Submission of Annual Progress Report
Supported Under the
Star College Scheme
for
Four Departments
(Chemistry, Mathematics, Physics and Zoology)

2nd Year Report
(2021-22)

Krishna Chandra College

A Government-Sponsored NAAC-Accredited Degree College
Established in 1897
Hetampur, Birbhum, West Bengal – 731124

Submission to

Department of Biotechnology

Ministry of Science & Technology,
New Delhi-110003

Department of Biotechnology

Proforma for submission of Annual Progress Report supported under Star College Scheme

(Kindly note that the annual report from Point 6 to 10, should not be more than 5 A4 size sheets, with font size 12pt and line spacing 1.5)

1. **Name of the College** : **KRISHNA CHANDRA COLLEGE**

2. **Name of Coordinator, designation, Address, Phone nos.** : **Dr. Shyamal Kr. Jash**
Associate Professor
Department of Chemistry
Krishna Chandra College, Hetampur,
Birbhum-731124, West Bengal, India
Phone No.: 9434633430 & 8250208910
Email: jash_sh@yahoo.co.in
dbt@kccollege.ac.in

Sl. No.	Department	Department wise coordinator
1	**Chemistry**	**Dr. Hena Paul** Assistant Professor Department of Chemistry, K. C. College, Hetampur, WB Phone: 6296373744 Email: hena_paul84@rediffmail.com hp.chem@kccollege.ac.in
2	**Mathematics**	**Sk Anowar Hossain** Assistant Professor Department of Mathematics, K. C. College, Hetampur, WB Phone: 9883560190 Email: skah.math@kccollege.ac.in
3	**Physics**	**Dr. Dipika Saha** Associate Professor Department of Physics, K. C. College, Hetampur, WB Phone: 9433230623 Email: saha.dipika5@gmail.com ds.phys@kccollege.ac.in
4	**Zoology**	**Dr. Joyita Mukherjee** Assistant Professor Department of Zoology, K. C. College, Hetampur, WB Phone: 9830625120 Email: joyitamukherjee07@gmail.com jm.zoo@kccollege.ac.in

3. **Assessment duration :** 01/04/2021 to 31/03/2022 **Duration in years :** 02 year

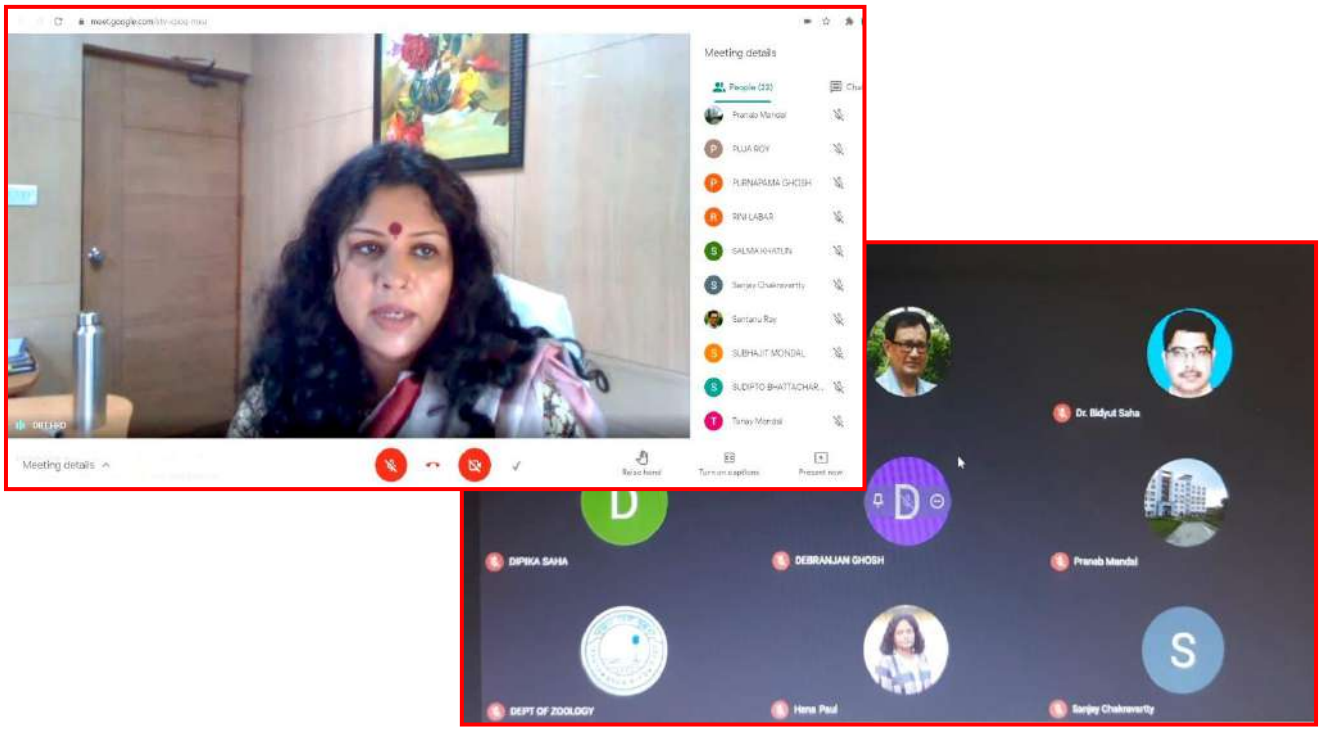
4. Details of Departments Supported

Sl No	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc) offered	Regular Faculty Members	
			Total = 23	
			With Ph.D.	Without Ph.D.
1.	Chemistry	B. Sc	04	03
2.	Mathematics	B. Sc	02	04
3.	Physics	B. Sc	02	03
4.	Zoology	B. Sc	02	03

5. **Number & Date of Advisory committee meeting**: One online meeting (through Google Meet) was held on **March 31, 2021** for the session 2020-21in presence of following members and faculty of four science departments. But not done yet for the session 2021-22.

Chairman	**Dr. Goutam Chatterjee** Principal, K. C. College, Hetampur, WB
DBT Representatives	**Dr. Garima Gupta** Programme Officer, Star College Scheme, New Delhi
External Experts	**Prof. (Dr.) Santanu Ray** Professor, Department of Zoology, Visva-Bharati (A Central University), Santiniketan, WB
	Prof. (Dr.) Bidyut Saha Professor, Department of Chemistry, The University of Burdwan, Burdwan, WB
Faculty members from participating departments	**Department of Chemistry:**
	Dr. Debranjan Ghosh Associate Professor, K. C. College, Hetampur, WB
	Dr. Hena Paul Assistant Professor, K. C. College, Hetampur, WB
	Dr. Lalan Chandra Mandal Assistant Professor, K. C. College, Hetampur, WB
	Arif Ul Haque SACT, K. C. College, Hetampur, WB
	Tanay Kumar Mondal SACT, K. C. College, Hetampur, WB
	Department of Mathematics:
	Dr. Pallav Jyoti Pal Assistant Professor, K. C. College, Hetampur, WB
	Sudipto Bhattacharjee

	Assistant Professor, K. C. College, Hetampur, WB
	Puja Roy SACT, K. C. College, Hetampur, WB
	Subhajit Mondal SACT, K. C. College, Hetampur, WB
	Department of Physics:
	Dr Pranabananda Mondal Associate Professor, K. C. College, Hetampur, WB
	Dipak Kumar Das Associate Professor, K. C. College, Hetampur, WB
	Dr. Dipika Saha Associate Professor, K. C. College, Hetampur, WB
	Manoj Kumar Saha Assistant Professor, K. C. College, Hetampur, WB
	Rini Labar Assistant Professor, K. C. College, Hetampur, WB
	Department of Zoology:
	Dr. Joyita Mukherjee Assistant Professor, K. C. College, Hetampur, WB
	Dr. Salma Khatun Assistant Professor, K. C. College, Hetampur, WB
	Sanjay Chakraborty SACT, K. C. College, Hetampur, WB
	Purnapama Ghosh SACT, K. C. College, Hetampur, WB
Coordinator	**Dr. Shyamal Kr. Jash** Assistant Professor & HOD, Dept. of Chemistry, K. C. College, Hetampur, WB



6. Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).

(You may enumerate 5 minor projects where students were involved and their impact or similar activities and their outcome; this is for representative purpose and coordinator may include details as per his own choice; kindly refrain from providing philosophical data Avoid any introduction. All the justifications must be very crisp like any aspect of the non-existent pre-STAR Scheme and you achieved after the grant).

Qualitative improvements due to DBT support:

Due to prolong closure of our institution, the major activities were performed by us through online mode. In order to conduct smoothly those activities through online mode, we was procured G-Suite though proper channel and successfully employed this platform to materialize numerous programme at that COVID pandemic situation. The grant was helped in escalating hands-on trainings through workshops/ research projects/routine lab work conducted under DBT-STAR college scheme in the session 2020-21. **After getting the news of this grant received by the college, a large number of new students have been admitted this year from other college to get benefit of the grant use for.**

Since the lockdown has been lifted in 2021-22 session in West Bengal and offline classes have started, every students are very eager to participate effectively in various activities under the DBT Star College grant. **We have not received any DBT letter to spend the money that we could not spend last year due to the covid19 pandemic situation and we also not yet been received any sanction amount for this session (2021-2022) to arrange all the activities/programme.**

we have purchased all the proposed instrument/equipment (Please see Annexure-I) for the four departments due to Improvement of Laboratory Infrastructure & Installation of an Innovative Laboratory from the non recurring grant this year. Both students and teachers have benefitted by the increased facilities of the laboratory and performed their various activities.

7. Any Novel aspect introduced or planning to introduce during the Scheme duration.

Introduced:

a. Procure G-Suite for education though proper channel and successfully employed this platform to materialize numerous programme in this pandemic situation.

b. Introduced online database in the college website about the DBT Star College Scheme, Krishna Chandra College, Hetampur which will include all activities of the four participating Departments viz Chemistry, Mathematics, Physics & Zoology about upcoming events, seminar and workshops, students projects, future planning, and minutes of advisory committee meeting. (Please see **Annexure-II**)

c. Owing to online classes during COID-19 pandemic situation, many assignment based experiments were created for better understanding of students.

Planning:

a. To organize more faculty development programmes for both teaching and non-teaching staff.

b. To introduce hands-on offline as well as virtual lab experiments and MOOC's for our students and nearby school students..

c. Planning to provide more hands on training for students on sophisticated instruments related to the field of research in order to promote their research interest and give exposure on research by visiting R & D laboratories in the states.

d. Provision for training to the students on "research methodology", "writing of research papers" and "project dissertation".

e. Visits to industry and important labs of national eminence when reopen college and other institution.

f. Planning to provide more outreach activities nearby schools and adopted villages.

g. We are planning to work on some basic minor projects which will help students to have hands on experience in instrument handling and application of their knowledge after the college reopens. We will try to publish these project works with students in reputed journals.

8. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300 words).

Lessons learnt:

i) The Covid-19 pandemic has paved way for introducing newer ways of teaching and learning through online mode. We was conducted in 2020-21 a Faculty Development program utilizing DBT grants to enhance the overall skill of the Teachers as well as to raise the

quality of the teaching process by learning several tools like Class Dojo, Edmodo, Applications of Latex, Google Classroom and various online assessment tools.

ii) On the other hand, for students, we was organized in 2020-21 a number of webinars including International/National webinar, popular lecture series, hands-on online training programme etc to improve their communication skills through interaction with the experts, gaining expert knowledge in a specific field, networking with others and renewing motivation and confidence for research work. All such programs were conducted using DBT grants.

Difficulties faced:

i) Suspension of all classes from March, 2020 to November, 2021 due to Covid-19 pandemic situation. It has also created a tough situation for us to comply with all the propose activates like lab visit, industry visit, hands-on training, outreach programme, invited talks and lecture programs, etc. offline under Star College Scheme. We tried our best to keep the teaching learning process on via online mode. But online mode is not sufficient for students of science-based subjects where hands-on experiments play a vital role in gaining practical knowledge. Moreover, students of remote areas faced difficulties in online mode due to lack of data, poor network and lack of attention.

ii) We have not received any DBT letter to spend the money that we could not spend last year due to the covid19 pandemic situation and we also not yet been received any sanction amount for this session (2021-2022) from DBT, New Delhi to arrange all the activities/programme for the greater benefit of the students.

Suggestions/Request:

i) Since the lockdown has been lifted in 2021-22 session in West Bengal and offline classes have started, every student are very eager to participate effectively in various activities under the DBT Star College Scheme. In this context, our suggestion and request to give us order to use the unspent balance allotted for the period "April 2020 to 31st March 2021" in the recurring and travel head of "DBT Star College Scheme" as 2nd year grant or released 2nd year sanction amount for the greater benefit of the students. We are sure that we will complete our proposed project after getting the fund/permission the use of fund.

9. Key performance indicators

S. No.	Indicator	Pre-support (2019-20)								During /After Support (2020-21 & 2021-22)								Remarks
1	No. of students admitted	Total = 61								Total = 105								
		M = 38				F = 23				M = 41 M = 31				F = 13 F = 20				
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	
	Chemistry	0	0	2	4	1	1	3	1	0	1	6	14	0	0	1	2	
										0	0	4	3	2	0	3	4	
	Mathematics	1	0	8	8	0	0	0	7	1	0	1	4	0	0	0	3	
										0	0	3	2	0	0	1	2	
	Physics	1	0	2	3	1	0	0	0	0	0	1	5	0	0	0	2	
										1	0	3	3	0	0	1	0	
	Zoology	0	0	4	5	1	0	1	7	1	0	3	4	1	0	2	2	
										3	0	2	7	1	0	2	4	
2	No. of students passing out (%) Students Admitted/passing out (pass %)	Chemistry : 50 % Mathematics : 42.11% Physics : 75% Zoology : 75%								Chemistry : 100% : 100% Mathematics : 100% : 95.5% Physics : 86% : 100% Zoology : 100% : 100%								
3	Drop-out rates	Chemistry : 20 % Mathematics : 15.79% Physics : 25% Zoology : 20%								Chemistry : Nil : Nil Mathematics : Nil : 4.35% Physics : Nil : Nil Zoology : 6 % : 7%								
4	No. of students opting for MSc	Chemistry : 02 Mathematics : 05 Physics : 02 Zoology : 03								Chemistry : 04 : 13 Mathematics : 03 : 03 Physics : 04 : 03 Zoology : Nil : 05								
5	Average marks	Chemistry : 58 % Mathematics : 55.64% Physics : 57%								Chemistry : 75 % : 77 % Mathematics : 85 %								

		Zoology : 58%	: 87 % Physics : 69 % : 73 % Zoology : 70 % : 75%	
6	No. of hands-on experiments being conducted	Chemistry : 96% Mathematics : Nil Physics : 90% Zoology : 90%	Chemistry : Nil : 35 Mathematics : 02 : Nil Physics : Nil : 30 Zoology : Nil : 39	
7	No. of new experiments introduced	Nil	Physics : 16	
8	Publications (scopus indexed) / patents, if any.	Chemistry : 06 Mathematics : 01 Physics : Nil Zoology : 04	Chemistry : 04 : 03 Mathematics : 01 : Nil Physics : 02 : 02 Zoology : 03 : 03	(Please see **Annexure-III)**
9	Training received by faculty	Chemistry : 01 Mathematics : 01 Physics : Nil Zoology : 01	Chemistry : 06 : Nil Mathematics : 02 : 02 Physics : 04 : Nil Zoology : 07 : 01	(Please see **Annexure-IV)**
10	Exhibitions/ seminars /training courses conducted	Chemistry : 01 Mathematics : Nil Physics : Nil Zoology : Nil	Chemistry : 03 : **Nil** Mathematics : 05 : **Nil** Physics : 07 : **Nil** Zoology : 03 : **Nil**	We could not arranged/conducted due to not received the fund for 2nd year
11	Books/journals subscribed from	Nil	Chemistry : NA Mathematics : 356	(Please see **Annexure-V)**

	grants		Physics : NA Zoology : NA	
12	Outreach activities (Popular lectures)	Nil	Chemistry : Nil : **Nil** Mathematics : Nil : **Nil** Physics : Nil : **Nil** Zoology : 03 : **Nil**	We could not arranged/conducted due to not received the fund for 2nd year
13	Colleges mentored to apply for DBT Star College grants	N/A	N/A	
14	Invited lectures	Chemistry : 02 Mathematics : Nil Physics : Nil Zoology : Nil	Chemistry : 09 : **Nil** Mathematics : 05 : **Nil** Physics : 07 : **Nil** Zoology : 08 : **Nil**	We could not arranged/conducted due to not received the fund for 2nd year

10. Self evaluation

N.B.: We could not arranged/conducted any activities as stated in proposal in this year (2021-22) due to not received any DBT letter to carry forward the Recurring, Travel Grant & Contingency amount of 2020-21 in this financial year/not received 2nd year sanction amount. So we could not self evaluated our activities.

Course Coordinator
(With Seal)

Co-ordinator
DBT Star College Scheme
K.C. College, Hetampur

Head of the Institution
(With Seal)

Principal
Krishna Chandra College
Hetampur,Birbhum

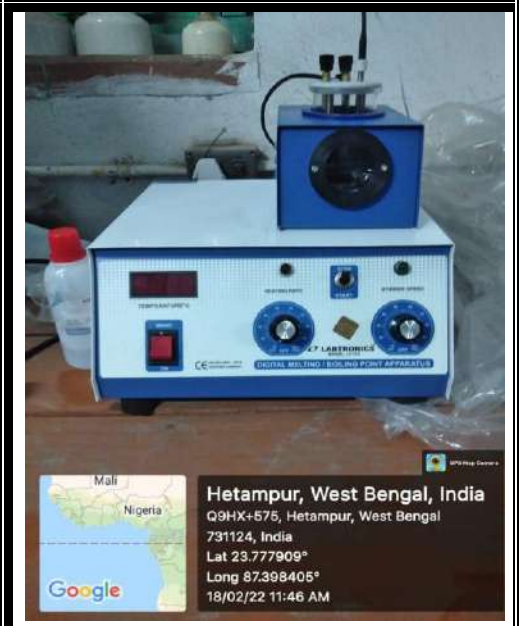
ANNEXURE-I

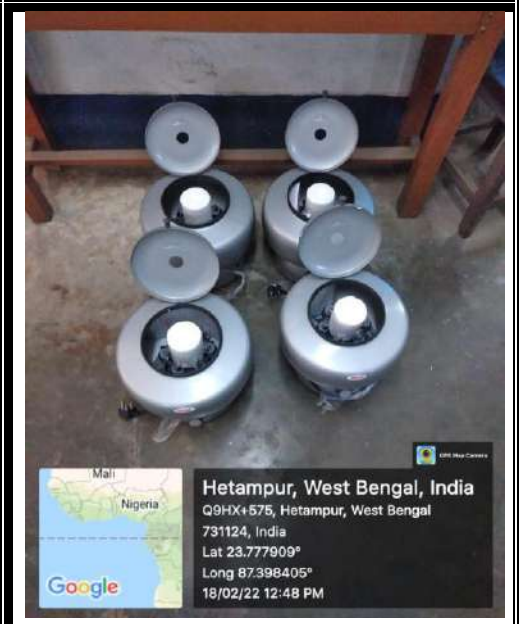
EQUIPMENT PURCHASED UNDER DBT NON-RECURRING GRANT

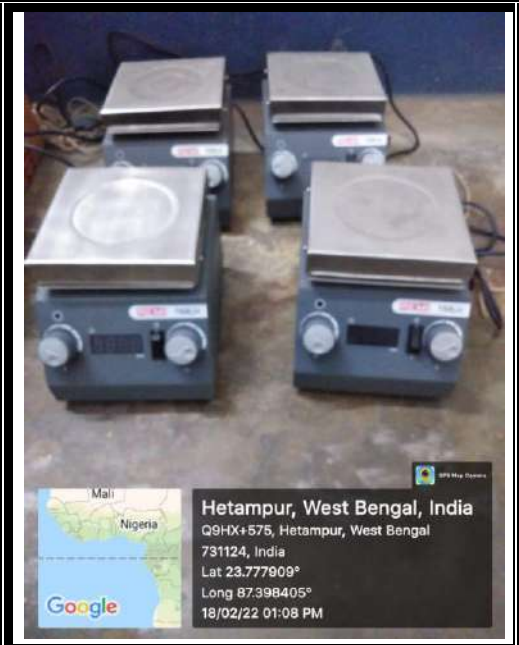
DEPARTMENT OF CHEMISTRY

S. No.	Name of Equipment	Unit	Total Cost (Rs)	Date of purchase of equipment	Remarks (if any)
1.	**Electronic Balance (3-digit)** [Sartorius AG, Germany MODEL NO-Practum 213-10IN]	1	51490	03.01.2022	Installed
2.	**Distillation Plant (5 Lit)**	1	6600	27.01.2022	Installed
3.	**Water Bath Digital** [LAB SOLUTION INDIA: 6 Whole Digital Panel & Temperature Control]	1	7350	11.12.2021	Installed
4.	**Convection Microwave Oven** [SAMSUNG]	1	14278	11.12.2021	Installed
5.	**UV Cabinet** [Equiptronics EQ-781]	2	20000	23.12.2021	Installed
6.	**Magnetic Stair with Hot Plat** [REMI, 1MLH]	4	29888	16.02.2022	Installed
7.	**Ice Maker Machine** [LABMAN, LMIF 30]	1	64764	16.02.2022	Installed
8.	**Electric Centrifugal Machines [**REMI, C-854/6]	4	29132	16.02.2022	Installed
9.	**Melting Point Apparatus (Digital)** [LABTRONICS, LT-115]	1	16632	16.02.2022	Installed
10.	**Mechanical Shaker** [LAB SOLUTION, INDIA : 16 Flask Capacity]	1	18644	05.01.2022	Installed
11.	**Digital Polari-Meter** [MAKE-EI]	1	78597	04.01.2022	Installed
12.	**Boiling Point Apparatus** (Digital)	2	60384	04.01.2022	Installed

S. No.	Name of Equipment	Unit	Total Cost (Rs)	Date of purchase of equipment	Remarks (if any)
	[MAKE-EI]				
13.	**Hot Incubator With Digital Panel** [MAKE-EI]	1	16107	04.01.2022	Installed
14.	**Chiller** [INKON]	1	79366	04.01.2022	Installed
15.	**Bomb Calorimeter With Digital Firing Unit** [MAKE-EI]	1	49521	04.01.2022	Installed
16.	**Digital Potentiometer With Electrode** [ELICO LTD]	2	20000	04.01.2022	Installed
17.	**Digital Photo Colorimeter** [ELICO, CL 223]	2	31340	04.01.2022	Installed
18.	**Conductivity Meter Digital** [ELICO, CM 183]	1	33512	04.01.2022	Installed
19.	**pH Meter Digital** [ELICO, LI 614]	1	33672	04.01.2022	Installed
20.	**Double Beam UV-VIS Spectrophotometer With Software** [ELICO LTD, SL 210]	1	298707	18.02.2022	Installed
21.	**Vacuum Pump** [Vacuum Range -650 mm/Hg Rockyvac Vacuum Pump 7010; Tarson-Rockyvac 300]	1	35950	24.02.2022	Installed
Total			**995934/-**		

ITEM NAME	IMAGE	ITEM NAME	IMAGE
Double Beam UV-VIS Spectrophotometer With Software		**Electronic Balance (3-digit)**	
Mechanical Shaker		**Melting Point Apparatus (Digital)**	

Water Bath Digital		**Convection Microwave Oven**	
Ice Maker Machine		**Electric Centrifugal Machine**	

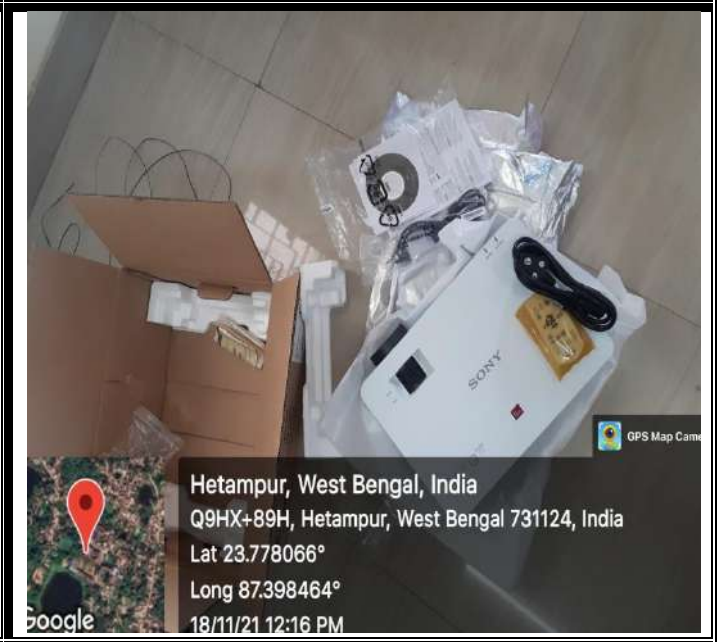
Magnetic Stair with Hot Plat		**Chiller**	
Distillation Plant (5 Lit)		**UV Cabinet**	

Digital Polari-Meter		**Hot Incubator With Digital Panel**	
Digital Potentiometer With Electrode		**Digital Photo Colorimeter**	

Conductivity Meter Digital		**pH Meter Digital**	
Vacuum Pump		**Bomb Calorimeter With Digital Firing Unit**	

DEPARTMENT OF MATHEMATICS

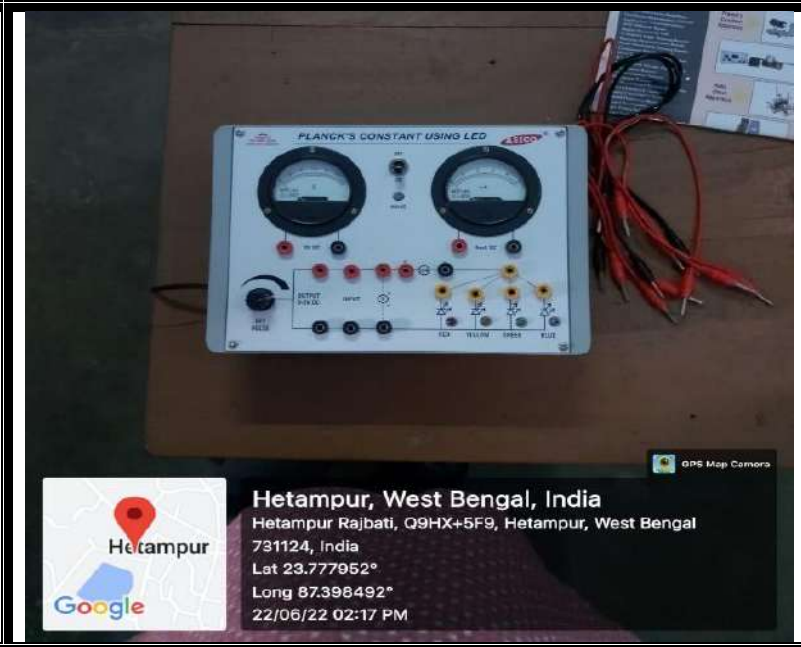
S. No.	Name of Equipment	Unit	Total Cost (Rs)	Date of purchase of equipment	Remarks (if any)
1.	**Canon Digital Laser MFD** [Make: IR-2006N with duplex facility]	1	77990	18.11.2021	Installed
2.	**DLP Projector** [Sony VPLEW575 4,300 lumens WXGA high Brightness Compact Projector]	1	63380	18.11.2021	Installed
3.	**Desktop Dell Vostro 3681** [Intel Core i5-10th Gen / 8GB RAM / 1TB HDD / Windows 10+MS Office / 19.5" Monitor Black, USB keyboard and Mouse, Table]	12	720000	30.11.2021	Installed
4.	**APC Online UPS 6KVA** [15 minutes backup on full load for 20 computers including internal batteries]	1	105000	30.11.2021	Installed
Total			**966370/-**		

ITEM NAME	IMAGE	ITEM NAME	IMAGE
Desktop Dell Vostro 3681	 	**DLP Projector**	
Canon Digital Laser MFD		**APC Online UPS 6KVA**	

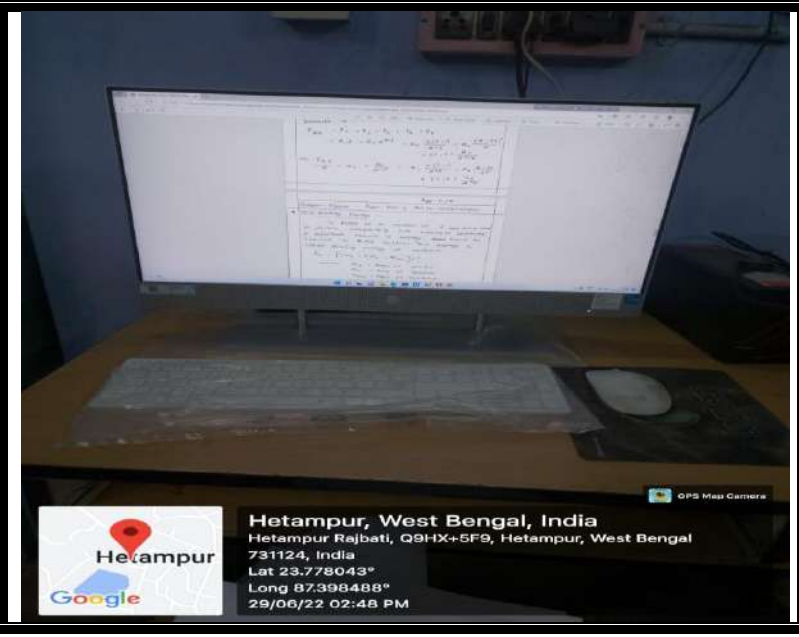
DEPARTMENT OF PHYSICS

S. No.	Name of Equipment	Unit	Total Cost (Rs)	Date of purchase of equipment	Remarks (if any)
1.	Set up to verify the Superposition, and Maximum power transfer theorems [ASICO]	1	2850	22.11.2021	Installed
2.	Set up to study response curve of a Series LCR circuit	1	1950	22.11.2021	Installed
3.	Set up to study the response curve of a parallel LCR circuit	1	1950	22.11.2021	Installed
4.	Set up to investigate the use of an op-amp as an Integrator / Differentiator.	1	1950	22.11.2021	Installed
5.	Set up to determine the refractive Index of glass using a Gaussian eyepiece	1	12500	22.11.2021	Installed
6.	Set up to verify the law of Malus for plane polarized light	1	10250	22.11.2021	Installed
7.	Study of V-I and power curves of solar cells and find maximum power point and efficiency.	1	2850	22.11.2021	Installed
8.	Ballistic Galvanometer	2	8000	22.11.2021	Installed
9.	Set up to study Photo-electric effect: photo current versus intensity	1	9770	17.11.2021	Installed
10.	Set up to study the characteristics of a Bipolar Junction transistor in CE configuration	2	6490	17.11.2021	Installed
11.	Dead Beat Galvanometer	3	11682	17.11.2021	Installed
12.	Digital Weighing Machine	1	8968	17.11.2021	Installed
13.	All in one Desktop Computer Model:24-dp0816in	7	392000	30.11.2021	Installed
14.	Scanner cum Laser Printer Laser Jet Pro MFP M126 nw	3	55500	30.11.2021	Installed
15.	Spectrometer	1	9200	23.12.2021	Installed
16.	To study the I-V characteristics of Zener Diode and its use as voltage regulator.	2	4950	23.12.2021	Installed
17.	To determine Plank's constant using LEDs of at least 4 different colour	2	6490	23.12.2021	Installed
18.	Set up to study Half Adder, Full Adder and four bit Binary Adder	1	2600	23.12.2021	Installed
19.	Set up to determine the absorption lines in the rotational spectrum of Iodine vapour.	1	17181	04.01.2022	Installed
20.	Set up to study of V-I & power curves of solar cells and find maximum power point and efficiency	1	2600	04.01.2022	Installed
21.	Cathode Ray Oscilloscope (30 MHz Dual Trace)	1	34810	04.01.2022	Installed
22.	Travelling Microscope	2	11900	04.01.2022	Installed
23.	Set up to determine the band gap by measuring the resistance of a thermistor at different	1	2856	04.01.2022	Installed

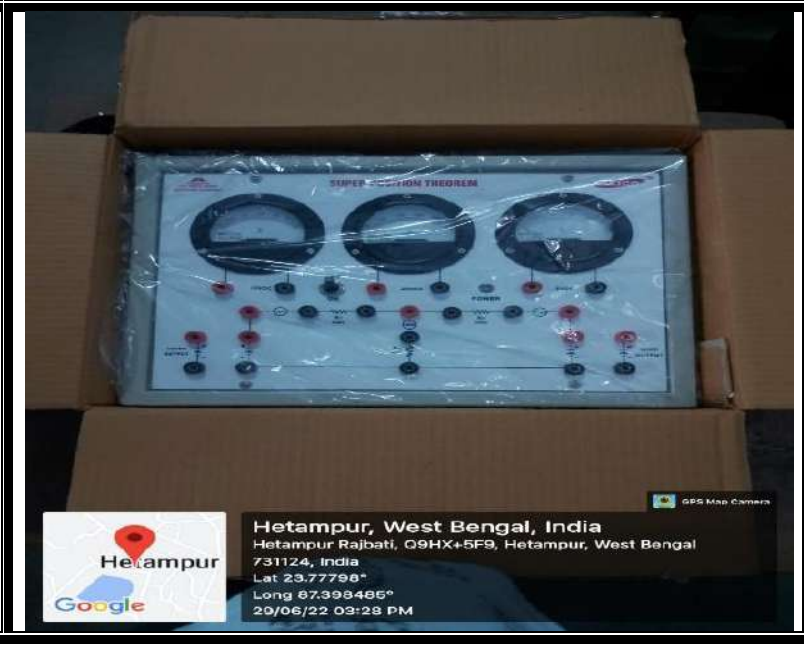
S. No.	Name of Equipment	Unit	Total Cost (Rs)	Date of purchase of equipment	Remarks (if any)
	temperature				
24.	To study the Motion of Spring and calculate (a) Spring constant, (b) g and (c)Modulus of rigidity	1	980	04.01.2022	Installed
25.	Regulated DC power supply Model: LQ6324T	1	27954	04.01.2022	Installed
26.	Set up to determine the value of g using Bar pendulum	1	5805	05.01.2022	Installed
27.	Set up to determine Stefan's constant using thermocouple.	1	21995	05.01.2022	Installed
28.	Set up to measure the resistivity of a semiconductor (Ge) with temperature by four-probe method (room temp to 150 C) and to determine its band gap	1	21818	05.01.2022	Installed
29.	Set up to analyze elliptically polarized Light by using a Babinet's compensator	1	16048	05.01.2022	Installed
30.	Set up to determine the wavelength and velocity of ultrasonic waves in a liquid (Kerosene oil, Xylene etc) by studying the diffraction through ultrasonic grating	1	25771	05.01.2022	Installed
31.	Set up to measure the Dielectric Constant of a dielectric Materials with variation of frequency.	1	29774	30.12.2021	Installed
32.	AC Millivoltmeter	2	23780	30.12.2021	Installed
33.	Set up to determine the excitation potential of mercury/Argon by Franck-Hertz experiment	1	43070	15.02.2022	Installed
34.	Regulated DC power supply	8	9200	15.02.2022	Installed
35.	Set up to determine the Hall coefficient of a semiconductor sample.	1	48970	27.11.2021	Installed
36.	Equilateral glass Prism for spectrometer 32X32 mm	5	2065	27.11.2021	Installed
37.	Set up to determine the excitation potential of mercury/Argon by Franck-Hertz experiment	1	47672	24.02.2022	Installed
38.	Servo Stabiliser 5KVA Model: 6344	1	33701	24.02.2022	Installed
39.	Set up to determine g and velocity for a freely falling body using Digital Timing Technique.	1	3430	24.02.2022	Installed
40.	Set up to compare capacitances using De'Sauty's bridge	1	4019	24.02.2022	Installed
41.	Set up to study the complete I-V characteristics of a Tunnel Diode	1	8593	24.02.2022	Installed
42.	To determine self-inductance of a coil by Anderson's bridge	1	4296	24.02.2022	Installed
43.	To determine the elastic Constants of a wire by Searle's method.	1	1732	24.02.2022	Installed
Total			**999970/-**		

ITEM NAME	IMAGE	ITEM NAME	IMAGE
Set up for Frank Hertz Expt.		**Cathode Ray Oscilloscope**	
Experimental set up for Zener Diode Characteristics		**Experimental set up for the determination of Planck's constant by four colour LED**	

Experimental set up for Solar Cell Characteristics		**Bar Pendulum**	
Servo Stabiliser		**Experimental set up for the determination of Hall Coefficient**	

Experimental set up to find energy band gap by Thermister		**Experimental set up to find energy band gap by four probe method**	
Scanner-Printer		**Desktop Computer**	

Babinet's Compensator		**Spectromer**	
Experimental set up to find Stefan's Constant		**Digital Weighing Machine**	

Expt set up for Transistor Characteristics		**Expt set up to find 'g' by digital time technique**	
de Sauty Bridge to find capacitance		**Set up to verify Superposition Theorem**	

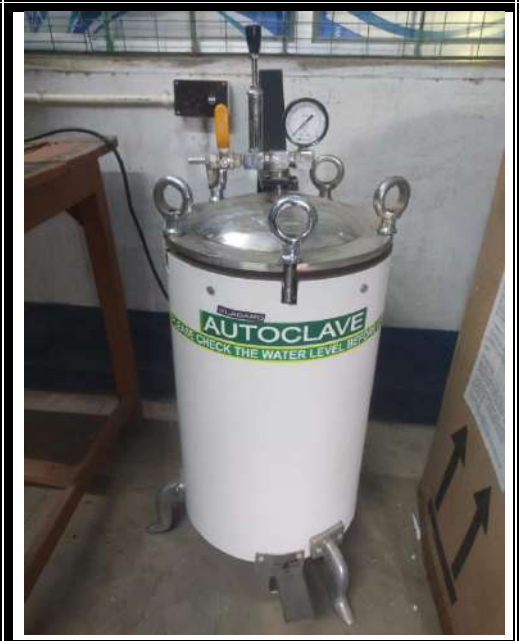
Anderson's Bridge Apparatus to find self-inductance		**Travelling Microscope**	
A.C. Millivoltmeter		**Expt set up to verify Malus Law**	

Experimental set up for Binary adder and Subtractor		**HOT PLATE**	

DEPARTMENT OF ZOOLOGY

S. No.	Name of Equipment	Unit	Total Cost (Rs)	Date of purchase of equipment	Remarks (if any)
1.	**Compound Microscope** [Olympus SM-100]	11	210146	17.11.2021	Installed
2.	**Compound microscope MX 21i with camera & software** [Olympus]	1	82858	24.11.2021	Installed
3.	**Laminar Hood, 2x2x2** [Table Top Design, compact in size saving space and easy to move. LED display with microprocessor control system. Comes with adjustable air speed]	1	115500	09.12.2021	Installed
4.	**Digital Multiparameter Pen** [Hanna]	1	14144	16.02.2022	Installed
5.	**Simple Microscope** [Kwality-KLM104]	12	37800	16.02.2022	Installed
6.	**Gel Apparatus** [Genie]	1	17155	16.02.2022	Installed

S. No.	Name of Equipment	Unit	Total Cost (Rs)	Date of purchase of equipment	Remarks (if any)
7.	**Autoclave** [Labbard]	1	27720	16.02.2022	Installed
8.	**GPS Range Finder** [Garmin Etrex]	1	8820	16.02.2022	Installed
9.	**Kymometer** [INCO]	1	13570	16.02.2022	Installed
10.	**Binocular (8x40)** [Olympus (8x40)]	5	32450	16.02.2022	Installed
11.	**-20 Refrigerator**]Blue Star CHF150]	1	20500	30.11.2021	Installed
12.	**Refrigerator** [Samsung]	1	22600	30.11.2021	Installed
13.	**Multifunction wireless Printer (colour) cum scanner** [Hp Laserjet 255DW]	1	45000	30.11.2021	Installed
14.	**Digital camera** [Canon]	1	23900	18.02.2022	Installed
15.	**Bacterial Genome Isolation Kit**]Biocompare]	1	59062.50	24.02.2022	Installed
16.	**Dissolved Oxygen (D.O.) kit** [ESICO]	1	11812.50	24.02.2022	Installed
17.	**Inoculating Loop**	9	3544	24.02.2022	Installed
18.	**Colorimeter** [MAKE- ELICO LTD.MODEL NO CL- 223]	1	15104	04.01.2022	Installed
19.	**Digital Multiparameter Analyzer** [WATER QUALITY ANALYSER PE-138]	1	99998	04.01.2022	Installed
20.	**pH meter** [MAKE- ELICO LTD.MODEL NO-LI 614]	1	33672	04.01.2022	Installed
21.	**Centrifuge** [Remi-NEYA10]	1	100000	04.01.2022	Installed
Total			**995356/-**		

ITEM NAME	IMAGE	ITEM NAME	IMAGE
Autoclave		**Gel Apparatus (BR Biochem)**	
Kymometer		**Laminar Hood**	

Digital Multiparameter Pen		**Simple microscope**	
Compound microscope MX 21i with camera & software		**Compound Microscope**	

GPS Range Finder		**Colorimeter**	
Multifunction wireless Printer (Colour) Cum Scanner		**Digital camera**	

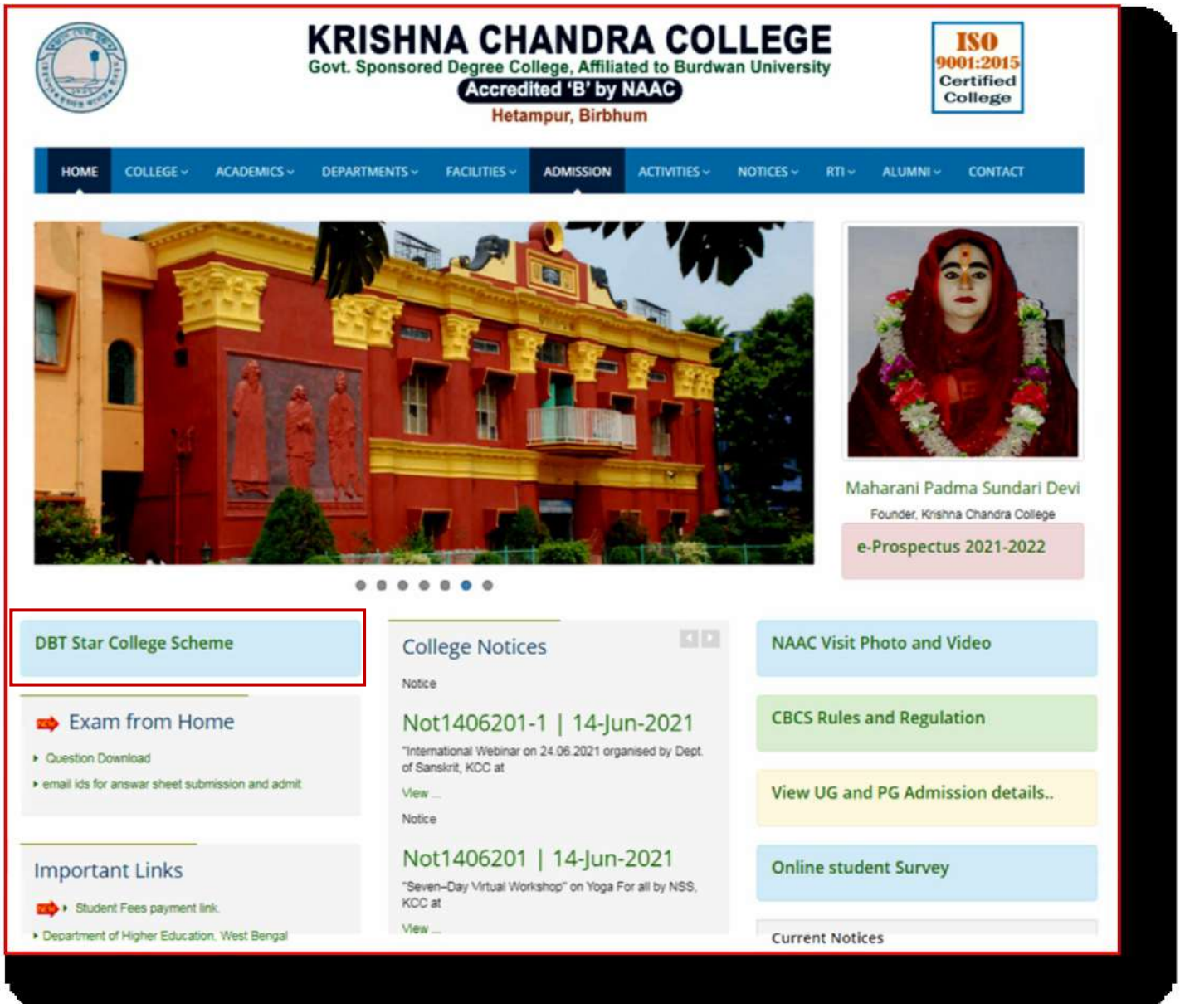
Refrigerator		**(-20 Refrigerator)**	

ITEM NAME	IMAGE	ITEM NAME	IMAGE
Digital Multiparameter analyzer		**pH meter**	

Inoculating loop		**Dissolved Oxygen (D.O.) Kit**	
Bacterial Genome Isolation Kit		**Centrifuge**	

ANNEXURE-II

INTRODUCED ONLINE DATABASE IN THE COLLEGE WEBSITE ABOUT THE DBT STAR COLLEGE SCHEME, Krishna Chandra College, Hetampur



DBT-STAR COLLEGE SCHEME

KRISHNA CHANDRA COLLEGE

Govt. Sponsored Degree College, Affiliated to Burdwan University

Accredited 'B' by NAAC

Hetampur, Birbhum

ISO 9001:2015 Certified College

HOME | COLLEGE | IQAC | DBT STAR | ACADEMICS | DEPARTMENTS | FACILITIES | ADMISSION | ACTIVITY | NOTICE | CONTACT

DBT Star College Scheme

- About – DBT Star College Scheme
- DBT - Star College Scheme at Krishna Chandra College
- Coordinator's Desk
- DBT Advisory Committee
- Notice for DBT Events
- Task Force Meeting
- Progress Reports
- Activities: DEPARTMENT OF CHEMISTRY
- Activities: DEPARTMENT OF MATHEMATICS
- Activities: DEPARTMENT OF PHYSICS
- Activities: DEPARTMENT OF ZOOLOGY
- Lab Manuals
- Standard Operating Procedures (SOP)
- List of Equipment Purchased
- List of Books Purchased
- Impact of DBT Star College Scheme
- Gallery
- Contact Us

About – DBT Star College Scheme

Star College Scheme for Strengthening of UG Science

The "Star College Scheme" has been initiated by the Department of Biotechnology (DBT), Govt. of India, New Delhi to support colleges and university departments offering undergraduate education to improve science teaching. This programme aims to improve the skills of teachers by offering faculty training, updated curriculum and emphasis on practical training to students by providing access to specialized infrastructure and consumables. It paves a way for the improvement of basic sciences and for facing the new challenges in the field of modern Biology among the young minds thereby improving the quality of education in the institution augmented by upgraded and modern equipments and to procure other essentials to enhance the practical skills.

Objectives:

- To improve the existing practical courses.
- To offer infrastructure facilities of laboratories by providing multiple equipments to carry out several lab experiments.
- To impart knowledge to the students through interdisciplinary based learning, hands on training and summer internships.
- To provide an exposure to the students for basic and advance research in the disciplines and institutional visit will be organized, this practice will help the students to choose their discipline in higher education.
- To organize faculty development program for updating knowledge on current scenario in their respective research disciplines.
- To augment the centralized instrumentation facilities and thereby to encourage students and faculty members for interdisciplinary activities.
- To carryout group projects among the students of various science departments and to appreciate their research to address the societal issues.
- To visit the various research laboratories and industries of repute for understanding the applied aspects of the science and ongoing research in the emerging field of science.
- To strengthen curricula and practical courses by development of e-contents, Laboratory manuals and SOP's for the specific instruments and experiments.To augment the library facilities to enhance self-learning and utilization of books for improving knowledge of the students and teachers.

Know More... Click

Term and conditions under Star College Scheme

Guidelines of Star College Scheme

KRISHNA CHANDRA COLLEGE

Govt. Sponsored Degree College, Affiliated to Burdwan University

Accredited 'B' by NAAC

Hetampur, Birbhum

ISO 9001:2015 Certified College

HOME | COLLEGE | IQAC | DBT STAR | ACADEMICS | DEPARTMENTS | FACILITIES | NEW ADMISSION | ACTIVITY | NOTICE | CONTACT

DBT Star College Scheme

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DBT - Star College Scheme at Krishna Chandra College

Our college has been selected under the **DBT-STAR College Scheme "Strengthening of Support"** category by the Department of Biotechnology (DBT), Ministry of Science and Technology, Govt. of India. The Department of Biotechnology, Ministry of Science & Technology, Government of India has sanctioned "Star College Scheme" in September 2020 for four undergraduate science departments viz., **Chemistry, Physics, Mathematics & Zoology**. These departments of the STAR college programme have been executing the scheme excellently, focusing on their goals and objectives at all levels. Under this Scheme, the College aims to strengthen the academic and physical infrastructure for achieving excellence in teaching and training, stimulate original thinking through 'hands-on' exposure to experimental work and participation in summer schools, promote networking and strengthen ties with neighboring institutions and other laboratories, provide access and exposure to students to research laboratories and industries and conduct specialized training programmes for faculty improvement for optimizing technical capabilities.

DBT Star College Scheme

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Activities: DEPARTMENT OF CHEMISTRY

VARIOUS ACTIVITIES (2020-21)

One Week Online Faculty Development Programmme

ANNEXURE-III

PUBLICATIONS (SCOPUS INDEXED) / PATENTS, IF ANY.

Department of CHEMISTRY:

List of publication

Pre-support (2019-20 session)

Dr. Lalan Chandra Mandal

1. Nuclear Magnetic Resonance Spectroscopic Behaviour of Some Selective Natural Flavonoids: A Look Through; Shyamal K. Jash, Dilip Gorai, **Lalan Chandra Mandal** and Rajiv Roy; *Mini-Reviews in Organic Chemistry*, 2020, *17(2)*, 185-196.
2. Concealed Chemical Cue in Human Relationship with Smell; Shyamal K. Jash and **Lalan Chandra Mandal**; *Journal of Advance Scientific Research*, 2020, *11(2)*, 17-24.
3. GC-MS Analysis of Antibacterial Phytochemicals from *Cassia sophera* Linn; Shyamal K. Jash, Dilip Gorai, **Lalan Chandra Mandal** and Sekhar Pal; *International Journal of Pharmaceutical Sciences and Nanotechnology*, 2020, 13(5), 5131-5137.

Dr. Shyamal Kr. Jash

1. Nuclear Magnetic Resonance Spectroscopic Behaviour of Some Selective Natural Flavonoids: A Look Through; **Shyamal K. Jash**, Dilip Gorai, Lalan Chandra Mandal and Rajiv Roy; *Mini-Reviews in Organic Chemistry*, 2020, *17(2)*, 185-196.
2. Concealed Chemical Cue in Human Relationship with Smell; **Shyamal K. Jash** and Lalan Chandra Mandal; *Journal of Advance Scientific Research*, 2020, *11(2)*, 17-24.
3. GC-MS Analysis of Antibacterial Phytochemicals from *Cassia sophera* Linn; **Shyamal K. Jash**, Dilip Gorai, Lalan Chandra Mandal and Sekhar Pal; *International Journal of Pharmaceutical Sciences and Nanotechnology*, 2020, 13(5), 5131-5137.

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Mini-Reviews in Organic Chemistry, 2020, 17, 185-196

REVIEW ARTICLE

BENTHAM SCIENCE

Nuclear Magnetic Resonance Spectroscopic Behaviour of Some Selective Natural Flavonoids: A Look Through

Shyamal K. Jash[1,*], Dilip Gorai[2], Lalan C. Mandal[1] and Rajiv Roy[3]

[1]Department of Chemistry, Krishna Chandra College, Hetampur, Birbum-731124, West Bengal, India; [2]Department of Chemistry, Bolpur College, Bolpur, Birbhum-731204, West Bengal, India; [3]Independent Researcher, Bhatgonna (Dignagar), Burdwan-713128, West Bengal, India

ARTICLE HISTORY

Received: September 21, 2018
Revised: November 08, 2018
Accepted: November 28, 2018

DOI: 10.2174/1570193X16666181224110663

CrossMark

Abstract: Flavonoids are considered as a significant class of compounds among the natural products, exhibiting a variety of structural skeletons as well as multidirectional biological potentials. In structural elucidations of natural products, Nuclear Magnetic Resonance (NMR) spectroscopy has been playing a vital role; the technique is one of the sharpest tools in the hands of natural products chemists. The present resume deals with hard-core applications of such spectral technique, particularly in structural elucidation of flavonoids; different NMR techniques including ^{1}H-NMR, ^{13}C-NMR, and 2D-NMR [viz. ^{1}H-^{1}H COSY, COLOC, HMBC, HMQC] are described in detail.

Mandal et al., J Adv Sci Res, 2020; 11 (2): 17-24 17

ScienSage

Journal of Advanced Scientific Research

Available online through http://www.scientage.info

ISSN 0976-9595 Review Article

CONCEALED CHEMICAL CUE IN HUMAN RELATIONSHIP WITH SMELL

Shyamal K. Jash, Lalan Chandra Mandal*

Department of Chemistry, Krishna Chandra College, Hetampur, Birbhum, West Bengal, India

*Corresponding author: lalan_chem@yahoo.co.in

ABSTRACT

Since the aurora of human civilization, visual cues play a premier reliable role for the judgement of making mate preference. Due to an evolutionary perspective, facial attractiveness for mate selection has been considering as one of the primitive tool. But role of smell in human relationship is considered as a significant factor. The influence of smell in human relationship is well connected with diversified factor including human body odor, physiological or behavioral responses, genetic factor etc. The present article has sketched a concise relationship of smell with human relationship.

Keywords: Human Relationship, Body Odor, Pheromone, Genetic influence

During /After Support (2020-21 Session)

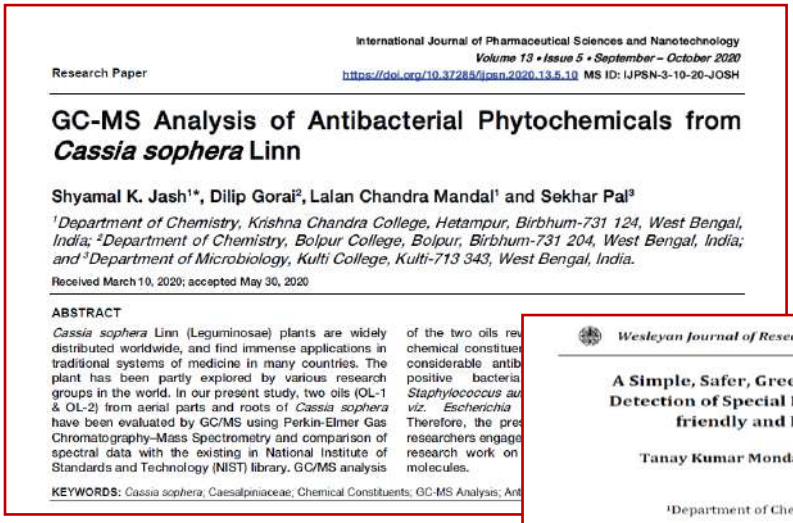
Dr. Lalan Chandra Mandal

1. A Simple, Safer, Green and Efficient Approach to Preliminary Test for Detection of Special Elements in Organic Qualitative Analysis: An Eco-friendly and Improved Procedure of Lassaigne Method; Tanay Kumar Mondal, Shyamal K. Jash, Bipul Sarkar and **Lalan Chandra Mandal**; *Wesleyan Journal of Research*, 2020, 12, (*Accepted*).
2. Shyamal K. Jash and **Lalan Chandra Mandal**; *Cultivation of Observation on Soil Carbon Dynamics and Aspect of Some Mathematical Insight*, In "RECENT DEVELOPMENTS IN NONLINEAR DYNAMICS AND IT'S APPLICATIONS", Nupur Bhakta (ed.), 1st ed., Book Center, Auroma Market, Santiniketan, West Bengal & Aakar Books, 28E Pocket IV, Mayur Vihar Phase I, New Delhi, India; 2020, 77-92 (ISBN: 978-81-944611-1-1).

Dr. Shyamal K. Jash

1. A Simple, Safer, Green and Efficient Approach to Preliminary Test for Detection of Special Elements in Organic Qualitative Analysis: An Eco-friendly and Improved Procedure of Lassaigne Method; Tanay Kumar Mondal, **Shyamal K. Jash**, Bipul Sarkar and Lalan Chandra Mandal; *Wesleyan Journal of Research*, 2020, 12, (*Accepted*).

2. **Shyamal K. Jash** and Lalan Chandra Mandal; *Cultivation of Observation on Soil Carbon Dynamics and Aspect of Some Mathematical Insight*, In "RECENT DEVELOPMENTS IN NONLINEAR DYNAMICS AND IT'S APPLICATIONS", Nupur Bhakta (ed.), 1st ed., Book Center, Auroma Market, Santiniketan, West Bengal & Aakar Books, 28E Pocket IV, Mayur Vihar Phase I, New Delhi, India; 2020, 77-92 (ISBN: 978-81-944611-1-1).



International Journal of Pharmaceutical Sciences and Nanotechnology
Volume 13 • Issue 5 • September – October 2020

Research Paper https://doi.org/10.37285/ijpsn.2020.13.5.10 MS ID: IJPSN-3-10-20-JOSH

GC-MS Analysis of Antibacterial Phytochemicals from *Cassia sophera* Linn

Shyamal K. Jash[1]*, Dilip Gorai[2], Lalan Chandra Mandal[1] and Sekhar Pal[3]

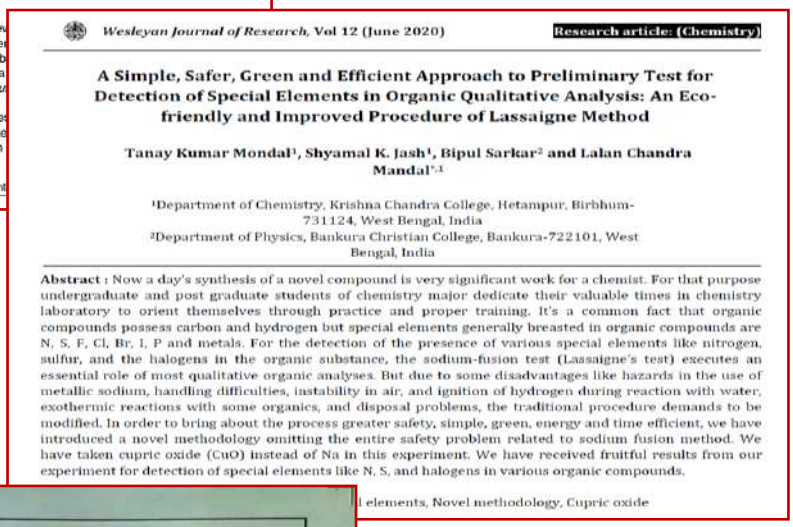
[1]Department of Chemistry, Krishna Chandra College, Hetampur, Birbhum-731 124, West Bengal, India; [2]Department of Chemistry, Bolpur College, Bolpur, Birbhum-731 204, West Bengal, India; and [3]Department of Microbiology, Kulti College, Kulti-713 343, West Bengal, India.

Received March 10, 2020; accepted May 30, 2020

ABSTRACT

Cassia sophera Linn (Leguminosae) plants are widely distributed worldwide, and find immense applications in traditional systems of medicine in many countries. The plant has been partly explored by various research groups in the world. In our present study, two oils (OL-1 & OL-2) from aerial parts and roots of *Cassia sophera* have been evaluated by GC/MS using Perkin-Elmer Gas Chromatography–Mass Spectrometry and comparison of spectral data with the existing in National Institute of Standards and Technology (NIST) library. GC/MS analysis of the two oils rev chemical constituer considerable antib positive bacteria *Staphylococcus au viz. Escherichia* Therefore, the pres researchers engage research work on molecules.

KEYWORDS: *Cassia sophera*; Caesalpiniaceae; Chemical Constituents; GC-MS Analysis; Ant



Wesleyan Journal of Research, Vol 12 (June 2020) **Research article: (Chemistry)**

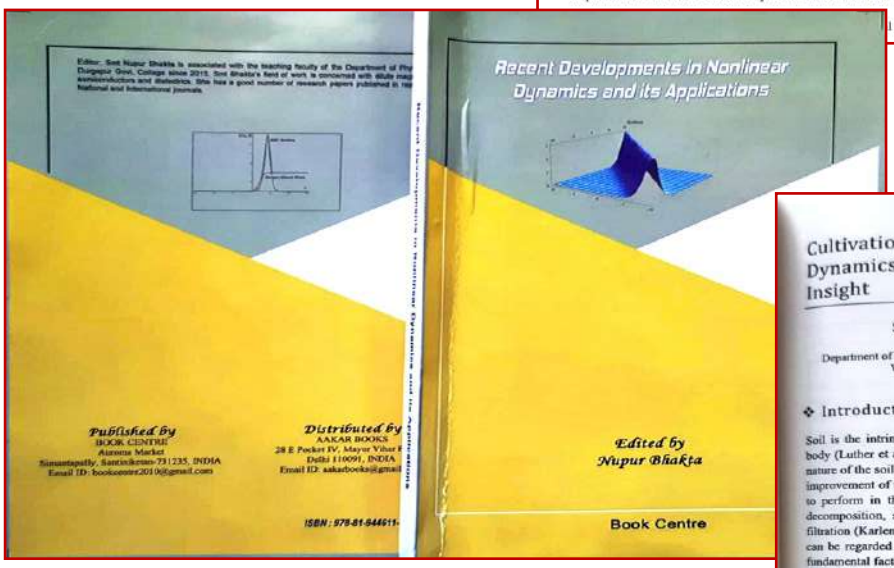
A Simple, Safer, Green and Efficient Approach to Preliminary Test for Detection of Special Elements in Organic Qualitative Analysis: An Eco-friendly and Improved Procedure of Lassaigne Method

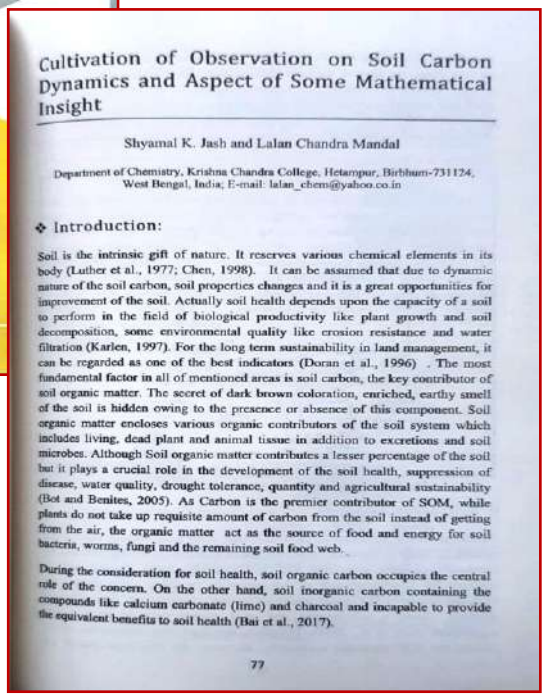
Tanay Kumar Mondal[1], Shyamal K. Jash[1], Bipul Sarkar[2] and Lalan Chandra Mandal[1,1]

[1]Department of Chemistry, Krishna Chandra College, Hetampur, Birbhum-731124, West Bengal, India
[2]Department of Physics, Bankura Christian College, Bankura-722101, West Bengal, India

Abstract : Now a day's synthesis of a novel compound is very significant work for a chemist. For that purpose undergraduate and post graduate students of chemistry major dedicate their valuable times in chemistry laboratory to orient themselves through practice and proper training. It's a common fact that organic compounds possess carbon and hydrogen but special elements generally breasted in organic compounds are N, S, F, Cl, Br, I, P and metals. For the detection of the presence of various special elements like nitrogen, sulfur, and the halogens in the organic substance, the sodium-fusion test (Lassaigne's test) executes an essential role of most qualitative organic analyses. But due to some disadvantages like hazards in the use of metallic sodium, handling difficulties, instability in air, and ignition of hydrogen during reaction with water, exothermic reactions with some organics, and disposal problems, the traditional procedure demands to be modified. In order to bring about the process greater safety, simple, green, energy and time efficient, we have introduced a novel methodology omitting the entire safety problem related to sodium fusion method. We have taken cupric oxide (CuO) instead of Na in this experiment. We have received fruitful results from our experiment for detection of special elements like N, S, and halogens in various organic compounds.

l elements, Novel methodology, Cupric oxide





Cultivation of Observation on Soil Carbon Dynamics and Aspect of Some Mathematical Insight

Shyamal K. Jash and Lalan Chandra Mandal

Department of Chemistry, Krishna Chandra College, Hetampur, Birbhum-731124, West Bengal, India; E-mail: lalan_chem@yahoo.co.in

❖ Introduction:

Soil is the intrinsic gift of nature. It reserves various chemical elements in its body (Luther et al., 1977; Chen, 1998). It can be assumed that due to dynamic nature of the soil carbon, soil properties changes and it is a great opportunities for improvement of the soil. Actually soil health depends upon the capacity of a soil to perform in the field of biological productivity like plant growth and soil decomposition, some environmental quality like erosion resistance and water filtration (Karlen, 1997). For the long term sustainability in land management, it can be regarded as one of the best indicators (Doran et al., 1996) . The most fundamental factor in all of mentioned areas is soil carbon, the key contributor of soil organic matter. The secret of dark brown coloration, enriched, earthy smell of the soil is hidden owing to the presence or absence of this component. Soil organic matter encloses various organic contributors of the soil system which includes living, dead plant and animal tissue in addition to excretions and soil microbes. Although Soil organic matter contributes a lesser percentage of the soil but it plays a crucial role in the development of the soil health, suppression of disease, water quality, drought tolerance, quantity and agricultural sustainability (Bot and Benites, 2005). As Carbon is the premier contributor of SOM, while plants do not take up requisite amount of carbon from the soil instead of getting from the air, the organic matter act as the source of food and energy for soil bacteria, worms, fungi and the remaining soil food web.

During the consideration for soil health, soil organic carbon occupies the central role of the concern. On the other hand, soil inorganic carbon containing the compounds like calcium carbonate (lime) and charcoal and incapable to provide the equivalent benefits to soil health (Bai et al., 2017).

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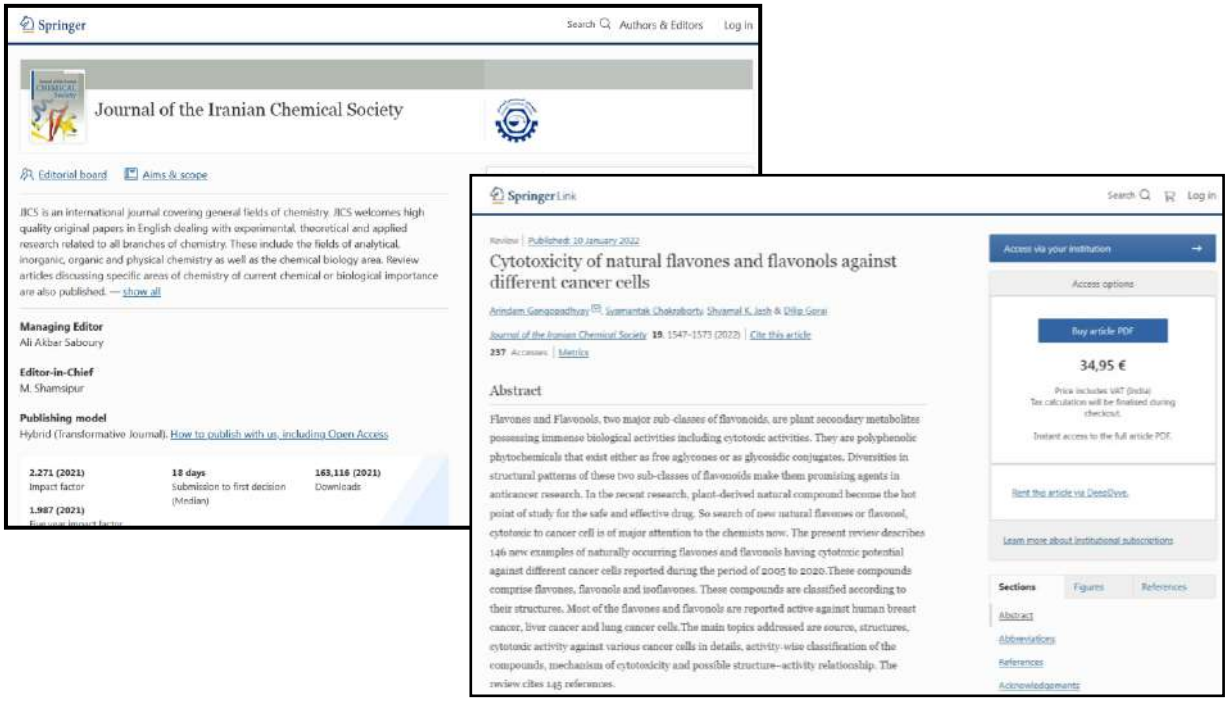
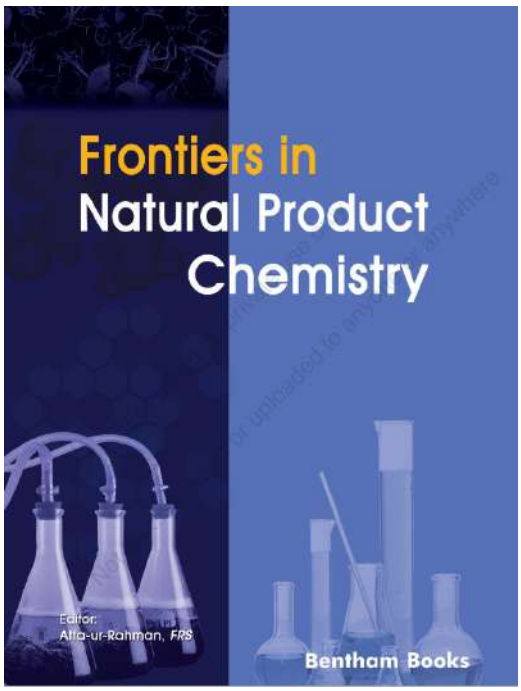
During /After Support (2021-22 Session)

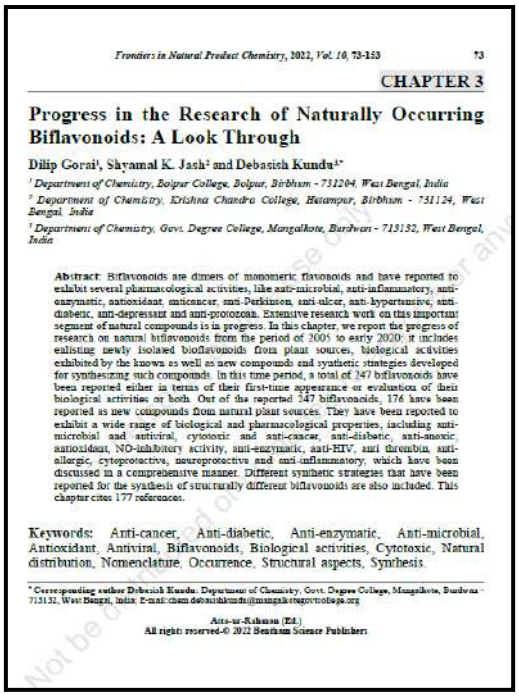
Dr. Shyamal K. Jash

1. Cytotoxicity of Natural Flavones and Flavonols Against Different Cancer Cells.; Arindam Gangopadhyay, Syamantak Chakraborty **Shyamal K. Jash** and Dilip Gorai; *Journal of the Iranian Chemical Society*, 2022, 19, 1547-1573.



2. Dilip Gorai, **Shyamal K Jash** and Debasish Kundu; Progress in the Research of Naturally Occurring Biflavonoids: A Look Through, In "FRONTIERS IN NATURAL PRODUCT CHEMISTRY", Atta-ur-Rahman (ed.), Vol-10, Bentham Science Publishers Pte. Ltd, 80 Robinson Road, Singapore; 2022, 73-153 (ISBN: 978-981-5040-77-7).




Frontiers in Natural Product Chemistry, 2022, Vol. 10, 73-153 73

CHAPTER 3

Progress in the Research of Naturally Occurring Biflavonoids: A Look Through

Dilip Gorai[1], Shyamal K. Jash[2] and Debasish Kundu[3,*]

[1] Department of Chemistry, Bolpur College, Bolpur, Birbhum - 731204, West Bengal, India
[2] Department of Chemistry, Krishna Chandra College, Hetampur, Birbhum - 731124, West Bengal, India
[3] Department of Chemistry, Govt. Degree College, Mangalkote, Burdwan - 713132, West Bengal, India

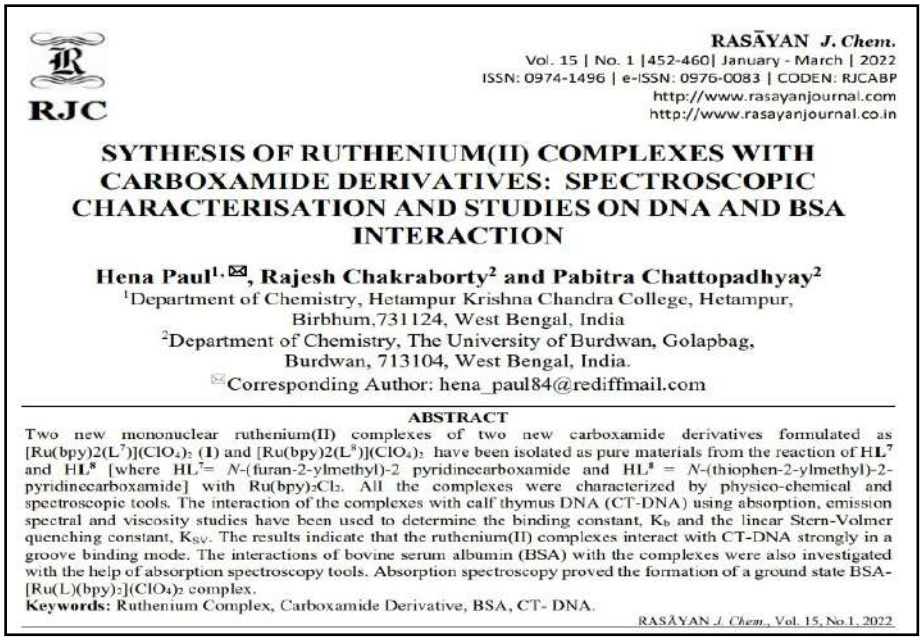
Abstract: Biflavonoids are dimers of monomeric flavonoids and have reported to exhibit several pharmacological activities, like anti-microbial, anti-inflammatory, anti-enzymatic, antioxidant, anticancer, anti-Parkinson, anti-ulcer, anti-hypertensive, anti-diabetic, anti-depressant and anti-protozoan. Extensive research work on this important segment of natural compounds is in progress. In this chapter, we report the progress of research on natural biflavonoids from the period of 2005 to early 2020: it includes enlisting newly isolated bioflavonoids from plant sources, biological activities exhibited by the known as well as new compounds and synthetic strategies developed for synthesizing such compounds. In this time period, a total of 247 biflavonoids have been reported either in terms of their first-time appearance or evaluation of their biological activities or both. Out of the reported 247 biflavonoids, 176 have been reported as new compounds from natural plant sources. They have been reported to exhibit a wide range of biological and pharmacological properties, including anti-microbial and antiviral, cytotoxic and anti-cancer, anti-diabetic, anti-anoxic, antioxidant, NO-inhibitory activity, anti-enzymatic, anti-HIV, anti thrombin, anti-allergic, cytoprotective, neuroprotective and anti-inflammatory, which have been discussed in a comprehensive manner. Different synthetic strategies that have been reported for the synthesis of structurally different biflavonoids are also included. This chapter cites 177 references.

Keywords: Anti-cancer, Anti-diabetic, Anti-enzymatic, Anti-microbial, Antioxidant, Antiviral, Biflavonoids, Biological activities, Cytotoxic, Natural distribution, Nomenclature, Occurrence, Structural aspects, Synthesis.

* Corresponding author Debasish Kundu: Department of Chemistry, Govt. Degree College, Mangalkote, Burdwan - 713132, West Bengal, India; E-mail: chem.debasishkundu@mangalkotegovtcollege.org

Dr. Hena Paul

Hena Paul, Rajesh Chakraborty, Pabitra Chattopadhyay; Sythesis of ruthenium(ii) complexes with carboxamide derivatives: spectroscopic characterisation and studies on dna and bsa interaction, *Rasayan J. Chem*., 15(1), 452-460 (2022)



RJC

RASĀYAN *J. Chem.*
Vol. 15 | No. 1 |452-460| January - March | 2022
ISSN: 0974-1496 | e-ISSN: 0976-0083 | CODEN: RJCABP
http://www.rasayanjournal.com
http://www.rasayanjournal.co.in

SYTHESIS OF RUTHENIUM(II) COMPLEXES WITH CARBOXAMIDE DERIVATIVES: SPECTROSCOPIC CHARACTERISATION AND STUDIES ON DNA AND BSA INTERACTION

Hena Paul[1,✉], Rajesh Chakraborty[2] and Pabitra Chattopadhyay[2]
[1]Department of Chemistry, Hetampur Krishna Chandra College, Hetampur, Birbhum,731124, West Bengal, India
[2]Department of Chemistry, The University of Burdwan, Golapbag, Burdwan, 713104, West Bengal, India.
✉Corresponding Author: hena_paul84@rediffmail.com

ABSTRACT
Two new mononuclear ruthenium(II) complexes of two new carboxamide derivatives formulated as $[Ru(bpy)_2(L^7)](ClO_4)_2$ (**1**) and $[Ru(bpy)_2(L^8)](ClO_4)_2$ have been isolated as pure materials from the reaction of HL^7 and HL^8 [where HL^7= *N*-(furan-2-ylmethyl)-2 pyridinecarboxamide and HL^8 = *N*-(thiophen-2-ylmethyl)-2-pyridinecarboxamide] with $Ru(bpy)_2Cl_2$. All the complexes were characterized by physico-chemical and spectroscopic tools. The interaction of the complexes with calf thymus DNA (CT-DNA) using absorption, emission spectral and viscosity studies have been used to determine the binding constant, K_b and the linear Stern-Volmer quenching constant, K_{SV}. The results indicate that the ruthenium(II) complexes interact with CT-DNA strongly in a groove binding mode. The interactions of bovine serum albumin (BSA) with the complexes were also investigated with the help of absorption spectroscopy tools. Absorption spectroscopy proved the formation of a ground state BSA-$[Ru(L)(bpy)_2](ClO_4)_2$ complex.
Keywords: Ruthenium Complex, Carboxamide Derivative, BSA, CT- DNA.

Department of MATHEMATICS:

List of publication

Pre-support (2019-20 session)

Sudipto Bhattacharjee

1. **S. Bhattacharjee** and S. Chakraborty, ``*Cosmological solutions of the Israel-Stewart transport equation", EPL* ***128****, no.6, 69001 (2019).*DOI:**https://doi.org/10.1209/0295-5075/128/69001**

epl A Letters Journal Exploring the Frontiers of Physics

December 2019
EPL, 128 (2019) 69001 www.epljournal.org
doi: 10.1209/0295-5075/128/69001

Cosmological solutions of the Israel-Stewart transport equation

Sudipto Bhattacharjee[1,2(a)] and Subenoy Chakraborty[2(b)]
[1] *Department of Mathematics, Krishna Chandra College - Hetampur, West Bengal, 731124, India*
[2] *Department of Mathematics, Jadavpur University - Kolkata, West Bengal, 700032, India*

received 15 July 2019; accepted in final form 2 January 2020
published online 5 February 2020

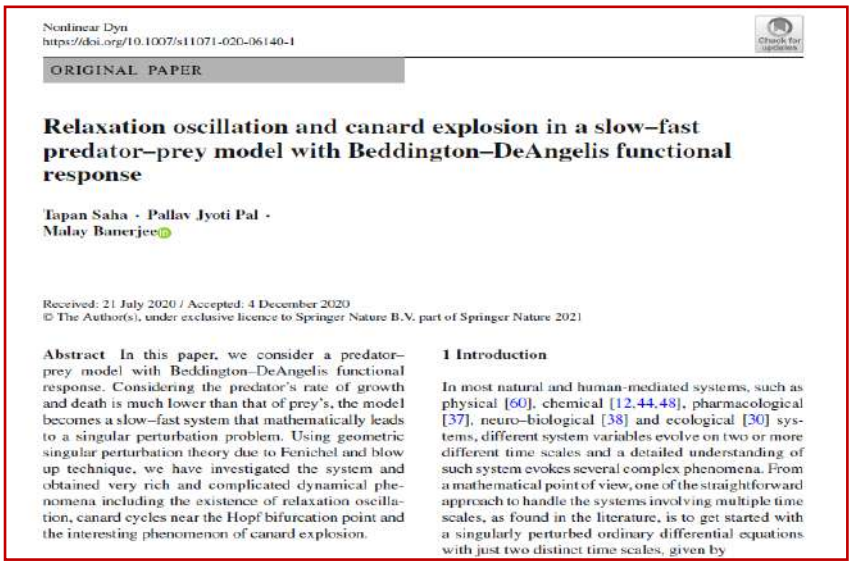
PACS 98.80.Jk – Mathematical and relativistic aspects of cosmology
PACS 05.70.Ln – Nonequilibrium and irreversible thermodynamics
PACS 95.30.Tg – Thermodynamic processes, conduction, convection, equations of state

Abstract – In this paper we shall consider second-order non-equilibrium thermodynamics in the realm of particle creation mechanism. Here we have considered the second-order theory described by Müller, Israel and Stewart (MIS theory). It is very difficult to solve the Israel-Stewart transport equation in the second-order theory. In this paper we have solved the Israel-Stewart transport equation in terms of particle creation rate with suitable assumptions.

During /After Support (2020-21 Session)

Dr. Pallav Jyoti Pal

1. T. Saha, **P. J. Pal** and M. Banerjee, ``*Relaxation oscillation and canard explosion in a slow–fast predator–prey model with Beddington–DeAngelis functional response*'', *Nonlinear Dyn* ***103****, 1195–1217 (2021).* DOI: **https://doi.org/10.1007/s11071-020-06140-1.**



Nonlinear Dyn
https://doi.org/10.1007/s11071-020-06140-1

ORIGINAL PAPER

Relaxation oscillation and canard explosion in a slow–fast predator–prey model with Beddington–DeAngelis functional response

Tapan Saha · Pallav Jyoti Pal · Malay Banerjee

Received: 21 July 2020 / Accepted: 4 December 2020
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Abstract In this paper, we consider a predator–prey model with Beddington–DeAngelis functional response. Considering the predator's rate of growth and death is much lower than that of prey's, the model becomes a slow–fast system that mathematically leads to a singular perturbation problem. Using geometric singular perturbation theory due to Fenichel and blow up technique, we have investigated the system and obtained very rich and complicated dynamical phenomena including the existence of relaxation oscillation, canard cycles near the Hopf bifurcation point and the interesting phenomenon of canard explosion.

1 Introduction

In most natural and human-mediated systems, such as physical [60], chemical [12,44,48], pharmacological [37], neuro–biological [38] and ecological [30] systems, different system variables evolve on two or more different time scales and a detailed understanding of such system evokes several complex phenomena. From a mathematical point of view, one of the straightforward approach to handle the systems involving multiple time scales, as found in the literature, is to get started with a singularly perturbed ordinary differential equations with just two distinct time scales, given by

Department of PHYSICS:

List of publication

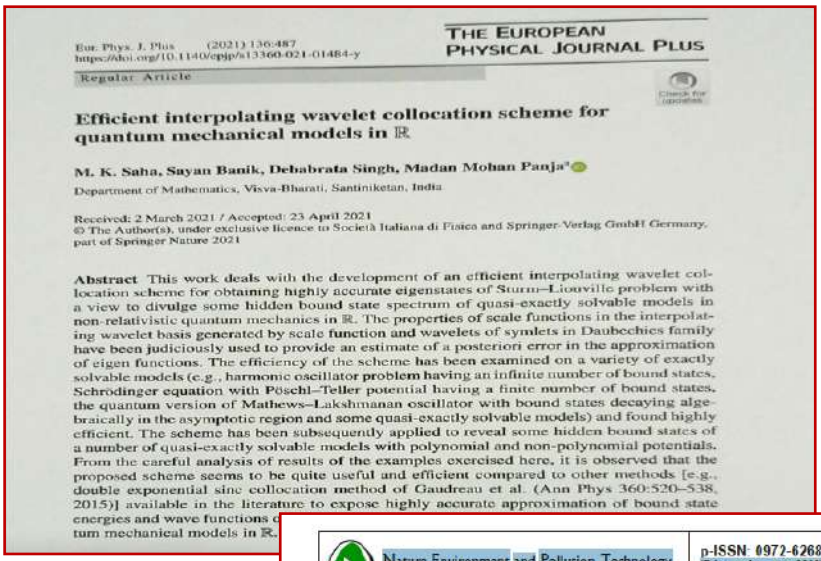
During /After Support (2020-21 Session)

Manoj Kumar Saha

1. M. K. Saha, Syan Banik, Debabrata Singh, Madan Mohan Panja, Efficient Interpolarating Wavelet Collocation Scheme for Quantum Mechanical Model for R, ***The European Physical Journal Plus***, **2021**, 136, 487.

Rini Labar

1. M. Pal, M. Gope A. Basu, T. Laha, R. E. Masto, **R. Labar**, T. K. Kundu, R. R. Hoque, P. S. Khillare and S. Balachandran, Indoor Quality of Residential Homes and Schools of an Industrial Area in Asansol: Characterization, Bioaccessibility and Health Risk Assessment of Potentially Toxic Elements, ***Nature Environment and Pollution Technology***, **2021**, 20, 13-28



Eur. Phys. J. Plus (2021) 136:487
https://doi.org/10.1140/epjp/s13360-021-01484-y

THE EUROPEAN PHYSICAL JOURNAL PLUS

Regular Article

Efficient interpolating wavelet collocation scheme for quantum mechanical models in $\mathbb{R}$

M. K. Saha, Sayan Banik, Debabrata Singh, Madan Mohan Panja[a]
Department of Mathematics, Visva-Bharati, Santiniketan, India

Received: 2 March 2021 / Accepted: 23 April 2021

Abstract This work deals with the development of an efficient interpolating wavelet collocation scheme for obtaining highly accurate eigenstates of Sturm–Liouville problem with a view to divulge some hidden bound state spectrum of quasi-exactly solvable models in non-relativistic quantum mechanics in $\mathbb{R}$. The properties of scale functions in the interpolating wavelet basis generated by scale function and wavelets of symlets in Daubechies family have been judiciously used to provide an estimate of a posteriori error in the approximation of eigen functions. The efficiency of the scheme has been examined on a variety of exactly solvable models (e.g., harmonic oscillator problem having an infinite number of bound states, Schrödinger equation with Pöschl–Teller potential having a finite number of bound states, the quantum version of Mathews–Lakshmanan oscillator with bound states decaying algebraically in the asymptotic region and some quasi-exactly solvable models) and found highly efficient. The scheme has been subsequently applied to reveal some hidden bound states of a number of quasi-exactly solvable models with polynomial and non-polynomial potentials. From the careful analysis of results of the examples exercised here, it is observed that the proposed scheme seems to be quite useful and efficient compared to other methods [e.g., double exponential sinc collocation method of Gaudreau et al. (Ann Phys 360:520–538, 2015)] available in the literature to expose highly accurate approximation of bound state energies and wave functions o
tum mechanical models in $\mathbb{R}$.

Nature Environment and Pollution Technology
An International Quarterly Scientific Journal

p-ISSN: 0972-6268 (Print copies up to 2016)
e-ISSN: 2395-3454

Vol. 20 | No. 1 | pp. 13-28 | 2021

Original Research Paper | https://doi.org/10.46488/NEPT.2021.v20i01.002 | Open Access Journal

Indoor Quality of Residential Homes and Schools of an Industrial Area in Asansol: Characterization, Bioaccessibility and Health Risk Assessment of Potentially Toxic Elements

M. Pal*, M. Gope**, A. Basu*, T. Laha*, R. E. Masto***, R. Labar****, T. K. Kundu****, R. R. Hoque*****, P. S. Khillare****** and S. Balachandran*†
*Department of Environmental Studies, Siksha-Bhavana, Visva-Bharati, Santiniketan-731235, West Bengal, India
**Department of Chemistry, National Institute of Technology, Durgapur (NIT Durgapur), Durgapur-713209, West Bengal, India
***Environmental Management Division, CSIR-Central Institute of Mining and Fuel Research, Digwadih Campus, CFRI, Dhanbad-826015, Jharkhand, India
****Department of Physics, Siksha-Bhavana, Visva-Bharati, Santiniketan-731235, West Bengal, India
*****Department of Environmental Sciences, Tezpur University, Tezpur-784028, Assam, India
******School of Environmental Sciences, Jawaharlal Nehru University, New Delhi-100 067, India
†Corresponding author: S. Balachandran; s.balachandran@visva-bharati.ac.in

During /After Support (2021-22 Session)

Manoj Kumar Saha

1. Debabrata Singh, M. K. Saha, Sayan Banik, Madan Mohan Panja, Efficient Interpolarating Wavelet Collocation Scheme for quasi-exactly solvable Strum-Liouville problems in R+, *Mathematical Methods in the Applied Sciences*, **2022**, 45, 4002.

Rini Labar

1. **Rini Labar**, Tapas Kumar Kundu, Fabrication and Characterization of Back-to-Back Schottky Diode in Ni/ZnO/Ag Nanojunction, ***Journal of Electronic Materials***, **2022**, 51, 223.

Received: 3 March 2021 | Revised: 21 July 2021 | Accepted: 6 November 2021
DOI: 10.1002/mma.8028

RESEARCH ARTICLE

WILEY

An efficient interpolating wavelet collocation scheme for quasi-exactly solvable Sturm–Liouville problems in $\mathbb{R}^+$

Debabrata Singh | M. K. Saha | Sayan Banik | Madan Mohan Panja

Department of Mathematics, Visva-Bharati University, Santiniketan, 731235, India

Correspondence
Madan Mohan Panja, Department of Mathematics, Visva-Bharati University, Santiniketan 731235, West Bengal, India.
Email: madanpanja2005@yahoo.co.in

Communicated by: T. Qian

Funding information
CSIR, Govt. of India, Grant/Award Number: 09/202(0103)/2019-EMR-I; Department of Science and Technology, Govt. of India, Grant/Award Number: IF170200

This investigation is an attempt to obtain a highly accurate approximation of the spectrum of Sturm–Liouville problems in $\mathbb{R}^+$ by representing the unknown solution of the model in the interpolating wavelet basis of $L^2(\mathbb{R})$. To accomplish the goal, the domain $\mathbb{R}^+$ has been stretched to $\mathbb{R}$ to avoid the additional care of the elements in the basis containing boundary point 0. In addition, such transformation may judiciously be utilized to eliminate (up to quadratic) the singularity of the equation. The equation in the new variable has been subsequently transformed into a generalized matrix eigenvalue problem by approximating the new (unknown) function in an appropriate (truncated) basis comprising

Journal of Electronic Materials
https://doi.org/10.1007/s11664-021-09280-1

ORIGINAL RESEARCH ARTICLE

Fabrication and Characterization of Back-to-Back Schottky Diode in Ni/ZnO/Ag Nanojunction

Rini Labar[1] · Tapas Kumar Kundu[2]

Received: 4 June 2021 / Accepted: 5 October 2021
© The Minerals, Metals & Materials Society 2021

Abstract
This work presents the fabrication and electrical analysis of a ZnO nanostructure-based Schottky device. The fabrication method employed is easy and cost-effective. The junction properties of the Ni/ZnO junction annealed at 400°C with silver probing has been studied leading to the formation of a metal–semiconductor–metal (MSM) back-to-back Schottky diode (BBSD) with the configuration Ni/ZnO/Ag; this is a rectifying diode for both $V > 0$ and $V < 0$. The junction properties have been analyzed employing the BBSD model in the light of the thermionic emission mechanism. Electrical parameters, like barrier height, ideality factor, and resistance of a device consisting of two diodes, have been determined based on the theory for the BBSD model. The diode action is lost when the specimen is annealed at 700°C due to the combined effect of the microstructure of ZnO and the growth of a NiO layer at the interface.

Keywords MSM (metal–semiconductor–metal) · BBSD (back-to-back Schottky diode) · sol–gel · nano-schottky contact

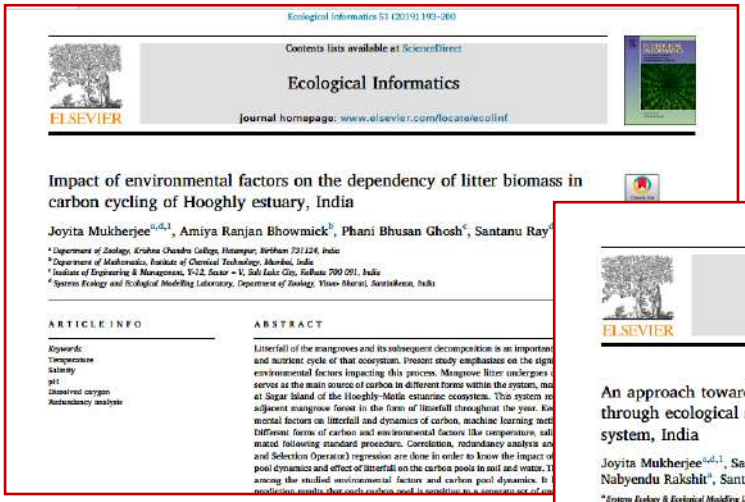
Department of ZOOLOGY:

List of publication

Pre-support (2019-20 session)

NAME OF FACULTY	TITLE OF PUBLICATION	NAME OF JOURNAL & ISSN	PAGE NO & VOL NO	Year of Publication	Impact Factor
Dr Joyita Mukherjee	Physiological response of fish under variable acidic conditions: A molecular approach through the assessment eco-physiological marker in the brain	*Environmental Science and Pollution Research* ISSN: 0944-1344	*26(23), 23442-23452*	2019	4.223
	Impact of environmental factors on the dependency of	*Ecological Informatics*	*51, 193-200*	2019	3.142

	litter biomass in carbon cycling of Hooghly estuary, India	ISSN: 1574-9541			
	An approach towards quantification of ecosystem trophic status and health through ecological network analysis applied in Hooghly-Matla estuarine system, India	*Ecological Indicators* ISSN: 1470-160X	*100*, 55-68	2019	4.958
Dr Salma Khatun	Potential risk of organophosphate exposure in male reproductive system of a non-target insect model *Drosophila melanogaster*	*Environmental Toxicology and Pharmacology ISSN: 1382-6689*	*74, 103308*	2020	4.860


Ecological Informatics 51 (2019) 193–200

Contents lists available at ScienceDirect

Ecological Informatics

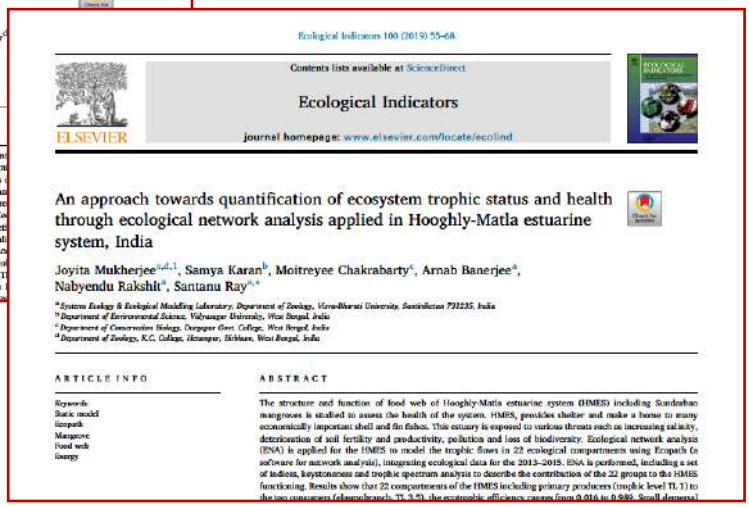
journal homepage: www.elsevier.com/locate/ecolinf

Impact of environmental factors on the dependency of litter biomass in carbon cycling of Hooghly estuary, India

Joyita Mukherjee[a,d,1], Amiya Ranjan Bhowmick[b], Phani Bhusan Ghosh[c], Santanu Ray[d]

ARTICLE INFO

ABSTRACT


Ecological Indicators 100 (2019) 55–68

Contents lists available at ScienceDirect

Ecological Indicators

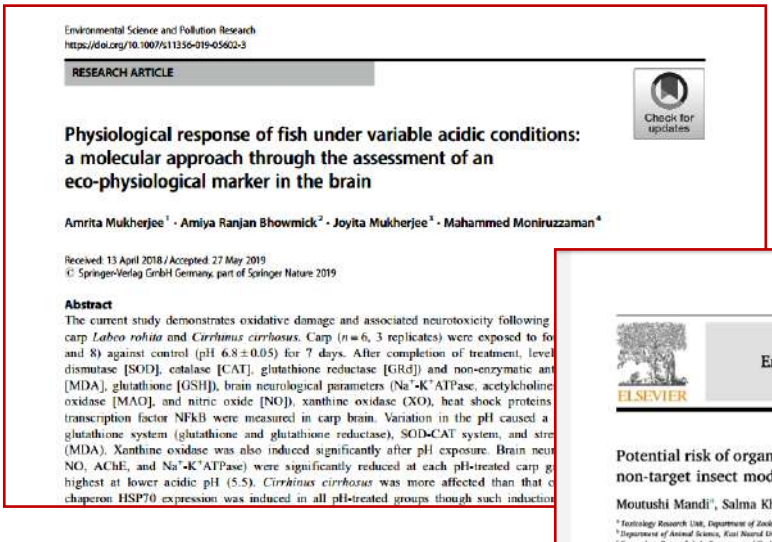
journal homepage: www.elsevier.com/locate/ecolind

An approach towards quantification of ecosystem trophic status and health through ecological network analysis applied in Hooghly-Matla estuarine system, India

Joyita Mukherjee[a,d,1], Samya Karan[b], Moitreyee Chakrabarty[c], Arnab Banerjee[a], Nabyendu Rakshit[a], Santanu Ray[b,*]

ARTICLE INFO

ABSTRACT


Environmental Science and Pollution Research
https://doi.org/10.1007/s11356-019-05602-3

RESEARCH ARTICLE

Physiological response of fish under variable acidic conditions: a molecular approach through the assessment of an eco-physiological marker in the brain

Amrita Mukherjee[1] · Amiya Ranjan Bhowmick[2] · Joyita Mukherjee[3] · Mahammed Moniruzzaman[4]

Received: 13 April 2018 / Accepted: 27 May 2019

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Abstract


Environmental Toxicology and Pharmacology 74 (2020) 103308

Contents lists available at ScienceDirect

Environmental Toxicology and Pharmacology

journal homepage: www.elsevier.com/locate/etap

Potential risk of organophosphate exposure in male reproductive system of a non-target insect model *Drosophila melanogaster*

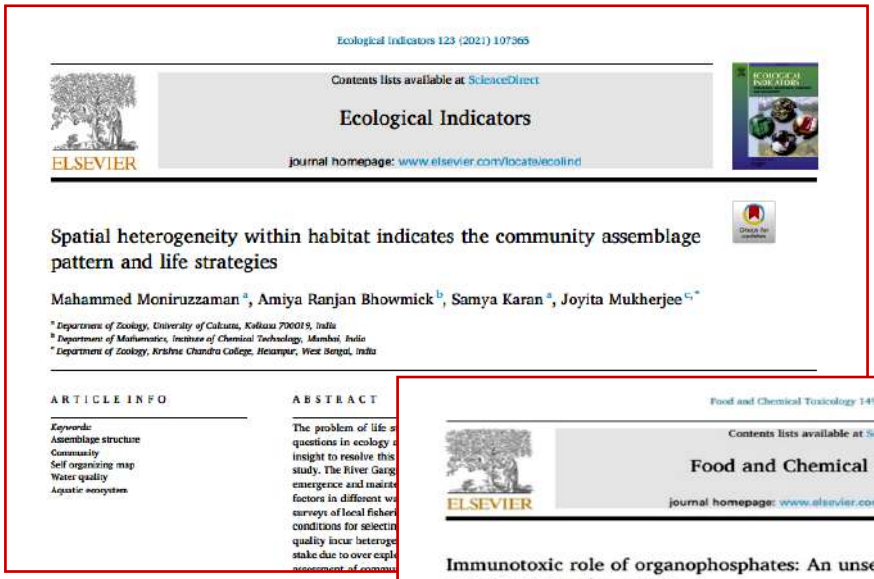
Moutushi Mandi[a], Salma Khatun[a], Prem Rajak[b], Abhijit Mazumdar[c], Sumedha Roy[a,*]

ARTICLE INFO

ABSTRACT

During /After Support (2020-21 Session)

NAME OF FACULTY	TITLE OF PUBLICATION	NAME OF JOURNAL & ISSN	PAGE NO & VOL NO	Year of Publication	Impact Factor
Dr Joyita Mukherjee	Spatial heterogeneity within habitat indicates the community assemblage pattern and life strategies	*Ecological Indicators* ISSN: 1470-160X	*123*, 107365	2021	4.958
Dr Salma Khatun	Immunotoxic role of organophosphates: An unseen risk escalating SARS-CoV-2 pathogenicity	*Food and Chemical Toxicology ISSN 0278-6915*	*149, 112007*	2021	6.023
	Understanding the cross-talk between mediators of infertility and COVID-19	*Reproductive Biology ISSN: 1642-431X*	*Accepted on 29th August, 2021*	2021	2.376



Ecological Indicators 123 (2021) 107365

Contents lists available at ScienceDirect

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind

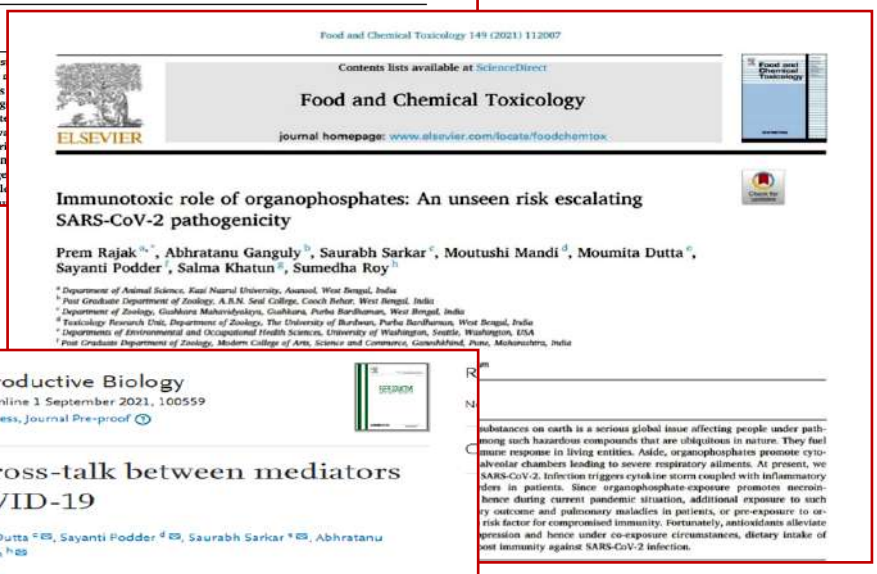
Spatial heterogeneity within habitat indicates the community assemblage pattern and life strategies

Mahammed Moniruzzaman [a], Amiya Ranjan Bhowmick [b], Samya Karan [a], Joyita Mukherjee [c,*]

ARTICLE INFO

Keywords:
Assemblage structure
Community
Self organizing map
Water quality
Aquatic ecosystem

ABSTRACT



Food and Chemical Toxicology 149 (2021) 112007

Contents lists available at ScienceDirect

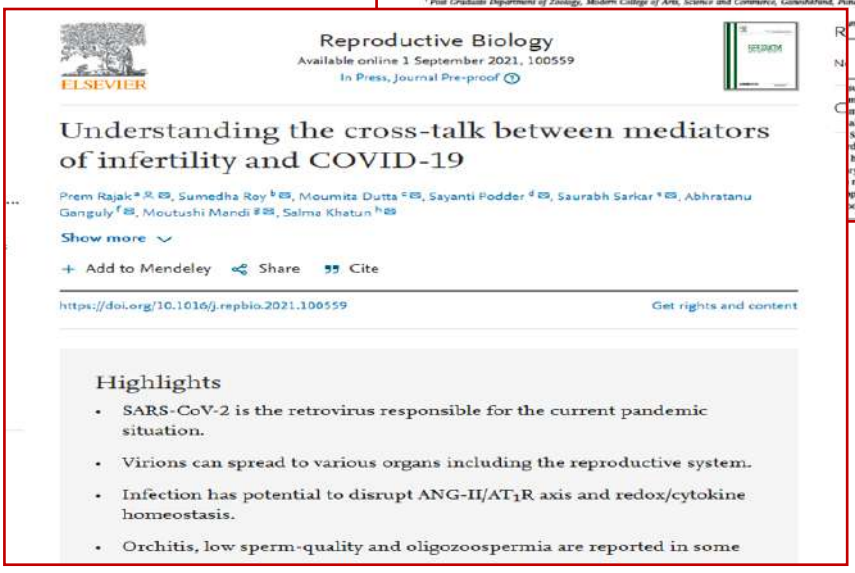
Food and Chemical Toxicology

journal homepage: www.elsevier.com/locate/foodchemtox

Immunotoxic role of organophosphates: An unseen risk escalating SARS-CoV-2 pathogenicity

Prem Rajak [a,*], Abhratanu Ganguly [b], Saurabh Sarkar [c], Moutushi Mandi [d], Moumita Dutta [e], Sayanti Podder [f], Salma Khatun [g], Sumedha Roy [h]

substances on earth is a serious global issue affecting people under path-
among such hazardous compounds that are ubiquitous in nature. They fuel
mmune response in living entities. Aside, organophosphates promote cyto-
alveolar chambers leading to severe respiratory ailments. At present, we
SARS-CoV-2. Infection triggers cytokine storm coupled with inflammatory
ders in patients. Since organophosphate-exposure promotes necroin-
hence during current pandemic situation, additional exposure to such
ty outcome and pulmonary maladies in patients, or pre-exposure to or-
risk factor for compromised immunity. Fortunately, antioxidants alleviate
pression and hence under co-exposure circumstances, dietary intake of
ost immunity against SARS-CoV-2 infection.



Reproductive Biology

Available online 1 September 2021, 100559

In Press, Journal Pre-proof

Understanding the cross-talk between mediators of infertility and COVID-19

Prem Rajak [a,*], Sumedha Roy [b], Moumita Dutta [c], Sayanti Podder [d], Saurabh Sarkar [e], Abhratanu Ganguly [f], Moutushi Mandi [g], Salma Khatun [h]

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Highlights

- SARS-CoV-2 is the retrovirus responsible for the current pandemic situation.
- Virions can spread to various organs including the reproductive system.
- Infection has potential to disrupt ANG-II/AT_1R axis and redox/cytokine homeostasis.
- Orchitis, low sperm-quality and oligozoospermia are reported in some

During /After Support (2021-22 Session)

	Title of the paper	Title of the journal& ISSN	Vol & Page No	Year of publication	Institutional affiliation as mentioned in the publication	Number of citations excluding self citations
Dr. Joyita Mukherjee	Bioaccumulation pattern of heavy metals in fish tissues and associated health hazards in human population	Environmental Science and Pollution Research, 1614-7499	29(15), 21365-21379.	March, 2022	Department of Zoology, Krishna Chandra College	1
Dr. Salma Khatun	Understanding the cross-talk between mediators of infertility and COVID-19	Reproductive Biology, ISSN: 1642-431X	21, 100559	Dec, 2021	Department of Zoology, Krishna Chandra College	6
	In Silico Study Reveals Binding Potential of Rotenone At Multiple Sites of Pulmonary Surfactant Proteins: A Matter of Concern	Current Research in Toxicology, ISSN: 2666-027X	2, 411-423	Nov, 2021	Department of Zoology, Krishna Chandra College	0

Reproductive Biology 21 (2021) 100559

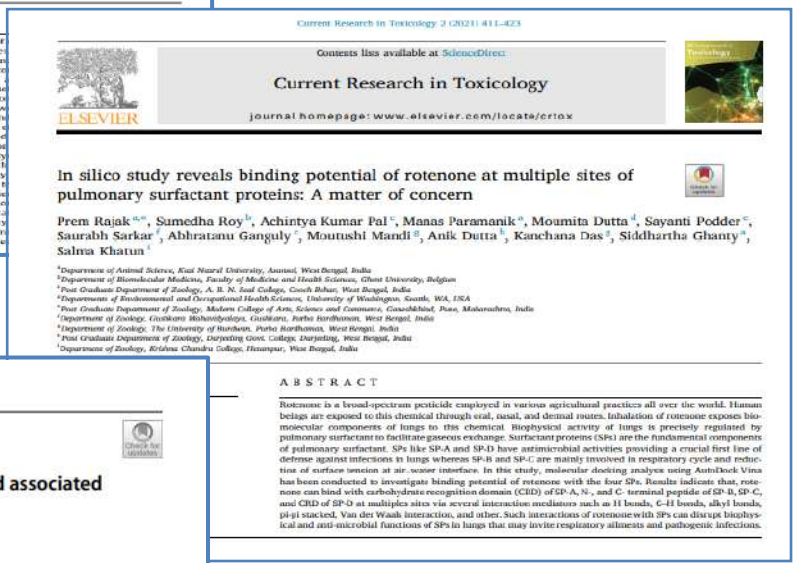
Contents lists available at ScienceDirect

Reproductive Biology

journal homepage: www.elsevier.com/locate/repbio

Understanding the cross-talk between mediators of infertility and COVID-19

Prem Rajak, Sumedha Roy, Moumita Dutta, Sayanti Podder, Saurabh Sarkar, Abhratanu Ganguly, Moutushi Mandi, Salma Khatun



Current Research in Toxicology 2 (2021) 411–423

Contents lists available at ScienceDirect

Current Research in Toxicology

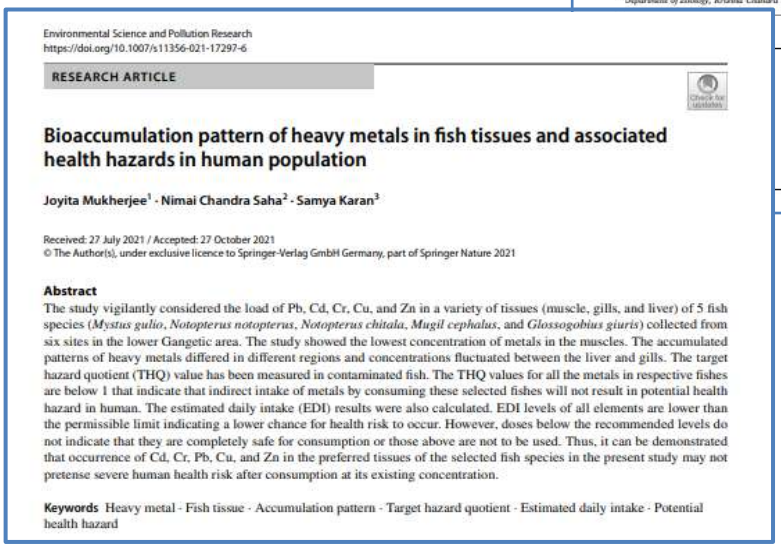
journal homepage: www.elsevier.com/locate/crtox

In silico study reveals binding potential of rotenone at multiple sites of pulmonary surfactant proteins: A matter of concern

Prem Rajak, Sumedha Roy, Achintya Kumar Pal, Manas Paramanik, Moumita Dutta, Sayanti Podder, Saurabh Sarkar, Abhratanu Ganguly, Moutushi Mandi, Anik Dutta, Kanchana Das, Siddhartha Ghanty, Salma Khatun

ABSTRACT

Rotenone is a broad-spectrum pesticide employed in various agricultural practices all over the world. Human beings are exposed to this chemical through oral, nasal, and dermal routes. Inhalation of rotenone exposes biomolecular components of lungs to this chemical. Biophysical activity of lungs is precisely regulated by pulmonary surfactant to facilitate gaseous exchange. Surfactant proteins (SPs) are the fundamental components of pulmonary surfactant. SPs like SP-A and SP-D have antimicrobial activities providing a crucial first line of defense against infections in lungs whereas SP-B and SP-C are mainly involved in respiratory cycle and reduction of surface tension at air–water interface. In this study, molecular docking analyses using AutoDock Vina has been conducted to investigate binding potential of rotenone with the four SPs. Results indicate that, rotenone can bind with carbohydrate recognition domain (CRD) of SP-A, N-, and C- terminal peptide of SP-B, SP-C, and CRD of SP-D at multiples sites via several interaction mediators such as H bonds, C–H bonds, alkyl bonds, pi-pi stacked, Van der Waals interaction, and other. Such interactions of rotenone with SPs can disrupt biophysical and anti-microbial functions of SPs in lungs that may invite respiratory ailments and pathogenic infections.



Environmental Science and Pollution Research
https://doi.org/10.1007/s11356-021-17297-6

RESEARCH ARTICLE

Bioaccumulation pattern of heavy metals in fish tissues and associated health hazards in human population

Joyita Mukherjee · Nimai Chandra Saha · Samya Karan

Received: 27 July 2021 / Accepted: 27 October 2021
© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2021

Abstract
The study vigilantly considered the load of Pb, Cd, Cr, Cu, and Zn in a variety of tissues (muscle, gills, and liver) of 5 fish species (*Mystus gulio*, *Notopterus notopterus*, *Notopterus chitala*, *Mugil cephalus*, and *Glossogobius giuris*) collected from six sites in the lower Gangetic area. The study showed the lowest concentration of metals in the muscles. The accumulated patterns of heavy metals differed in different regions and concentrations fluctuated between the liver and gills. The target hazard quotient (THQ) value has been measured in contaminated fish. The THQ values for all the metals in respective fishes are below 1 that indicate that indirect intake of metals by consuming these selected fishes will not result in potential health hazard in human. The estimated daily intake (EDI) results were also calculated. EDI levels of all elements are lower than the permissible limit indicating a lower chance for health risk to occur. However, doses below the recommended levels do not indicate that they are completely safe for consumption or those above are not to be used. Thus, it can be demonstrated that occurrence of Cd, Cr, Pb, Cu, and Zn in the preferred tissues of the selected fish species in the present study may not pretense severe human health risk after consumption at its existing concentration.

Keywords Heavy metal · Fish tissue · Accumulation pattern · Target hazard quotient · Estimated daily intake · Potential health hazard

ANNEXURE-IV

TRAINING RECEIVED BY FACULTY

Department of CHEMISTRY:

Pre-support (2019-20 session)

Dr. Shyamal Kr. Jash

1. Short Term Course (workshop) in Accreditation of NAAC and Choice Base Credit System, HRDC, The University of Burdwan, WB, India [11.02.2020 to 17.02.2020].

UNIVERSITY GRANTS COMMISSION

HUMAN RESOURCE DEVELOPMENT CENTRE
THE UNIVERSITY OF BURDWAN, BURDWAN

UGC SPONSORED SHORT-TERM COURSE

Certificate of Participation

This is to certify that

Dr Shyamal Kumar Jash, Asstt. Professor (Designation)
Krishnra Chandra College, Hetampur Birbhum, W Bengal
(College/University) (Place)
Participated in the Short Term Course on Accreditation of NAAC and Choice Based Credit System
held from February 11 to 17, 2020

Burdwan
Date : 17.02.2020

COURSE CO-ORDINATOR(S) DIRECTOR REGISTRAR/~~VICE-CHANCELLOR~~

During /After Support (2020-21 Session)

Dr. Hena Paul

1. Online Refresher Course in Chemistry (New Trends of Teaching and Research in Chemistry) held from 14.09.2020 – 26.09.2020 organised by HRDC, PRSU, Raipur, Chhattisgarh, India.

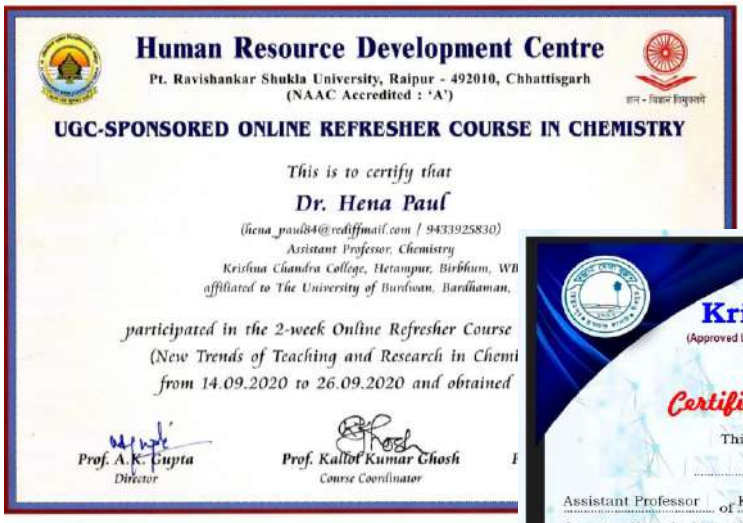
2. Faculty Development Programme on Learning Management System and Open Educational Resources (04-11-2020 to 10-11-2020) organized by IQAC and Science Departments of Krishna Chandra College, Hetampur, Birbhum, West Bengal.

Dr. Lalan Chandra Mandal

1. Refreshers Course: 08.09.2020-21.09.2020- HRDC, The University of Burdwan, Grade: A+
2. Faculty Induction Programme: 05.02.2021-06.03.2021- HRDC, The University of Burdwan. Grade: A+
3. Faculty Development Programme on Learning Management System and Open Educational Resources (04-11-2020 to 10-11-2020) organized by IQAC and Science Departments of Krishna Chandra College, Hetampur, Birbhum, West Bengal.

Dr. Shyamal K. Jash

1. Self Learning Online Course on "Understanding Open Educational Resources" offering by Commonwealth of Learning, Canada on November 04, 2020.


Human Resource Development Centre
Pt. Ravishankar Shukla University, Raipur - 492010, Chhattisgarh
(NAAC Accredited : 'A')
UGC-SPONSORED ONLINE REFRESHER COURSE IN CHEMISTRY
This is to certify that
Dr. Hena Paul
(hena_paul84@rediffmail.com / 9433925830)
Assistant Professor, Chemistry
Krishna Chandra College, Hetampur, Birbhum, WB
affiliated to The University of Burdwan, Bardhaman,
participated in the 2-week Online Refresher Course
(New Trends of Teaching and Research in Chemi
from 14.09.2020 to 26.09.2020 and obtained
Prof. A.K. Gupta
Director
Prof. Kallol Kumar Ghosh
Course Coordinator


Certificate No: KCC/FDP/016
Krishna Chandra College
(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)
Hetampur, Birbhum, West Bengal
Certificate of Participation
This certificate is presented to
Dr. Hena Paul
Assistant Professor of Krishna Chandra College, Birbhum
for attending the One Week Online Faculty Development Programme (FDP) on Learning Management Systems and Open Educational Resources held from 04-11-2020 to10-11-2020 organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The
lly completed the tasks allotted during the FDP.
Dr Pallavi Jyoti Pal
Director, FDP
K C College
Dr Shyamal K Jash
Coordinator, DBT
K C College
Dr Goutam Chatterjee
Principal
K C College


UNIVERSITY GRANTS COMMISSION
HUMAN RESOURCE DEVELOPMENT CENTRE
THE UNIVERSITY OF BURDWAN
UGC-SPONSORED REFRESHER COURSE
Certificate of Participation
This is to certify that
Mr./Ms./Dr. Lalan Chandra Mandal, Assistant Professor, Krishna Chandra College, He
affiliated to The University of Burdwan participated in the
Refresher Course in Emerging Trends in Science and Technology
from 8th September 2020 to 21st September 2020 and obtained Grade A
Place: Burdwan
Date: 21 Sept 2020
Director
Course Co-ordinator(s)


Certificate No: KCC/FDP/018
Krishna Chandra College
(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)
Hetampur, Birbhum, West Bengal
Certificate of Participation
This certificate is presented to
Dr. Lalan Chandra Mandal
Assistant Professor of Krishna Chandra College, Birbhum
for attending the One Week Online Faculty Development Programme (FDP) on Learning Management Systems and Open Educational Resources held from 04-11-2020 to10-11-2020 organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.
Date of issue: 10th November, 2020
Dr Pallavi Jyoti Pal
Director, FDP
K C College
Dr Shyamal K Jash
Coordinator, DBT
K C College
Dr Goutam Chatterjee
Principal
K C College

Department of MATHEMATICS:

Pre-support (2019-20 session)

Sk Anowar Hossain

1. Participated in the 116th *Orientation Programme* from 06.01.2020 to 25.01.2020 organised by UGC Human Resource Development Centre, JNU, New Delhi.

During /After Support (2020-21 Session)

Sudipto Bhattacharjee

1. Participated in "*Online Faculty Development Programme on Learning Management System and Open Educational Resources"* during 04.11.2020-10.11.2020, organised by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept. of Biotechnology, Ministry of Science and Technology, Govt. of India.

Mr. Subhajit Mondal

1. Participated in the "*Online Faculty Development Programme on Learning Management System and Open Educational Resources"* during 04.11.2020-10.11.2020, organised by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept. of Biotechnology, Ministry of Science and Technology, Govt. of India.


Certificate No: KCC/FDP/045

Krishna Chandra College

(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)

Hetampur, Birbhum, West Bengal

Certificate of Participation

This certificate is presented to

Mr Sudipto Bhattacharjee

Assistant Professor of Krishna Chandra College, Hetampur

for attending the One Week Online **Faculty Development Programme (FDP)** on **Learning Management Systems and Open Educational Resources** held from **04-11-2020 to10-11-2020** organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.

Date of issue: 10th November, 2020

Dr Pallav Jyoti Pal
Director, FDP
K C College

Dr Shyamal K Jash
Coordinator, DBT
K C College

Dr Goutam Chatterjee
Principal
K C College


Certificate No: KCC/FDP/067

Krishna Chandra College

(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)

Hetampur, Birbhum, West Bengal

Certificate of Participation

This certificate is presented to

Subhajit Mondal

SACT of Krishna Chandra College, Hetampur

for attending the One Week Online **Faculty Development Programme (FDP)** on **Learning Management Systems and Open Educational Resources** held from **04-11-2020 to10-11-2020** organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.

Date of issue: 10th November, 2020

Dr Pallav Jyoti Pal
Director, FDP
K C College

Dr Shyamal K Jash
Coordinator, DBT
K C College

Dr Goutam Chatterjee
Principal
K C College

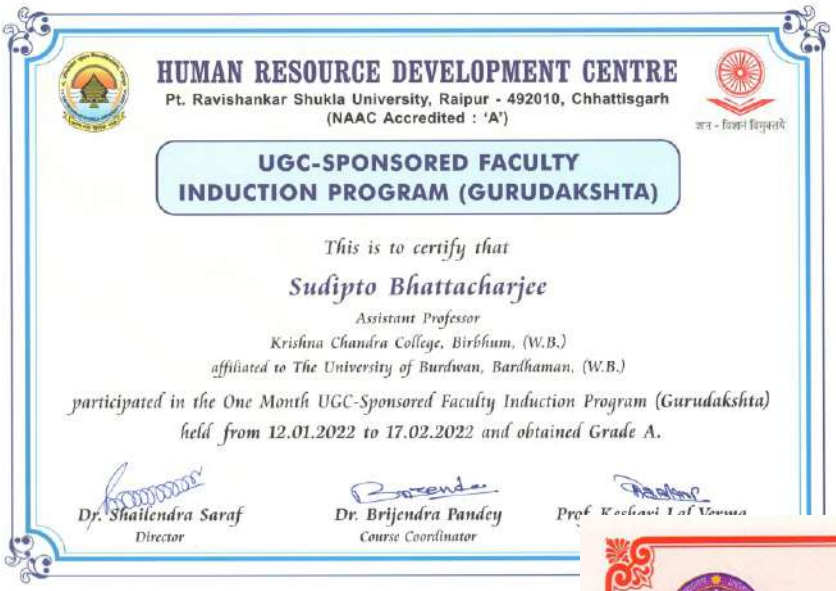
During /After Support (2021-22 Session)

Sudipto Bhattacharjee

1. Participated in the One Month UGC-Sponsored Faculty Induction Program (Gurudakshta) held from 12.01.2022 to 17.02.2022 in at Human Resource Development Centre Pt. Ravishankar Shukla University, Raipur-492010, Chhattisgarh.

Sk Anowar Hossain

1. Sk Anowar Hossain has participated in 2 weeks online Refresher Course in Mathematics/ Operational Research/ Statistics andComputer Science (IMD) from 04.10.2021 to 18.10.2021.



HUMAN RESOURCE DEVELOPMENT CENTRE
Pt. Ravishankar Shukla University, Raipur - 492010, Chhattisgarh
(NAAC Accredited : 'A')

UGC-SPONSORED FACULTY INDUCTION PROGRAM (GURUDAKSHTA)

This is to certify that

Sudipto Bhattacharjee

Assistant Professor
Krishna Chandra College, Birbhum, (W.B.)
affiliated to The University of Burdwan, Bardhaman, (W.B.)

participated in the One Month UGC-Sponsored Faculty Induction Program (Gurudakshta) held from 12.01.2022 to 17.02.2022 and obtained Grade A.

Dr. Shailendra Saraf, Director
Dr. Brijendra Pandey, Course Coordinator
Prof. Keshavi Lal Verma

CPDHE (UGC-HRDC)

Centre for Professional Development in Higher Education
Human Resource Development Centre
University of Delhi, Delhi

Certificate

UGC-Sponsored Refresher Course

This is to certify that

SK. Anowar Hossain

Krishna Chandra College, Hetampur, Birbhum,
The University of Burdwan, Bardhaman, West Bengal

Participated in 2 weeks online Refresher Course in

Mathematics/ Operational Research/ Statistics and Computer Science (IMD)*

from October 04, 2021 to October 18, 2021

and obtained grade 'A+'.

*Inter / Multi-Disciplinary Refresher Course

Course Coordinator Director Registrar

Department of PHYSICS:

During /After Support (2020-21 Session)

Name of the Teacher	Programme attended	Date and duration	Topic	Document
Dr. Pranabananda Mondal	Three days online lecture series and hands-on training	February 8-10, 2021 3 days	"Basic Operations of Tensor Algebra"	e-certificate of participation
	Two days hands-on training	February 13-14, 2021 2 days	Scilab	e-certificate of participation
Dipak Kumar Das	Three days online lecture series and hands-on training	February 8-10, 2021 3 days	"Basic Operations of Tensor Algebra"	e-certificate of participation
	Two days hands-on training	January 26-27, 2021	Basics of C and C++ Programming language for students	e-certificate of participation
	Two days hands-on training	February 13-14, 2021 2 days	Scilab	e-certificate of participation
	Faculty Development Programme	November 4-10, 2020 7 days	Learning Management Systems and Open Educational Resources	e-certificate of participation
	Self-learning online course	November 5, 2020 One day	Understanding Open Educational Resources	e-certificate of participation
Dr. Dipika Saha	Three days online lecture series and hands-on training	February 8-10, 2021 3 days	"Basic Operations of Tensor Algebra"	e-certificate of participation
	Two days hands-on training	January 26-27, 2021	Basics of C and C++ Programming language for students	e-certificate of participation
	Two days hands-on training	February 13-14, 2021 2 days	Scilab	e-certificate of participation
	Faculty Development Programme	November 4-10, 2020 7 days	Learning Management Systems and Open Educational Resources	e-certificate of participation
	Self-learning online course	November 5, 2020 One day	Understanding Open Educational Resources	e-certificate of participation
Manoj Kumar Saha	Three days online lecture series and hands-on training	February 8-10, 2021 3 days	"Basic Operations of Tensor Algebra"	e-certificate of participation
	Two days hands-on training	January 26-27, 2021	Basics of C and C++ Programming language for students	e-certificate of participation
	Two days hands-on training	February 13-14, 2021 2 days	Scilab	e-certificate of participation
	Faculty Development Programme	November 4-10, 2020 7 days	Learning Management Systems and Open Educational Resources	e-certificate of participation
	Self-learning online	November 5,	Understanding Open	e-certificate of

	course	2020 One day	Educational Resources	participation
	UGC-Sponsored Faculty Induction Programme	February 24-March 26 28 days	FIP-III	e-certificate of participation
	Refresher Course		Recent Advancement in Physical, Chemical and Mathematical Sciences	e-certificate of participation
Rini Labar	Three days online lecture series and hands-on training	February 8-10, 2021 3 days	"Basic Operations of Tensor Algebra"	e-certificate of participation
	Two days hands-on training	January 26-27, 2021	Basics of C and C++ Programming language for students	e-certificate of participation
	Two days hands-on training	February 13-14, 2021 2 days	Scilab	e-certificate of participation
	Faculty Development Programme	November 4-10, 2020 7 days	Learning Management Systems and Open Educational Resources	e-certificate of participation
	Self-learning online course	November 5, 2020 One day	Understanding Open Educational Resources	e-certificate of participation

TWO DAYS HANDS-ON TRANING
ON
"SCILAB"
13& 14 FEBRUARY, 2021
Organized by:
DEPARTMENT OF PHYSICS (UNDER DBT STAR COLLEGE SCHEME)
KRISHNA CHANDRA COLLEGE,
HETAMPUR, BIRBHUM, WEST BENGAL

Certificate of Participation

THIS CERTIFICATE IS PRESENTED TO: MR MANOJ KUMAR SAHA, ASSISTANT PROF. OF PHYSICS, KRISHNA CHANDRA COLLE
FOR ATTENDING THE TWO DAYS HANDS-ON-TRANING
ORGANIZED BY DEPARTMENT OF PHYSICS (UNDER DBT
SCHEME) OF KRISHNA CHANDRA COLLEGE, HETAMPUR, E
THE STRENGTHENING COMPONENT OF DBT-STAR COLLEGE
OF BIOTECHNOLOGY, MINISTRY OF SCIENCE AND TECHNO
INDIA ON 13-14 FEB, 2021.

TWO DAYS HANDS-ON TRANING
ON
"SCILAB"
13& 14 FEBRUARY, 2021
Organized by:
DEPARTMENT OF PHYSICS (UNDER DBT STAR COLLEGE SCHEME)
KRISHNA CHANDRA COLLEGE,
HETAMPUR, BIRBHUM, WEST BENGAL

Certificate of Participation

THIS CERTIFICATE IS PRESENTED TO: RINI LABOUR, A
PHYSICS, KRISHNA CHANDRA COLLEGE, HETAMPUR. F
TWO DAYS HANDS-ON-TRANING ON "SCILAB"
DEPARTMENT OF PHYSICS (UNDER DBT STAR COL
KRISHNA CHANDRA COLLEGE, HETAMPUR, BIRB
STRENGTHENING COMPONENT OF DBT-STAR COLLEGE
BIOTECHNOLOGY, MINISTRY OF SCIENCE AND TECH
INDIA ON 13-14 FEB, 2021.

LECTURE SERIES
ON
"BASIC TENSOR ALGEBRA"
Organised by:
DEPARTMENT OF PHYSICS (UNDER DBT STAR COLLEGE SCHEME)
KRISHNA CHANDRA COLLEGE,
HETAMPUR, BIRBHUM, WEST BENGAL

Certificate of Participation

THIS CERTIFICATE IS PRESENTED TO : RINI LABOUR, Faculty, Krishna Chandra College FOR ATTENDING THE THREE DAYS LECTURE SERIES ON "BASIC TENSOR ALGEBRA" ORGANIZED BY DEPARTMENT OF PHYSICS (UNDER DBT STAR COLLEGE SCHEME) OF KRISHNA CHANDRA COLLEGE, HETAMPUR, BIRBHUM UNDER THE STRENGTHENING COMPONENT OF DBT-STAR COLLEGE SCHEME, DEPT OF BIOTECHNOLOGY, MINISTRY OF SCIENCE AND TECHNOLOGY, GOVT OF INDIA ON FEBRUARY 08-10, 2021.

Certificate No: KCC/FDP/015

Krishna Chandra College
(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)
Hetampur, Birbhum, West Bengal

Certificate of Participation

This certificate is presented to
Dr. Dipika Saha
Associate Professor of Krishna Chandra College, Birbhum
for attending the One Week Online Faculty Development Programme (FDP) on Learning Management Systems and Open Educational Resources held from 04-11-2020 to10-11-2020 organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.

Dr Pallavi Jyoti Pal, Director, FDP, K C College
Dr Shyamal K Joshi, Coordinator, DBT, K C College
Dr Goutam Chatterjee, Principal, K C College

Date of issue: 10th November, 2020

Certificate No: KCC/FDP/044

Krishna Chandra College
(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)
Hetampur, Birbhum, West Bengal

Certificate of Participation

This certificate is presented to
Mr Dipak Kumar Das
Associate Professor of Krishna Chandra College, Birbhum
for attending the One Week Online Faculty Development Programme (FDP) on Learning Management Systems and Open Educational Resources held from 04-11-2020 to10-11-2020 organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.

Dr Pallavi Jyoti Pal, Director, FDP, K C College
Dr Shyamal K Joshi, Coordinator, DBT, K C College
Dr Goutam Chatterjee, Principal, K C College

Date of issue: 10th November, 2020

Certificate No: KCC/FDP/0072

Krishna Chandra College

(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)

Hetampur, Birbhum, West Bengal

Certificate of Participation

This certificate is presented to

Manoj Kumar Saha

Assistant Professor of Krishna Chandra College, Hetampur, Birbhum

for attending the One Week Online **Faculty Development Programme (FDP) on Learning Management Systems and Open Educational Resources** held from **04-11-2020 to10-11-2020** organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.

Date of issue: 10th November, 2020

Dr Pallavi Jyoti Pal
Director, FDP
K C College

Certificate No: P-202102026

Krishna Chandra College

(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)

Hetampur, Birbhum, West Bengal

Certificate of Participation

This is to certify that **Rini Labar, Faculty, Krishna Chandra College** has participated in the Two-Day Hands-on Online Training on **Basics of C and C++ Programming Language for Students** held from ***26th January, 2021 to 27th January, 2021*** organized by Department of Mathematics & Department of Physics, Krishna Chandra College ***under the Strengthening Component of DBT-STAR College Scheme by the Dept of Biotechnology (DBT), Ministry of Science and Technology, Govt of India.***

This is a system generated certificate & authenticated by Krishna Chandra College

Date of issue: 27th January, 2021

Dr Pallavi Jyoti Pal
Convener
& Coordinator, IQAC
K C College

Mr Dipak Kumar Das
Co-Convener
& Associate Professor,
K C College

Dr Shyamal K Jash
Coordinator, DBT
K C College

Dr Goutam Chatterjee
Principal
K C College

COMMONWEALTH of LEARNING

Certificate of COMPLETION

This is to certify that

Mr Dipak Kumar Das

successfully completed the self-learning Online Course on

Understanding Open Educational Resources

offered by the Commonwealth of Learning, Canada
Course available at https://learncer.col.org.

Nov 04, 2020

COMMONWEALTH of LEARNING

Certificate of COMPLETION

This is to certify that

Dipika Saha

successfully completed the self-learning Online Course on

Understanding Open Educational Resources

offered by the Commonwealth of Learning, Canada
Course available at https://learncer.col.org.

Professor Asha S. Kanwar
President & Chief Executive Officer
Commonwealth of Learning

COMMONWEALTH of LEARNING

Certificate of COMPLETION

This is to certify that

MANOJ KUMAR SAHA

successfully completed the self-learning Online Course on

Understanding Open Educational Resources

offered by the Commonwealth of Learning, Canada
Course available at https://learncer.col.org.

Nov 05, 2020

Professor Asha S. Kanwar
President & Chief Executive Officer
Commonwealth of Learning

UNIVERSITY GRANTS COMMISSION
HUMAN RESOURCE DEVELOPMENT CENTRE
THE UNIVERSITY OF BURDWAN, BURDWAN

UGC-SPONSORED REFRESHER COURSE
Certificate of Participation

This is to certify that

Mr/Ms/Dr Manoj Kumar Sahar, Asstt. P
K.C. College Hetampur, Birbhum affiliated to Th
(College) (University) (Place)
of Burdwan Participated in the Refresher Course in Recent Advances in Chemical & Mathematic
(University)
from February 12 to 25, 2020 and obtained Grade

Burdwan
Date : 25.02.2020 DIRECTOR COURSE CO-ORDINATOR REGISTRAR/VI

University Grants Commission
Human Resource Development Centre
Kumaun University, Nainital (Uttarakhand)

UGC - Sponsored Faculty Induction Programme
Online Mode
This is to certify that

Mr Manoj Kumar Saha — Assistant Professor
(Name of the participant) (Designation)
KrishnaChandra College Hetampur — Hetampur Birbhum, West Bengal
(College/University) (Place)
affiliated to Burdwan University University

participated in the Faculty Induction Programme FIP-III

02/2021 to 26/03/2021 and obtained Grade 'A'

Coordinator Registrar/Vice-Chancellor

Certificate No: O-001

Krishna Chandra College
(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)
Hetampur, Birbhum, West Bengal

Two-Day Hands-on Online Training on Basics of C and C++ Programming Language for Students

Certificate

The institute is pleased to acknowledge that Mr. Dipak Kumar Das, Associate Professor, Department of Physics, Krishna Chandra College has successfully coordinated and organized Two-Day Hands-on Online Training on Basics of C and C++ Programming Language for Students as Co-Convener held from 26th January, 2021 to 27th January, 2021 *under the Strengthening Component of DBT-STAR College Scheme by the Dept of Biotechnology (DBT), Ministry of Science and Technology, Govt of India.*

Dr PJ Pal
Coordinator,IQAC
K C College

This is a system generated certificate & authenticated by Krishna Chandra College
Date of issue: 27th January, 2021

Certificate No: O-003

Krishna Chandra College
(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)
Hetampur, Birbhum, West Bengal

Two-Day Hands-on Online Training on Basics of C and C++ Programming Language for Students

Certificate

The institute is pleased to acknowledge that Dr Dipika Saha, Associate Professor, Department of Physics, Krishna Chandra College has successfully organized Two-Day Hands-on Online Training on Basics of C and C++ Programming Language for Students as a member of the organizing committee held from 26th January, 2021 to 27th January, 2021 *under the Strengthening -STAR College Scheme by the Dept of Ministry of Science and Technology, Govt of*

Dr PJ Pal
Coordinator,IQAC
K C College

Dr Goutam Chatterjee
Principal
K C College

is a system generated certificate & authenticated by Krishna Chandra College

Certificate No: O-004

Krishna Chandra College
(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)
Hetampur, Birbhum, West Bengal

Two-Day Hands-on Online Training on Basics of C and C++ Programming Language for Students

Certificate

The institute is pleased to acknowledge that Mr. Manoj Kumar Saha, Assistant Professor, Department of Physics, Krishna Chandra College has successfully organized Two-Day Hands-on Online Training on Basics of C and C++ Programming Language for Students as a member of the organizing committee held from 26th January, 2021 to 27th January, 2021 *under the Strengthening Component of DBT-STAR College Scheme by the Dept of Biotechnology (DBT), Ministry of Science and Technology, Govt of India.*

Dr PJ Pal
Coordinator,IQAC
K C College

This is a system generated certificate & authenticated by Krishna Chandra College
Date of issue: 27th January, 2021

Certificate No: P-202102026

Krishna Chandra College
(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)
Hetampur, Birbhum, West Bengal

Certificate of Participation

This is to certify that Rini Labar, Faculty, Krishna Chandra College has participated in the Two-Day Hands-on Online Training on Basics of C and C++ Programming Language for Students held from 26th January, 2021 to 27th January, 2021 organized by Department of Mathematics & Department of Physics, Krishna Chandra College *under the Strengthening Component of DBT-STAR College Scheme by the Dept of Biotechnology (DBT), Ministry of Science and Technology, Govt of India.*

Dr Pallavi Jyoti Pal
Convener
& Coordinator, IQAC
K C College

Mr Dipak Kumar Das
Co-Convener
& Associate Professor,
K C College

Dr Shyamal K Jash
Coordinator, DBT
K C College

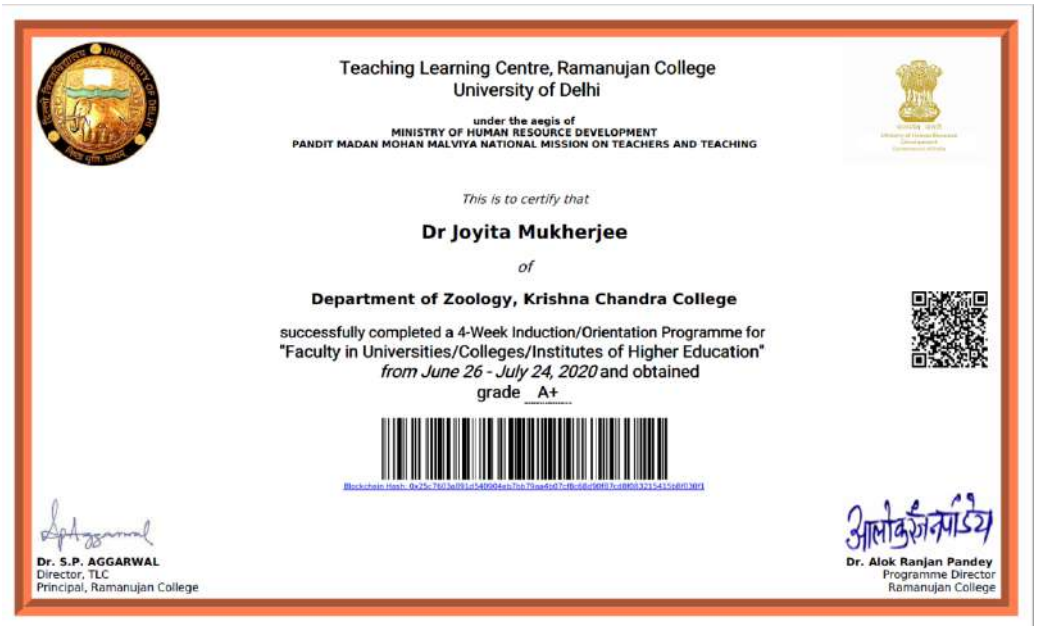
Dr Goutam Chatterjee
Principal
K C College

This is a system generated certificate & authenticated by Krishna Chandra College
Date of issue: 27th January, 2021

Department of ZOOLOGY:

Pre-support (2019-20 session)

NAME OF FACULTY	NAME OF COURSE	ORGANIZED BY	PERIOD
DR JOYITA MUKHERJEE	Induction Training/Orientation Programme for Faculty in Universities/Colleges/Higher Educational Institutions	Teaching Learning Centre (TLC), Ramanujan College, University of Delhi under MHRD sponsored Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching	26th June – 24th July, 2020


Teaching Learning Centre, Ramanujan College
University of Delhi
under the aegis of
MINISTRY OF HUMAN RESOURCE DEVELOPMENT
PANDIT MADAN MOHAN MALVIYA NATIONAL MISSION ON TEACHERS AND TEACHING
This is to certify that
Dr Joyita Mukherjee
of
Department of Zoology, Krishna Chandra College
successfully completed a 4-Week Induction/Orientation Programme for "Faculty in Universities/Colleges/Institutes of Higher Education" from June 26 - July 24, 2020 and obtained grade A+
Dr. S.P. AGGARWAL
Director, TLC
Principal, Ramanujan College
Dr. Alok Ranjan Pandey
Programme Director
Ramanujan College

During /After Support (2020-21 Session)

NAME OF FACULTY	NAME OF COURSE	ORGANIZED BY	PERIOD
DR JOYITA MUKHERJEE	Refresher course on Research Methodology	Mizoram University (A Central University), under UGC-STRIDE program	19th August - 01st September, 2020
	Online Faculty Development Programme on Learning Management Systems and Open Educational Resources	Internal Quality Assurance Cell (IQAC) & Science Departments of Krishna Chandra College	04th November -10th November, 2020
	Inter-Disciplinary Refresher Course/Faculty Development Programme on Research Methodology and Data Analysis	Teaching Learning Centre (TLC), Ramanujan College, University of Delhi under MHRD sponsored Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching	17th May – 31st May, 2021
DR SALMA	Online Faculty Development	Internal Quality Assurance	04th November

KHATUN	Programme on Learning Management Systems and Open Educational Resources	Cell (IQAC) & Science Departments of Krishna Chandra College	-10th November, 2020
MS PURNAPAMA GHOSH	Online Teaching Learning and Evaluation	IQAC of Uluberia College and K.K. Das College	16th August - 17th August,2020
	Online Faculty Development Programme on Learning Management Systems and Open Educational Resources	Internal Quality Assurance Cell (IQAC) & Science Departments of Krishna Chandra College	04th November -10th November, 2020
	Research Methodology: A Learning Journey From Bivariate techniques to multivariate techniques	Teaching Learning Centre (TLC), Ramanujan College, University of Delhi under MHRD sponsored Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching	10th December – 23rd December, 2020


UGC-STRIDE/RC2/115

UNIVERSITY GRANTS COMMISSION, NEW DELHI

STRIDE

UGC-STRIDE PROGRAM - COMPONENT - I

[File No. F.2-2/2019 (STRIDE-1) dt. 3/12/2019]

MIZORAM UNIVERSITY, Aizawl - 796004, Mizoram, India

This is to certify that **Dr. JOYITA MUKHERJEE**, Assistant Professor, Department of Zoology, Krishna Chandra College, affiliated to University of Burdwan, Hetampur, Birbhum, West Bengal, successfully completed the **UGC-STRIDE Refresher Course** (Multidisciplinary) on "***Research Methodology: Research Ethics, Methods, Skills, Writing and Communication***" held from 19 August, 2020 to 01 September, 2020 and obtained Grade **A**

Prof. Lalnundanga, Registrar | Prof. K.R.S. Sambasiva Rao, Vice Chancellor | Prof. G. Gurusubramanian, Coordinator


Certificate No: KCC/FDP/005

Krishna Chandra College

(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)

Hetampur, Birbhum, West Bengal

Certificate of Participation

This certificate is presented to

Dr Joyita Mukherjee

Assistant Professor of Krishna Chandra College, Hetampur

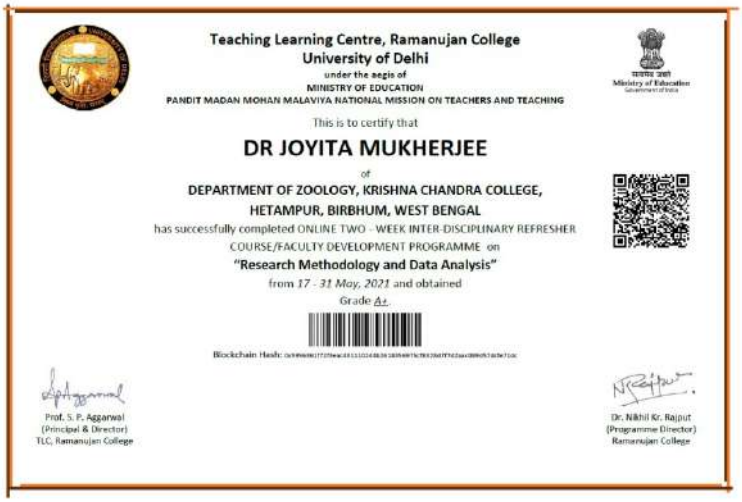
for attending the One Week Online **Faculty Development Programme (FDP)** on **Learning Management Systems and Open Educational Resources** held from **04-11-2020 to10-11-2020** organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.

Date of issue: 10th November, 2020

Dr Pallav Jyoti Pal, Director, FDP, K C College

Dr Shyamal K Jash, Coordinator, DBT, K C College

Dr Goutam Chatterjee, Principal, K C College


Teaching Learning Centre, Ramanujan College

University of Delhi

under the aegis of

MINISTRY OF EDUCATION

PANDIT MADAN MOHAN MALAVIYA NATIONAL MISSION ON TEACHERS AND TEACHING

This is to certify that

DR JOYITA MUKHERJEE

of

DEPARTMENT OF ZOOLOGY, KRISHNA CHANDRA COLLEGE,

HETAMPUR, BIRBHUM, WEST BENGAL

has successfully completed ONLINE TWO - WEEK INTER-DISCIPLINARY REFRESHER COURSE/FACULTY DEVELOPMENT PROGRAMME on

"Research Methodology and Data Analysis"

from 17 - 31 May, 2021 and obtained

Grade A+

Prof. S. P. Aggarwal (Principal & Director) TLC, Ramanujan College

Dr. Nikhil Kr. Rajput (Programme Director) Ramanujan College


Certificate No: KCC/FDP/009

Krishna Chandra College

(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)

Hetampur, Birbhum, West Bengal

Certificate of Participation

This certificate is presented to

Dr Salma Khatun

Assistant Professor of Krishna Chandra College, Hetampur

for attending the One Week Online Faculty Development Programme (FDP) on Learning Management Systems and Open Educational Resources held from 04-11-2020 to10-11-2020 organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.

10th November, 2020

Dr Pallavi Jyoti Pal
Director, FDP
K C College

Dr Shyamal K Jash
Coordinator, DBT
K C College

Dr Goutam Chatterjee
Principal
K C College


Two-Day e-Workshop on

Online Teaching, Learning and Evaluation

Certificate of Participation

This is to certify that PURNAPAMA GHOSH

SACT, Krishna Chandra College

has participated in the Two-Day (10 Hrs.) e-workshop: e-Adhyayan on "Online Teaching, Learning and Evaluation" jointly organized by the Internal Quality Assurance Cell of Uluberia College and K. K. Das College on 16th and 17th August, 2020.

Dr. Debasish Pal
Principal
Uluberia College


Certificate No: KCC/FDP/058

Krishna Chandra College

(Approved by UGC, affiliated to The University of Burdwan and Accreditated by NAAC)

Hetampur, Birbhum, West Bengal

Certificate of Participation

This certificate is presented to

Mrs Purnapama Ghosh

SACT of Krishna Chandra College, Hetampur

for attending the One Week Online Faculty Development Programme (FDP) on Learning Management Systems and Open Educational Resources held from 04-11-2020 to10-11-2020 organized by IQAC and Science Departments of Krishna Chandra College under the Strengthening Component of DBT-STAR College Scheme, Dept of Biotechnology, Ministry of Science and Technology, Govt of India. The participant has successfully completed the tasks allotted during the FDP.

Date of issue: 10th November, 2020

Dr Pallavi Jyoti Pal
Director, FDP
K C College

Dr Shyamal K Jash
Coordinator, DBT
K C College

Dr Goutam Chatterjee
Principal
K C College


CERTIFICATE NO : RC/E-CERT/FDPRM1023DEC-0173

Teaching Learning Centre

Ramanujan College

University of Delhi

UNDER THE AEGIS OF

MINISTRY OF HUMAN RESOURCE DEVELOPMENT
PANDIT MADAN MOHAN MALVIYA
NATIONAL MISSION ON TEACHERS AND TEACHING

Certificate

THIS IS TO CERTIFY THAT

PURNAPAMA GHOSH

OF

KRISHNA CHANDRA COLLEGE, HETAMPUR ,BIRBHUM, WEST BENGAL

SUCCESSFULLY COMPLETED TWO WEEK FACULTY DEVELOPMENT PROGRAMME ON

RESEARCH METHODOLOGY : A LEARNING JOURNEY FROM BIVARIATE TECHNIQUES TO MULTIVARIATE TECHNIQUES

FROM 10TH DECEMBER TO 23RD DECEMBER 2020,

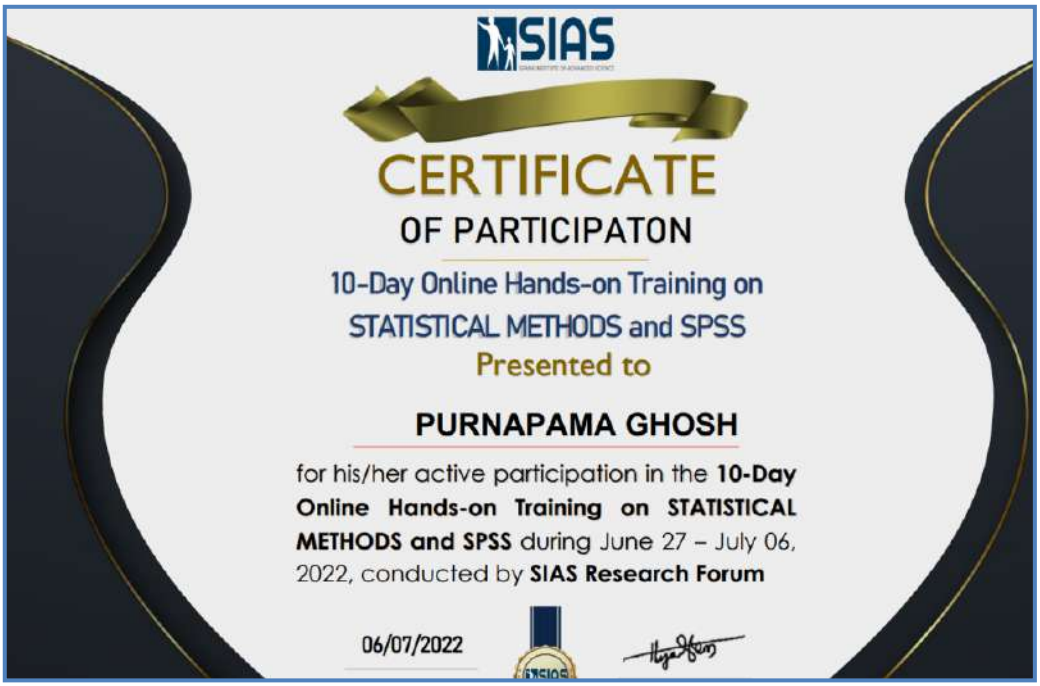
ORGANISED BY DEPARTMENT OF COMMERCE AND OBTAINED A GRADE " A "

DR. S.P. AGGARWAL
(PRINCIPAL)
DIRECTOR, TLC
RAMANUJAN COLLEGE

DR. KANWAL JEET SINGH
(CONVENOR)

During /After Support (2021-22 Session)

NAME OF FACULTY	NAME OF COURSE	ORGANIZED BY	PERIOD
MS PURNAPAMA GHOSH	10-Day Online Hands-on Training on STATISTICAL METHOD and SPSS	SIAS RESEARCH FORUM	27th June-06th July, 2022

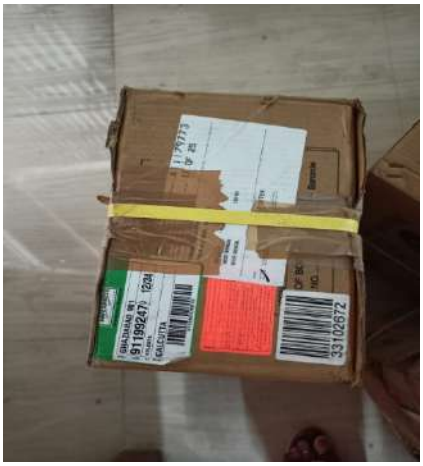


ANNEXURE-V

BOOKS/JOURNALS SUBSCRIBED FROM DBT GRANT

Department of MATHEMATICS:

No. of Books Purchased: 356









1


2


3


4


5


6
DYNAMICS
CLASSICAL MECHANICS
Algebra
Advanced Differential Equations
Calculus and Analytic Geometry


7
ENGINEERING MECHANICS
MATHEMATICAL ANALYSIS
CLASSICAL MECHANICS


8
A First Course in
ABSTRACT ALGEBRA
TENSOR CALCULUS


9
DYNAMICS
CLASSICAL MECHANICS
Algebra
Calculus and Analytic Geometry


10


11
Differential Equations
DYNAMICS