



গড়গাঁও মহাবিদ্যালয়
GARGAON COLLEGE

**MOU
AND
COLLABORATION
DEPARTMENT OF MATHEMATICS**

Gargaon College and Nazira College, Sivasagar, Assam



In the year 2016, an MoU between Gargaon College and Nazira College is signed. As the part of the MoU , faculty exchange programme, international Mathematics Day celebration, career counseling programmes are conducted together by the both department of Mathematics Gargaon College and Nazira College.

Objectives:

1. To jointly organize seminars, conferences, workshops on topics of common interests for the benefit of faculty members and students.
- 2) To jointly undertake research and training programmes and to invite each other's faculty to participate in them.

GARGAON COLLEGE


ESTD: 1959
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Reaccredited by NAAC with B Grade
Tel: 03772-296164
www.gargaoncollege.ac.in

Date: 10.11.2021

TO WHOM IT MAY CONCERN

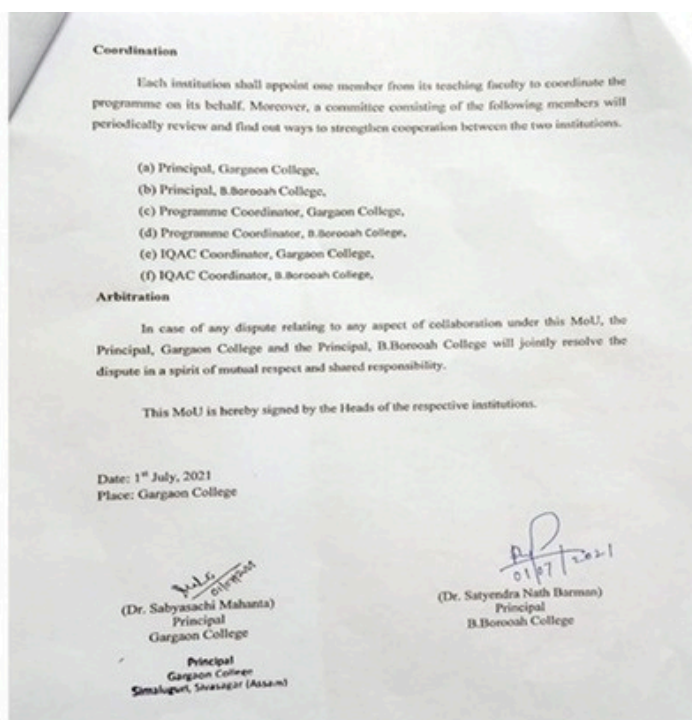
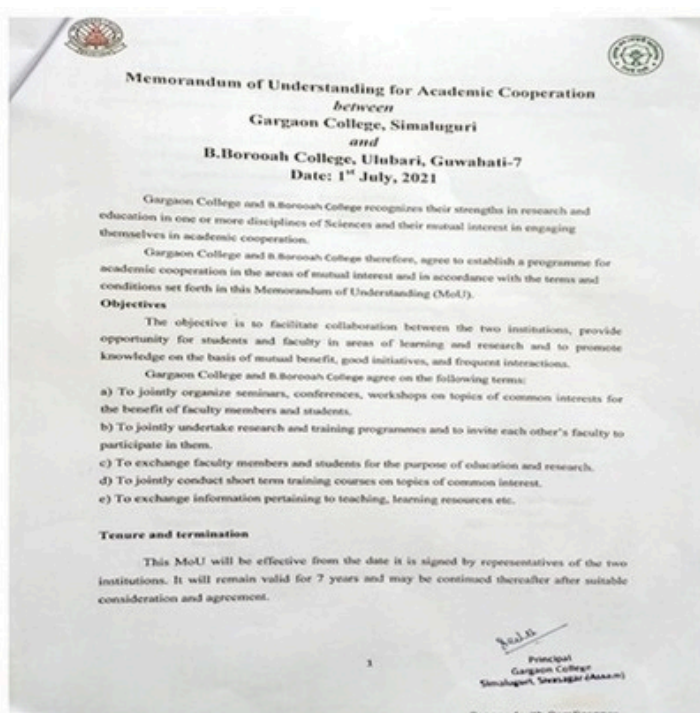
This is to certify that Mr. Jiten Phukan, Associate Professor, Department of Mathematics, Nazira College and Mrs. Sujata Borthakur, Associate Professor, Department of Mathematics, Nazira College have taken classes at Department of Mathematics, Gargaon College in accordance with the MoU signed between Gargaon college and Nazira College dated 10.03.2016.


(Dr. Sabyasachi Mahanta)
Principal
Gargaon College
Principal
Gargaon College
Simaluguri, Sivasagar (Assam)



Gargaon College, Simaluguri and B. Boruah College, Guwahati.

To enhance the academic cooperation in the areas of mutual interest Department of Mathematics, Gargaon College and Department of B. Boruah College, Guwahati signed a MoU on 1 July, 2021. The prime objective of the MoU is to exchange faculty to provide more depth and basic interplay of mathematics. Moreover, conducting workshop and seminars on the computer language are also listed in the objectives within the MoU.



List of activities:

Lecture series will be conducted within the academic season.

9. Collaborative research between Gargaon College and Moran College, Assam



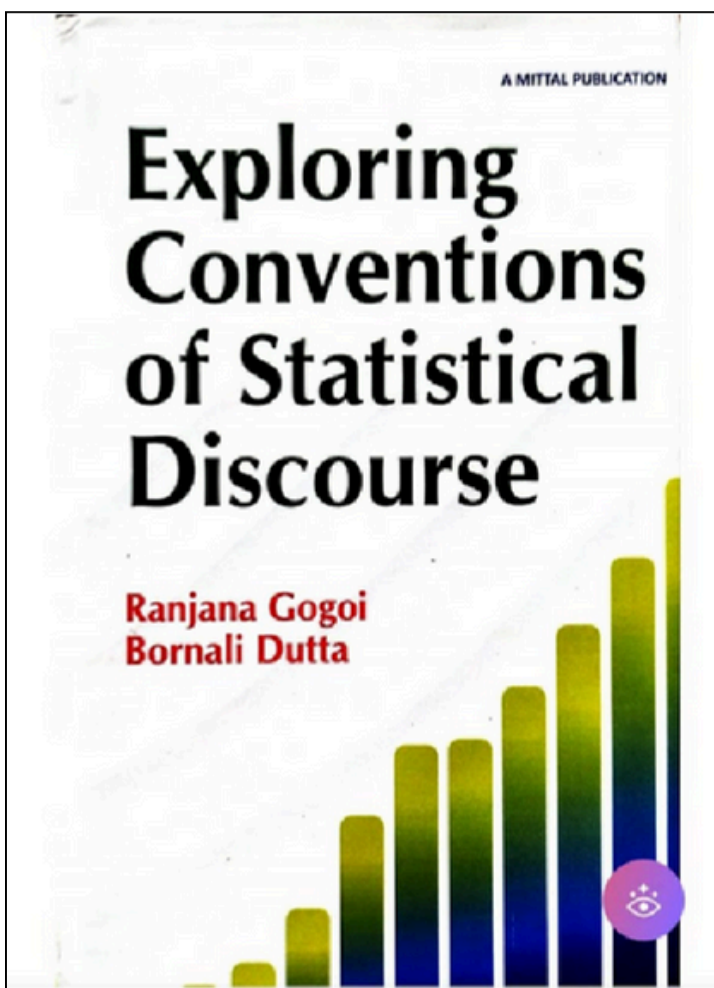
Outline of the Activity

Collaborative research
Kabita Phukan
Department of Mathematics
Gargaon College
&
Jugal Gogoi

Department of Mathematics, Moran College, Assam

Title of Paper: A study of some mathematical models in population biology with the help of differential Equation

Photograph of the Activity



xii | Exploring Conventions of Statistical Discourse

7. Elderly Health Problems and Functional Disability: A Logistic Regression Analysis – SHYAMALI DUTTA AND JITEN HAZARIKA	91 91
8. A Comparison Among Survival Analysis Models for Stock data of Companies under National Stock Exchange, India – PAL DEKA, MANASH PRATIM BARMAN AND PRANJAL KR CHAKRAVARTTY	109
9. Statistics and its Role in Psychological Research: A Comprehensive Analysis of Emotional Intelligence among Child and Adult Offenders – AKANKSHYA KASHYAP AND SANHITA SARMAH	117
10. Length-Weight Relationship and Condition Factor of <i>Trichgaster fasciatus</i> Bloch and Schneider, 1801 from Sivasagar District – RASHMI DUTTA AND PIMILY LANGTHASA	129
11. Life Expectancy of India with Special Reference to Assam through Life Table Method – BIDYUT BIKASH BORUAH & MANASH PRATIM BARMAN	143
12. A Study on Anxiety Among Post Graduate Students of Assam University – DEBAJYOTI BORA	165
13. Evaluation of Length-Weight Relationship and Condition Factor of <i>Amblypharyngodon mola</i> from Dikhow River, Sivasagar District, Assam – PIMILY LANGTHASA AND RASHMI DUTTA	175
14. A Study of Some Mathematical Models in Population Biology with the Help of Differential Equation – KABITA PHUKON AND JUGAL GOGOI	185
15. Multilevel Modelling: An Explanation with Simple Examples – NAVAJYOTI TAMULI	193
16. Quantitative Ethnobotany of Medicinal Plants used by Ahom Community in Chetia Handique Village of Sivasagar District, Assam – SANGEETA CHETIA	211

14

A STUDY OF SOME MATHEMATICAL MODELS IN POPULATION BIOLOGY WITH THE HELP OF DIFFERENTIAL EQUATION

KABITA PHUKON AND JUGAL GOGOI

1. Introduction

In science, we understand our real-world phenomenon by observation, collecting data, find rules inside or among them and finally, we want to explore the truth behind and to apply it to predict the future. This is the technique by which we can improve our scientific knowledge. If the above rules are in terms of mathematics, then they are called mathematical models. One important such models is the ordinary differential equations^[1]. It describes relations between variables and their derivatives. Such models appear everywhere in the real-world. For instant, population dynamics in ecology and biology^[2], mechanics of particles in physics, chemical reaction in chemistry, economics, etc. In modern science, we have many advance tools to collect data and powerful computers to analyze them. To utilize the latest tools and techniques of science and technology, it is very useful to learn about the theory of ordinary differential equation, which is an important language of mathematics. In this article, we will mainly focus on two important classes of mathematical models

Click Here



10. Collaborative research between Gargaon College and Dibrugarh University, Assam



Outline of the Activity

Collaborative research
Sujata Gowala
Department of Mathematics
Gargaon College
&
Dr. Surajit Borkotokey
Department of Mathematics, Dibrugarh University, Assam
Title of Paper: The efficient, symmetric and linear values for cooperative
Games and their Characterization

Photograph of the Activity

The Efficient, Symmetric and Linear Values for Cooperative Games and Their Characterizations



Sujata Goala and Surajit Borkotokey

Mathematics Subject Classification: 91A10 · 91A12

1 Introduction

A cooperative game with transferable utilities or a TU game, in short, describes situations where players make binding agreements to generate some worth or profit together. The problem is then how to share the profit among the players in a rational manner. The value is a function that prescribes a scheme of sharing the profit among the players. The most popular value in TU games till date is the Shapley value [20] which gives every player the average of her marginal contributions stemming out from all possible coalitions she can make with her peers under the given binding agreements. The Shapley value is the unique value that satisfies four properties, namely, efficiency, symmetry, linearity, and dummy axiom or the null player property. Another very popular value found in the literature is the equal division rule (ED) that splits the profits equally among the players irrespective of their productivities. The ED also satisfies efficiency, symmetry,¹ and linearity. There is a large class of values that satisfies these three properties, we call them ESL values.

In this paper, we survey the recent developments in the ESL values and their characterizations. We also make a brief discourse of some of the subclasses of the ESL values that build on these characterizations. We show some interesting results

¹In many occasions, the symmetry we are considering here is called equal treatment to equals and symmetry is another axiom where the permutation of a player does not effect her payoff till she generates the same worth under different permutations in a coalition, however, for linear and efficient values, the two axioms are equivalent ([13], Theorem 2).

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https://doi.org/10.1007/978-981-16-4737-6_7 119



Link to the Document

13. Faculty exchange between Gargaon College and Dibrugarh University



Outline of the Activity

Faculty Exchange Programme

Department of Mathematics

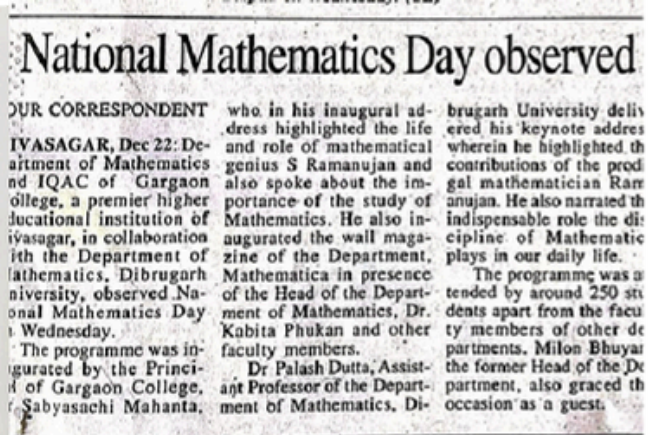
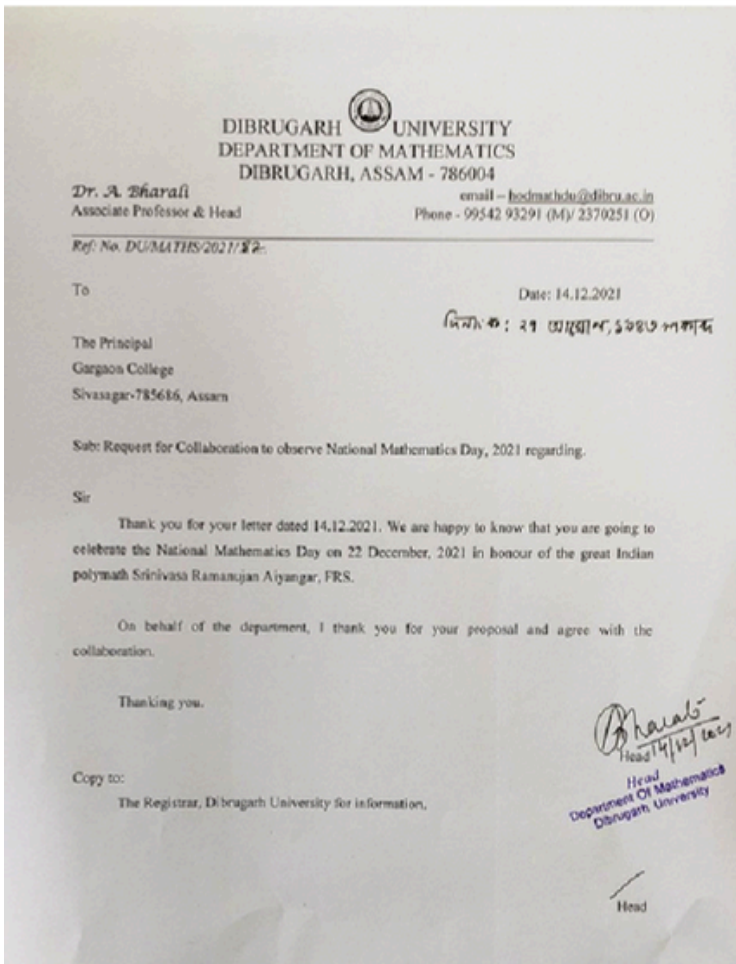
Gargaon College

&

Department of Mathematics, Dibrugarh University

Resource Person: Dr. Palash Dutta, Department of Mathematics, Dibrugarh University

Photograph of the Activity



**Gargaon College, Simaluguri
&
Nazira College, Sivasagar**



In the year 2016, an MoU between Gargaon College and Nazira College is signed. As the part of the MoU , faculty exchange programme, international Mathematics Day celebration, career counseling programmes are conducted together by the both department of Mathematics Gargaon College and Nazira College. Objectives: 1. To jointly organize seminars, conferences, workshops on topics of common interests for the benefit of faculty members and students. 2) To jointly undertake research and training programmes and to invite each other's faculty to participate in them.

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This is to certify that Mr. Jiten Phukan, Associate Professor, Department of Mathematics, Nazira College and Mrs. Sujata Borthakur, Associate Professor, Department of Mathematics, Nazira College have taken classes at Department of Mathematics, Gargaon College in accordance with the MoU signed between Gargaon college and Nazira College dated 10.03.2016.


(Dr. Sabyasachi Mahanta)
Principal
Gargaon College
Principal
Gargaon College
Simaluguri, Sivasagar (Assam)

List of activities



International Mathematics Day Celebration





Gargaon College, Simaluguri & B.Borooah College, Guwahati

A memorandum of understanding for academic cooperation between Gargaon college, simaluguri and B.Borooah college, ulubari, guwahati-7 on the 1st july, 2021. The objective is to facilitate collaboration between the two institutions, provide opportunity for students and faculty in areas of learning and research and to promote knowledge on the basis of mutual benefit, good initiatives, and frequent interactions.



Memorandum of Understanding for Academic Cooperation
between
Gargaon College, Simaluguri, Sivasagar
and
B.Borooah College, Ulubari, Guwahati-7
Date: 1st July, 2021

Gargaon College and B. Borooah College recognizes their strengths in research and education in one or more disciplines of Sciences and their mutual interest in engaging themselves in academic cooperation.

Gargaon College and B. Borooah College is therefore agree to establish a programme for academic cooperation in the areas of mutual interest and in accordance with the terms and conditions set forth in this Memorandum of Understanding (MoU).

Objectives


The objective is to facilitate collaboration between the two institutions, provide opportunity for students and faculty members in areas of learning and research and to promote knowledge on the basis of mutual benefit, good initiatives and frequent interactions.

Gargaon College and B. Borooah College is agreed on the following terms:


- To jointly organize seminars, conferences, workshops on topics of common interests for the benefit of faculty members and students.
- To jointly undertake research and training programmes and to invite each other's faculty to participate in them.
- To exchange faculty members and students for the purpose of education and research.
- To jointly conduct short term training courses on topics of common interest.
- To exchange information pertaining to teaching, learning resources etc.

Tenure and termination

This MoU will be effective from the date it is signed by representatives of the two institutions. It will remain valid for 7 years and may be continued thereafter after suitable consideration and agreement.


Principal
Gargaon College
Simaluguri, Sivasagar (Assam)

1


PRINCIPAL
B. BOROORAH COLLEGE
GUWAHATI-781007
ASSAM

Coordination

Each institution shall appoint one member from its teaching faculty to coordinate the programme on its behalf. Moreover, a committee consisting of the following members will periodically review and find out ways to strengthen cooperation between the two institutions.


1. Principal, Gargaon College
2. Principal, B. Borooah College
3. Programme Coordinator, Gargaon College
4. Programme Coordinator, B. Borooah College
5. IQAC Coordinator, Gargaon College
6. IQAC Coordinator, B. Borooah College

Arbitration

In case of any dispute relating to any aspect of collaboration under this MoU, the Principal, Gargaon College and the Principal, B. Borooah College will jointly resolve the dispute in a spirit of mutual respect and shared responsibility.

This MoU is hereby signed by the Heads of the respective institutions.


(Dr. Sabyasachi Mahanta)
Principal,
Gargaon College
Principal
Gargaon College
Simaluguri, Sivasagar (Assam)


(Dr. Satyendra Nath Barman)
Principal,
B. Borooah College
PRINCIPAL
B. BOROOAH COLLEGE
GUWAHATI-781007
ASSAM

Date: 1st July, 2021
Place: Gargaon College


List of activities

Faculty Exchange Programme



Department of Mathematics, Gargaon College & Ligiripukhuri High School , Sivasagar

A Memorandum of Understanding for Academic Cooperation between the Department of Mathematics, Gargaon College, Simaluguri and Ligiripukhuri High School , Sivasagar on 8th May, 2023. The Department of Mathematics, Gargaon College has adopted Ligiripukhuri High School with the aim of promoting community engagement and social responsibility. The Department of Mathematics, Gargaon College and Ligiripukhuri High School recognize their strengths and expertise in education and social commitment and their mutual interest in engaging themselves in various collaborative activities and projects for academic cooperation and community service.


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E-mail: gargaoncollege@rediffmail.com www.gargaoncollege.ac.in

Ref: GC/MoU/351/2023/ Date: 08/05/2023

**Memorandum of Understanding for Academic Cooperation
between
The Department of Mathematics, Gargaon College, Simaluguri
and
Ligiripukhuri High School, Sivasagar**

The Department of Mathematics, Gargaon College has adopted Ligiripukhuri High School with the aim of promoting community engagement and social responsibility. The Department of Mathematics, Gargaon College and Ligiripukhuri High School recognize their strengths and expertise in education and social commitment and their mutual interest in engaging themselves in various collaborative activities and projects for academic cooperation and community service.

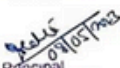
The Department of Mathematics, Gargaon College and Ligiripukhuri High School, therefore, agree to establish a programme for academic cooperation and community service in the areas of mutual interest and in accordance with the terms and conditions set forth in this Memorandum of Understanding (MoU).


Objectives

The objective is to facilitate collaboration between the department of Mathematics, Gargaon College and Ligiripukhuri High School provide opportunity for students and faculty in areas of learning and community service and to promote knowledge on the basis of mutual benefit, good initiatives, and frequent interactions.

The Department of Mathematics, Gargaon College and Ligiripukhuri High School hereby agrees on the following terms:

- To jointly organize workshops on topics of relevance for the benefit of faculty members and students.
- To jointly undertake awareness programmes on various issues pertaining to education, culture, health etc.
- To organized practice classes by the Undergraduate students for the school students.
- Conduct visit of the school students to the Gargaon college campus to provide exposure.
- To jointly conduct short term training programmes on topics of common interest.
- To exchange information pertaining to teaching, learning resources etc.
- To provide career guidance to the students.
- To organize any other programme related to the betterment of the students and community.


Principal
Gargaon College
Simaluguri, Sivasagar (Assam)


FIELD MASTER
Ligiripukhuri High School
P.O. Ligiripukhuri
NAZIRA, SIVASAGAR



Tenure and termination

This MoU will be effective from the date it is signed by the representatives of the two institutions. It will remain valid for 5 years and may be continued thereafter after suitable consideration and agreement.

Coordination


Each institution shall appoint one member from its teaching faculty to coordinate the programme on its behalf. Moreover, a committee consisting of the following members will periodically review and find out ways to strengthen cooperation between the two institutions.


- (a) Principal, Gargaon College
- (b) Programme Coordinator & Head, Department of Mathematics, Gargaon College
- (c) Programme Coordinator & Head Teacher of Ligiripukhuri High School
- (d) IQAC Coordinator, Gargaon College

Arbitration

In case of any dispute relating to any aspect of collaboration under this MoU, the Principal, Gargaon College and Head Ligiripukhuri High School will jointly resolve the dispute in a spirit of mutual respect and shared responsibility.

This MoU is hereby signed by the Heads of the respective institutions.


(Dr. Sabyasachi Mahanta)
Principal
Gargaon College
Principal
Gargaon College
Simaluguri, Sivasagar (Assam)


(Mr. Prosenjit Borthakur)
HEAD MASTER
Ligiripukhuri High School
P.O. Ligiripukhuri
MAZIRA, SIVASGAR

List of activities

School adoption initiative



Gargaon College undertakes school adoption initiative

OUR CORRESPONDENT

SIVASAGAR, May 11: As part of a school adoption initiative, the Department of Mathematics, Gargaon College, in collaboration with IQAC, conducted a visit to the Ligoripukhuri High School located near 1st Assam Police Battalion Camp, Ligoripukhuri on May 8.

The introductory meeting of the school adoption programme was hosted by Harekrishna Mili, Assistant Professor of the Department of Mathematics, Gargaon College. Dr Surajit Saikia, IQAC Coordinator of the college, explained the purpose and objective of the meeting. He spoke about the initiative planned by the college to create a platform to impart support to schools and underprivileged students in the area of education. He congratulated the school for being the first adopted institution under the colleges school adoption initiative. Referring to the strength of Gargaon College in terms of faculty and infrastructure, he explained how the college is capable of imparting support to the adopted school.

Dr Kabita Phukon, Head of the Department of Mathematics, explained the activities that the Department of Mathematics would like to carry out in collaboration with Ligoripukhuri High School. An MoU between the department of Mathematics, Gargaon College and Ligoripukhuri High School was signed in presence of Prosenjit Borthakur, Principal of Ligoripukhuri High School, Dr Kabita Phukon, Dr Surajit Saikia, and former Principal of the school, Rajen Sharma.

CRCC Binud Gogoi read out the objectives mentioned in the MoU and appreciated the initiative undertaken by Gargaon College. Rajen Sharma extended gratitude towards the college and expressed hope that continuous activities for the benefit of the students under the MoU would take place. Prosenjit Borthakur, Principal of the school, stated the needs and requirements in the context of the school and asked for necessary assistance and support from Gargaon College in this regard. He further promised to do the needful for the success of the MoU.



Harekrishna Mili spoke on the need for creating awareness on mathematical education. As part of the initial activities of the school adoption programme, plantation was carried out in the school campus and classes by the faculty members and students of the Department of Mathematics.

Dr Sabyasachi Mahanta, Principal of the college and noted academician, appreciated the effort of the department of Mathematics of the college for undertaking the noble initiative.



Department of Mathematics, Gargaon College & Nazira Bortala Higher Secondary School, Sivasagar

A Memorandum of Understanding for Academic Cooperation between the Department of Mathematics, Gargaon College, Simaluguri and Nazira Bortala Higher Secondary School, Sivasagar on 25th May, 2023. Objectives i) To organized practice classes by the Undergraduate students for the school students. ii) Conduct visit of the school students to the Gargaon college campus to provide exposure. iii) To jointly conduct short term training programmes on topics of common interest. iv) To exchange information pertaining to teaching, learning resources etc. v) To provide career guidance to the students.



Memorandum of Understanding for Academic Cooperation
between
Gargaon College, Simaluguri, Sivasagar
and
Nazira Bortala Higher Secondary School, Sivasagar
Date: 25th May, 2023

The Department of Mathematics, Gargaon College has inked a Memorandum of Understanding (MoU) with Nazira Bortala Higher Secondary School with the aim of promoting community engagement and social responsibility. The Department of Mathematics, Gargaon College and Nazira Bortala Higher Secondary School recognized their strength and expertise in higher education and social commitment and their mutual interest in engaging themselves in various collaborative activities and projects for academic cooperation and community service.

The Department of Mathematics, Gargaon College and Nazira Bortala Higher Secondary School is therefore agree to establish a programme for academic cooperation and community service in the areas of mutual interest and in accordance with the terms and conditions set forth in this Memorandum of Understanding (MoU).


Objectives


The objective is to facilitate collaboration between the Department of Mathematics, Gargaon College and Nazira Bortala Higher Secondary School, to provide opportunity for students and teachers in areas of learning, community service and to promote knowledge on the basis of mutual benefit, good initiatives and frequent interactions.

The Department of Mathematics, Gargaon College and Nazira Bortala Higher Secondary School is hereby agreeing on the following terms:

- To jointly organize workshops on topics of relevance for the benefit of faculty members and students.
- To jointly undertake awareness programmes on various issues pertaining to education, culture, health etc.
- To organize classes by undergraduate students for the school students.
- Conduct visit of the school students to the Gargaon College campus to provide exposure.

1


Principal
Gargaon College
Simaluguri, Sivasagar (Assam)


Principal
Nazira Bortala H.S. School
Nazira

- e) To jointly conduct short term training programmes on topics of common interest.
- f) To exchange information pertaining to teaching, learning resources etc.
- g) To provide Career guidance to the students.
- h) To organize any other programme related to the betterment of the students and community.

Tenure and termination

This MoU will be effective from the date it is signed by representatives of the two institutions. It will remain valid for 7 years and may be continued thereafter, after suitable consideration and agreement.

Coordination


Each institution shall appoint one member from its teaching faculty to coordinate the programme on its behalf. Moreover, a committee consisting of the following members will periodically review and find out ways to strengthen cooperation between the two institutions.

1. Principal, Gargaon College
2. Programme Coordinator & Head, Department of Mathematics, Gargaon College
3. Programme Coordinator & Principal, Nazira Bortala Higher Secondary School
4. IQAC Coordinator, Gargaon College,

Arbitration

In case of any dispute relating to any aspect of collaboration under this MoU, the Principal, Gargaon College and the Principal, Nazira Bortala Higher Secondary School will jointly resolve the dispute in a spirit of mutual respect and shared responsibility.

This MoU is hereby signed by the Heads of the respective institutions.


(Dr. Sabyasachi Mahanta)
Principal,
Gargaon College

Date: 25th May'2023
Place: Gargaon College

Principal
Gargaon College
Simaluguri, Sivasagar (Assam)


(Mrs. Nivedita Gogoi)
Principal i/c,
Nazira Bortala Higher Secondary
School

Principal
Nazira Bortala H.S. School
Nazira

List of activities

Academic programmes are planning

15. Collaboration between Gargaon College & Dibrugarh University



Outline of the Activity

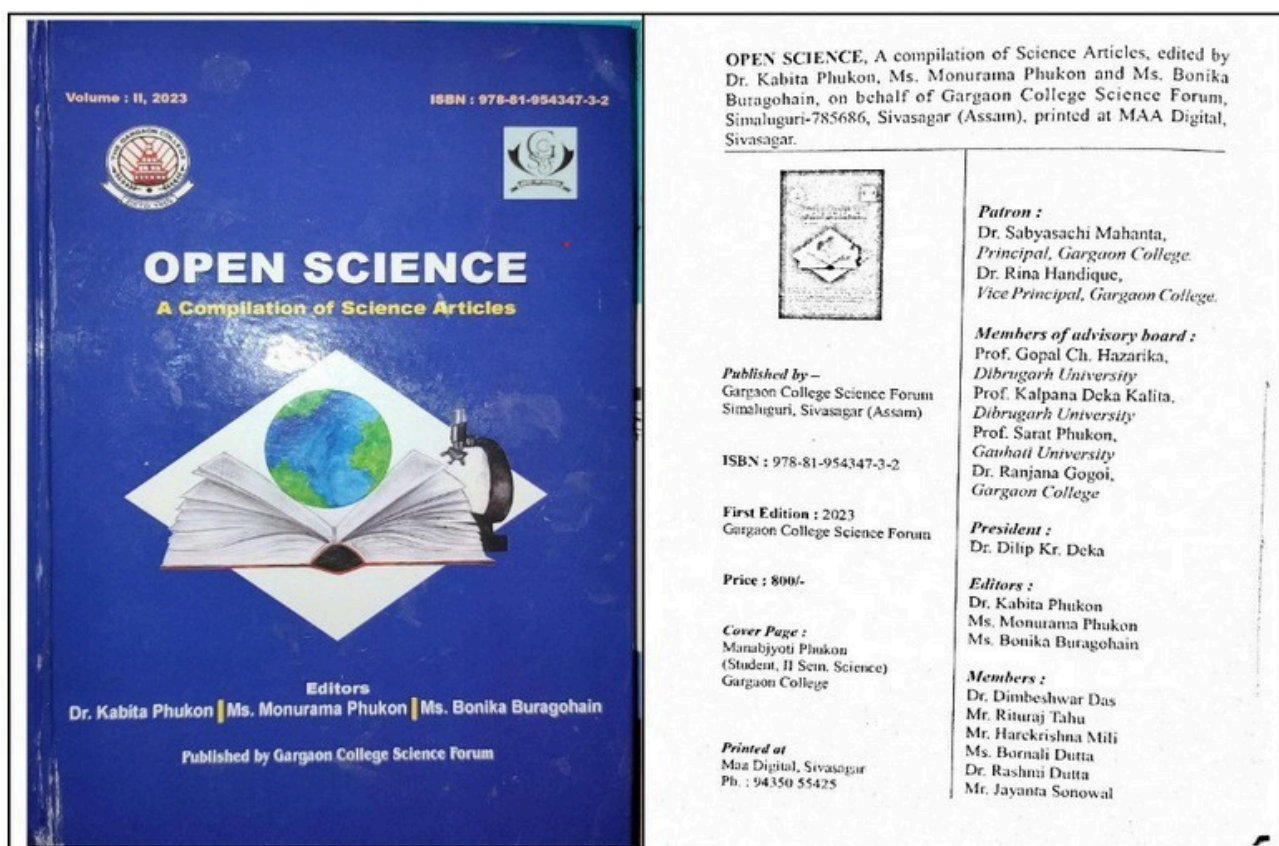
Collaborative Book Chapter
Sujata Gowala , Assistant Professor
Department of Mathematics, Gargaon College
with
Niharika Kakoty
Research Scholar
Department of Mathematics,
Dibrugarh University

Title of the Paper: Convex Combination of the Solidarity Value and the ED Value

Title of the Book: Open Science: A compilation of Science Articles

ISBN: 978-81-954347-3-2

Photograph of the Activity



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Convex Combination of Two Distinct ESL Values

Niharika Kakoty¹, Sujata Goala²

¹Department of Mathematics, Gargaon College, Simlaguri

E-mail: sujatagoala10@gmail.com

²Research Scholar, Department of Mathematics
Dibrugarh University

ABSTRACT

One of the most important and widely studied class of solution concepts of cooperative game theory viz., the ESL values is discussed. Here, we formulate a new value for a TU-game that is the convex combination of two distinct ESL values. Then we provide a characterization of the value using some standard axioms prevalent in the literature.

INTRODUCTION

In a cooperative TU-game, most of the widely studied solution concepts are the Shapley value [7], the Core [1], the Weber set [10], the Bargaining Set [6], Nucleolus [4]. Some other solution concepts include the Solidarity values [11], the

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