and individually as 'Party'

AND

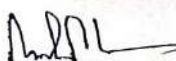
Whereas

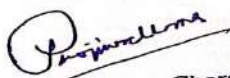
- a) **First Party** is a UGC recognized State Private University in West Bengal and the Brainware University Act, 2015' has been passed by the West Bengal State Legislative Assembly, and the same has been published in Kolkata Gazette, Extraordinary on January 27, 2016. The provisions of the Brainware University Act, 2015, have come into effect from February 25, 2016, through the Government of West Bengal Notification (No. 165-Edn (U)/IU – 125/2014) on February 24, 2016. It is a University with more than 175 academic members, offering specialized UG, PG and PhD degree programmed and diploma programs in Engineering, Biotechnology, Management, Commerce, Law, Pharmacy, Allied Health Sciences, Nursing, Computational Science, Mathematics, Media Science and English.
- a) **Second Party** is a UGC recognized State Govt. Deemed Institute in West Bengal, having a team of highly educated faculties who are well equipped with the expertise for teaching and research.
- b) First Party & Second Party both believe in collaboration and co-operation between themselves that will promote more effective use of each of their resources and provide each of them with enhanced opportunities and also in exploring new areas of unbroached field in relation to the prevailing technological advanced era.
- c) The Parties herein intend to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education and Research.
- d) Both Parties, being legal entities desire to sign this MoU for advancing their mutual interests.

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL CONSENT SET FORTH IN THIS MOU, THE PARTIES HEREIN AGREE AS FOLLOWS:

CLAUSE 1: CO-OPERATION

- 1.1 Both Parties are united by common interests and objectives and they shall establish channels of communication and co-operation that will promote and advance their respective operations within the Institution and its related wings. The Parties herein shall keep each other informed of potential opportunities and shall share all information that may be relevant to secure additional opportunities for one another.
- 1.2 The general terms of co-operation shall be governed by this MOU. The Parties shall cooperate with each other and shall, as promptly as is reasonably practical, enter into all relevant agreements, deeds and documents (the 'Definitive Documents') as may be required to give effect to the actions contemplated in terms of this MOU. The term of


Registrar
Brainware University
Rasat, Kolkata- 700125


Officer-in-Charge
Darjeeling Govt. College
Darjeeling, West Bengal-7341


Officer-in-Charge
Darjeeling Govt. College





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Definitive Documents shall be mutually decided between the Parties. Along with the Definitive Documents, this MOU shall represent the entire understanding as to the subject matter hereof and shall supersede any prior understanding between the Parties on the subject matter hereof.

CLAUSE 2: SCOPE AND OBJECTIVE

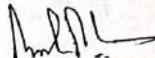
Both the parties will give valuable inputs in the programs listed below

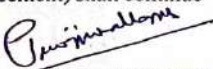
- 2.1 **Curriculum Design:** Suggestions in teaching / training methodology and suitably customize the curriculum related to Biotechnology by sharing on-field experience and knowledge for increasing the perception to every area of expertise, so that the concerned students fit into the industrial scenario meaningfully.
- 2.2 Jointly conduct **training programs** for students as well as researchers.
- 2.3 Jointly submit **research projects** to funding agencies on a mutual sharing basis with prior written consent.
- 2.4 Jointly organize **conferences, seminars, webinars, workshops.**
- 2.5 Both institutions will facilitate **internship** for students and researchers.
- 2.6 Supervise the students and researchers as **guide and co-guide within rules prescribed by the Ordinance of the respective Institution/University.**
- 2.7 Joint **publications as well as patents** may be encouraged with prior consent of either parties herein.
- 2.8 Facilitate **students and faculties exchange** programs.
- 2.9 Sharing of **lab and research facilities.**
- 2.10 **Academic Requirements:** Both parties will assign one faculty member from its side to maintain all the academic administration related activities related to their respective students.
- 2.11 Both the parties shall render all possible support in taking up steps to prevent damage of lab instruments and equipment and accessories together with security of its relating thereto.
- 2.12 No party will be responsible for providing any accommodation, travel expenses or other utility services to the students, researchers and faculties.

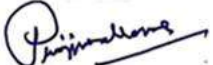
CLAUSE 3: DURATION and TERMINATION

DURATION OF THE AGREEMENT:

- 3.1 This Agreement shall remain valid and binding upon both the parties for a period of three years effective from the date on which it is executed. That the instant MoU may be renewed by mutual consent of either parties herein.
- 3.2 In any case, if either Party decides against renewal/termination of this agreement, after expiry/subsistence of this agreement it shall be the responsibility of both parties herein to see that the students already studying (at the time of expiry of the agreement) shall continue


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Barasat, Kolkata- 700125


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and complete the practical training/internship as per provisions of this agreement and for this purpose, the agreement shall be operative, unless otherwise agreed between the two parties as per extant provision.

TERMINATION OF AGREEMENT:

The parties herein shall be entitled to terminate this agreement by mutual consent in writing by serving at least two months' prior notice to the other party herein, subject to completion of training of the prevailing trainee students, if any.

CLAUSE 4: RELATIONSHIP BETWEEN THE PARTIES

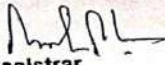
4.1 It is expressly agreed that First Party and Second Party are acting under this MoU as independent contractors and the relationship established under this MOU shall not be construed as a partnership. Neither Party is authorized to use the other Party's name in any way, to make any representations or create any obligation or liability, expressed or implied, on behalf of the other Party, without the prior written consent of the other Party. Neither Party shall have, nor represent itself as having, any authority under the terms of this MOU to make any arrangements/agreements of any kind in the name of or binding upon the other Party, to pledge the other Party's name, credit or to extend credit on behalf of the other Party.

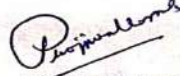
4.2 Nothing contained in this MoU shall, by express right, grant, implication, estoppels or otherwise, create in either Party any right, title, interest or license in or to the intellectual property (including inventions, patents, copy rights, trademark, trade secrets, industrial property and designs) of the other Party.

4.3 Any violation and/or infringement of the intellectual property rights envisaged hereinabove, caused by either Parties herein shall be subjected to commission of offences under the provisions of Indian Penal Code and/or any special statute and/or any other law both civil and criminal, being in force, having exclusive jurisdiction of Courts of Kolkata only.

CLAUSE 5: DISPUTE RESOLUTION BETWEEN PARTIES

5. Any divergence or difference or dispute derived/arrived from the interpretation or application of the instant understanding, it shall be resolved by invoking the provisions of arbitration between the parties herein as per the Arbitration and Conciliation Act, 1996 (as amended till date). The place of arbitration shall be within the jurisdiction of the Hon'ble High Court, Calcutta, India as per the constitution of the Tribunal concerned. In case, any dispute has arisen, the name of the Learned Arbitrator shall be nominated by the First Party herein only. This undertaking is to be construed in accordance with Indian Law having exclusive jurisdiction of the Courts of Kolkata only.


Registrar
Brainware University
Barasat, Kolkata- 700125


Officer-in-Charge
Darjeeling Govt. College
Darjeeling, West Bengal-734101


Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

CLAUSE 6: REVIEW AND AMENDMENTS

6. This Memorandum may be amended or revised if both parties agree during the aforementioned tenure, as and when required. Such amendments or revision shall be effective immediately from the date of execution. Amendments may be decided at any time and shall be made in writing upon mutual consent of the parties.

IN WITNESSETH WHEREOF the parties hereto have signed these presents on the date, month and year first written herein above.

For Brainware University

For Darjeeling Government College

Authorized Signatory
(Ms. Mahua Pal)
Registrar

Address: Brainware University,
398, Ramkrishnapur Road, Barasat
North 24 Parganas, Kolkata – 700125
Contact Details: 03371445573
Email: registrar@brainwareuniversity.ac.in
Website: www.brainwareuniversity.ac.in
Date:

Stamp / Seal

**Registrar
Brainware University
Barasat, Kolkata- 700125**

Witness 1:

(Dr. Sayantan Ghosh)

Head of the Department
Department of Biotechnology
Brainware University

Stamp / Seal

**HOD
Department of Biotechnology
Brainware University
Barasat, Kolkata-700125**

**Officer-in-Charge
Darjeeling Govt. College
Darjeeling, West Bengal-734101**
Authorized Signatory
(Dr. P.C. Lama)
Principal

Address: Darjeeling Government College
Lebong Cart Road, Richmond Hill Darjeeling, P.O.
& District- Darjeeling. Pin- 734101 West Bengal.

Contact Details:

Email: dgc.principal@gmail.com
Website: www.darjeelinggovernmentcollege.com
Date:

Stamp / Seal



Witness 2:

08/09/2022
**Head
Dept. of Hindi
Darjeeling Govt. College
Darjeeling**

**Officer-in-Charge
Darjeeling Govt. College**





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10. Memorandum of Understanding (MOU) between **Eastern Himalayan Foundation**, Darjeeling with Darjeeling Government College, Darjeeling. Pin-734101

MEMORANDUM OF UNDERSTANDING

The MEMORANDUM OF UNDERSTANDING (hereinafter referred to as "MoU") is made in Darjeeling, West Bengal on the **14th of July 2022**

BETWEEN

(1) Darjeeling Government College (hereinafter referred to as "DGC"), which is an educational institution established on 5th August 1948, which expression shall, unless anything repugnant to the context, include its successors in office and assign

AND

(2) Eastern Himalayan Foundation, (hereinafter referred to as "EHF"), incorporated under the Companies Act, 2013 on March 7th 2022 having its registered office at Relling School-line, Darjeeling, West-Bengal, 734201 which expression shall, unless anything repugnant to the context, include its successors in office and assigns,

Each of the parties mentioned above are, hereinafter collectively, referred to as the "**Parties**" and individually as a "Party".

WHEREAS

(A) DGC has agreed to implement the **Trailblazer Fellowship** with the 2nd and 4th semester students from all departments and a **College Outreach Program** for all students

(B) EHF aims to build youth leadership in the districts of Darjeeling and Kalimpong.

Since November 2021 to April 2022, it have been engaged in an intensive Needs Assessment with 8 educational institutions in the Darjeeling SubDivision and the Block of Darjeeling Pulbazar and conducted a survey of appx. 240 youth representatives to understand the 'State of the Youth' in Darjeeling.


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Darjeeling Govt. College





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Based on the insights received from the needs assessment process, EHF IS initiating a youth Fellowship program (called the "Trailblazer Fellowship") and a College Outreach program with the following colleges:

1. Darjeeling Govt. College
2. Bijanbari Degree College

(C) EHF does not have any commercial interest in working with DGC;

(D) The Parties have a common interest to build and improve the capacities of youth in Darjeeling district.

(E) The MoU is a statement of intent by DGC and EHF to work together and is a non-legally binding document.

The parties hereby agree as follows:

1. Purpose of the Partnership

DGC and EHF are determined to build and improve capacities and skills of the fellows through Trailblazer Fellowship and College Outreach Program. They are keen to promote such initiatives that help fellows/youth discover and build their skills and capacities.

2. Term of the Partnership

The **duration of the MoU is for 3 years.**

At the end of three years, both the Parties may extend the term of this MoU on such Terms and Conditions as may be mutually agreed in writing.

3. Key Elements of the Partnership

3.1 TRAILBLAZER FELLOWSHIP COMPONENTS

3.1.1 Selection Process

EHF will select 5-8 Fellows, in consultation with the DGC, based on criteria set by EHF


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Darjeeling Govt. College





3.1.2 Training

- Fellows will be trained to identify and implement a project in their chosen communities of intervention (in college/village/town) on a relevant social issue with the United Nations' Sustainable Development Goals (for eg. education, waste, climate change, delivery of services etc.)
- Through the project, fellows will be trained on 21st Century Skills including Life & Career Skills, Information, technology & media, learning & innovation

3.1.3 Duration

The Fellowship will be for a period of 6-8 months

3.1.4 Engagement of the Fellows

- i. The Fellows will be engaged for an average of 10 hours per week
- ii. This will include work in their chosen communities of intervention (in college/village/town) and attending weekly meetings
- iii. They will be required to attend monthly residential training conducted by the EHF team
- iv. They will also be attending one exposure visit to a non-profit organization outside Darjeeling implementing an innovative solution on the same issue as the Fellows.

3.2 COLLEGE OUTREACH PROGRAM:

3.2.1 Training

A larger cohort of students (selected by the College) will be engaged & trained on the topics included within 21st Century learning including:

1. Life & Career Skills
2. Information, Media & Technology skills

3.2.2 Duration & Frequency of Training

4. Outcomes

4.1 Outcomes of the Trailblazer Fellowship

4.1.1 Selected fellows will be able to engage their communities on relevant social issues using 21st century skills


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- 4.1.2 Selected fellows will be able to design and implement a project within the United Nations' framework of Sustainable Development Goals
- 4.1.3 Fellows will be able to demonstrate improved employability skills
- 4.1.4 Each academic year, 5-8 Fellows will graduate from the Trailblazer Fellowship program
- 4.1.5 They will receive a certificate of completion from DGC and EHF combined

4.2 Outcomes of the College Outreach Program

- 4.2.1 A larger cohort of students (selected by DGC) will be engaged & trained on the topics included within 21st Century learning including Life & Career Skills and Information, Media & Technology skills

5. Roles and Responsibilities of the Parties in the MoU

5.1 EHF team:

- 5.1.1 Selection of Fellows (in consultation with DGC)
- 5.1.2 Finalization of the curriculum for the Trailblazer Fellowship
- 5.1.3 Training of Fellows
- 5.1.4 Design and implement the engagement plan of the Fellows (in 3.1.4 above)
- 5.1.5 Financially support the Fellows for exposure visits and any other areas where it deems required for the successful completion of the Fellowship
- 5.1.6 Connect with sector experts
- 5.1.7 Create a joint review mechanism to assess the progress of the Fellows with the DGC
- 5.1.8 Conduct sessions for College Outreach Program in collaboration with external organizations/individuals jointly selected with the DGC

5.2 Darjeeling Government College (DGC):

- 5.1.2 Help organize sessions with students to introduce them to the Fellowship and invite applications
- 5.1.3 Selection of Fellows (in consultation with the EHF team)
- 5.1.4 Support the selected Fellows to attend the monthly residential training programs organized by the EHF
- 5.1.5 Support the EHF team to review the progress of the Fellows in DGC


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- 5.1.6 Identify cohort for the College Outreach Program
5.1.7 Identify topics within 3.2.1 with EHF for the College Outreach Program
5.1.8 Provide a space for conducting training, workshops and seminars for the College Outreach Program
5.1.8 Ensure attendance of students for the College Outreach program

4. Representatives

- (1) DGC nominates Dr. Prajwal Lama, Officer incharge, Darjeeling Government College, to interact with EHF concerning this MoU
(2) EHF nominates Ms. Mashqura Fareedi, Founder Director, Easter Himalayan Foundation, to interact with DGC to deal with the issues related to the initiatives stated in this MoU.
(3) Either Party may change or nominate additional representatives as it may deem necessary subject to intimation in writing to the other Party.
(4) Each of the Parties warrants and undertakes that it (and any person acting on its behalf) shall comply with all applicable laws while performing under this MOU.

5. Representation, Warranties and Undertakings

- (1) EHF have represented that each of its initiatives relating to this MoU is in compliance with applicable laws and Government rules.
(2) EHF has further represented that execution of this MOU:
I. Is within its powers and has been duly authorized by it;
II. Constitutes its legal, valid and binding obligations;
III. Does not conflict in any material respect with any law or regulation or its constitutional documents or any document binding on it and that it has obtained all necessary consents for the performance by it of this MOU and;
(3) DGC and EHF have represented that each of its initiatives related to this MoU is in compliance with applicable laws and rules in Government rules.


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- (4) DGC and EHF have further represented that execution of this MOU:
- Is within their powers and have been duly authorized;
 - Constitutes its legal, valid and binding obligations;
 - Does not conflict in any material respect with any law or regulation

6. Confidentiality

All Parties agree that any confidential information received from the other Party will not be used otherwise than for the purposes of the Programme under this MOU or for the purpose of fulfilling a statutory, legal or regulatory obligation.

7. Non-solicitation

During the term of this MoU and for one (1) year immediately following its termination, neither Party shall, on its own behalf or in the service or on behalf of others, induce or attempt to induce any officer, director, or employee to leave the other Party.

8. Non-Publicity

Programme, furnish any details of thereof, advertise, issue any press release, or use the other Party's name in any format or make any other public announcement related to this MoU and the Programme, to any other person or entity, written or oral, without the prior written consent of the other Party.

9. Notices

Any notice (including written intimation) required to be given under this MoU shall be deemed to have been duly given upon receipt when in writing and delivered in person, by facsimile transmission, by email, or by courier at the address stated below, namely:

- (a). In the case of the DGC- Dr. Prajwal Lama

Title: Officer in Charge, Darjeeling Govt. College


Officer-in-Charge
Darjeeling Govt. College





(b). In the case of EHF - Ms. Mashqura Fareedi

Title: Founder Director, Eastern Himalayan Foundation, Darjeeling

10. Governing Law and Dispute Resolution

(1) This MoU shall be interpreted, construed and enforced in accordance with the laws of India.

(2) In the event of any dispute between the Parties arising under this MoU (including with regard to the existence, validity or enforceability of this MoU or any provisions hereof), the Founder Director of EHF and the Representatives of the DGC, shall use their best efforts to resolve such dispute amicably through discussions between senior representatives of the Parties.

(3) Any dispute between the Parties as to matters arising under this MoU which cannot be settled amicably within thirty days after receipt by one Party of the other Party's written request for amicable settlement may be submitted by either Party to arbitration in accordance with the provisions set out below.

a. The arbitration proceedings shall be conducted in accordance with the Arbitration and Conciliation Act, 1996 or any amendment or reenactment thereof and the rules made there under. Each dispute submitted by a Party shall be heard by a sole arbitrator appointed jointly by both the Parties.

b. Arbitration proceedings shall be held in Darjeeling and the language of any arbitration proceedings shall be English.

11. Amendments

No amendment, supplement, modification or clarification to this MoU shall be valid or binding unless set forth in writing and duly executed by the Parties to this MoU.

12. Relationships

This MOU is on a principal-to-principal basis between the Parties hereto. Nothing contained herein shall be deemed to create any association, partnership, joint venture or relationship of principal and agent or master and servant or employer and employee between the Parties hereto or any affiliates thereof or to provide either Party with the right, power or authority, whether expressed or implied to create any


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such duty or obligation on behalf of the other Parties.

13. Survival

The provisions that survive the determination of this MoU by implication, including but not limited to the provisions of clause 13 (*Survival*) shall survive the termination of this MoU.

14. Counterparts

This MoU may be executed in counterparts, each of which shall be deemed to be original, but all of which together shall constitute one and the same MoU.

15. Termination

Either Party may initiate termination of this MoU, by giving at least three months prior notice in writing to the other party and the termination notice will specify the reason for terminating this MOU.

IN WITNESS WHEREOF the parties have caused these presents to be executed by their duly authorized official on the day, month and year first written above.

SIGNED AND DELIVERED by the Officer for and on behalf of **Eastern Himalayan Foundation**

Name:

Title

Witness:

Name:


Officer-in-Charge
Darjeeling Govt. College





INTRODUCING THE TRAILBLAZERS

BATCH 1 (2022 - 23)

Abhidaan Lama

Darjeeling Govt. College
B.A (History) 3rd Semester

Ghayabari T.E. Kurseong block.
Abhidaan is a deep thinker and an avid reader.

He is passionate about social change, even though he says "it can take a 100 years". He would like to contribute. He is especially interested in stories that are "lost", "unheard" and wants to "excavate the lost voices" to "bring them back to life".

He believes that we need to work towards erasing borders that differentiate one human from another, that create a division between "us" and "them".

He wants to work on the issue of Climate Change and individual accountability.

Through the Fellowship, he wants to meet and work with like minded people. He is keen to learn more about the world and its intricacies through different perspectives and lenses.



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Avijit Kerketta

Darjeeling Govt. College
B.A (History) 3rd Semester

Rajabhat T.E., Kalchini block, Alipurduar District.

Avijit moved to Darjeeling to pursue his graduation but with the re-location, he used the opportunity to grow and connect with the world. He is an active NSS and AICUF volunteer and is always looking forward to help and serve those in need.

He is keen to make a difference in the world, especially in the lives of the poorest of the poor. He wants to pursue higher studies and get a PhD. Aspires to be a Professor to touch the lives of many young people.

He believes that education is what makes us more human and therefore wants to provide quality education for the underprivileged children.

Through the Fellowship, he is keen to develop his capacity to learn and do more.



EASTERN HIMALAYAN
FOUNDATION

Principals

Officer-in-Charge
Darjeeling Govt. College





Deepika Dhungana

Darjeeling Govt. College
B.A (Geography) 5th Semester

Rockwood, Chota Kakjhora, Darjeeling.

Dipika is a yoga practitioner, a singer, dancer, a poet and a theatre artist.

She has overcome challenges in life with tenacity. Her mother is her biggest support from whom she has learnt values of courage and perseverance.

She wants to pursue higher education outside Darjeeling because she feels she will be able to learn and grow if she is able to relocate outside.

She is passionate about spreading more awareness on mental health. She feels that "Knowledge about human mind, emotions and feelings should also be given to the youngest so that the young generation can learn to train their mind to be stronger".

Through the Fellowship, she wants to develop her understanding of social issues, develop her communication skills and boost her self confidence.



Namit Rai

Darjeeling Govt. College
B. Com 5th Semester

Kerabari, GP Goke, Pulbazar Block

Namit is independent and entrepreneurial. He has been supported by his Uncle since he was 13 years old. He took it upon himself to start a small business to support part of his education and his daily needs.

He is a part of the Nav Yuva Samaj in Kerabari which organises various programs to raise awareness on substance abuse, supporting poor families etc.

He wants to do his B. Ed. and become a teacher.

He also provides free tuition to the kids in his village and is passionate about the lack of quality education in government schools. He wants to ensure that all children are able to access quality education, irrespective of their economic status.

Through the Fellowship, he wants to develop his leadership abilities.




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Suvankar Thapa

Darjeeling Govt. College
B. A (History) 3rd Semester

Nagari Farm T.E., Jorebunglow Sukhia pokhari Block

He has worked as a Child Representative in Anugyalaya DDSSS which helped him gain both experience and knowledge on issues like child rights, early marriage and drug abuse. During Covid, he worked with the locally formed Himalayan Harbinger Foundation which helped spread awareness on the virus and also supported those affected. He was also active in organizing the Zero Plastic campaign and events like 'Nagari Got Talent'. He is also an active member of Reporter's club of Mirik.

He wants to work on child rights, to abolish child labour and provide career guidance to youth.

He wants to pursue B. Ed. if resources permit.

He says he has realised that social change needs people and institutions to collaborate with each other. He wants to join the Fellowship to work with other like minded individuals and organizations to support his dream to work for his community. He wants to live a life where his work becomes and inspiration for others.



EASTERN HIMALAYAN
FOUNDATION

P. J. ...
Officer-in-Charge
Darjeeling Govt. College





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11. Memorandum of understanding between Acharya Prafulla Chandra Roy Government College, Himacha Vihar, Matigara, Darjeeling with Darjeeling Govt. College, Darjeeling. Pin-734101



পশ্চিমবঙ্গ পশ্চিম বঙ্গাল WEST BENGAL

74AB 789132

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter called as the 'MOU') is entered into on The.... DAY ofTwo Thousand and Twenty Three by and between

DR. MAYUKH SARKER, OFFICER-IN-CHARGE
ACHARYA PRAFULLA CHANDRA ROY GOVERNMENT COLLEGE, HIMACHAL VIHAR, MATIGARA, DIST.
DARJEELING-734010

AND

DR. PROJJWAL CHANDRA LAMA, OFFICER-IN-CHARGE
DARJEELING GOVERNMENT COLLEGE, LEBONG CART ROAD, DARJEELING-734101

Acharya Prafulla Chandra Roy Government College and Darjeeling Government College being two academic Institute of Higher Education Department, Govt. of West Bengal share common values of interest in the academic circle. Both the Institute recognizes their strength in the field of Science, Social Science and Value Education.

APC Roy Govt. College and Darjeeling Govt. College therefore agree to establish a program for academic cooperation in the areas of mutual interest, and in accordance with terms and conditions set forth in this memorandum of understanding (MOU) for a period of five years

Objectives

: This MOU shall not bind either parties to function independently however whenever possible the following will be observed:

Prasanna

[Signature]

Prasanna

Officer-in-Charge
Darjeeling Govt. College





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- (1) Exchange of faculty and students on to a reciprocal basis, students at Undergraduate, Post-Graduate levels for limited periods of time for purpose of education.
- (2) Organize various workshops on Entrepreneurship Development
- (3) Conduct practical trainings on Entrepreneurship Development
- (4) Jointly organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's faculty to participate therein
- (5) Help each other arrange the placement of trained students.
- (6) Exchange students to participate on internship program on Science and Social Sciences.

**NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL AGREEMENT SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS, AS FAR AS POSSIBLE.
CO-OPERATION**

Exchange of Scientific and Technical Material

Acharya Prafulla Chandra Roy Government College and Darjeeling Government College will exchange information on educational programs and teaching/learning material and other literature relevant to their educational programs.

Joint Conferences, workshops and short-term courses

Acharya Prafulla Chandra Roy Government College and Darjeeling Government College agree to help identify and invite faculty members from the other institution to participate in conferences, workshops and short-term courses.

Student Exchange

Acharya Prafulla Chandra Roy Government College and Darjeeling Government College agree that student exchange will be guided by principles listed below. A home institution refers to the institution where a student is a full-time student, and from where he/she is expected to graduate. A host institution refers to an institution that receives a student for a brief period of time to undertake a pre-determined program of study or research.

- a) Exchange students will be selected by mutual agreement between the home institution and the host institution.
- b) An exchange student will continue to be treated as full-time student at his/her home institution.
- c) An exchange student will be considered as full-time "exchange" student at the host institution.
- d) His/her program of study at the host institution will be determined by mutual consultation between his/her academic advisor at the home institution and his/her "interim" academic advisor identified by the host institution.
- e) The host institution will evaluate an exchange student's performance in each course or module, award a letter grade or marks, and issue a letter to that effect.
- f) The home institution may award to the exchange student credits earned at a host institution, but only after the home institution has established correspondence between courses taken at the host institution vis-a-vis those offered at the home institution.
- g) If an exchange student has undertaken research, then the host institution will evaluate the exchange student's performance in the research, and issue a letter to that effect, together with a technical "report" of

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the research carried out.
h) The exchange students will continue as usual to pay tuition and other fees at their home institution.


SCOPE OF THE MOU


- (1) Both the Higher Educational Institute (HEI) believe that close co-operation between the two would be a major benefit to the student community to enhance their skills and knowledge.
- (2) Exposure provided to students through this association will build confidence and prepare the students to have a smooth transition from academic to working career.
- (3) The students will enrich themselves with the knowledge through the program on the emerging technologies in order to bridge the gap in skill and make them ready for industry.
- (4) The students of the two HEI through this association will build their mutual value added knowledge, ethics and responsibility towards environment and society.

VALIDITY


- (1) The validity of the agreement is five years from the date of agreement and may be continued thereafter after suitable review and agreement.
- (2) Either institution may terminate the MoU by giving written prior notice to the other institution three months in advance. Once terminated, Acharya Prafulla Chandra Roy Government College and Darjeeling Government College will be responsible for any losses, financial or otherwise, which the other institutions may suffer. However, APC Roy Govt. College and Darjeeling Government College will ensure that all activities in progress are allowed to complete successfully.


AGREED:



Principal/Officer-In-Charge
APC Roy Govt. College
For
Acharya Prafulla Chandra Roy Govt. College,
Siliguri
Dr. Mayukh Sarker
W.P.E.S
Officer- In- Charge
A.P.C. Roy Govt. College
Siliguri
Govt. Of West Bengal



Witness 1:


Astt. Professor
A.P.C. Roy Govt. College
Matigara, Siliguri
Dist.- Darjeeling


Principal/Officer-In-Charge
Darjeeling Government College
For
Darjeeling Government College
Darjeeling
Officer-in-Charge
Darjeeling Govt. College



Witness 2:


Prajjawal Pradhan
Assistant Professor W.B.E.S
Department of Commerce
Darjeeling Government College


Officer-in-Charge
Darjeeling Govt. College





सत्यमेव जयते

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सत्यमेव जयते

GOVERNMENT OF WEST BENGAL
OFFICE OF THE PRINCIPAL
ACHARYA PRAFULLA CHANDRA ROY GOVERNMENT COLLEGE
Himanchal Vihar, P.O & P.S - Matigara, Siliguri, Darjeeling – 734010, West Bengal
Phone: 0353-2571340, e-mail: apcrgc@gmail.com, Website: www.apcrgc.org

Date: 27/2/24

To whom it may concern

This is to certify that a one day seminar on Gametogenesis and Fertilization was held in the Seminar Hall, Department of Zoology on 27.02.2024 at 11 am. The speech delivered by Ms. Priyanka Saha, Assistant Professor of Zoology, Darjeeling Government College was informative and helpful for both the faculty and students of the Department.


Officer in charge
A.P.C. Roy Government College

Officer-in-Charge
A.P.C. ROY GOVT. COLLEGE
Siliguri


Officer-in-Charge
Darjeeling Govt. College





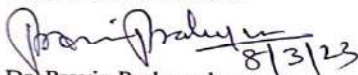
Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

12. Memorandum of understanding between Indira Gandhi National Open University (IGNOU) and Darjeeling Govt. College



A MoU was signed in between Indira Gandhi National Open University (IGNOU) and Darjeeling Govt. College in the year 1991. According to the MoU, a Study Centre of IGNOU is running at Darjeeling Govt. College as IGNOU Darjeeling Govt. College Study Centre with LSC Code 2811 for Post Graduation, Graduation, Diploma and Certificate programme since 1992 to till date under IGNOU Regional Centre Siliguri with RC Code-45 following all the rules and regulations of IGNOU.


8/3/23
Dr. Pravin Pralayankar
Regional Director (I/c)
IGNOU Regional Centre, Siliguri
Siliguri

क्षेत्रीय केंद्र, सिलीगुरी
Regional Centre, Siliguri

79/92 जे.सी. बोस रोड, सुभाष पल्ली, सिलीगुरी - 734001
17/12 J.C. Bose Road, Subhas Pally, Siliguri - 734001
फोन/Phone : 0353-252 6818, ई-मेल/e-mail : rcsiliguri@ignou.ac.in

इन्दिरा गांधी राष्ट्रीय मुक्त विश्वविद्यालय
इन्दिरा गाँधी राष्ट्रीय मुक्त विश्वविद्यालय
Indira Gandhi National Open University
वेबसाइट / website : www.rcsiliguri.ignou.ac.in


Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

13. Memorandum of understanding between Kalimpong College, Kalimpong, W. B. Pin-734301 with Darjeeling Govt. College on 15.03.2023.



GOVERNMENT OF WEST BENGAL
Office of the Principal
Darjeeling Government College
Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com



Memo No:

Date: 15TH March, 2023

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter called as the 'MOU') is entered into On The 15th Day of March Two Thousand and Twenty Three by and between

Darjeeling Government College, Lebong Cart Road, Darjeeling, Pin 734101
And

Kalimpong College, Rinkinpong road, near Rishi Bankim Chandra Park P.O. Kalimpong,
District- Kalimpong, Pin-734 301

Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, Pin-734101 and Kalimpong College, Rinkinpong road, near Rishi Bankim Chandra Park P.O. Kalimpong, District- Kalimpong, Pin-734 301, being two academic Institute of Higher Education share common values of interest in the academic circle. Both the Institute recognizes their strength in the field of Science, Social Science, Skill Development and Value Education.

Darjeeling Government College and Kalimpong College, therefore agree to establish a program for academic cooperation in the areas of mutual interest and in accordance with terms and conditions set forth in this memorandum of Understanding (MOU) for a period of five years.

Objectives

- 1) Exchange of faculty and students on to a reciprocal basis, students at Undergraduate and Post-Graduate levels for limited periods of time for purpose of education.
- 2) Organize various workshops on Entrepreneurship Development.
- 3) Conduct practical trainings on Entrepreneurship Development.
- 4) Jointly organizes seminars, conferences or workshops on topics of mutual interest and to invite each other's faculty to participate therein.
- 5) Help each other arrange the placement of trained students.
- 6) Exchange students to participate on internship program on science and Social Sciences.

Devi Chatterjee
Teacher in-charge
Kalimpong College
Kalimpong
03/2023

Principals
15/3/23
Officer-in-Charge
Darjeeling Govt. College

Principals
Officer-in-Charge
Darjeeling Govt. College





NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CO-OPERATION

Exchange of Scientific and Technical Material

Darjeeling Government College and Kalimpong College will exchange information on educational programs and teaching/ learning material and other literature relevant to their educational programs.

Joint Conferences, Workshops and Short-term courses

Darjeeling Government College and Kalimpong College agree to help identify and invite faculty members from other institution to participate in conferences, workshops and short term courses.

Student Exchange

Darjeeling Government College and Kalimpong College agree that student exchange will be guided by principles listed below. A home institution refers to the institution where a student is a full time student and from where he/she is expected to graduate. A host institution refers to an institution that receives a student for a brief period of time to undertake a predetermined program of study or research.

D-107
Teacher in-charge
2023
Kalimpong College
Kalimpong

- a) Exchange students will be selected by mutual agreement between the home institution and the host institution.
- b) An exchange student will continue to be treated as full time student at his/her home institution.
- c) An exchange student will be considered as full "exchange": student at the host institution.
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- g) If an exchange student has undertaken research then the host institution will evaluate the exchange student's performance in the research and issue a letter to that effect, together with a technical "report" of the research carried out.
- h) The exchange students will continue as usual to pay tuition and other fees at their home institution.

Principal
15/12/23
Officer-in-Charge
Darjeeling Govt. College

Principal
Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com

SCOPE OF THE MOU

1. Both the Higher Educational Institute (HEI) believes that close cooperation between the two would be a major benefit to the student community to enhance their skills and knowledge.
2. Exposure provided to students through this association will build confidence and prepare the students to have a smooth transition from academic to working career.
3. The students will enrich themselves with the knowledge through the program on the emerging technologies in order to bridge the gap in skill and make them ready for industry.
4. The students of the two HEI through this association will build their mutual value added knowledge, ethics and responsibility towards environment and society.

[Signature]
15/03/23
Officer-in-Charge
Darjeeling Govt. College

VALIDITY

[Signature]
15/03/2023
Teacher in Charge
Kalimpong College
Kalimpong

1. The validity of the agreement is five years from the date of agreement and may be continued thereafter suitable review of the agreement.
2. Either institution may terminate the MOU by giving written prior notice to the other institution three months in advance. Once terminated, **Darjeeling Government College** and **Kalimpong College** will be responsible for any losses, financial or otherwise, which the other Institutions may suffer. However, **Darjeeling Government College** and **Kalimpong College** will ensure that all activities in progress are allowed to complete successfully.

AGREED:

[Signature]
15/03/23
Principal / Officer- In-Charge
Darjeeling Government College
Darjeeling, PIN 734101



Witness 1: *[Signature]*
15/3/2023

[Signature] 15/03/2023
Principal /Teacher-in Charge,
Kalimpong College
Kalimpong, PIN-734 301
Teacher-in-charge
Kalimpong College
Kalimpong

Witness 2: *[Signature]*
15/3/23

[Signature]
Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

Phone / Fax: (0354) 2254078
(0354) 2254019
Email : dgc.principal@gmail.com



KALIMPONG COLLEGE

27.05°N
88.46°E
1248 M



(Govt. Aided)

ACCREDITED BY NAAC WITH GRADE 'B' (CYCLE 3)

RINKINPONG ROAD, P.O. & DIST. KALIMPONG, WEST BENGAL, PIN-734301

Email: principalkalimpongcolleg

03552-351002

Website: kalimpongcollege.ac.in

Date: 15TH March, 2023



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On The 15th Day of March Two Thousand and Twenty-Three by and between

Kalimpong College, Rinkinpong Road, near Rishi Bankim Chandra Park P.O. Kalimpong,
District- Kalimpong, Pin-734 301

And

Darjeeling Government College, Lebong Cart Road, Darjeeling, Pin 734101

Darjeeling Government College, Lebong Cart Road, Darjeeling, District- Darjeeling, Pin-734101 and Kalimpong College, Rinkinpong road, near Rishi Bankim Chandra Park P.O. Kalimpong, District- Kalimpong, Pin-734 301, being two academic Institute of Higher Education share common values of interest in the academic circle. Both the Institute recognizes their strength in the field of Science, Social Science, Skill Development and Value Education.

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Jewi Chatterjee
Teacher-in-charge
Kalimpong College
Kalimpong

Principals
15/3/23
Officer-in-Charge
Darjeeling Govt. College

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Principals
Officer-in-Charge
Darjeeling Govt. College





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Devi Chelth
 Teacher-in-charge
 Kalimpong College
 Kalimpong

Officer-in-Charge
 Darjeeling Govt. College

Officer-in-Charge
 Darjeeling Govt. College





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Devi Chethu
Teacher-in-charge
Kalimpong College
Kalimpong

Princip
12/12/21
Officer-in-Charge
Darjeeling Govt. College

Principals
Officer-in-Charge
Darjeeling Govt. College





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Dewi Chatterjee
Teacher-in-charge
Kalimpong College
Kalimpong

Principal
15/3/23
Officer-in-Charge
Darjeeling Govt. College

AGREED:

Dewi Chatterjee
Principal / Teacher- In-Charge, 15/03/2023
Kalimpong College
Kalimpong, PIN-734301
Teacher-in-charge
Kalimpong College
Kalimpong

Principal
15/3/23
Principal /Officer-in-Charge
Darjeeling Government College
Darjeeling, PIN 734101
Officer-in-Charge
Darjeeling Govt. College



Witness 1: *Prasanna* 15/3/23

Witness 2: *Prasanna*
15/3/2023

Prasanna
Officer-in-Charge
Darjeeling Govt. College





Government of West Bengal
Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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GOVERNMENT OF WEST BENGAL
Office of the Principal
Darjeeling Government College
Darjeeling - 734 101, West Bengal, INDIA
Website: www.darjeelinggovernmentcollege.com
E-mail: dgc.principal@gmail.com



Memo No:

Date:

Memo No:

Date: 11.04.2023

TO WHOM IT MAY CONCERN

This is to certify that Dr. Jigmi Dorjee Bhutia, Assistant Professor of Mathematics, Department of Mathematics, Kalimpong College has delivered a Special Lecture on 11.04.2023 to the students of the Department of Mathematics at Darjeeling Government College on the topic, "Conjugancy Class in Group Theory" as a part of faculty exchange and sharing of academic information in connection with the MoU signed on 15.03.2023 between Darjeeling Government College, Lebong Cart Road, Darjeeling, District – Darjeeling, Pin-734101, W.B. and Kalimpong College, Rinkinpong Road, near Rishi Bankim Chandra Park P.O. Kalimpong, District- Kalimpong, Pin-734 301, W.B

Officer- in-Charge,
Darjeeling Government College,
Darjeeling, PIN 734101

Officer-in-Charge
Darjeeling Govt. College



Officer-in-Charge
Darjeeling Govt. College





Figure: Some photographs of Dr. **Jigmi Dorjee Bhutia**, Assistant Professor of Mathematics, Department of Mathematics, **Kalimpong College** has delivered a Special Lecture on **11.04.2023** to the students of the Department of Mathematics at Darjeeling Government College on the topic, “**Conjugacy Class in Group Theory**”.


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Darjeeling Govt. College





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Office of the Principal
Darjeeling Government College
Darjeeling-734 101, West Bengal, INDIA

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14. Collaborative Research Activities of by **Dr. Sonam Lama**, Assistant Professor in Geography with **Indian Institute of Tropical Meteorology** (An Autonomous Institute of the Ministry of Earth Sciences, Government of India) Dr. Homi Bhabha Road, Pune 411 008, India.



भारतीय उष्णदेशीय मौसम विज्ञान संस्थान
(पृथ्वी विज्ञान मंत्रालय का एक स्वायत्त संस्थान, भारत सरकार के अधीन)
डा. होमी भाभा मार्ग, पुणे ४११ ००८

INDIAN INSTITUTE OF TROPICAL METEOROLOGY
(An Autonomous Institute of the Ministry of Earth Sciences, Government of India)
Dr. Homi Bhabha Road, Pune 411 008, India

Phone: +91-20-2590-4535 • Fax: +91-20-2586 5142 • <http://www.tropmet.res.in> • Email: mujum@tropmet.res.in

CCCR/Rain_Isotope/May/1

Date: 22/05/23

To,
Dr. Projjwal Ch. Lama,
Officer-In-Charge, Darjeeling Govt. College
Richmond Hill, Darjeeling, WB-734101

CC:
Dr. Sonam Lama,
Assistant Professor in Geography,
Darjeeling Govt. College

Sub: Rainwater sample collection for stable isotope analysis

Dear Sir
Indian Institute of Tropical Meteorology, Pune (Ministry of Earth Sciences, Govt. of India) is involved in rainwater collection and its stable isotopic analysis from various locations throughout India. Isotopic analysis of rainwater helps study the hydro-meteorological processes and some aspects of short term monsoon variability.
As per previous interactions with Dr. Sonam Lama it is understood that Darjeeling Govt. College is interested in this project. IITM team would be pleased to involve Darjeeling Govt. College in the said activity.
Please note that all the material required for sample collection (Rain sampler, bottles, Record books etc.) will be provided by IITM. Similarly charges for dispatching samples will be borne by IITM. Due credit in the form of authorship in relevant publications will be given to Dr. Sonam Lama. Other details regarding observations and further research work will be discussed later.

Looking forward to a fruitful collaboration

Thanking You

Sincerely Yours

मिलिन्द मुजुमकार
Dr. Milind Mujumdar
Scientist-F, In charge- Metflux Project
Mo. 9921001064

Officer-in-Charge
Darjeeling Govt. College





15. Collaborative Research Activities of by Mr. Samir Halder, Assistant Professor in Botany, Darjeeling Govt. College with Burdwan University, Burdwan, 713104, W.B. India.

Kundu et al., IJPSR, 2018; Vol. 9(12): 5294-5300.

E-ISSN: 0975-8232; P-ISSN: 2320-5148

IJPSR (2018), Volume 9, Issue 12

(Research Article)



INTERNATIONAL JOURNAL
OF
PHARMACEUTICAL SCIENCES
AND
RESEARCH



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SALICYLIC ACID-INDUCED MODULATION OF GROWTH AND METABOLISM OF A MEDICINAL PLANT *MENTHA SPICATA* L.

M. Kundu¹, S. Halder² and A. Bhattacharjee^{*1}

Plant Physiology and Biochemistry Section¹, UGC Centre for Advanced Study, Department of Botany, Burdwan University, Burdwan - 713104, West Bengal, India.

PG Department of Botany², Darjeeling Government College, Darjeeling - 734101, West Bengal, India.

Keywords:

Salicylic acid,
Plant growth regulator, Medicinal
plant, *Mentha spicata*, Antioxidants,
Growth and biochemical attributes

**Correspondence to Author:
Prof. Aloke Bhattacharjee**

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Plant Physiology and Biochemistry
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University, Burdwan - 713104,
West Bengal, India.

E-mail: alokebc@yahoo.co.in

ABSTRACT: Salicylic acid is a phenolic plant growth regulator found in plants with various important physiological roles. This investigation was aimed to study the effect of exogenous application of salicylic acid on the growth, metabolism and health status of *Mentha spicata*, an aromatic medicinal plant having several monoterpenes and antioxidants which show various kinds of medicinal properties. In the present work, some growth and biochemical parameters were recorded at 30 and 60 days after treatment with different concentrations of salicylic acid (0, 100, 200 and 300 $\mu\text{g ml}^{-1}$). Results clearly revealed that salicylic acid particularly at 200 $\mu\text{g ml}^{-1}$ concentration significantly enhanced most of the growth and some of the biochemical attributes as well as the antioxidant property when compared with that of control plants. It can be concluded that exogenously applied salicylic acid at particular doses can enhance the biomass production as well as the medicinal potential of *M. spicata* as evidenced from some reliable physiobiochemical parameters.

INTRODUCTION: First and certainly the oldest system of human health care is herbal medicine. Herbs are used for the treatment of human ailments by almost all civilizations and cultures. In recent years, both in developed and developing countries, the demand of medicinal plants has increased rapidly. Mint (*M. spicata*) is one of the most commonly used essential oil bearing medicinal herbs. India is the largest mint oil producer, with an annual production of essential oil of 15,000 - 20,000 tons¹. The genus *Mentha* under the family Lamiaceae includes 18 species and 11 named hybrids².

Plant extracts of mint species are used in cosmetic industry, food industry, pharmaceutical industry and are generally considered safe to use^{3, 4, 5}. This plant especially the leaves contains several monoterpenes including menthol, and carvone is the main volatile component⁶. Various kinds of medicinal properties of this plant include: carminative, antispasmodic, anti-vomiting, anti-hysterical, anti-irritant, antibronchitis, antioxidative, antifungal action etc.

The plant needs profuse foliar biomass production for utilizing this biomass as potential source of essential oil which are mainly used for treatment of various human-ailments. Like some traditional growth regulators, salicylic acid (SA), an established non-traditional plant growth regulator (NTPGR) is reported to enhance the biomass production as well as to increase the quality of essential oil in plants^{7, 8, 9}.

	<p>QUICK RESPONSE CODE</p>
	<p>DOI: 10.13040/IJPSR.0975-8232.9(12).5294-00</p>
<p>Article can be accessed online on: www.ijpsr.com</p>	
<p>DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.9(12).5294-00</p>	



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Received: 03-01-2018
Accepted: 04-02-2018

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College, Darjeeling, West Bengal,
India

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Plant Physiology and
Biochemistry Section, UGC
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Department of Botany, The
University of Burdwan,
Burdwan, West Bengal, India

Paclobutrazol-induced augmented productivity of an endangered medicinal plant safed musli (*Chlorophytum borivilianum* Sant. et Fernand.)

Samir Halder, Moitreyee Kundu and Aloke Bhattacharjee

Abstract

In the present investigation an attempt was made to improve productivity of safed musli by using paclobutrazol (PBZ), a potent growth regulating chemical having promising influence on tuber yield. Foliar application with 100 and 200 $\mu\text{g ml}^{-1}$ of PBZ was found to improve plant potential of safed musli and this was measured in terms of some reliable physio-biochemical parameters along with some selective yield attributes. Our results showed that the foliar application of PBZ reduced plant height, increased number of branches and leaves per plant. PBZ-induced enhanced growth parameters were associated with augmented metabolic status of the plant species as evidenced from higher chlorophyll and protein contents, significantly enhanced catalase along with reduced protease activities in leaves. The positive influence of PBZ was also recorded from the yield attributes as evidenced from the increased number and fresh weight of tubers per plant as well as length and circumference of the tubers, in comparison to control ones. Thus, it can be concluded that the PBZ may be used as a potent chemical for augmented productivity of this high-value endangered plant.

Keywords: *Chlorophytum borivilianum*, safed musli, paclobutrazol, physiochemical changes, productivity

Introduction

The genus *Chlorophytum* Ker Gawl., under the family Asparagaceae (formerly in family Liliaceae), includes more than 215 species, 6 subspecies and 8 varieties which are distributed throughout the tropical and subtropical parts of the world [1]. In India the genus is represented by 21 species among which 2 are ornamental plants, 18 are strictly wild and only *Chlorophytum borivilianum* is wild as well as cultivated as medicinal plant.

Fleshy tubers of *C. borivilianum* are used in Ayurvedic medicines and widely used as a natural sex tonic and is an integral part of more than 100 herbal drug formulation [2]. Their aphrodisiac properties have proved very much useful for the people suffering from erectile dysfunction. Drugs prepared from safed musli are potential enough to increase general body immunity, curative of natal and post-natal problems, increase working capacity, delay aging process, possess anti-inflammatory and anti-oxidant activity. It is also useful in rheumatoid arthritis, diabetes mellitus and post-menopausal syndrome [3-4]. At present, the estimated global demand of safed musli is approximately 40,000 tons per year but current production is 5500 tons per year only [5]. Its huge demand and inadequate supply, makes it a very costly herb. The Department of Indian System of Medicines and Homoeopathy, Ministry of Health and Family welfare, National Medicinal Plants Board (NMPB) identified safed musli as a high value and high demand medicinal crop, and thus it is rightly called the 'root of gold'. NMPB, New Delhi also identified safed musli as the sixth important herb among 28 medicinal plants to be protected, promoted and preserved. Keeping these in mind an attempt was made to undertake a comprehensive research work to address the problems of safed musli in our laboratory and agricultural field, and the present communication deals with the efficacy of a potent PGR paclobutrazol (PBZ) on augmentation of its tuber productivity.

Paclobutrazol (2RS, 3RS)-1-(4-chlorophenyl)-4, 4-dimethyl-2-(1H-1, 2, 4-triazol-1-yl)-pentan-3-ol] is a triazolic group of plant growth regulator. The growth regulating properties of paclobutrazol are mediated by reduced stem elongation [6], increasing root length and diameter as well as dry matter accumulation [7]. Reduced stem elongation may be due to inhibitory effect of paclobutrazol on oxidative reactions of gibberellins biosynthesis [8]. Paclobutrazol also can influence the chlorophyll biosynthesis, delay the senescence and prolong the metabolic activity of many plants [9].

As the global demand of safed musli is increasing day by day and it is depleting rapidly from the Indian forests conservation, mainstream cultivation in different agroclimatic zones of India

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16. Collaborative Research Activities of by **Souvik Mitra, Assistant Professor in Botany, Darjeeling Govt. College** with Chemical Signal and Lipidomics Laboratory, **Department of Botany, Centre of Advanced Study, University of Calcutta, Kolkata, 700019, India.**

Lipids (2018)
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COMMUNICATION

“Dicranin” in the Membrane Phospholipids of a Dicranaceae and Pottiaceae Moss Member of the Eastern Himalayan Biodiversity Hotspot

Sumedha Roy Chowdhuri¹ · Anashuya Biswas Raha¹ · Souvik Mitra² · Jayashree Datta¹ · Mousumi Poddar Sarkar¹

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Abstract The phospholipids of two moss samples *Oreoweisia laxifolia* (Hookf.) Kindb. (family-Dicranaceae Schimp.) and *Leptodontium viticulosoides* (P. Beauv.) Wijk & Margad (family-Pottiaceae Schimp.) of the Eastern Himalayan Biodiversity Hotspot were investigated to find out any peculiarity in their fatty acid profiles. Detailed analysis of phospholipid classes and the respective fatty acids was performed using high-performance thin-layer chromatography and gas chromatography-mass spectrometry. An array of different saturated and unsaturated fatty acids were detected in both the samples. Although it has been proposed previously that acetylenic fatty acids are associated only with triacylglycerol of storage lipids, the most striking observation of the present investigation is the abundance of an acetylenic fatty acid, octadeca-6-yn-9,12,15-trienoic acid (18:4a), or Dicranin, in the phospholipids of both the mosses. The position of the triple bond in the hydrocarbon chain of the fatty acids was confirmed by dimethylloxazoline derivatization of fatty acids and their characteristic mass fragmentation pattern. The occurrence of Dicranin in phospholipids and in the Pottiaceae family is reported for the first time, with substantial explanations of the observed

results. This may raise the issue of rethinking “Dicranin” as a chemotaxonomic marker of Dicranaceae.

Keywords Acetylenic fatty acids · Dicranin · Eastern Himalaya · Gas chromatography–mass spectrometry · *Leptodontium viticulosoides* · Moss · *Oreoweisia laxifolia* · Phospholipids

Lipids (2018).

Abbreviations

AFA	acetylenic fatty acid(s)
DMOX	dimethylloxazoline
FA	fatty acid(s)
FAME	fatty acid methyl ester(s)
GC-MS	gas chromatography–mass spectrometry
Gro3P	glycerol-3-phosphate
HP-TLC	high-performance thin-layer chromatography
NL	neutral lipid(s)
PL	polar lipid(s)
PtdCho	phosphatidylcholine
PtdEtn	phosphatidylethanolamine
PtdIns	phosphatidylinositol
PUFA	polyunsaturated fatty acid(s)
TLC	thin-layer chromatography

Supporting information Additional supporting information may be found online in the Supporting Information section at the end of the article.

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Introduction

Mosses, a member of the bryophyte group of plants, have been under scrutiny for their heterogeneous fatty acid (FA) content in both membrane polar lipid (PL) and storage neutral lipid (NL) fractions. A progressive study on lipids and FA of different plant groups, including mosses had

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RESEARCH ARTICLE

Ecological Impact on Fatty Acid Composition of Mosses from Two Biodiversity Hotspots of Hungary and India

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Abstract Mosses, the pioneer member among the terrestrial plants, acquired remarkable adaptive advantages for their habitat transition and thus enjoy a global distribution even under diverse ecological conditions. Lipids are assumed to play a significant role in the development of various adaptive strategies that favour evolution. The present paper is an attempt to understand the possible reorientation of fatty acid machinery by the cellular system of the mosses that can be relevant in view of their eco-geographical diversity and distribution. Six abundant mosses were collected from dry, low lands of Hungarian plain, and six representative species belonging to similar systematic positions were collected from high-altitude, humid places of Eastern Himalayan Biodiversity Hotspot depending on

their availability for experimentation. Total lipids of the plant samples were extracted, and the fatty acid compositions were analysed using gas chromatography–mass spectrometry and gas chromatography–flame ionizing detector. Chemical analyses revealed a diverse array of saturated, monounsaturated, long-chain polyunsaturated fatty acids in Eastern Himalayan mosses but abundance of saturated fatty acids in Hungarian mosses. One-way analysis of variance and principal component analysis based on various parameters of total fatty acid fingerprints clearly distinguished these two groups of mosses. Thus, this investigation concluded that fatty acid dynamicity has a possible role for adaptation of mosses under different climatic conditions.

Significance Statement This investigation explores the adaptive strategy in mosses, grown in two different ecology and climatic conditions of two biodiversity hotspots at Hungary and India. It was a part of an initiative for conservation of bryophytes under the aegis of “8th European Committee for Conservation of Bryophytes”, 2012.

Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s40011-019-01080-2>) contains supplementary material, which is available to authorized users.

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Keywords Hungary (H) · Eastern Himalayas (EH) · Moss · Gas chromatography–mass spectrometry (GCMS) · Fatty acid signature · Principal component analysis (PCA)

Introduction

Mosses, the amphibian members of the plant kingdom, are known to economize their resources in order to acclimatize under different ecological and environmental conditions, thereby efficiently perpetuating even under acute environmental stress [1, 2]. Mosses, with their poikilohydric nature, simplicity in tissue structure and efficient osmoregulatory mechanism, gained adaptive advantage over desiccation tolerance and in their transition from aquatic to terrestrial habitat [3]. Thus, mosses underwent preferential selection even under extreme climatic conditions to spread over a diverse range of habitats throughout the Universe from desert to alpine, tropic to temperate, arctic to antarctic. Moreover, owing to their pioneer status





17. Collaborative Research Activities of by **Mr. Subhojit Ojha, Assistant Professor in Botany, Darjeeling Govt. College** with Dept. of Botany, Saldiha College, Saldiha-722 173, Bankura, West Bengal, India.



EFFECT OF CCC AND IAA ON VIABILITY EXTENSION OF LENTIL SEEDS

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ABSTRACT

The present investigation was carried out by using two plant growth regulatory substances (PGRs) where one is plant growth promoter (IAA) and one is plant growth retardant (CCC) on lentil seeds to evaluate the efficacy of the chemicals in respect to germinability and metabolism of the experimental seeds. The major problem of the lentil is its poor seed germination capacity under natural condition which leads to impaired plant growth due to loss of seed vigour and viability status. Initially, percentage germination was recorded by using different concentrations of IAA and CCC, where CCC shows inhibitory effect on percentage germination of lentil seeds. Metabolic status of seeds pre-soaked with the CCC shows reduced status of the dehydrogenase activity, amino acid contents and soluble carbohydrate levels of *Lens culinaris*. Thus, PGRs potentially modulate the activities of the beneficial enzymes of the seeds over control samples.

KEY WORDS

CCC, IAA, seed viability, *Lens culinaris*, PGRs, seed germination

INTRODUCTION

In this present investigation, chemical manipulation technique is employed to lentil (*Lens culinaris* L.) seeds by using one growth promoter indole acetic acid (IAA) and one growth retardant chlorocholine chloride (CCC). Lentil seeds exist some problems related to seed germinability, poor seedling establishment and loss of vigour and viability under storage as well as ambient environmental condition. To overcome this impairment of germinability of lentil, growth promoter IAA was employed and growth retardant CCC was treated to the seeds for healthy plant establishment.

Seed vigour and viability is an important index for plant health and thus various physiological and biochemical parameters like percentage germination, TTC stainability, some metabolic status of seeds as well as growth parameters was analysed using chemically hardened lentil seeds. This comprehensive work on chemical-induced modulation of seed vigour and viability status to alleviate the specific problems and

improve metabolic status of seeds leads to enhanced growth of the experimental plant.

In fact, reports available in the literature where growth promoters and retardants potentially enhance productivity of many crop plants (1,2,3,4,5,6). Some reliable physiological and biochemical parameters was critically analysed to get an insight of the metabolic status of seeds which includes free amino acid leaching, soluble carbohydrate level, dehydrogenase activity of lentil by chemically treated seeds. Metabolic status of seeds reveals a clear concept about the efficacy of the chemicals as well as the storage potentiation of seeds in ambient environmental condition.

MATERIALS AND METHODS

Experiments of the present investigation were carried out with the fully viable, freshly harvested lentil seeds (*Lens culinaris* L.) are collected from local market of Darjeeling, West Bengal. The chemical manipulating



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Seed potentiation of lentil by herbal manipulation

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Abstract

Effect of *Gleichenia* leaves on lentil (*Lens culmaris*) seeds was evaluated by physiological and biochemical approaches. Some reliable indices were taken as the major findings of the experimental plant species. It was concomitant from the detailed experimental results that the concentrations of leaf extracts (1:1 and 1:2) exert positive allelopathic effect. The plant extracts (1:1 and 1:2) of *Gleichenia* reduced the percentage germinability of lentil seeds. The plant extract-induced biochemical changes associated with enhanced leaching of free amino acids and soluble carbohydrate contents followed by reduced insoluble carbohydrates, RNA contents and dehydrogenase enzyme activity from the seed species were also analysed.

Keywords: herbal manipulation, *Gleichenia*, lentil, seed germination, leaf extract

Introduction

In natural or man managed agroecosystems, neighbouring plant sp. may interact with the growth and development of other species. Weeds cause a number of harms in agroecosystems. They are unwanted plants which interfere with agricultural operations, compete with crop plants for light, water, nutrients and space and also reduce crop growth and yield through the release of phytotoxins as leachates, exudates, volatiles and de-composition products (Rice, 1984) [1]. Allelopathy may be explained as "Any process involving secondary metabolites produced by plants, microorganisms, viruses, fungi that influence the growth and development of agricultural and biochemical systems (including animals), including positive and negative effects". It signifies that interacting or inhibition of growth both crop and weed species, by the release of chemicals from plant parts by leaching, root exudation, volatilization residue decomposition and other processes (Molish, 1937) [2]. These interactions are widely known in different groups of plants such as algae, lichens, crops, as well as annual and perennial weeds (Chatterjee *et al.*, 2012; Ojha *et al.*, 2013) [3, 4].

In Darjeeling hills, West Bengal, India an abundance of *Gleichenia* sp. found growing on the road side as well as on the hilly area. There are some common indices for evaluating the allelopathic action of plants and plant parts; these include germination behaviour and other physiobiochemical parameters for responses of test species (Dogra *et al.*, 2011) [5]. In the present investigation an attempt was made to assess the herbal potential of *Gleichenia* leaf extracts by using lentil seeds as bioassay materials.

Materials and Methods

Experiments of the present investigation were carried out with fully viable healthy seeds of lentil as the test material. Healthy mature leaves of *Gleichenia* sp. were collected from Darjeeling Govt. College Campus, Darjeeling, W.B. Leaves were detached and washed with distilled water to remove the adherent dust particles. Leaves of *Gleichenia* (500 g) were thoroughly homogenized by mortar and pestle using 250 ml distilled water. The homogenate was strained using fine cloth and then centrifuged at 4000g for 10 minutes. The supernatant was then made up to 500 ml using distilled water and this were considered as 1:1 (w/v) proportion stock solution of leaf extract. From this stock solution another concentration grade in the proportion of 1:2 (w/v) was prepared using distilled water and thus two concentrations of solution were prepared. These two concentration grades of leaf extracts were used for experimental purposes (Maity *et al.*, 2015) [6].

Fully viable 200 g of lentil seeds were surface sterilized with 0.1% HgCl₂ solution for 90 seconds. The seed lots were then separately pre-soaked in this two concentration grades of leaf extracts for 12 hours. From the treated seed samples germination behaviour (percentage and T₅₀ of seed germination), leaching of free amino acids, soluble carbohydrates, insoluble carbohydrates, RNA contents and dehydrogenase activity were recorded.





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ASSESSMENT OF THE EFFECT OF PESTICIDES ON TEA PEST INFESTATION

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Abstract: Commercially tea is grown as monoculture plantation across the world. The plantation crop is mostly grown between the latitudes of 41°N to 16°S in as many as 34 countries in over 2.71 million hectares. In India, about 57% of the total states grow tea as an industrial crop, covering an area of about 563.98 thousand hectares, producing about 1208.78 million Kg. providing employment and livelihood to 112,2419 individuals. She is the second highest producer and fourth in export, earning foreign exchequer of 736.42 million USD a year. In the foothills and the plain of northern West Bengal, tea is cultivated in about 1, 22, 620 hectares. About 25% of the total tea produced by India is contributed by the region. Over a thousand species of arthropod pests are known from tea plantations all over the world. A comparative study was done to find out the effect of pesticide application on the infestation of tea by *H. theivora* and *O. coffeae*, the two most common and severe arthropod pests. The result indicates that the exposure to synthetic pesticide leads to a significant reduction in the population of the pest. But there are various reports of development of tolerance in many tea pests against pesticide following extensive application of synthetic pesticides. In view of the rapid development of tolerance, prophylactic and 'no threshold' spray of pesticides should be completely abandoned. Regular monitoring of pesticide tolerance level should be done and choice of the most effective pesticide for management of the pest under IPM is necessary. Pests of the tea plantations in the plains and the foothills of the northern West Bengal may be largely managed if the biocontrol potential of the predatory spiders like *O. javanus* is fully realised, especially in bio-organically managed tea plantations.

Keywords: Tea, *Helopeltis theivora*, *Oligonychus coffeae*, IPM, Pest

INTRODUCTION:

Tea (*Camellia sinensis* L. O. Kuntze) is grown in various parts of the world as monoculture plantation crop in diverse climatic and topographic conditions of the tropical world. Tea grows with great adaptation in areas having annual precipitation between 1,000 and 5,000 mm, in temperature ranging from -8°C to 35°C and at day length varying from 9.4 to 15.0 hours. Tea is commercially grown in the region extending from 41°N to 16°S, in approximately 2.71 million hectares across 34 countries in varied agro-climatic conditions ranging from sea level to 2,300 m amsl in the Himalayas [1,2].

In India, the British colonizers for their irredeemable habit of drinking tea started tea cultivation (Assam variety) as a plantation crop as early as 1830s as an alternative to the lone Chinese source to the United Kingdom. The commercial cultivation was started in 1850s in the hilly terrain of Darjeeling. Today in India, tea is grown in as many as 16 out of 29 (55.17%) states as industrial crop, covering an area of about 563.98 thousand hectares, producing about 1208.78 million Kg. providing employment and livelihood to 112,2419 individuals [3]. Presently, India is the second largest producer, next to China contributing about 24.46% to the world production and fourth largest exporter of tea [3,4] earning foreign

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[45]


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Quinoline derivative containing monomeric and polymeric metal carboxylates: Synthesis, crystal structure and gas adsorption study over a 2D layered framework

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Abstract: A new supramolecular metal-carboxylate framework $[\text{Co}(\text{mqc})_2]_n$ (**1**), and another monomeric compound $[\text{Zn}(\text{mqc})_2(\text{H}_2\text{O})]$ (**2**) (mqcH = 4-methoxy 2-quinolinecarboxylic acid) have been synthesized solvothermally and characterized by single crystal X-ray diffraction, elemental analysis, IR spectra, UV-vis spectra, powdered X-ray diffraction (PXRD) and thermogravimetric analysis. Compound **1** is a 2D coordination polymer, extended to a 3D porous supramolecular network having void space in between 2D layers. Compound **1** exhibits gas uptake capacity of N_2 , H_2 , CO_2 and CH_4 like small gas molecules in which moderately high uptake of H_2 and CO_2 takes place among the 2D MOFs. While the Zn variety, compound **2** features a one-dimensional chain like structure through strong intermolecular hydrogen-bonding.

Keywords: Co(II); 2D layered MOF; Zn(II); crystal structure; gas adsorption



Cu(II)/Cu(II)-Mg(II) Containing Pyridine-2,5-dicarboxylate

Frameworks: Synthesis, Structural Diversity, Inter-conversion and Heterogeneous Catalytic Epoxidation

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Abstract

Ligand concentration dependent structural diversity and inter-conversion of hydrothermally synthesized metal carboxylate compounds, $\{[\text{Mg}(\text{H}_2\text{O})_6][\text{Cu}(\text{pdc})_2] \cdot 2\text{H}_2\text{O}\}_n$ (1), $\{[\text{CuMg}(\text{pdc})_2(\text{H}_2\text{O})_4] \cdot 2\text{H}_2\text{O}\}_n$ (2), $\{2(\text{Him})[\text{Cu}(\text{pdc})_2]\}_n$ (3), and $\{[\text{Cu}(\text{pdc})(\text{im})_2] \cdot 2\text{H}_2\text{O}\}_n$ (4) (H_2Pdc = pyridine-2,5-dicarboxylic acid and im = imidazole), have been thoroughly investigated. Formation of compounds 1-4 depends on the concentration of imidazole. Structure of all four compounds has been verified by single crystal X-ray diffraction and other physicochemical studies. Compound 3 catalyzes olefin epoxidation reaction in heterogeneous condition.

1. Introduction

Metal organic framework (MOF) is nothing but a symmetric arrangement of metal ions which are connected through organic linkers and extended into 1, 2 and 3-dimensional networks via coordination bonding and other weak bonding interactions [1]. MOF has wide range of application potential in various fields, including gas adsorption,



Homo and hetero-bridged dinuclear copper(II) complex: Synthesis, X-ray structure and catalytic N-arylation

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ABSTRACT

Two new dinuclear Cu(II) Schiff base compounds were synthesized, structurally characterized and their catalytic efficacy in N-arylation reaction was studied. Reaction of CuCl₂ with two different polydentate Schiff base ligands viz. H₂L1 (H₂L1 = 1-(N-ortho-hydroxyacetophenimine)-ethane-2-ol) and H₂L2 (H₂L2 = 2-methoxy-6-[(2-hydroxyethylimino)methyl]phenol) has afforded two new very different in structure complexes [Cu₂(HL1)₂(μ-Cl)₂·(H₂O)₃] (1) and [Cu₂L2(HL2)(μ-Cl)₂·(H₂O)] (2). Complexes 1 and 2 were characterized by single crystal X-ray diffraction, FT-IR, elemental analysis, UV/Vis spectroscopic and TG/DTA studies. Complex 1 featured a simple dichloro-bridged dinuclear moiety, whereas 2 a hetero-bridged (chloro and phenolic oxygen) dinuclear compound. Catalytic efficacy towards N-arylation reactions between aryl iodide with aryl amine catalyzed by complexes 1 and 2 under homogeneous condition had been studied. Both the catalysts exhibited excellent catalytic efficacy in DMSO medium.

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1. Introduction

Considering the dominant role of suitable metal salts and multidentate ligand in the adjustment and control of the architecture for the coordination compounds, selection of metal salt and ligand is of paramount importance and it needs to be very precise [1]. Coordination chemistry of Schiff base ligand is particularly interesting in this count as the selection of suitable amine and aldehyde substituents containing steric and electronic functional groups at selective positions may create structural and functional variations [2–6]. Simple but efficient {Cu(II)₂(μ-Cl)₂} moiety containing dimeric copper(II) units have attracted much interest of chemists during the past few decades for several reasons. Dinuclear type copper compounds have already attracted significant interest in biochemistry because Type III copper centers are found in multi-copper based proteins (e.g. tyrosinase, hemocyanins, copper oxidases) [7–10]. In last few decades chloro bridged dinuclear copper(II) compounds attracted chemists' attention to study magnetic interaction between two metal centers [11–24]. Such type of studies involving copper(II) ions is particularly focused on gathering

knowledge of different magneto-structural properties [11–24]. A great deal of investigations including quantum chemical calculations has been undertaken in respect of magneto-structural correlations in dimers [25–31]. This involves a wide variety of compounds with a huge variation of structural features of dimeric copper(II) ion units and its periphery, exhibiting diversified pathways of magnetic interaction [11,16,18–20,28–31].

Standing out from magnetic studies, catalytic application of copper(II) Schiff base compounds received only little attention and there is a scope of exploration. Ramadan et al. studied oxidase catalytic activity of mononuclear and dinuclear copper(II) compounds towards the aerobic oxidation of vitamin C [32]. Parra-Hake et al. studied catalytic activity in the enantioselective cyclopropanation of styrene using monomer and dimer copper(II) chiral Schiff base compounds, where ligands are synthesized from chiral amines [33]. Previously we have examined catalytic activity of a group of structurally diverse copper(II) Schiff base compounds towards O-arylation of nitroarenes [34]. Regarding importance of reactions, cross coupling reactions to form C–N bonds have great influence in recent time because of their wide applications in preparation of numerous useful compounds which are important in biological, pharmaceutical, and material science [35–37]. Copper-assisted classic Ullmann type reaction is one of the common synthetic routes for the preparation of such type of compounds, and copper is a preferred catalyst for environmental and economic reasons.

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Morphometric Analysis of Chel River Basin, West Bengal, India, using Geographic Information System

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ABSTRACT

Morphometric analysis of Chel basin was carried out with the help of geographic information system (GIS). Mosaic of two Shuttle Radar Thematic Mapper (SRTM) 1Arc V3 (30m) tiles was used to prepare Digital Elevation Model (DEM). The watershed boundary was delineated and drainage lines were identified using Arc Hydro tools in ArcGIS 10.1 by collaborating Survey of India (SOI) toposheets. Morphometric parameters like stream order, stream length, bifurcation ratio, drainage density, stream frequency, form factor, circulatory ratio, and other parameters are computed under three broad categories namely linear, areal and relief aspects. River Chel was found to be a 5th order stream with overall length of 58.23 kms. Chel basin encompasses an area of 321 km² with basin perimeter of 115.21 kms. Relief ranges from 92m to 2449 m with total relief of 2357 m. An elongation ratio value of 0.47 suggests Chel is a highly elongated drainage basin. Further the circulatory ratio of Chel basin is 0.304. Mean bifurcation ratio for whole Chel basin is 3.43 whereas weighted mean bifurcation ratio for the same is 4.05. The mean drainage density of Chel basin is 1.07 and drainage frequency value is 0.49. The elliptic hypsometric curve with greater initial downward deviation from the equilibrium line followed by long gentle gradient and finally becoming almost parallel to the abscissa and very low hypsometric integral (H.I.=0.15) is suggestive of basin being in 'senile stage'. These finding would help in better understanding of various morphometric parameters at play and thereby enhance our spatial understanding for logical decision making in order to formulate proper management plans for the whole basin.

Keywords: Morphometric analysis, SRTM DEM, Hypsometric Curve and Integral, Senile stage, Chel River

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21. Collaborative Research Activities of by **Prabir K. Sen, Department of Chemistry, Darjeeling Govt. College** with Department of Botany, **Govt. General Degree College, Keshiary, Tilaboni-Mahisamura, Paschim Midnapur-721135.**



Total Synthesis of Elvirol: An Unique Bisabolene Sesquiterpene

www.rnlkwc.ac.in Nilay Kumar Maitra^a and Prabir K. Sen^{b,*}

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Terpene, enantiomeric, biogenicity, α -curcumene, elvirol.

ABSTRACT

Elvirol is a potent antimicrobial compound which show antibacterial activity against *Staphylococcus aureus* and *Vibrio anguillarum*. It is a structurally exceptional natural product isolated from *Delilahbiflora* (L.) Kuntze (syn. *Elvirabiflora* (L.) DC). The compound is a bisabolene sesquiterpene. Synthesis of elvirol does not obey specialisoprene rule. This review describes the total synthesis of the elvirol employing different methodologies.

Introduction

Curcuphenol 2 and Elvirol 1 (Figure 1) have molecular structures which possess powerful antibacterial, antifungal, antitumor and antimalarial activities[1]. This prompted chemists to undertake the synthetic analogical approach to synthesise these natural products. Elvirol 1 is a bisabolene sesquiterpene metabolite, isolated from *Elvira biflora* [2]. Although elvirol has been assigned a terpenoid basis, it is somewhat unique in that it does not conform to the isoprene rule that goes to make up all the terpene constituents. Different synthetic strategies have been employed to mediate total synthesis of Elvirol 1

Results and Discussions

It has been assumed that the biogenetic origin of elvirol 1 could be traced to α -curcumene 3 which undergoes an aromatic-epoxidation and

a subsequent 1,2- alkyl shift (Scheme1).

Enantiomeric nature of elvirol has not been referred to in its isolation and as such no information is available on its possible biological activity. Interestingly, its more well-known structural sibling curcuphenol 2 displays interesting biological activities of both its enantiomers [3,4]. Several reports of synthesis of elvirol have appeared in literature[3,4,5,6,7]and recently a synthesis of both its enantiomers has also been disclosed.

Bohlmann et.al, who reported the isolation of elvirol, also disclosed its first synthesis [5]. The synthesis started with the crotenylcresyl ether 4 , which on Claisen rearrangement furnished the propenyl phenol 5 . Protection of the phenolic group 6 followed by hydroboration resulted in the alcohol 7 which was converted to the bromide 8 . Oxidation to the aldehyde 9



22. Collaborative Research Activities of by **Kishor Biswas, P.G. Department of Botany, Darjeeling Govt. College** with **Department of Tea Science, North Bengal University, Darjeeling- 734013, West Bengal, India**

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NEW RECORD

***Astraea lobata* (L.) Klotzsch [Euphorbiaceae]: a new record for Eastern India from Darjeeling Terai**

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Abstract

Astraea lobata (L.) Klotzsch [Euphorbiaceae] is recorded for the first time from West Bengal in Eastern India. It occurred in the roadside area of Siliguri subdivision of Darjeeling district. A detailed description with illustration of the species is provided here.

Key words: *Astraea lobata*, New Record, West Bengal

INTRODUCTION

The genus *Astraea*, having eight accepted species, is a native of South America and West Indies (www.thelantlist.org, Version 1.1 2013). *Astraea lobata* (L.) Klotzsch is the only species to be found throughout the Neotropical region and introduced in Africa and Yemen. Though it is native to South America and West Indies, Khan & Khan (2002) reported this species from Bangladesh. Gaikwad *et al.* (2012) reported it from Sholapur district of Maharashtra, India for the first time and Das *et al.* (2016) from Tripura.

During a survey of the road side flora of Darjeeling district, a population of about 12 individuals of *Astraea lobata* was found near North Bengal University (26°42'9.83" N & 88°21'05.0" E) in flowering and fruiting condition. After critical examination and scrutiny of relevant literatures (Chakrabarty & Balakrishnan 1997; Webster 1993; Govaerts *et al.* 2000; Khan & Khan 2002; Balakrishnan & Chakrabarty 2007; Schmelzer 2007; Gaikwad *et al.* 2012; Das *et al.* 2016) the plant was identified as *Astraea lobata* (L.) Klotzsch. Its occurrence in this locality reports a new distributional record for West Bengal and also for the first time from Eastern India. A detailed description with suitable photographs is provided to facilitate its identification.

TAXONOMIC TREATMENT

Astraea lobata (L.) Klotzsch, Arch. Naturgesch. (Berlin) 7: 194. 1841; Das *et al.* *Pleione* 10(2): 392 – 395. 2016. *Croton lobatus* L., Sp. Pl. 2: 1005. 1753 “*lobatum*”; Vell., Fl. Flumin. 10: t. 70. 1831.

Monoecious annual herb, upto 80 cm high; stem terete, ribbed, branched, stellate-hairy with 1 or 2 branches longer and erect. Leaves simple, alternate; lamina 2.5 – 11 cm long, deeply 3 – 5 lobed; lobes oblanceolate to obovate, crenate-serrate with glandular tips, acuminate, 3 – 5 nerved at base, sparsely stellate-hairy; basal glands present; petioles 2.5 – 15 cm long; stipules free lateral, filiform to subulate, c.1 mm, glandular hairy. Racemes mainly terminal



STATUS OF MEDICINAL PLANTS IN MPCAS AND ADJOINING AREAS IN TERAI-DUARS REGION OF WEST BENGAL, INDIA

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Abstract

Terai-Duars belt is covered by the IUCN recognised Himalaya Hotspot for biodiversity conservation and is rich in medicinally important herbs, shrubs and trees. The area is home to numerous rare and threatened species also. The present investigation recorded occurrence of 397 species of medicinally important plants belonging to 283 genera and 96 families, including 9 spp. of pteridophytes. Most of the recorded plants were herbs and found to be used medicinally and few for their aromatic property. Of these, 38 species were recognized as threatened ones. Comparison with previous report nicely showed fruitfulness of establishing the MPCAs to conserve threatened medicinal and accompanying non-medicinal plants those required conservational attention. It also suggests proper conservation strategies to protect this important green wealth of the country.

Key words: Medicinal Plants, Terai, Duars, Conservation, MPCAs.

Introduction

Terai-Duars region of West Bengal is lying at the feet of Eastern Himalaya and extended from Nepal to Assam. Entire Siliguri sub-division, southern and lower part of Kurseong sub-division of Darjeeling district and a small part of Jalpaiguri district lying west to the river Tista is known as Terai whereas the eastern part of Tista composed of remaining portion of Jalpaiguri and entire Alipurduar District is known as Duars [= Dooars]. The entire belt is covered with dense forests and being contiguous with the Eastern Himalaya, it is quite rich and diverse in floral components and is also diverse in habitat structure and forms of vegetation. Not only that, Terai-Duars belt is also covered by the IUCN recognised Himalaya Hotspot for biodiversity conservation (Conservation International 2005) and is home to numerous rare and threatened species of plants (Das 1996; Kadir 2001; Das *et al.*, 2003; Rai & Das 2008; Kadir & Das 2007; Shukla *et al.*, 2014; Sarkar & Das 2015, 2017). Mixed-deciduous forests comprise the major forest type of this area and other prominent types of forests are riverine scrubs and forests, herblands,

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shrubby-scrubs, savannah type tall grasslands etc. (Mukerjee 1965; Sikdar 1984; Mohanta 2004; Das *et al.*, 2010; Sarkar & Das 2017). But, in recent decades, plantations (monoculture and mixed plantation of both native and exotic species) occupied wide area of Terai-Duars belt.

This Sub-Himalayan belt support excellent Savannah type of tall and very dense grasslands, which provide shelter to extremely high population of big animals like elephant, rhino, bison, different type of deer, leopard, royal bengal tiger, etc. To protect the rich diversity of plants and animals a number of Protected Areas, like three National Parks [Gorumara NP, Buxa NP and Jaldapara NP]; three Wildlife Sanctuaries [Mahananda WLS, Chapramari WLS and Buxa WLS]; one Reserve Forest [Buxa Tiger Reserve] have been developed in this zone (Anonymous 1997; http://wiienviis.nic.in/Database/WestBengal_7842.aspx). Forest and vegetations of this areas harbour a wide variety of useful and medicinal plants also (Biswas & Chopra 1940, 1956; Yonzon *et al.*, 1984; Ghosh *et al.*, 2020).

Previously, up to the end of 19th century, the entire Terai-Duars region was covered mostly with thick and


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Allelopathic Effects of Some Dominant Weeds on Seed Germination and Seedling Growth of Tea

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ABSTRACT

The allelopathic effect of different concentration of leachates and extracts of six dominant weed species was studied on seed germination and early seedling growth of tea plants [*Camellia sinensis* (L.) Kuntze]. Almost in all the cases of leachates and extracts, the highest concentration (1:2.5) showed inhibitory effect on germination of seeds and subsequent seedling growth of tea. However, interestingly, it was noted that in case of *Persicaria runcinata* the highest concentration (1:2.5) of leachate showed slightly stimulatory effects on seed germination. The leachates or/and extracts of those test species having no major effect on seed germination, affect seedling elongation especially the root elongation. The inhibitory or stimulatory effect of a test plant leachate or/and extract depends on the concentrations. The study also suggests further allelopathic investigation, isolation and identification of active allelochemicals as well as their potential uses as growth and yield promoting agents.

Key words: Leachate, Extract, *Camellia sinensis*, Root length, Shoot length

Allelopathy is a form of competition that works through interfering chemicals to prevent other plants from using the available resources and ultimately to keep other plants out of its space and thus influence the evolution and distribution of other species including microorganisms. Generally, the toxic chemical substances from allelopathic plants which are known as allelochemicals, escaped into the environment in four different ways – weathering, leaching, exudation and volatilization and subsequently influence the growth and development of other neighbouring plants [1-3]. Target species are affected by these toxins in different ways. They may affect germination of seeds, inhibit shoot and/or root growth, nutrient uptake, or may attack a naturally occurring symbiotic relationship thereby destroying the usable source of nutrient of the Plants. Modern research suggests that allelopathy may exert both positive and negative effects depending upon the concentration of allelochemicals and organisms involved [4-9].

One of the most worked out aspects of allelopathy in manipulated ecosystems is its role in agriculture, and the

effects of weeds on crops, impacts of crops on weeds and effect of crops on some other crops have been invariably emphasized. Scientific investigation also revealed the prospect and possibility of using allelochemicals as growth regulators and natural pesticides [10-11] and thus sustainable agriculture may be promoted by replacing or at least reducing the uses of synthetic and harmful pesticides (including weedicides, insecticides, nematocides, fungicides etc.) which are the continuous sources of innumerable hazards viz., development of resistance in organisms, environmental pollution, toxicity related health hazards in humans and livestock etc. So, for the sustainability of agriculture as well as pollution free environment it is urgent need to minimize their uses and to take advantages of allelopathic strategies for pest management. Tea [*Camellia sinensis* (L.) Kuntze] is one of the important crops which plays major role in the economy and development of North Bengal as well as the country. Major parts of Northern Bengal is occupied by tea gardens and diverse group of weeds in and around the gardens create different forms of hazards including outbreak of pests and pathogens, increasing cultivation cost, hampering the quality and quantity of tea etc [12]. On the other hand, no such information is there regarding the allelopathic effects of common weeds on tea and no such study has been undertaken by any other worker. Therefore, the present investigation was carried out to evaluate the impacts of dominant weeds on seed germination and early growth of tea seedling.

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MATERIALS AND METHODS



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23. Collaborative Research Activities of by **Ekramul Kabir, Department of Physics, Darjeeling Govt. College** with Department of Physics, Aliah University, Newtown Campus, Kolkata - 700156, India.

Complex impedance studies of organic ferroelectric- Diisopropylammonium Iodide (DIPAI)

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Abstract. Frequency dependent dielectric modulus, impedance and AC conductivity of diisopropylammonium Iodide (DIPAI) have been studied. The conductivity shows a semiconducting type and the compound exhibit non-debye type of relaxation. At higher frequencies the dielectric loss decrease, as a result the electrical conductivity of the sample increases. Here barrier hopping model explains the conductive mechanism.

Keywords: Organic Ferroelectrics, Impedance Spectroscopy, Relaxation Mechanism, AC Conductivity

INTRODUCTION

Organic ferroelectric materials paved the way for non-toxic data storage, sensing and others application [1]. However, it has been challenging as well as interesting to develop organic counterpart of mostly used inorganic/perovskite materials with adequate technological properties such as high spontaneous polarization at room temperatures, low switching time etc. Ferroelectricity exists only in polar crystal structures with perfect symmetry and therefore it can be very challenging to researchers to develop new kind of ferroelectric materials with such properties. The ferroelectric state of these new kind of molecular ferroelectrics is highly stable at room temperature because the ferroelectric to paraelectric transition temperature is higher than inorganic one. Among them, Diisopropylammonium Chloride and Bromide (DIPAC and DIPAB) was found to be one of the most remarkable molecular ferroelectric material with low coercive field, large spontaneous polarization of and high curie temperature of [1,2]. Therefore, DIPA-based molecular ferroelectrics are promising alternatives to oxide ferroelectrics for use in organic electronics technologies. Following the discovery of DIPAC and DIPAB researchers tried to invent another new material substituting the anion with Iodine, expecting to get larger spontaneous polarization as the chronological order of chlorine and bromine in periodic table. But some controversy was started for diisopropylammonium Iodide. Before scientists could reach their expecting results research group of Poland reported that there is no ferroelectric nature found in DIPAI and there is only one phase transition from paraelectric to piezoelectric form i.e. ferroelectric phase is absent in DIPAI according to this group[3]. Strong increase in dielectric permittivity is found in $P2_12_12_1$ to $P2_1/m$ transition which is analogous to ferroelectric nature. However with some modification in synthesis process research group of IISc Bangalore reported DIPAI is a strong ferroelectric material with largest spontaneous polarization $P_s=33\mu\text{C}/\text{cm}^2$, ever reported in organic ferroelectrics as well as inorganic one [4].

Herein, we have investigated on DIPAI molecular ferroelectrics. The main purpose of the present paper is to characterize the ferroelectric properties of DIPAI as well as the conductivity, impedance and modulus spectroscopy by capacitance-conductance (C_p -G) measurements. Here frequency and temperature dependence of these quantity were measured in the frequency ranges 20Hz-10MHz.


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A Review on Polymer and Organic Ferroelectrics for Flexible High Energy Storage Material

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Abstract. At present semi-crystalline ferroelectric polymers and several organic molecular ferroelectrics are suitable for a large variety of flexible devices as an electrical energy storage application. Considerable progress has been made over the past several years in the enhancement of energy density of ferroelectric polymers, carbon nanotube (CNT) and also organic ferroelectrics. Realizing the application potential, this review article summarizes a range of several applications of PVDF composites, CNT and organic ferroelectrics in the field of memory elements. This article also highlights on dielectric capacitor and other energy storage devices with advantages and disadvantages.

Keywords: Capacitors, PVDF, CNT, Organic Ferroelectrics, Energy density applications

INTRODUCTION

Energy storage, an immediate step to the versatile, clean and efficient use of energy, is one of the great challenge in twenty-first century. Ever increasing energy requirements and the rapid depletion of fossil fuels, significant demand raised to make efficient use of energy, as well as to seek sustainable and renewable energy sources. In response to the needs of modern society and emerging ecological concern, it become essential to find new, low-cost and environmentally friendly energy conversion and storage systems; such as batteries, fuel cells, electrochemical capacitors and dielectric-based capacitors; hence the rapid development of research interest in this field. Among these energy storage systems, all-solid dielectric-based capacitors show superior advantages due to their intrinsic high power density, fast charge-discharge speed, long cycle life and environmentally friendly characteristics and thus hold great promise for the generation of high performance power electronics used in hybrid electric vehicles, medical devices, and electrical weapon systems [1]. Dielectric capacitors with high energy density can significantly reduce the weight, volume, and cost of various energy storage systems. Conventional dielectric materials usually composed of polymer as matrix materials and inorganic/organic fillers as the reinforcement. Utilizing both properties polymer dielectric materials have a relatively high breakdown field, while the fillers, have high dielectric constant and the combination of both provides enhanced dielectric properties depending on the nature and type of the polymer chain as well as fillers [2]. Apart from inorganic and polymer matrix, recently reported organic ferroelectric croconic acid and diisopropylammonium based halides also posses high dielectric constant with low dielectric loss and high spontaneous polarization which can be a very flexible material for energy storage [3]. Thus a key issue to raise the dielectric permittivity of material, organic ferroelectric material can be a promising for high energy storage applications. The aim of this review is to provide comprehensive information on dielectric capacitor for high energy storage devices and a discussion of possible high dielectric constant materials ; polymers , conducting fillers and organic ferroelectrics.



24. Collaborative Research Activities of by **Salim Mandal, Department of Geography, Darjeeling Govt. College** with Dept. of Geography, **University of Gour Banga, Malda, West Bengal, India.**

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Impact of domestic smokes on the prevalence of acute respiratory infection (ARI) among under-five children: Evidence from India

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ABSTRACT

Background: Acute respiratory infection (ARI) is one of the major causes of childhood morbidity which leads to mortality as well.
Aim: The study aimed to estimate the effect of household cooking fuels and smoking habits on the prevalence of ARI among under-five children over India.
Methods: This study employs nationally representative data National Family Health Survey (NFHS-4: 2015–2016) which was gathered and arranged by International Institute for Population Science, Mumbai as the Nodal Agency under the patronage of the Ministry of Health and Family welfare, Government of India. The χ^2 test implemented to assess the difference by the prevalence of ARI against the use of household cooking fuels, smoking habits and socio-demographic characteristics. Then binary logistic regression models were incorporated to look at the crude and net impact of cooking fuels used in households on childhood ARI.
Result & Findings: ARI was mostly affective for those children who were from those households where biomass were the main source of cooking fuels and significantly the prevalence of ARI was related to the combustion of biomass fuels for cooking ($p < 0.0005$). The smoking habits (OR = 1.42, CI: 1.18–1.70) and use of biomass cooking fuels (OR = 1.03, CI: 0.86–1.08) significantly predicted the higher probability of ARI prevalence among children. Therefore children should be kept away from the kitchen during cooking and the kitchen room should have sufficient open space to evacuate the pollutants easily.

1. Introduction

One of the most frequent and adverse diseases occur in the early childhood period is acute respiratory infection (ARI). Severe illness and death occurs due to ARI and pneumonia among under-5 children accounted for 4.5% worldwide in 2002 (Pandey, Smith, Boleij, & Wafula, 1989; Holberg, Wright, Martinez, Morgan, & Taussig, 1993; Emmelin & Wall, 2007; Maio, Simoni, Baldacci, Sherrill, & Viegi, 2009; WHO, 2003). And this problem is mostly prominent in the developing countries (Cashat-Cruz, Morales-Aguirre, & Mendoza-Azpuri, 2005; Ramesh Bhat, Manjunath, Sanjay, & Dhanya, 2012). ARI among children leads to acute lower respiratory infection (ALRI) which was found as major factor of child mortality (Mishra, Smith, & Retherford, 2005). The shocking situation was about 4.9 lakh children were victims annually to death due to ALRI which had 1.5 percent contribution to the whole world disease burden (Smith, 2003; Mishra et al., 2005). Living beings take breath from surrounding environment. And purity of surrounding environment depends on human activities and cultures and their living condition. Cooking is one of all the daily necessary activities in every

house in rural as well as urban areas. Air quality directly related to respiratory system of living beings. Many times indoor air condition depends on cooking fuel used in the household. People from different standard of living used to exercise different types of cooking fuel in their household. Previous studies estimates that air quality and cleanliness affected by cooking fuels like biomass, coal, lignite and charcoal, woods etc (Smith & Liu, 1994). A number of health damaging air pollutants and smokes are produced due to combust of biomass fuels (woods, straw/shrubs/grass and agricultural crop, animal dung etc). The air pollutants emit from the biomass combustion includes particulate matter, carbon monoxide (CO), nitrogen oxides (NO_x), methanol (CH₂O), benzene (C₆H₆), 1,3-butadiene (C₄H₆), polycyclic aromatic hydrocarbons (PAHs) (such as benzo[a]pyrene-C₂₀H₁₂), and various toxic organic compounds. Biomass cooking fuels are used by majority portion of households in developing countries. In the developing country India most of the people are reside in rural areas [68.84%] compare to urban areas [31.16%] (Census of India, 2011). Cooking fuels mostly used in the rural areas are associated with dry organic substances like straw/shrubs/grass, crop waste, dung fuel, dry leaves,

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Influence of socio-demographic factors on coverage of full vaccination among children aged 12–23 months: a study in Indian context (2015–2016)

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ABSTRACT

Background: Vaccine-preventable diseases (VPDs) are one of the key public health concerns in low and middle-income countries due to incomplete vaccination coverage. Nearly three million children up to 5 years of age die due to VPDs each year. Vaccination plays a significant role in reducing child mortality and morbidity from VPDs. Globally, full vaccination coverage efficiently saves two to three million children's lives from life-threatening VPDs.

Objective: This study intends to inspect the influence of socio-demographic factors on full vaccination coverage of children aged 12–23 months in India.

Methods: A cross-sectional observational study was carried out using the NFHS-4, 2015–2016 data of India. A total of 44,771 children aged 12–23 months born to the mothers aged 15–49 years in the last 5 years preceding the survey were used for this study. For the analyses of the data, Bivariate and Multivariate analyses were performed.

Results: The prevalence of full vaccination coverage of children aged 12–23 months in India was 62%. The result of the study indicated that maternal educational attainment, household wealth status, child size at birth, and maternal health-care services are the main significant predictors of full vaccination coverage. Other socio-demographic factors include maternal age, sex of the household head, exposure to mass media, child birth order, social category, religion, place of residence and region also play significant role in the coverage of full vaccination.

Conclusion: The study found that socio-demographic factors play a significant role in full vaccination coverage children in India. Therefore, policymaker and administrators should accentuate the inventive approach for the development of women education, improvement of family income, and easy accessibility of maternal and child healthcare services to surmount the impediment of children full vaccination coverage, which eventually reduce the risk of child morbidity and mortality.

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Immunization; vaccines; full vaccination coverage; children of aged 12–23 months; India

Introduction

Vaccination is an important life-saver aspect of a child at the early age and a cost-effective tool against vaccine-preventable diseases (VPDs).^{1–3} It plays a significant role in reducing child mortality and morbidity from VPDs.^{1–3} During 2011–2020, vaccination coverage helps to reduce under-five mortality by about 24%.^{4,5} Globally, full vaccination coverage efficiently saves nearly two to three million children's lives annually from 20 life-threatening VPDs; such as diphtheria, influenza, measles, tetanus and pertussis.⁶ As per Immunization Agenda (IA), 2030, vaccination will avert about 24 million people from falling into poverty.⁷

As lifesaving significance, the World Health Organization (WHO) has started Expanded Programme on Immunization (EPI) in 1974 to wipe out under-five mortality from VPDs. After the initiation of EPI, vaccination coverage was significantly increased over the decades.⁸ To ensure impartial access of present vaccines to the children despite their living places, all the members of the World Health Assembly (WHA) have approved Global Vaccine Action Plan (GVAP) in 2012.⁸ Globally, 116 million (85%) infants received three doses of DTP (diphtheria-tetanus-pertussis-containing vaccines) and

125 (64%) countries reached 90% or more DTP3 coverage rate in 2019.⁹ In 2011, globally, full vaccination coverage of 12–23 months children was increased to 83%.¹⁰

In spite of these, VPDs are one of the key community health concerns due to deficient full vaccination coverage.¹¹ Each year, globally about three million children die due to VPDs¹² and which is 20% of total under five child deaths.¹³ Nevertheless, in 2019, globally 20 million children were unable to access lifesaving vaccines like measles, tetanus, and diphtheria within 12 months of their life.¹²

The full vaccination coverage is the percentage of children who have received all compulsory doses of particular vaccines within 12 months of their age. It is the principal indicators of utilization of vaccination by a population, and higher rate of routine vaccination coverage is very effective to eradicate VPDs from the populations.^{14,15} As per WHO, children covered with full vaccination if they received single dose of BCG and measles, all three doses of DPT and polio vaccines within first year of their life.¹⁶

In 1978, after the implementation of EPI globally, India did not delay to take immediate actions in this regard.¹⁷ As in 1984, UNICEF identified six VPDs; meanwhile the Indian



How maternal age links to childhood mortality? A brief analysis from NFHS-4 (2015–2016), India

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ABSTRACT

The study aimed to estimate the relationship between childhood mortality and maternal age using bivariate association and logistic regression using the nationally representative data from India through NFHS-4 (2015–2016). The study reveals that the odds ratio of childhood mortality was comparatively higher among lower aged women (<20 years old) and aged women (30 years and more). The result depicted that childhood mortality was comparatively less among those women of 20–29 age groups and suggests raising maternal education to avoid child marriage and early marriage, not to plan a child at the upper age (>40 years old).

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logistic regression; India

1. Introduction

Many previous studies confirmed the significant relationship between child mortality and maternal age as a vital biological factor (Knodel & Hermalin, 1984). Child marriage (marriage or union under 18 years old for girls) and childbirth at an early age is common in many under-developed and developing countries. Several studies proved that child marriage leads to a high child mortality rate (Geronimus, 1986; Knodel & Hermalin, 1984; Alam, 2000; Raj et al., 2010; Finlay et al., 2011; Kozuki et al., 2013). Child marriage always leads to the probability of maternal death along with stillbirth, miscarriage, child death during 0–5 years of age (Nour, 2009; Paul, 2018; Raj & Boehmer, 2013). Moreover, young mothers frequently have the risk of attention-deficit/hyperactivity disorder (ADHD; Chang et al., 2014). The complication can also occur with those women who were going to be a mother at their advanced age or above the average age of motherhood and very few studies were accomplished to estimate adverse pregnancy outcomes for comparatively aged mothers (Kenny et al., 2013; Laopaiboon et al., 2014). Women having first child earlier remain at higher risk of child mortality than women having their first child later (Jayaraman et al., 2009). But what may be the suitable ages or age group of a woman to be a mother for the first time and last time as well? We aimed to answer the question through the association between maternal age and childhood mortality in the Indian context.

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25. Collaborative Research Activities of by **Md Hasanujjaman, Department of Physics, Darjeeling Govt. College with Variable Energy Cyclotron Centre, 1/AF Bidhan Nagar, Kolkata 700064, India.**

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Dispersion and suppression of sound near the QCD critical point

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We have used second-order relativistic hydrodynamics equipped with an equation of state which includes the critical point to study the propagation of a perturbation in a relativistic QCD fluid. The dispersion relation for the sound wave has been derived to ascertain the fate of the perturbation in the fluid near the QCD critical end point (CEP). We observe that the threshold value of the wavelength of the sound in the fluid diverges at the CEP, implying that all the modes of the perturbation are dissipated at this point. Some consequences of the suppression of sound near the critical point have been discussed.

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I. INTRODUCTION

Relativistic heavy ion collision experiments (RHIC-E) are carried out to create a new state of strongly interacting matter, called quark-gluon Plasma (QGP) [1,2], where color degrees of freedom are deconfined from their parent hadrons; its properties are governed by the colored quarks and gluons. The study of the transition from QGP to the hadron phase is one of the main goals of RHIC-E. For the last several years, significant work has been done to explore the QCD phase diagram in the (μ, T) plane, where T and μ denote temperature and baryonic chemical potential respectively. Lattice QCD simulations show that, at vanishing baryonic chemical potential ($\mu = 0$), the transition from hadron to QGP is a crossover [3–7] whereas, at large μ , the transition from hadronic matter to QGP is found to be first order [6,8]. Therefore, it is expected that the first-order phase transition ends at some point in the (μ, T) plane, which is called the critical end point (CEP). The existence of the CEP was suggested theoretically in Refs. [5,9–11] and predicted later in lattice simulation [12–14]. The experimental search for the CEP has been taken up through the beam energy scan (BES) program at the BNL Relativistic Heavy Ion Collider (RHIC). The search will continue rigorously in future experiments at the Facility for Anti-proton and Ion Research (GSI-FAIR) and Nuclotron-based Ion Collider fAcility (JINR-NICA) [15].

A major issue in the exploration of the phase diagram of QCD is to find out the location of the CEP. The exact location of the CEP is not known theoretically because of the difficulties associated with the sign problem of the Dirac fermion

[16–18] in lattice QCD calculations. Some of the QCD based effective models such as NJL and PNJL predict the location of the CEP [19] with uncertainties of 266–504 MeV in μ_c and 115–162 MeV in T_c . Therefore, locating the CEP in QCD phase diagram remains as a big, challenging task. It is one of the main aims of the RHIC-BES programme [20,21] to find the CEP by creating systems with different μ and T by tuning the colliding energy ($\sqrt{s_{NN}}$) of the nuclei. At the CEP the correlation length diverges [22–24], resulting in divergences in several thermodynamic quantities which may affect signals of QGP. The chances of detecting such effects become greater if the freeze-out curve in the μ - T plane is sufficiently close to the CEP.

In the present work, however, we are not searching for the location of the CEP. Rather, we want to examine the effects on the fate of a sound wave propagating through a fluid in presence of a CEP. Here the location of the CEP is taken to be at: $(T_c, \mu_c) = (154 \text{ MeV}, 367 \text{ MeV})$ [25]. It is expected that a system conducive to studying the effects of the CEP may be realized through nuclear collisions at GSI-FAIR, NICA, and BES-RHIC. The QGP produced in such collisions will expand rapidly along a trajectory with s/n constant (s and n stand for the entropy density and baryon number density respectively) and cools down consequently. It is assumed that the isentropic trajectory followed by the QGP in the (μ, T) plane will pass through trajectories which are very close to the CEP.

The space-time evolution of the QGP can be modeled by the relativistic viscous hydrodynamics. The first-order theory of relativistic viscous hydrodynamics governed by Navier-Stokes (NS) equations depends on the first order in dissipative fluxes, which is known to violate causality and gives unstable solutions [26], therefore making it unsuitable to study the space-time evolution of QGP. These problems were solved by Muller [27] and Grad [28] after including quantities in the second-order dissipative flux, therefore these theories are called the “second-order hydrodynamics.” The relativistic

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Inhibitory efficacy of RNA virus drugs against SARS-CoV-2 proteins: An extensive study

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ABSTRACT

Herein we have made a comprehensive analysis of inhibitory efficacy of 16 RNA virus drugs against RdRp, Mpro and PLpro proteins of SARS-CoV-2. Analysis of docked conformation revealed that Baloxavir marboxil (BMX) corresponds to the highest binding energy. Analysis of residue confirmed that BMX strongly interact with these three proteins involving H-bonding, ionic as well as hydrophobic interactions. Molecular dynamics simulation and analysis of parameters like RMSD, RMSF, binding energy confirmed noticeable conformational alternation with these proteins with makeable effect on RdRp. The potentially inhibitory action of BMX against these three proteins suggests the inhibition of overall transcription process of SARS-CoV-2. These observation along with the recently observed inhibitory action of BMX on influenza with clinically proven no side effects emphasizes to uncover the role of BMX by *in-vitro* and *in-vivo* analysis.

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1. Introduction

The recent pandemic COVID-19 causes a Public Health Emergency of International Concern (PHEIC) and seriously damaged the global economy. On January 13th, 2020 complete genome analysis was performed and revealed a novel corona virus (Gen Bank No. MN908947), official name is SARS-CoV-2 previously known as SARS-CoV [1]. SARS-CoV-2 can spread with human-to-human transmission via respiratory droplets (e.g. through coughing or sneezing) or even by contact with contaminated surfaces [2].

It is a single-stranded positive-sense RNA (ssRNA) virus consisting of 29,903 nucleotides and two untranslated sequences of 254 and 229 nucleotides at the 5'- and 3'- ends, respectively and is included in β -corona virus genus, closely related to the genomic organization of SARS-CoV identified in 2003 [3]. The most important structural proteins of CoV are spike (S) protein (trimeric), membrane (M) protein, envelop (E) protein, and the nucleocapsid (N)

protein. Some of the viruses such as beta-CoVs also have hemagglutinin esterase (HE) glycoprotein [4]. The interaction of angiotensin converting enzyme 2 (ACE2) of Human cell with spike protein of SARS-CoV-2 helps the virus to enter into the human cell immediately viral replication and transcription are started with the functional proteins like main protease (Mpro), papain-like protease (PLpro), RNA-dependent RNA polymerase (RdRp) [5,6]. Different studies revealed that the viral proteins showed varying mutation rates [7]. NSP12 (RdRp) accompanied with D614G (S) mutation showed mutation rate (MR) 0.994 while other residues of RdRp showed slower mutation rate (MR) 0.04 with A185 and 0.04 with V776 [8].

But till now any potentially active drug is not available in the market to combat with SARS-CoV-2. According to World Health organisation there are 24 vaccines that are in advance stages and another 142 vaccines are also in various early stages of development of the SARS-Cov2 pathogen [9]. Drug repurposing is an excellent way to choose a drug, developed for the treatment of other diseases to treat a new type of disease. But a number of antiviral drugs such as arbidol [10], chloroquine [11], darunavir [12], favipiravir [13], hydroxychloroquine [14], interferons [15], lopinavir [16],

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Inhibitory effect of anti-HIV compounds extracted from Indian medicinal plants to retard the replication and transcription process of SARS-CoV-2: an insight from molecular docking and MD-simulation studies

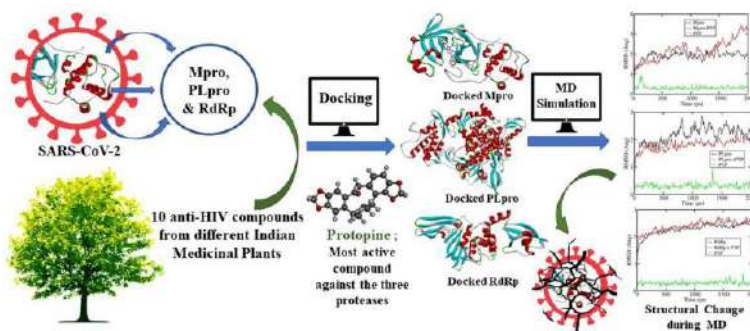
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Abstract

Outbreak of Coronavirus (SARS-CoV-2) has thrown a big challenge to the globe by snatching millions of human lives from the world. In this study, inhibitory efficiency of ten anti-HIV compounds from different Indian medicinal plant parts have been virtually screened against Mpro, PLpro and RdRp proteins of SARS-CoV-2. The molecular docking study reflected that among these compounds, Proptine (PTP) has the highest binding affinity for the three cases. Introduction of PTP molecules within the binding pocket of these proteins showed a large structural and conformational changes on the structure of proteins which is revealed from molecular dynamics (MD) simulation studies. RMSD, RMSF and analysis of thermodynamic parameters also revealed that PTP makes a huge impact on the structures of the respective proteins which will pave an opportunity for doing advanced experimental research to evaluate the potential drug to combat COVID-19.

Graphic abstract



Keywords SARS-CoV-2 · COVID-19 · Proptine · Anti-HIV · Molecular dynamics simulation · Mpro · PLpro · RdRp

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Rare, Endemic and Threatened Plants of Terai – Duars Belt of West Bengal, India

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Abstract

Being located at the foot of the *Darjeeling* part of the *Eastern Himalayas*, Terai-Duars region is very rich in phytodiversity and unique habitats of a number of rare, endemic and threatened elements. Present study documented a total of 41 species (22 Endemic, 9 Endangered, 2 Near Threatened, 6 Vulnerable and 1 Critically Endangered) belonging to 27 families. Uncontrolled increase in anthropogenic activities leading to destruction and fragmentation of vegetations, invasion of exotic aggressive species were detected as the major threats. Presently replacement of natural forest by economically potent exotic species and their huge plantation has also been added to the list of threats. Thus the present work suggest further extensive study on this RET elements, their population structure and status, major threats to them and to frame the proper conservational strategies.

Terai - Duars belt of West Bengal is the Sub-Himalayan region of the Indian state that extends from Nepal to Assam. Geographically this area is located from 26°16'00'' N to 27°00'00'' N latitudes and from 87°59'30'' E to 89°53'00'' E Longitudes and bordered by Hilly region of Darjeeling district and Bhutan to the North; by Cooch Behar, North Dinajpur and Bangladesh to the South. Botanically, Terai is defined as the region of forest trees. Duars is divided into two distinct types of land forms - plains and undulated areas. The topography of Terai region is uneven and the altitude ranges from 62 to 350

m, whereas that of Duars ranges from 90 to 1750 m. Soil of this marshy Sub-Himalayan belt consists of almost horizontal layers of unconsolidated sand, silt, pebbles and gravels¹. The entire belt is criss-crossed by a number of the monsoon-swollen Himalayan Rivers, rivulets and streams and encounters mostly of humid subtropical type of climates more or less similar to that of the remaining districts of North Bengal. Due to its proximity to the hills, it faces longer winter and receives heavier rainfall. Average Monthly maximum temperature varies between 23°C – 32°C in January and September respectively whereas the average


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Status of tree diversity of the Jaldapara National Park in West Bengal, India [☆]



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ABSTRACT

A floristic investigation was made during 2016 – 2018 to observe the tree diversity and their present status in the Jaldapara National Park (JNP) which is situated in the Duars region of West Bengal, India. A total of 294 species of trees belonging to 189 genera and 63 families, including 4 species of gymnosperms were recorded. Fabaceae (s.l.) with its 36 species has been appeared to be the dominant family. The tree community of JNP was found to be an excellent blend of wild as well as cultivated species of trees. All the four species of gymnosperms recorded are introduced to the park area. The present study highlights on different categories of threatened taxa which contributed about 43.53% of the recorded tree species. Different types of anthropogenic interferences, including NTFP (Non Timber Forest Product) collection and artificial forest-fire causing dangerous threats for the maintenance of its original vegetation and survival of numerous species in all the strata of the vegetation. Strict implementation of forest conservation related rules and the establishment of *ex-situ* Protected Area near the park may improve the situation.

Introduction

West Bengal is bounded by the Eastern Himalayas in the North, Bay of Bengal in the South, surrounded by five Indian states (Sikkim, Assam, Bihar, Jharkhand and Orissa) and three countries (Bhutan, Nepal and Bangladesh). The Northern part of West Bengal, often referred as North Bengal, is the gateway to northeast India and partly falling within and otherwise contiguous with the central part of the IUCN recognized 'Himalaya Biodiversity Hotspot', in which around 30% of higher plant species are endemic to the region (Grierson and Long 1983; Das 1995; A.P. 2004; Bhujel and Das 2002; Ghosh and Das 2009).

North Bengal covers two Phyto-ecological zones: 1. Himalayan Region: a. *Darjeeling Himalayas* and b. *Sub-Himalayan region* and 2. Gangetic Plains: the *Barind Tract* (Rodgers and Panwar 1988). Champion & Seth (1968) recognized 10 major forest types in West Bengal of which 08 are found in North Bengal region. Northernmost part of North Bengal is hilly and the remaining parts are the southwardly rolling plains. Natural beauty as well as the biological wealth of this area is quite diverse

and plentiful (Das and Chanda 1987; Bhujel and Das 2002; Das 2005; Das et al., 2003, 2008; Ghosh and Das 2007; Sarkar and Das, 2017).

Northern part of West Bengal harbours 05 National Parks, 06 Sanctuaries, 01 Tiger Reserve and 01 Elephant Reserve, whereas the entire state of West Bengal has 06 National Parks, 15 Sanctuaries, 02 Tiger Reserves and 02 Elephant reserves. The varied habitat conditions in the protected and reserved forests lying at the Himalayan foothills harbours an extremely rich flora, diverse wildlife and various cultural races and communities (Biswas 2017; Ghosh et al., 2020).

Among the 13 recognised Protected Areas of North Bengal, Jaldapara National Park (JNP) is the most prestigious one and is the second largest natural home for the great Indian one-horned Rhinoceros (*Rhinoceros unicornis* L.) in India after Kaziranga National Park in Assam. The park is also a rich reservoir of biodiversity and supports the occurrence of quite a good number of threatened, an endemic taxa (Banerjee 1993; Pandit 1996; Anonymous 1997; M. 2007, 2016; Das et al., 2003; Ghosh and Das 2005; C. 2007; Ghosh et al., 2013). Angiospermic trees represent a large part of floral diversity in forested

^{*} Websites consulted: <http://www.bsiensis.nic.in> <https://www.googleearth.com> <https://www.inditales.com> <https://www.ipni.org> <http://www.iucn.org> <http://www.iucnredlist.org> <https://www.mapsofindia.com> <https://www.plantsoftheworldonline.org> <https://www.theplantlist.org> <https://www.wikimapsia.org> <https://www.wildfaet.com>

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ARTICLE



Socio-ecological assessment of squamate reptiles in a human-modified ecosystem of Darjeeling, Eastern Himalaya

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ABSTRACT

Squamate reptiles are among the most underappreciated taxa due to their unappealing esthetics and numerous myths and misconceptions associated with them, depriving them of much needed conservation-related attention. This study was undertaken in a human-modified ecosystem of Darjeeling, Eastern Himalaya, by integrating ecological and social methods to assess the conservation potential of reptiles and understand community perceptions about reptiles. Ecological diversity was investigated by time-constrained visual encounter surveys, whereas key informant interviews ($n = 42$) using a semi-structured questionnaire examined the perceived diversity, attitudes, and behavior toward reptiles. Results indicated that respondents underestimated the local reptilian-diversity, but recognized their habitats and phenology. Eighty-three percent of key informants believed that squamates are poisonous, whereas 52% suggested that they would kill squamates. Knowledge-building programs that promote citizen science and help in identifying venomous squamates may be key to squamate reptile conservation in the region.

KEYWORDS

Human-dominated landscape; reptiles; conservation; ecosystem services; community attitudes; biodiversity

Introduction

Understanding the needs of humans is a crucial component in biodiversity conservation, as human-biodiversity interactions can range from reverence to extreme conflict (Deutsch et al., 2020). The conceptual framework of the Millennium Ecosystem Assessment (MEA, 2005) recognizes the dynamic interaction between humans and ecosystems. This framework focuses on benefits that humans derive from ecosystems, referred to as ecosystem services, whereas the perceived or actual negative impacts of ecosystems on humans are considered to be disservices (Shackleton et al., 2016). Many components of biodiversity have socio-cultural importance and are subject to socio-cultural valuation, including appreciation of wildlife, esthetic, spiritual, educational, religious, and recreational values (MEA, 2005). This “conservation perspective of ecosystem services” (Mace et al., 2012, p. 20) treats biodiversity as an ecosystem service. This perspective has been utilized by numerous studies to frame the sociological and psychological underpinnings of human-biodiversity interactions on multiple taxa, with birds receiving the most attention (Belaire

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REGULAR ARTICLE

Metabolism of β -naphthoflavone by cytochrome P450 isoforms in three air breathing fish, *Channa punctatus*, *Heteropneustes fossilis* and *Clarias batrachus*

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ABSTRACT

The crucial phase I xenobiotic metabolising enzyme cytochrome P450 (CYP 450) has a variety of isoforms and a wide range of substrate specificities. While the roles of mammalian CYP 450 are well established, those of non-mammalian species are much less defined. These roles are frequently extrapolated from mammalian data and assumed to be similar across vertebrate species. In the present study, three air breathing fish species, *Channa punctatus*, *Heteropneustes fossilis* and *Clarias batrachus* were injected intraperitoneally (IP) with 50 mg/kg β -naphthoflavone (β -NF) and its effects on hepatic CYP 450 system were evaluated. β -NF treatment resulted in significant increase ($p < 0.01$) in CYP 450 content and CYP1A mediated EROD (Ethoxyresorufin O-deethylase) activity in all three treated fish groups compared to control. CYP2B mediated N,N-dimethylaniline demethylase activity and CYP2E1 mediated aniline hydroxylase activity showed no response suggesting insensitivity to β -NF treatment. All three fish species showed an increase in CYP3A4 mediated erythromycin N-demethylase activity, but only *H. fossilis* displayed a significant difference ($p < 0.05$). Of all the activities investigated, EROD activity mediated by CYP1A responded towards β -NF treatment the best and could serve as a sensitive biomarker to gauge the effects of chemical pollutants in the aquatic environment.

1. Introduction

Many of the chemicals that have been introduced into the environment over the past 50 years are highly persistent substances, such as pesticides, heavy metals, polychlorinated biphenyls (PCBs), polychlorinated dibenzodioxins (PCDDs), and polyaromatic hydrocarbons (PAHs). Aquatic organisms are exposed to highly harmful compounds as a result of their chemical stability and persistency, which tends to accumulate in

various aquatic environments (Havelkova et al., 2007).

All spheres of life contain members of the vast, universal superfamily of hemoprotein monooxygenases known as cytochrome P450 (CYP 450). They participate in several physiological processes, such as the oxidative metabolism of xenobiotic and the production of endogenous substances. Conversion of foreign compounds into polar metabolites to facilitate their elimination is

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