



DEPARTMENT OF BIOTECHNOLOGY  
Ministry of Science & Technology  
Government of India



Anekant Education Society's

# JAYSINGPUR COLLEGE JAYSINGPUR

Religious Jain Minority | DST-FIST Level-I

Affiliated to Shivaji University, Kolhapur

Reaccredited by NAAC (3<sup>rd</sup> Cycle) with 'A' Grade (CGPA 3.24)

## DBT-STAR COLLEGE SCHEME

### ANNUAL PROGRESS REPORT (2024-25)

## DEPARTMENT OF MATHEMATICS & STATISTICS

**Mr. Pritam R. Patil**  
Departmental Coordinator

**Dr. Sandip Sabale**  
Coordinator  
DBT-STAR COLLEGE SCHEME

**Dr. Surat Manjare**  
Principal  
JAYSINGPUR COLLEGE JAYSINGPUR



Anekant Education Society's

## Jaysingpur College, Jaysingpur Department of Mathematics

Under DBT Star Scheme

Name of the Activity: Celebration of National Mathematics Day

Year:	2024-25
Name of the Activity:	Celebration of National Mathematics Day
Date:	08 <sup>th</sup> January, 2025
Venue:	Department of Mathematics
Co-ordinator/Convenor:	Mrs.V.H.Shinde and Mr.P.R.Patil
Organised for:	Jaysingpur College, Jaysingpur
No. of Participants	31
Nature:	Academic
Chief Guest/s or Resource Person/s	Principal Dr.S.A.Manjare

(# Photos, participant's list and other documents are attached)

National Mathematics Day is celebrated in India on December 22nd every year. This day marks the birth anniversary of the famous Indian mathematician Srinivasa Ramanujan. Ramanujan was born on December 22, 1887, in Erode, Tamil Nadu. He made significant contributions to number theory, algebra, and mathematical analysis. Despite facing many challenges and having limited formal education, Ramanujan's work had a profound impact on mathematics.

In 2012, the Indian government declared December 22nd as National Mathematics Day to recognize Ramanujan's contributions and to promote mathematics education in India.

On the occasion of National Mathematics Day, Mathematics Department arranged various activity like wallpaper presentation, Mathematical models, funny games and screening of biological drama movie "The Man Who Knew Infinity" on Srinivasa Ramanujan in Mathematics department. Head Mrs. V. H. Shinde of Mathematics department welcomed all the dignitaries on the dais and participants. Principal Dr. S. A. Manjare, Vice Principals Mrs. Dr. M V Kale, Vice Principals Mrs. Dr. V. V. Chougule, Prof. Dr. B. M. Sargar, Prof. Dr. R. D. Mane, Mrs. Dr. S. R. Nakate, Mr. P. R. Patil, and 31 students were present for the program. The vote of thanks given by Mr. P.R. Patil.



*Patil*

Mr. Pritam R. Patil,  
Departmental Coordinator,  
Department of Mathematics.

PROJECT INVESTIGATOR

*Sabale*

Dr. Sandip R. Sabale

Coordinator

DBT-STAR College Scheme  
Jaysingpur College, Jaysingpur

HEAD OF THE INSTITUTION

*Manjare*

Dr. Surat A. Manjare

PRINCIPAL

Jaysingpur College, Jaysingpur



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**Jaysingpur College, Jaysingpur**

**Department of Mathematics**

**One Day Workshop on “Career opportunities for  
Mathematician in Finance”  
under the DBT-Star College Scheme**

Year:	2024-25
Name of the Activity:	One Day Workshop “Career opportunities for Mathematician in Finance”
Date:	6 <sup>th</sup> September , 2024
Venue:	Department of Mathematics
Co-ordinator/Convenor:	Mr. P.R. Patil,
Organised for:	Jaysingpur College, Jaysingpur
No. of Participants	30
Nature:	Academic
Chief Guest/s or Resource Person/s	Mr. Pranav B. Shinde, Associate II, Data management and quantitative Analyst, Book of New York, Mellon, Pune.

(# Photos, participant's list and other documents are attached)

One Day Workshop on “Mathematical Softwares” has been conducted by the department of Mathematics under the DBT-Star College Scheme. Mr. P. R. Patil have welcomed all the dignitaries on the dais and participants. Dr.R.S.Dhabbe, Dr. Mrs.V.H.Shinde and 30 students were present for the program. Mr. P. R. Patil felicitated Resource Person Mr. Pranav B. Shinde. Mrs. V.H.Shinde introduced the Resource Person. The vote of thanks given by Mr. P. R. Patil.

Mr. Pranav B. Shinde introduced the finance world and career opportunities in finance for mathematician and path to achieve those opportunities. He introduced NISM certification, courses like advanced EXCEL, SQL, VBA in brief.





*Ratil*

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Dr. Sandip R. Sabale  
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Dr. Surat A. Manjare  
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**Jaysingpur College, Jaysingpur**

**Department of Mathematics**

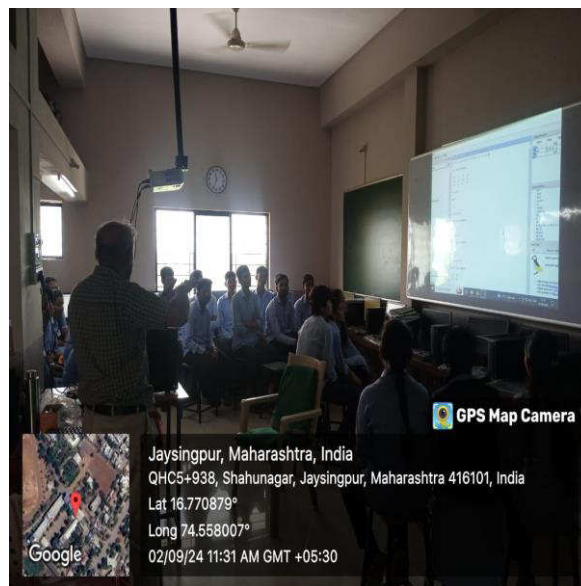
**One Day Workshop on “Mathematical Softwares”  
under the DBT-Star College Scheme**

Year:	2024-25
Name of the Activity:	One Day Workshop on “Mathematical Softwares”
Date:	2 <sup>nd</sup> September , 2024
Venue:	Department of Mathematics
Co-ordinator/Convenor:	Mr. P.R. Patil, Mrs. V.H.Shinde.
Organised for:	Jaysingpur College, Jaysingpur
No. of Participants	30
Nature:	Academic
Chief Guest/s or Resource Person/s	Mr.P.G.Chhapkane, Head, Department of Mathematics, Devchand College, Arjunnagar.

(# Photos, participant's list and other documents are attached)

One Day Workshop on “Mathematical Softwares” has been conducted by the department of Mathematics under the DBT-Star College Scheme. Mr. P. R. Patil have welcomed all the dignitaries on the dais and participants. Prof. Dr. (Mrs) M.V.Kale, Vice-Principal, Jaysingpur College, Jaysingpur, Head of department Dr. Mrs.V.H.Shinde and 30 students were present for the program. Vice Principal Dr. M. V. Kale felicitated Resource Person Mr.P.G.Chhapkane, head, department of Mathematics, Devchand College, Arjunnagar. Mrs. V.H.Shinde introduced the Resource Person. The vote of thanks given by Mr. P. R. Patil.

Mr.P. G. Chhapkane discussed the various mathematical softwares like Scilab, Matlab, Mathematica and Python with applications. Also, he explained Scilab language in details with the help of LCD projector and screen.



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Dr. Surat A. Manjare  
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**Jaysingpur College, Jaysingpur**  
Department of Mathematics

**Name of the Activity:** participation in State level Ramanujan Quiz and Poster Presentation , Securing 1<sup>st</sup> rank in Quiz competition (organized by Willingdon College, Sangli )

Year:	2025
Name of the Activity:	Participation in State level Ramanujan Poster Presentation competition and securing 1 <sup>st</sup> rank in Quiz competition organized by Willingdon College, Sangli.
Date:	25 <sup>th</sup> February, 2025
Venue:	Willingdon College, Sangli
Co-ordinator/Convenor:	Mr. P. R. Patil
Organised for:	Students, faculty
No. of Participants	8
Nature:	Academic

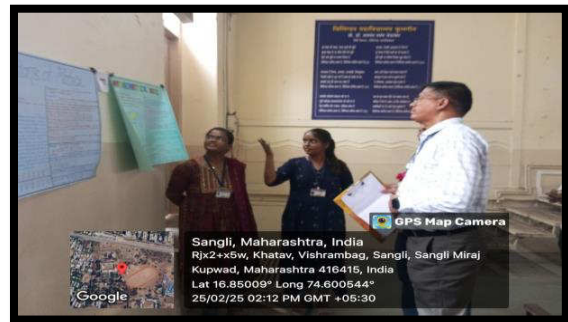
(# Photos, participant's list and other documents are attached)

On 25<sup>th</sup> February, 2025 Tuesday, Willingdon College Sangli has organized State level Ramanujan Quiz and Poster Presentation competition. 8 student of B.Sc II of our college has participated in this competition with enthusiasm.

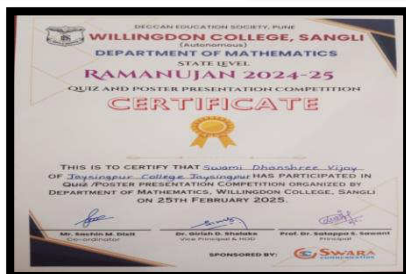
Screening test has been taken by organizer for quiz competition .5 students from B.Sc I, 5 students from B.Sc II, 5 students from B.Sc III are selected for quiz competition . 5 teams has been formed such a way that each team consist 1 students from B.Sc I, 1 students from B.Sc II, 1 students from B.Sc III. Each team consist 3 members. Student Miss. Manisha Buddharaj Chaudhari of our college was member of winner team in quiz competition who got certificate and winner trophy.



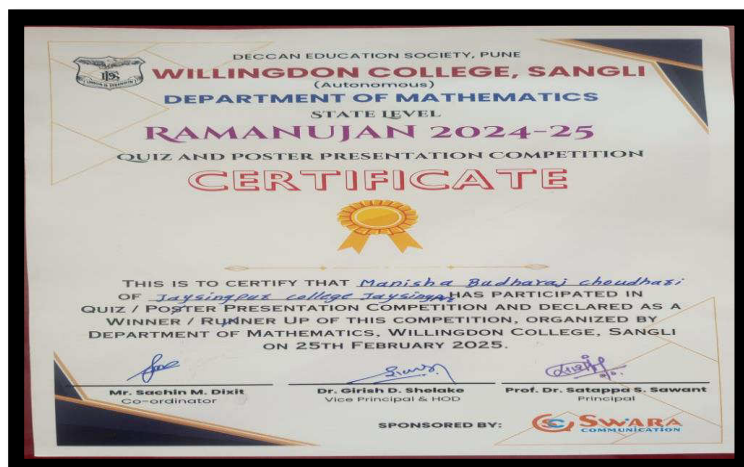
## Students Presenting Posters



## Certificates of Participant



## Trophy & Certificate of Winner of Quiz Competition



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Departmental Coordinator,  
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Anekant Education Society's  
**Jaysingpur College, Jaysingpur**  
**Department of Mathematics**

**Three Days Hands on Training Program on**  
**“Python Language”**  
under  
DBT-Star College Scheme

Year:	2024-25
Name of the Activity:	Three Days Hands on Training Program on “ Python Language ”
Date:	30/01/2025 to 01/02/2025
Venue:	Mathematics Laboratory
Co-ordinator/Convenor:	Mr. P.R. Patil,
Organised for:	Jaysingpur College, Jaysingpur
No. of Participants	35
Nature:	Academic
Chief Guest/s or Resource Person/s	Mr. Mehul A Jadhav, Assistant Professor, Vivekanand College, Kolhapur.

(# Photos, participant's list and other documents are attached)

In the fast-paced world of technology, learning a versatile and in-demand programming language like Python can open doors to numerous opportunities. Python language has become an essential tool in the field of research as well as industry for mathematician. Mathematicians can apply their expertise in solving real-world problems through the application of Python. Considering the capabilities and functionalities of Python for solving mathematical problems, Three Days Hands on Training Program on “Python Language” conducted by the department of Mathematics under the DBT-Star College Scheme. Mr. P. R. Patil have welcomed all the dignitaries on the dais and participants. Prof. Dr. (Mrs) M.V.Kale, Vice-Principal, Science stream; Incharge Co-ordinator of DBT star college scheme Dr.S. D. Umdale ; Head of department Dr. Mrs.V.H.Shinde and 35 students were present for the program. Vice Principal Dr. M. V. Kale felicitated Resource Person Mr. Mehul A Jadhav. Mrs. V.H.Shinde introduced the resource Person.



The first day of the workshop Mr. Mehul A Jadhav discussed the introductory topics such as need of Python software and its applications, installation of python software Basic data types and variables, arithmetic operations, strings and operation of strings. On the second day of the workshop, topics named data structures such as lists, sets, tuples, dictionaries and range are covered. On the same day installation and use of various modules such as math, matplotlib and numpy were covered. Also, was covered and trigonometric and logarithmic graphs using numpy was covered. On the third day, operations on trigonometric functions and logarithmic functions using math and numpy module and plotting of bar graphs, histograms, pie-charts, scatter plots using matplotlib were covered. Resource person also explained how to use Google Collab.

In this hands-on course, students learnt fundamentals of Python programming. Students learnt the applications of various modules in Python with enthusiasm. The vote of thanks was given by Mr. P. R. Patil.







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**Department of Mathematics**

Name of the Activity: Webinar on “Fundamentals of Algebra and Graph Theory”

Year:	2025
Name of the Activity:	Webinar on “Fundamentals of Algebra and Graph Theory”
Date:	18 <sup>th</sup> February, 2025
Venue:	Department of Mathematics
Co-ordinator/Convenor:	Mr. P. R. Patil
Organised for:	Students, Teaching Staff
No. of Participants	27
Nature:	Academic
Chief Guest/s or Resource Person/s	Dr. S.B. Ballal, Associate Professor, School of Mathematics and Statistics, University of Hyderabad, Hyderabad.

(# Photos, participant's list and other documents are attached)

Webinar on “Fundamentals of Algebra and Graph Theory” was conducted by the department of Mathematics under the DBT-Star College Scheme. Student Miss. Punam Mane of B.Sc. II have welcomed resource person, Principal, Vice Principal, Teachers and all student participants. 24 students and 4 Faculties were present to webinar. Mr. P. R. Patil introduced the resource Person. The vote of thanks given by Dr. R. S. Dhabbe.

Dr. Ballal discussed the concepts group, subgroup, ring, field of algebra in brief. Also, he explained basic concepts of graph theory and introduced the subject algebraic graph theory. He gave guideline research topic by explaining hyper edges, hyper vertices and hyper graphs and application of hypergraphs in chemistry, network systems in brief.

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Sachin Bhanudas Ballal (Presenting)

Webinar on  
Fundamentals of Algebra and Graph Theory  
(Recent developments in Graphs and Hypergraphs on Algebraic Structures)  
By  
Dr. Sachin Bhanudas Ballal  
Associate Professor  
School of Mathematics and Statistics  
University of Hyderabad (A Central University)  
Telangana State  
18<sup>th</sup> February, 2025

Paired with PRITAM PATIL  
Sachin Bhanudas Ballal

22 others

Paired with Sachin...  
PRITAM PATIL

People

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Sachin Bhanudas Ballal (Presenting)

Handwritten diagram showing a graph structure with nodes and edges, labeled with  $2^4$ ,  $2^3$ ,  $2^2$ ,  $2^1$ , and  $2^0$ .

Paired with PRITAM PATIL  
Sachin Bhanudas Ballal

22 others

Paired with Sachin...  
PRITAM PATIL

People

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- S SUYOG KALE

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Sachin Bhanudas Ballal (Presenting)

Applications of Hypergraphs

Chemical Hypergraph Theory

Hypergraphs appear to be more convenient to describe some chemical structures. A hypergraph  $H = (E, \mathcal{H})$  is called a chemical hypergraph if it represents molecular structure. Here  $E$  corresponds to individual atom, hyperedges with degrees greater than 2 correspond to polycyclic bonds and hyperedges with  $\deg(x) = 2$  correspond to simple covalent bonds.

Paired with PRITAM PATIL  
Sachin Bhanudas Ballal

21 others

Paired with Sachin...  
PRITAM PATIL

People

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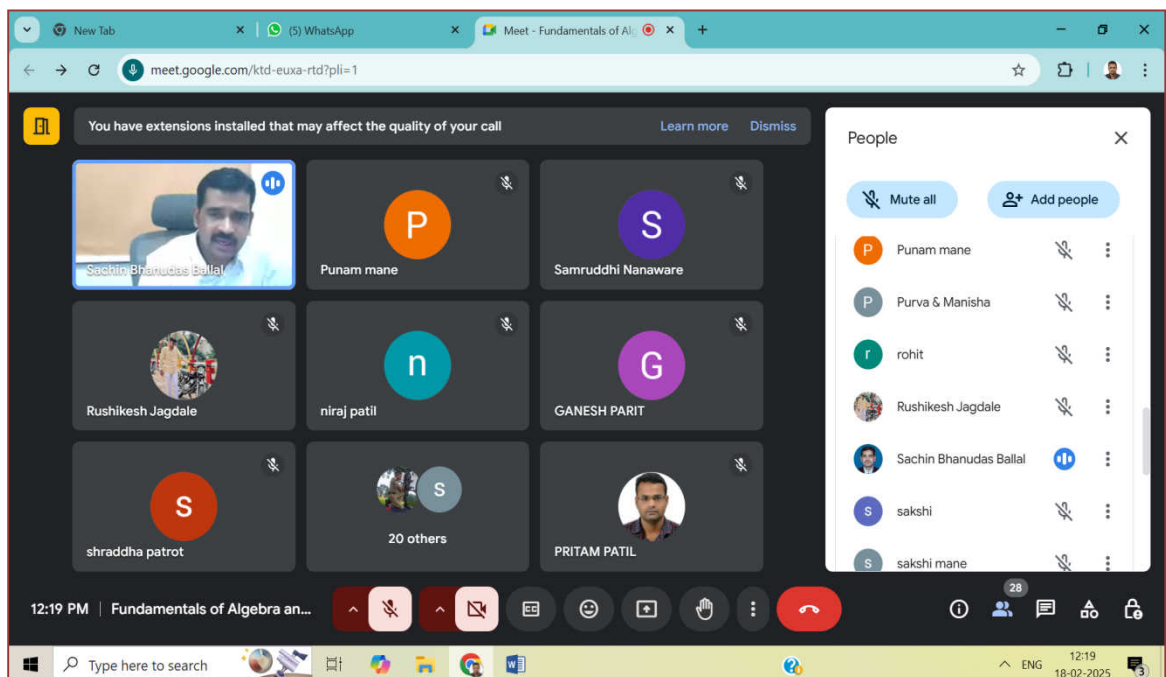
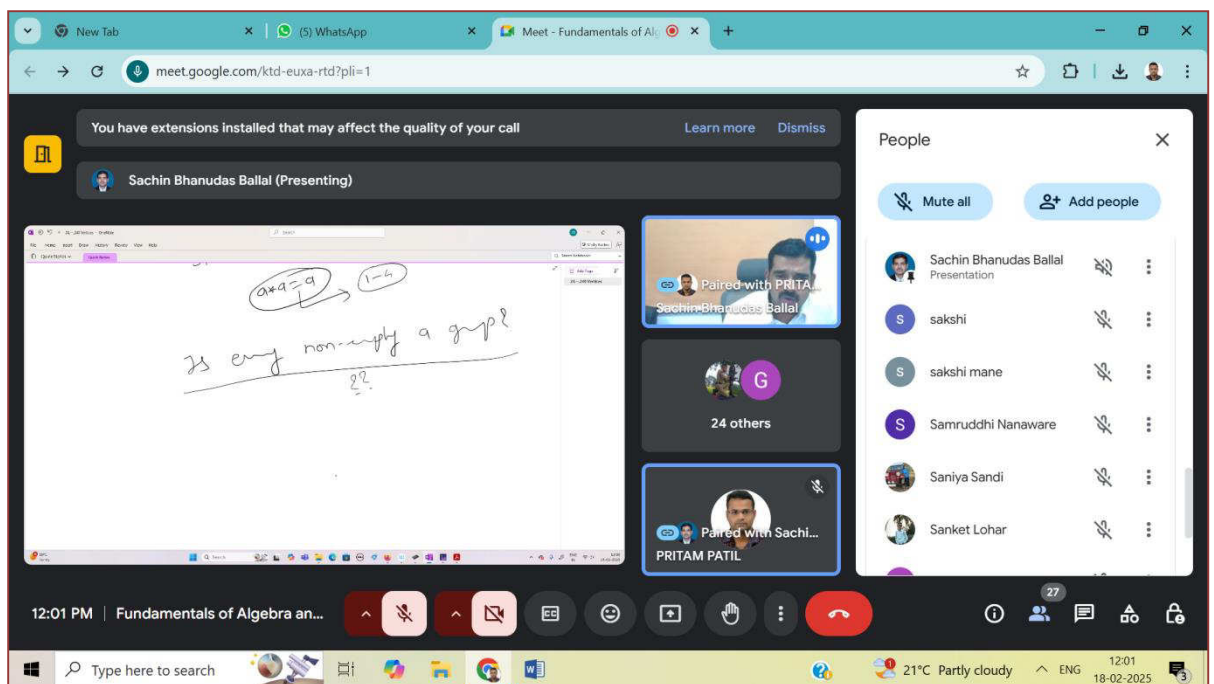
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*Patil*  
 Mr. Pritam R. Patil,  
 Departmental Coordinator,  
 Department of Mathematics.

PROJECT INVESTIGATOR  
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### Participation in State level Ramanujan Quiz and Poster Presentation, and Secured 1<sup>st</sup> rank in Quiz competition



### Day Workshop on "Career opportunities for Mathematician in Finance"



### One Day Workshop on "Mathematical Software's"



### Three Days Hands on Training Program on "Python Language"



### Celebration of National Mathematics Day



### Webinar on "Fundamentals of Algebra and Graph Theory"

