



## Department of Mathematics



**Centre of Excellence Govt. College Sanjauli Shimla – 6 under DBT STAR College presents a 3-day workshop on Exploration of Mathematics using MAXIMA Software.**

The Department of Mathematics Centre of Excellence, Govt. College- Sanjauli under DBT Star college scheme organized a three-days workshop Maxima- Software from 26 - 28 December 2023, to introduce students with analysis for graphical environments, scientific tools, and real mathematics concepts that are not currently included in the curriculum. This workshop was attended by more than 150 students not only the students of Sanjauli college but also the students of periphery colleges like St. Bede's and Govt. College Dhama etc. Some eminent professors from other colleges of the state also attended this workshop. This workshop runs parallelly with the aim of DBT i.e. collaborative learning.

The workshop aimed to provide a comprehensive understanding of the Maxima software and its vast applications in the field of mathematics.

The inaugural session was conducted in the conference hall of the college. The program began with the welcome of the chief guests by Dr. Kamayani Bisht, Associate Professor department of English, who highlighted the importance of such programs for students.

The resource persons for the workshop were Dr. Arun Pal Singh, Professor and Dr. Monika Singh, Associate Professor, both from the University of Delhi. Other invited guests were the Professors from various colleges.

Prof. Bharti Bhagra, the Principal of College Sanjauli, felicitated the chief guests and explained the importance of the workshop. Dr. Anjana Sharma, the organizing secretary, welcomed the resource persons and expressed her gratitude for sparing their precious time for the students of mathematics department.

Dr. Arun Pal Singh, Professor from University of Delhi, briefly explained the workshop's design and highlighted the importance of analytical learning in the language of mathematics, scientific design study, mind algorithm, language of mathematics, and future trends in the field of mathematics.

The workshop was held at departmental of Computer Science and also at Mathematics department computer lab and was open to undergraduate students from various colleges and teachers also.



### **DAY 1(FIRSTSESSION):**

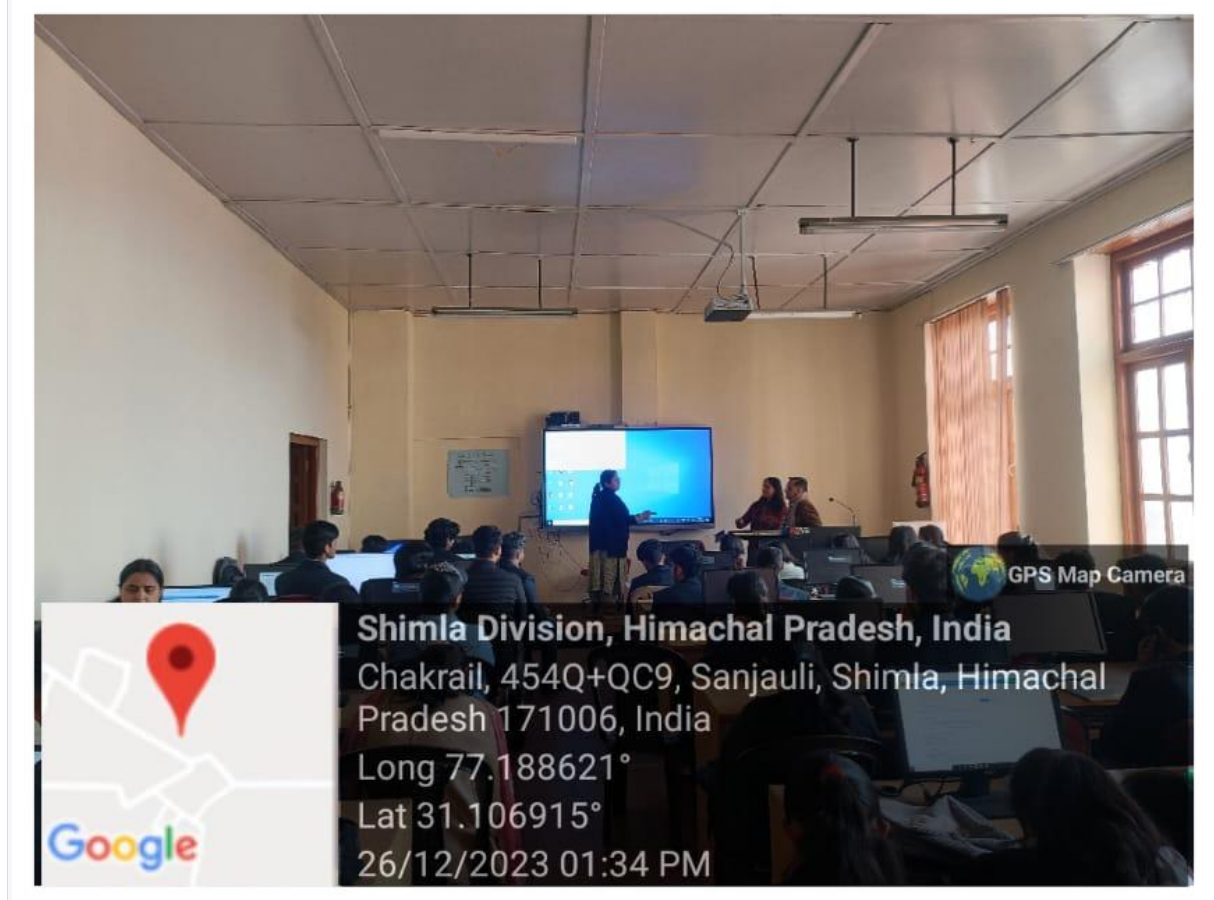
On December 26, 2023, Dr. Arun Pal Singh conducted the first session of the workshop, which was an interactive session on how to install maxima software with hands on demonstration and what are the basic criteria for the installation of maxima software, requirement for the software.

After this session lunch break start at 1:30 Pm for students and teachers.

### **DAY-1(Session 2).**

After lunch, Dr. Monika Singh conducted a session on the basic operators in mathematics, basic fundamental operators of algebra and its execution. She gave an idea of making the function more accessible whether it is an algebraic equation, transcendental equation, absolute valued function or greatest valued function. At the end she displayed the Tute- sheet for the practice of what we had done in the class. She had an artistic method of teaching that engaged and motivated the students.

There were approximately 150 students from different colleges in attendance at the session. The first day of the workshop ended with lots of fun, motivation, and learning.

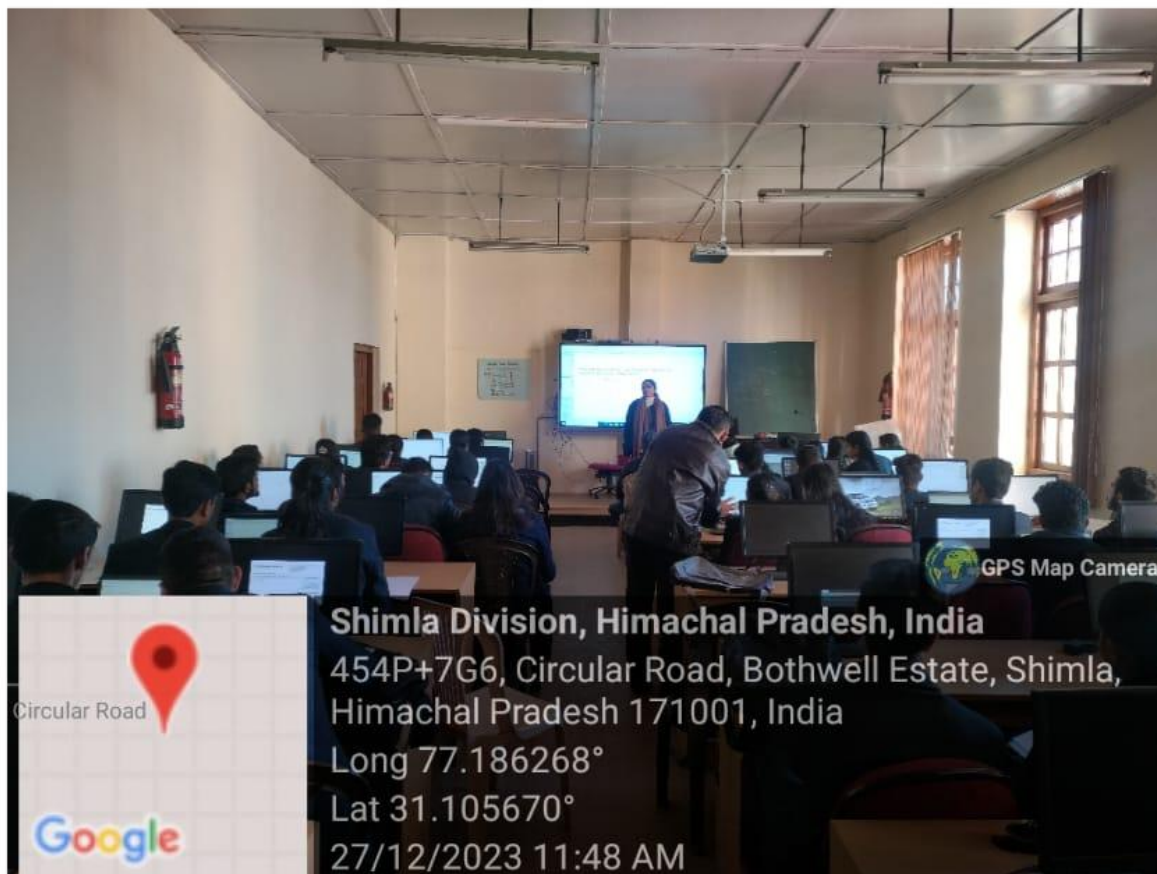


### **DAY 2 (THIRD SESSION):**

On December 27, 2023, Dr. Arun Pal Singh conducted the first half of the second session of the workshop, where he gave the idea of what we have done in the previous session and how can we use that knowledge in forming graph of various functions. After this Dr. Monica Singh take over the charge and she describes the behaviour of continuous and discrete graph. The software works so smooth if we have the proper knowledge of syntax and the program.

Post lunch session was conducted by Dr. Monika Singh, she described to plot the graph of various functions like trigonometric, polynomial and many more. With the help of graph, we are able to find the maxima and minima of the function, we can easily rotate the graph which looks some mesmerizing.

This was how the second day of workshop was ended with inducement and delight.



### **DAY 3(FIFTH SESSION):**

The final day of workshop includes 1<sup>st</sup> and 2<sup>nd</sup> derivative test, its geometrical meaning, concavity and convexity, limit, differentiation, integration and its applications. how to use conditional statements like if else if, do loop, loop for and do and print the sequence of numbers using programmes and commands.



### Post lunch session:

The post lunch session was conducted by Dr Arun Pal Singh. He taught the Bisection method to find the real roots of the equation, its convergence rate, analytical and graphical treatment also its importance and drawbacks. Last but not the least he compared Bisection method and Newton Raphson method.



At the end closing ceremony of this wonderful workshop comprises of feedback of the workshop by Swati, a student of St. Bede's, Chahat Sharma Vice -President Ramanujan Mathematical Society and Uday Singh President COE Sanjauli on the behalf of all the participants thanks resource person Dr. Arun Pal and Dr. Monical Singh for their invaluable time and contribution. Certificates are distributed among participants for their encouragement. Also Principal Bharti Bhagra and Dr. Anjana Sharma organizing secretary and Dr. Girish Kapoor HOD mathematics and co-Ordinator of this workshop emphasise on organizing this type of workshop in future also.

The ceremony end by Dr. Girish Kapoor who presents a vote of thanks to the resource persons, organising committee and all the participants.

Hoping for more such enlightening session in the future.

This workshop was attended by:

1. UG Students: -(137GC- Sanjauli, BSc mathematics, 10 St.-Bede's college, BSc-maths and 10 BCA students and 6 students from GC- Dhami)
2. PG Students: - 11 from HP University Shimla.
3. Research Scholar: - 2
4. Teachers Participants: - 14

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