A

PROFILE

DEPARTMENT OF MATHEMATICS

REMUNA DEGREE COLLEGE
REMUNA, BALASORE

Website-remunadegreecollege.org

Email-remunadegreecollege@gmail.com

Department mail ID: rdcmathematics56@gmail.com

OUR COLLEGE

Education stimulates self-study. We must endure willingly for the fulfillment of dreams and this is possible only at college .As college broadens one's horizon. It is a broader platform to understand and prove ourselves a place where we find and create ourselves. It is a temple of learning.

CONTENTS

DEPARTMENT OF MATHEMATICS

MATHEMATICS was introduced by the college as a subject in 2001 and followed by its successful record in 2016 it is recommended by Fakir Mohan University as honours Subject. Mathematics helps us understand the world and provides an effective way of building mental discipline. Math encourages logical reasoning, critical thinking, creative thinking, problem solving ability and even effective communication skills.

DEPARTMENT NAME: **MATHEMATICS**

Year of establishment**:** **1999 (Pass) and 2016 (Honours)**

Broad Classification of the stream: **Physical Science**

Program offered: **Under Graduate Honours Course**

Syllabi adopted: **Choice Based Credit System**

Sanctioned Strength: **+3 Science (Hon's) – 24**

Name of university to which the department is affiliated: **F.M. UNIV. VYASAVIHAR, BALASORE**

Any Interdisciplinary Course or participation in subsidiary course offered by other departments:

- **Skill Enhancement Course- QALT**
- **Bridge Course-Macro and Micro Economics**

PURPOSE OF THE DEPARTMENT

Mathematics is a powerful tool for global understanding and communication that organizes our lives and prevents chaos. Using it, students can make sense of the world and solve complex and real problems. Rethinking math in a global context offers students a twist on the typical content that makes the math itself more applicable and meaningful for students. Math is often studied as a pure science, but it is typically applied to other disciplines, extending well beyond physics and engineering. It is not only gives students a real world context in which to use the math, but helps them understand global phenomena.

If students are given the right content and context for a globally infused math curriculum, they will able to apply math strategies to solve problems and develop and explain the use of a given math concept in the global sense. And they will be able to use the right math tools in right situation.

VISION, MISSION AND FUTURE PROSPECTS

VISION

- Imparting of quality Mathematics Education and the inculcating of the spirit of research through innovative teaching and research methodologies.
- Department is committed to providing an education that combines rigorous academics.
- To provide an environment where students can learn, become competent users of mathematics and understand the use of mathematics in other disciplines.

MISSION

- To discover, mentor and nurture Mathematically inclined students and provide them a supportive environment that fosters intellectual growth.
- To explore applications of Mathematics and statistics and engage in collaborative research in an interdisciplinary environment.
- To guide the students for self evaluation, personality development to strive towards perfectly.
- Provide a back ground for relating Mathematical techniques to solve real life problems.

FUTURE PROSPECTS

- Refine our curriculum to cultivate students' Mathematics literacy and potential.
- Keep on updating and building facilities for teaching and research to enhance performance and achievement.
- To encourage students to participate in institutional seminar for Mathematical related studying Goals and Objectives
- Become Mathematical problem solver
- Students should appreciate the beauty, fun and power of Mathematics and be able to articulate what Mathematics is about and what Mathematicians do.
- Students should develop effective thinking and communication skills.
- Students should be able to use technological tools appropriately and effectively.

FACULTY PROFILE

FACULTY MEMBERS

At present the total member of sanctioned teaching staff is 2.

The following table reveals the details

S\N.	Name of Teaching Staff	Designation	Qualification	Teaching Experience in Period
01	Mrs. Sasmita Ray	Lecturer, HOD	M.Sc	9yr
02	Mr. Gopinath Das	Lecturer	M.Sc	5yr

SUCCESSIVE HOD LIST

The following table reveals the detail

Sl. N.	Name	From	To
1.	Mrs. Sasmita Ray	21.7.14	Continuing

BIO-DATA OF FACULTY MEMBER -1

NAME	**Mrs. Sasmita Ray**
QUALIFICATION	M.Sc.
SPECIALIZATION	Number Theory and Cryptography
DESIGNATION	Lect. In Mathematics
PRESENT BASIC PAY	8500/-
DATE OF BIRTH	11-05-1992
DATE OF JOINING	21.07.2014
PRESENT ADDRESS	REMUNA DEGREE COLLEGE, REMUNA, BALASORE, PIN-756019
PERMANENT ADDRESS	AT-Achyutapur, PO-Naraharipur,Via-Remuna, DIST-Balasore, PIN-756019
SEMINAR ATTENDED	02
EXPERIENCE	09 YEAR
E-mail ID	s.ray.pinky@gmail.com
CONTACT	+919658153707

SEMINAR (INTERNATIONAL/NATIONAL/STATE) ATTENDED

Sl. N.	Nature: Seminar/ Conference	Organizing Institutions	Period	Topic	Attended/ Presented Paper
01	National Level	IQAC-REMUNA DEGREE COLLEGE ,REMUNA,BALASORE	26.08.2015	"Tools and Techniques to improve Quality in higher Education"	Participated
02	NATIONAL Level	FAKIR MOHAN AUTO COLLEGE, BALASORE	20.03.2015 & 21.03.2015	Some aspects of computational Mathematics	Participated

WEBINAR (INTERNATIONAL/NATIONAL/STATE) ATTENDED

Sl. N.	Nature: Seminar/ Conference	Organizing Institutions	Period	Topic	Attended/ Presented Paper
01	InterNationa l	**KIIT D**eemed to be University , Bhubaneswar, india	17th -20th Aug 2020	**Recent Developments in Number Theory**	Participated
02	InterNationa l Level	Raj ku. Goel Institute of Technology,Ghaziabad	Aug 18 , 2020	Introduction and application in wood products Research	Participated
03	InterNATIO NAL Level	FAKIR MOHAN UNIVERSITY, BALASORE	Aug 29,2020	Recent trends in Medical images Processing	Participated

04	InterNationa l Level	Department of Mathematical Science, Bodiland University	21st & 22nd Aug 2020	Fuzzy & Neutrosophic System	Participated
05	InterNationa l	Sri RamaKrishna Institute of technology,Coimbatore	Oct 22 ,2020	Mathematical Modeling Simulation for Societal Need :An integration of Science Technology & Engineering	Participated
06	InterNationa l	Upendra Nath college,Soro,Balasore	Nov 11 , 2020		Participated
07	InterNationa l	Kalyani MahaVidyalaya, Nadia , West Bengal, India	9th &10th Sep 2020	Mathematics in Data Analysis & Internet Security During COVID-19 Pandemic	Participated

BIO-DATA OF FACULTY MEMBER-2

NAME	**Mr. Gopinath Das**
QUALIFICATION	M.Sc.
SPECIALIZATION	Number Theory and Cryptography
DESIGNATION	Lect. In Mathematics
PRESENT BASIC PAY	8500/-
DATE OF BIRTH	10-04-1996
DATE OF JOINING	
PRESENT ADDRESS	REMUNA DEGREE COLLEGE, REMUNA, BALASORE, PIN-756019
PERMANENT ADDRESS	AT-Nargoda, PO/Via-Irda, DIST-Balasore, PIN-756080
SEMINAR ATTENDED	Nil
EXPERIENCE	5 year
E-mail ID	gopidas125@gmail.com
CONTACT	6370518289

WEBINAR (INTERNATIONAL/NATIONAL/STATE) ATTENDED

Sl. N.	Nature: Seminar/ Conference	Organizing Institutions	Period	Topic	Attended/ Presented Paper
01	State Level	REMUNA DEGREE COLLEGE, REMUNA, BALASORE	26TH Aug 2020	New normal and higher education	Participated
02	NATIONL Level	IQAC, COMMERCE Department Remuna Degree College, Balasore	4th Dec. 2020	NAAC Related Quality Enhancement Strategies	Participated
03	Internationa l Level	Mathematics, Department Remuna Degree College, Balasore	28th Nov.2020	Importance of Mathematics in Everyday Life	
04	State Level	Home Science Department Remuna Degree College, Balasore	23.12.2020	Understandin g the value and career opportunities of Home Science Education	Participated

FACULTY DEVELOPMENT PROGRAM ATTENDED

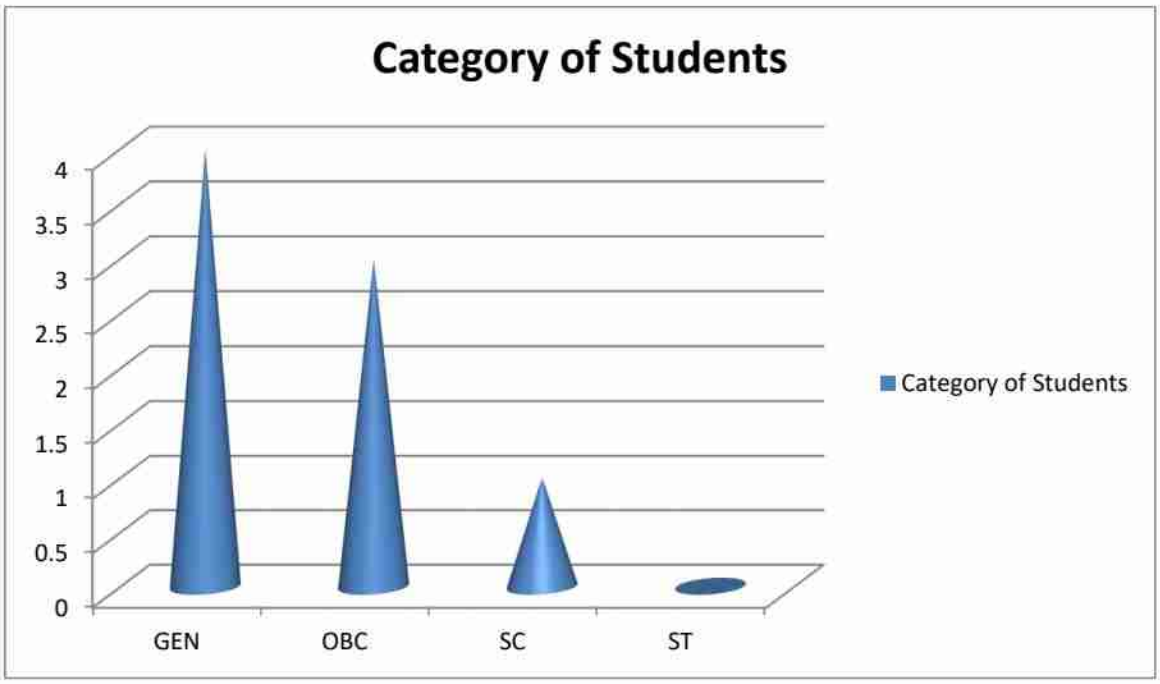
Sl. N.	Nature: Conference	Organizing Institutions	Period	Topic	Attended/ Presented Paper
01	State Level	Bhavan's Center for Communication & management , 9, Kharvel Nagar, Bhubaneswar	22nd may 2019	Transactional Analysis (TA) For Improving Classroom Effectiveness	Participated

STUDENTS PROFILE

There are 24 Honours seats for +3 degree course. The following is the success rate of the students of the last five years.

ADMISSION DATA

Academic Session	No. of Seats Available (Sanctioned Strength)	No. of student admitted	Category of students admitted and pursue studies				GENDER	
			GN	OBC	SC	ST	M	F
2022-23	24	08	04	03	01	00	06	02



PERFORMANCE OF HONOURS STUDENTS FOR THE SESSION (2022-23)

RESULT DATA

Result Analyses for last Three Years

Year	Appear	1st Class	2nd Class	3rd class	Fail	Dropout	Total
2022	19	19	00	00	00	00	19

Average percentage of students progressing to higher education during the session 2022-23

Year	Name of the student enrolling into higher education	Programme Graduated from	Name of the institute Joined	Name of Programme admitted
2022	Cosmic Swain	Mathematics	Fakir Mohan University	PG
2022	Gayatri Jyoti Panda	Mathematics	Fakir Mohan Autonomous	PG
2022	Saumya Ranjan Jena	Mathematics	Fakir Mohan Autonomous	PG
2022	Jagannath Behera	Mathematics	Fakir Mohan Autonomous	PG
2022	Bhargavi Nandy	Mathematics	College of Gandhi Institute of Excellent	MCA

Students Facilities provided by the Department

- Department Quality Circle.
- Bridge Course
- Career Guidance Programme
- Unit Test
- Surprise Test
- Open Book Test
- Group Discussion
- Departmental Library
- Department MOU with other college
- Question Bank
- Probable Question Sets
- Remedial Class
- Special class for Slow Learners & Advance Learnrs
- Parents Teacher Meeting
- Information Board

CURRICULUM

The curriculum of +3 Honors courses as well as elective is taught by the faculty members of the department as per the syllabus prescribed by Fakir Mohan University.

CORE COURSE Syllabus for Session 2016-19

Semester	Paper	Course Name	Credit	Total marks
Semester-I	AECC I	MIL(O/H/E/U)	4	100
	Core I (Theory)	Calculus-1	4+2	75
	Core II (Theory)	Algebra-1	6	75
	GE 1 (Theory)	Calculus and ODE	6	75
Semester-II	AECC 2	EVS	4	100
	Core III (Theory)	Real Analysis (Analysis-1)	6	75
	Core IV (Theory)	Differential Equation	4+2	75
	GE II (Theory)	Linear Algebra advance Algebra	6	75
Semester-III	Core V (Theory)	Analysis-II	6	75
	Core VI (Theory)	Algebra –II	6	75
	Core VII (Theory)	PDE And System of ODE	4+2	75
	SEC 1	ENGLISH	4	100
	GE III (Theory)	Calculus and ODE	4	75

SEMESTER –IV	Core VIII	Numerical Method	4+2	100
	Core IX (Theory)	Analysis-III	6	75
	Core X (Theory)	Algebra-III	6	75
	SEC 2	Logic and Sets	4	100
	GE IV (Theory)	Linear Algebra And Advance Algebra	6	100
Semester-V	Core XI (Theory)	Multivariate Calculus	6	100
	Core XI (Practical)		2	25
	Core XII (Theory)	Probability and Statistics	6	100
	DSE I (Theory)	Programming in C++	4+2	100
	DSE II (Theory)	Discrete Mathematics	6	100
	DSE II (Practical)		2	25
Semester -VI	Core XIII (Theory)	Metric Space And Complex Analysis	6	100
	Core XIV (Theory)	Linear Programming	6	100
	DSE III (Theory)	Differential Geometry	6	100
	DSE IV	PROJECT	2	100

CORE COURSES

Syllabus from session 2019-20 till Now

Course structure of UG Mathematics Honours Semester – I	Course Name	Credits (Theory +Practical)	Total marks
AECC-1	MIL(O/H/E/U)	6	100
C-I	Calculus	4+2	100
C-II	Discrete Mathematics	6	100
GE-I –p1	Calculus and Differential Equation	6	100
Semester-II			
AECC-2	EVS	6	100
C-III	Real Analysis	6	100
C-IV	Differential Equation	4+2	100
GE-I-p-2	Algebra	6	100
Semester –III			
C-V	Theory of Real Function	6	100
C-VI	Group Theory -1	6	100
C-VII	Partial Differential Equations and system of ODEs	4+2	100
GE-II-p-1	Calculus and Differential Equation	6	100
SEC-I	QALT	4	100
Semester –IV C-VIII	Numerical Methods and Scientific Computing	4+2	100
C-IX	Topology of Metric Spaces	6	100
C-X	Ring Theory	6	100
GE-II-p-2	Algebra	6	100
SEC-II	DACA	4	100
Semester-V CC-XI	Multivariable Calculus	6	100
CC-XII	Linear Algebra	6	100
DSE-1	Linear Programming	6	100
DSE-2	Probability and Statistics	6	100
Semester –VI CC-XIII	Complex Analysis	6	100
CC-XIV	Group Theory -2	6	100
DSE-3	Differential Geometry	6	100
DSE-4	Number theory/Project	6	100

COURSE OUT COME OF MATHEMATICS

Department of Mathematics Course Specific Outcome			
Semester	**Paper /Course**	**Name of the Paper/Corse**	**Course Outcome**
Semester1	CC-1	Calculus	Gain proficiency in calculus computation and solve application problems in a variety of settings ranging from physics and biology to business and economics
	CC-2	Discrete Mathematics	An ability to apply knowledge of computing and mathematical foundations, algorithm principles, and computer science theory to the modelling and design of computer based system.
	GE-1	CALCULUS AND DIFFERENTIAL EQUATIONS	Understand the relationship between the derivative and the definite integral as expressed in both parts of the fundamental theorem of calculus.
Semester2	CC-3	Real Analysis	Demonstrate an understanding of limits and how they are used in sequences, series, differentiation and integrations.
	CC-4	Differential equations	Learn the concept of differential equation classify the differential equation with respect to their order and linearity. Learn the meaning of salutation of differential equation also

			known existence and uniqueness.
	GE-2	ALGEBRA	Recognise technical terms and appreciate some of the uses of algebra. Collect like terms and simplify
Semester3	CC-5	Theory of Real functions	Lear Fundamental properties of the real numbers that lead to the formal development of real analysis
	CC-6	Group Theory-I	Understand and use the term homomorphism and isomorphism also use the concept of conjugation. Derive the existence of groups of a specified small order.
	CC-7	Partial differential equations and system of ODEs	By using partial differential equation can solve modelling, the general structures of solution analytic and
			numerical methods for solution.
	SEC-1	Quantitative and Logical Thinking	Will able to reason, model and draw conclusion or make decision with mathematical, statistical and quantitative information. Also will be able to critique and evaluate quantitative arguments that utilize mathematical, statistical and quantitative information.

Semester4	CC-8	Numerical Methods and Scientific Computing	Derive numerical methods for various mathematical operations and tasks, such as interpolations, differentiation, integration, the solutions of linear and nonlinear equations and the solution of differential equations. Analyse and evaluate the accuracy of common numerical methods.
	CC-9	Topology of Metric spaces	Demonstrate an understanding of the concepts of matric spaces and topological spaces, and their role in mathematics known about completeness, connectedness and convergence within this structures
	CC-10	Ring Theory	Validate and critically assess a mathematical proof; use a combination of theoretical knowledge and independent mathematical thinking to investigate questions in ring theory and to construct proofs
	SEC-2	Data Analysis and Computer Application	Demonstrate a basic understanding of computer hardware and software. Demonstrate problem solving skills. Apply logical skills to programming in a variety of languages. Utilize web technologies. Present conclusions effectively, orally and in writing. Demonstrate basic understanding of network principles.
Semester5	CC-11	Multivariable Calculus	Will know many different ways of representing functions of several variables including algebraic formulas, graphs, contour diagrams,

			cross sections, and numerical tables.
	CC-12	Linear Algebra	Explain the concept of base and dimension of a vector space, properties of vectors on the base, row and column space.
	DSE-1	Linear Programming	Able to know quantitative methods used in decision making, explain the applications, constructs linear programming models, known transportation model.
	DSE-2	Probability and Statistics	Demonstrate the concepts of factorial and the basic principal of counting, known permutation, combination and Binomial theorem known the concept of a random event.
Semester6	CC-13	Complex analysis	Define the concepts of derivation of analytic functions. Define the concept of sequences and series of the complex functions known concepts of convergence sequences and series of the complex function.
	CC-14	Group Theory-II	Precise and accurate and mathematical objects in ring theory. Known irreducibility of higher degree polynomial over rings. Use a combination of theoretical knowledge and independent mathematical thinking to investigate questions in ring theory.

	DSE-3	Differential Geometry	Analyse the equivalence of two curves by applying some theorems express definition and parameterization of surfaces. Express tangent spaces of surfaces. Explain different maps between surfaces and find derivatives of such maps
	DSE-4	Project	Understand the foundations of mathematics. Be able to perform basic computations in higher mathematics. Develop and maintain problem solving skills. Be able to write and understand basic proofs. Have experience using technology to address mathematical ideas.

Opportunities

Scope after B.Sc. in Mathematics

- The field of Mathematics is of great importance in our day to day life. It is commonly referred to as 'The Science of Matter' .Once a candidate comes out successfully as a degree holder in B.Sc. Mathematics they have various options for the future. He can grab a job with that degree or he can go for higher studies which will improve their educational qualification or he can choose any short term or long term certification courses. Both public sector and private sector organizations demand such up coming young talents.

Job opportunities after B.Sc. Mathematics

- There are various fields where a B.Sc. mathematics graduate can utilize their talents. Some of the areas that offer jobs for a B.Sc. degree holder include the following:

Top Job Opportunities in Mathematics

- Mathematics best job opportunities are available in the following disciplines.
- Operation research analyst
- Chartered accountant
- Software engineers
- Teaching
- Computer system analyst
- Banks
- Mathematician
- Indian Civil Services
- There are various job opportunities available for a B.Sc. degree holder in both public sector & private sector organizations. In this developing era the need of such talents is also on the rise.
- Some of the public sector firms which offer job opportunities are:
- Bharath petroleum
- Indian Oil Corporation
- Government colleges
- Indian Railway sector
- Some of the job profiles for a B.Sc. degree holder in various areas include
- Lecturer
- Technical Writer/Editor
- Research Associate
- Researcher
- Radiologist
- Scientist
- Teacher

Innovative Teaching Methods

- Departmental Seminar
- Chalk and talk method
- Technology aided lectures, demonstration, group discussions and educational tours, project works.
-
- Participation in Institutional Social Responsibility (ISR) Extension activities:
- Practical methods are explained by virtually.
- ICT TOOLs (Projector with interactive whiteboards ,PPT, Prints ,audio-video tapes ,CDs, Question bank).
- Study Tour
- Other E-resources and techniques used in teaching E- Library, E-journal, E-books.
- Proctorial Classes
- Slow learner and advance learner
- Unit Test

DEPARTMENTAL SEMINAR / WEBINAR

The Departmental seminar is central to the academic life of the Department. The Seminar offer an opportunity to get acquainted with

and discuss the ongoing research conducted by Professors, Doctoral students and invited guests. Here is what I have come up :

1.A Seminar builds social and intellectual relationships and often sparks the serendipitous conversations that generate new ideas.

2.We want our graduate students to learn how to give good presentations.

3.We want our graduate students to have breadth of knowledge to complement the depth they gain from their own research. Attending good seminar is one way to get that breadth.

Seminar organized by the department

Sl. No.	Date of Seminar	Class	Name of Resource person	Topic Name	No of Student attend	No of Student Participant
01	13.03.2023	1st yr, 2nd & 3rd	Dr. Benudhar Behera	"Vedic Mathematics"	30	05

SEMINAR PHOTOS

Year- 2023

GROUP DISCUSSION

In a Group Discussion, the teacher and all the students work on a specific content together, using one another's ideas. The purpose of discussion are to be build collective knowledge and capability in relation to specific instructional goals and to allow students to practice listening ,speaking and interpreting .The teacher and a wide range of students contribute orally, listen actively and respond to and learn from others' contribution .

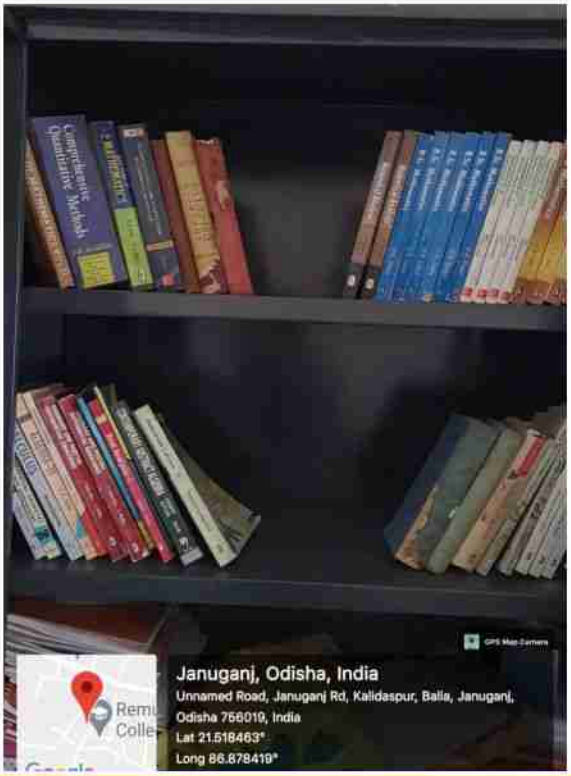
In a group discussion about Mathematics, the teacher supports students to individually and collectively engage in sense-making about rich mathematical content. A mathematics discussion can provide opportunities for students learn, practice and refine habits of mind.

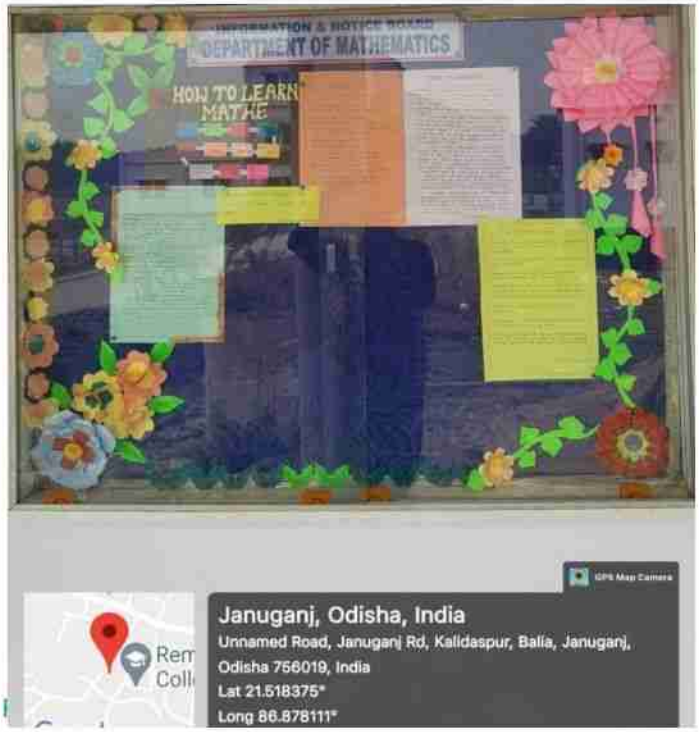
FACILITIES AVAILABLE IN THE DEPARTMENT

Facilities

LibraryFacility

The college library is very well equipped with textbooks and reference books which the students can issue. The library also subscribes to numerous journals and newspapers for the students. There is also a departmental library and Department have a information board





Wi-Fi

The college provides a Wi-Fi facility for those who work on laptop computers, there is space provided for availing Wi-Fi services.

READING ROOM FACILITY

The college provides reading room facilities with internet available for the students.

Participate in Institutional Social Responsibility (ISR) and Extension activities.

EXTENSION ACTIVITIES

Our department has a healthy tradition in organizing a number of activities outside the course curriculum.

- **Celebration and observation**

In our department the students celebrate Lord Ganesh Puja, Sara Swati puja with religious fervor and National days like Teachers Day during the academic year. All the students participated in the celebrations under the guidance of the faculty.

- **Picnic and field tours**

The department also organizes students field tours. By visiting new places and meeting people the students get acquire knowledge on various fields and enrich their personal experiences. The mental horizon of the students gets widened as well. They also get practical experiences and develop self-confidence.

➢ NSS

The students of our college have been volunteers of National Service Scheme. They have participated in various camps and proved their excellence.

➢ RED CROSS

Our students have been volunteers of Youth Red Cross and they have participated in various training camps per year.

➢ Rover & Rangers

Our students have been volunteers of Rover & Rangers Unit and they have participated in various training camps per year.

➢Other achievements

Students Achievement

- The students of the department are free to interact with the teachers in academic and matters related to the development of their personality. In academic field the students of this department have brought glory by securing marks in mathematics in the University in final degree exams.

Other activities of the Department

- The department looks care of the students in the subjects taught. For slow learners the faculty members pay special attention and care in extra classes for better understanding.

Best Practice of the department

Faculty members and resource person are also providing counseling to the students.

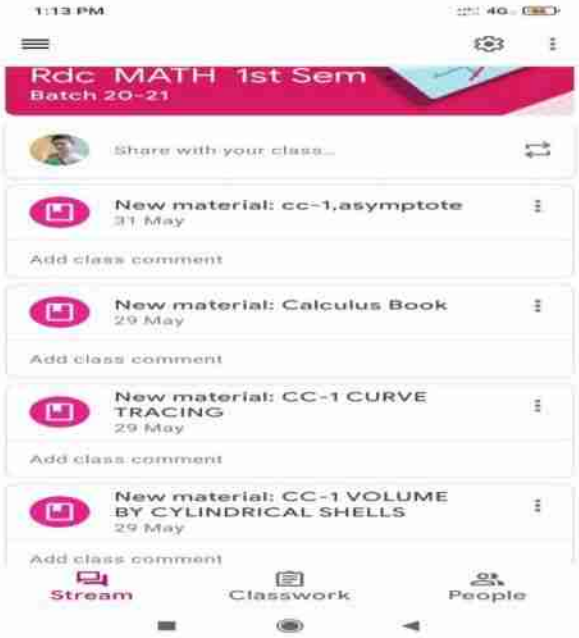
- Career counseling.

Departmental Activities At a Glance

1. ICT enabled tools

Department Faculty Uses Projector with Interactive White Boards PPT, Pdf, Audio-Video Taps, CDs, Question bank, Google meet, Google Class room, Departmental whatsapp Group, Departmental Mail Id for strengthening teaching Learning Process

(ICT Clasess)



(Study Material through Google class Room)

2. Slow and Advance Learner

The institute is very careful not create in students any psychological division and labeling them as particular type of learners. However, it is our of general intelligence of students. Teachers make a close observation of students learning style. So the Department identify Slow and advanced learner on the basis of students performance

(Advanced Learner)

(Slow Learner)

3. Proctorial Class

Proctorial class has been introduce for Developing intimate relationship between the student and teachers for timely guidance and advice in Academic and other matters. Students are entrusted to a teacher Whom the student meet to put their problem

(Proctorial Class)

4. Quality Circle

Quality Circle is a small group of students doing similar work who voluntarily meet together on a regular basis to identify improvements in their respective work areas using various techniques for analyzing and solving work related problems coming in the way of achieving and sustaining excellence leading to mutual upliftment of students as well as the organization. It is a way of capturing the creative and innovative power that lies within the work force.

Characteristic of Quality Circle

- Quality circle is a small group.
- Quality Circle is a problem solving technique.
- The membership of Quality Circle is most voluntary.
- The basic role of Quality Circle is to identify and solve work related.

  Problems for improving quality and productivity.

5. NCC

The students of our department have been volunteers of National Cadet Crops. They have participated and proved their Excellence

6. NSS

The students of our college have been volunteers of National Service Scheme. They have participated in various camps and proved their excellence.

7. YRC

Our students have been volunteers of Youth Red Cross and they have participated in various training camps per year.

8. Career Counseling

Student attending career counseling programme organized by our college.

9. Medha Samman

Year-2022

SWOC analysis of the department and Future plans

Strength:

- Highly dedicated staff.
- Well-equipped Library.

Weakness:

- Lack of support staff

Opportunity:

- Preparing Students for various entrance exam.
- Preparing Students to get job in various factories and chemical lab.

Challenges:

- To motivates students master degree course and to score good rank in National Level Exam.

Future plan

- Procure latest Mathematics books for Departmental library.
- The power point Lectures will be available in the department website for the student.
- Advanced Study tour
- Organization of Refresher Courses
- More focus on Student's Personality Development and extracurricular activities to make them employable
- Organize more seminars

THANK YOU