



# **SATHYABAMA**

**INSTITUTE OF SCIENCE AND TECHNOLOGY**

**(DEEMED TO BE UNIVERSITY)**

**Accredited A++ Grade by NAAC | 12B Status by UGC | Approved by AICTE**

**[www.sathyabama.ac.in](http://www.sathyabama.ac.in)**

## **School of Science and Humanities**

### **Department of Mathematics**

#### **1.3.3 Value Added Courses 2022- 2023**

| <b>S. No.</b> | <b>Title</b>    | <b>Dates</b>                 | <b>No. of Students Enrolled</b> | <b>No. of Students Completed</b> | <b>Page No.</b> |
|---------------|-----------------|------------------------------|---------------------------------|----------------------------------|-----------------|
| 1             | LaTeX           | 13.4.2023<br>to<br>12.5.2023 | 21                              | 21                               | 2               |
| 2             | APPS on PHYSICS | 6.2.2023<br>to<br>18.2.2023  | 22                              | 22                               | 8               |
| 3             | PHP with MYSQL  | 27.1.2023<br>to<br>5.2.2023  | 12                              | 12                               | 13              |

## 1. LaTeX



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**SCHOOL OF SCIENCE AND HUMANITIES**  
**DEPARTMENT OF MATHEMATICS**

**ORGANIZES**  
**CERTIFICATE COURSE ON LATEX**  
**April 13th to May 12th, 2023.**

**LATEX**

**RESOURCE PERSON**  
**Ms. Monisha Kumari S**  
Assistant Professor  
Sathyabama Institute of Science and Technology

**CONVENORS**  
**Dr. Y. Swarnalatha**  
Dean, Higher Studies  
**Dr. Rekha Chakravarthi**  
Dean, Arts and Science  
**Dr. M. Nirmala**  
Head, Dept. of Mathematics

**PATRON**  
**Dr. T. Sasipraba**  
Vice Chancellor

**CHIEF PATRONS**  
**Dr. Mariageena Johnson**  
Chancellor  
**Dr. Marie Johnson**  
President  
**Mr. J. Arul Selvan**  
Vice President  
**Ms. Maria Bernadette Tamilarasi**  
Vice President  
**Ms. Maria Catherine Jayapriya**  
Vice President

## LATEX

The Department of Mathematics, Sathyabama Institute of Science and Technology, organized a Certificate course (Value added course) for the first year M.Sc. Mathematics students (Mathematics department) from April 13<sup>th</sup> to May 12<sup>th</sup>. In this course they were taught how to install the MixTex and Tex work programs in their system and run files.

**Introduction:** Latex, a powerful typesetting system used for creating documents with unparalleled precision and beauty, is the cornerstone of academic and professional publishing. This 12-day Latex course is designed to take participants from beginners to proficient users,

equipping them with the skills needed to produce elegant documents, reports, and even theses.

### **Day 1: Introduction to Latex**

- Overview of Latex and its applications
- Installation and setup of Latex
- Creating a basic Latex document
- Compiling documents using Latex and understanding errors

### **Day 2: Document Structure**

- Organizing your document into sections, subsections, and chapters
- Adding titles, headings, and subheadings
- Customizing document layout and page formatting

### **Day 3: Text Formatting**

- Typography in Latex: Fonts, styles, and sizes
- Manipulating text: Bold, italics, underline, and more
- Handling special characters and symbols

### **Day 4: Lists and Tables**

- Creating lists: Bullet points and numbered lists
- Designing tables: Basic table structure and formatting
- Adding captions and references to tables

### **Day 5: Figures and Images**

- Inserting images and graphics
- Captioning figures and cross-referencing
- Positioning figures within the document

### **Day 6: Mathematics and Equations**

- Latex's powerful math mode
- Writing mathematical expressions and equations
- Numbering and referencing equations

### **Day 7: Bibliographies and Citations**

- Introduction to Bib Tex for managing references
- Inserting citations within your document
- Generating a bibliography section

## Day 8: Advanced Formatting

- Customizing headers and footers
- Creating custom page styles
- Incorporating multi-column layouts

## Day 9: Custom Environments

- Defining and using custom environments
- Building theorem-like structures
- Designing your own document classes

## Day 10: Advanced Graphics

- Advanced image inclusion and manipulation
- Drawing with TikZ: A comprehensive introduction
- Creating flowcharts, diagrams, and graphs

## Day 11: Templates and Document Organization

- Utilizing Latex templates for various document types
- Document organization and project management
- Collaborative writing and version control with Latex

## Day 12: Final Projects and Troubleshooting

- Showcase your skills with a final project
- Troubleshooting common Latex errors
- Tips for efficient document production and optimization

## Conclusion:

This 12-day Latex course provides a thorough and structured journey for participants to master the art of document typesetting. By the end of the course, attendees will be well-equipped to create professional documents, research papers, and reports with precision, elegance, and efficiency, making them valuable assets in academic and professional settings. Whether you're a beginner or seeking to refine your Latex skills, this course is a comprehensive and hands-on approach to harnessing the power of Latex.

## LIST OF PARTICIPANTS

| S. No. | Register No. | Name of the Student      |
|--------|--------------|--------------------------|
| 1      | 42630001     | Deepika M                |
| 2      | 42630002     | Joel Jaikumar Madhuran G |
| 3      | 42630003     | Menaka                   |
| 4      | 42630004     | Mercy J                  |
| 5      | 42630005     | Poovizhi                 |
| 6      | 42630006     | Ruby Shalini T           |
| 7      | 42630007     | Shree Vijayalakshmi B    |
| 8      | 42630008     | Suvetha. V               |
| 9      | 42630009     | Shelcia Jhenci J M       |
| 10     | 42060001     | Gayathri M               |
| 11     | 42060002     | Keerthana P              |
| 12     | 42060003     | Lavanya S                |
| 13     | 42060004     | Logeshwari S             |
| 14     | 42060005     | Murali C                 |
| 15     | 42060006     | Nithya Sri J             |
| 16     | 42060007     | Pratheepa N              |
| 17     | 42060008     | Renupradap S             |
| 18     | 42060009     | S Palanivel              |
| 19     | 42060010     | Shelshiya P              |
| 20     | 42060011     | Subasri S                |
| 21     | 42060012     | V.Ramia                  |

## COURSE OUTCOME:

Upon completion of the 12-day Latex course, participants can expect to achieve the following course outcomes:

**Proficiency in Latex Usage:** Participants will have gained a strong command of Latex, from basic document creation to advanced typesetting techniques, allowing them to produce professional-quality documents efficiently.

**Document Structuring:** Participants will be able to organize complex documents with ease, utilizing appropriate sectioning, headings, and formatting for clarity and readability.

**Text Formatting Skills:** Students will have developed skills in text formatting, including font manipulation, special character handling, and consistent typography for polished document presentation.

**Table and Figure Handling:** Participants will be adept at creating tables, figures, and captions, allowing them to present data and graphics effectively within their documents.

**Mathematical Typesetting:** Students will be proficient in mathematical typesetting, enabling them to create complex equations, formulas, and mathematical documents with precision.

**Bibliography Management:** Participants will understand how to manage references and citations, ensuring accurate and consistent bibliographies in their documents.

**Custom Document Styles:** Students will have the ability to customize document styles, headers, footers, and page layouts, tailoring documents to specific needs and requirements.

**Advanced Graphics and Diagrams:** Participants will be skilled in incorporating advanced graphics, flowcharts, diagrams, and custom illustrations into their documents using tools like TikZ.

**Document Templates:** Students will be capable of utilizing and creating Latex templates for various document types, saving time and ensuring consistency in their work.

**Collaborative Writing:** Participants will have experience with collaborative writing and version control in Latex, facilitating teamwork on Latex-based projects.





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# CERTIFICATE OF COMPLETION



THIS IS TO CERTIFY THAT

*Shelcia Thenci J M*

*HAS SUCCESSFULLY COMPLETED LATEX  
CERTIFICATE COURSE BETWEEN APRIL-  
MAY, 2023.*

**MS. S. MONISHA KUMARI**  
ASSISTANT PROFESSOR



**DR. M. NIRMALA**  
HEAD, DEPARTMENT OF MATHEMATICS

## 2. APPS on PHYSICS

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**SCHOOL OF SCIENCE AND HUMANITIES**  
**DEPARTMENT OF MATHEMATICS AND PHYSICS**  
in association with  
**IIT BOMBAY, SPOKEN TUTORIAL**  
(An initiative of National Mission of Education through ICT, 11 RD, Govt of India)  
**Organizes**  
**TEN Days Online Student Development Program(SDP) on**  
**Apps on Physics**

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**SDP DATES: 06-02-2023 to 18-02-2023**

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**Spoken Tutorial project is funded by**  
**National Mission on Education through ICT, MHRD, Govt of India and**  
**Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching**

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**Register Online At :**  
<https://rb.gy/kuvire>  
**Free Registration:**  
E-Certificates will be given to all participants by IIT Bombay  
Course completion certificates will be given to those who have attended online exam  
conducted by IIT Bombay

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**Chief Patrons :**  
**Dr. Mariazeena Johnson, Chancellor**  
**Dr. Marie Johnson, President**  
**Mr. Arulselvan , Vice President**  
**Ms. Maria Bernadette Tamilarasi, Vice president**  
**Ms. Maria Catherine Jayapriya, Vice President**

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**Dr. Rekha Chakravarthi,**  
Dean, Arts and Science  
**Dr. M. Nirmala**  
Prof and HOD,  
Department of Mathematics

**Organizers :**  
**Dr. M. Prasanna Jeyanthi** Assistant professor,  
Department of Mathematics  
**Dr. D.S. Jaya lakshmi**  
Assistant professor,  
Department of Physics

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**Name of the Program: Apps on Physics**

**Intended Participants B.Sc., M.Sc.**

**Duration: 06/02/2023 to 18/02/2023**

- Apps on physics simulations are for teaching and learning basic physics.
- Apps on Physics are simulations that help us to understand basic topics in Physics.
- These Apps are freely downloadable and easy to use. Using these apps topics chosen are in chronological order.
- The Apps are available in JavaScript and HTML formats.

- We are using the format to create this series. It is intended for teaching and learning Physics from secondary school to higher secondary. It is freely available for download at <http://www.walter-fendt.de>.
- The apps were originally created in German. They are translated into English and other languages. For this series, we are using the apps that were translated into English. <https://www.walter-fendt.de/html5/phen/>
- These Apps were created by Walter-Fendt and his team.

## Schedule

| S. No | Date       | Topic                                                                                                                                                                                                       |
|-------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | 06/02/2023 | <b>Simple Machine</b><br>About App interfaces Simulate reflection and refraction of light ray<br>Define the Snell's law Change the medium and angle of incidence to verify Snell's law                      |
| 2     | 07/02/2023 | <b>Inclined Plane</b><br>Uses of an inclined plane About Inclined Plane App interface<br>Simulate the motion of the load on an inclined plane                                                               |
| 3     | 08/02/2023 | <b>Linear Motion</b><br>Simulate the motion of a car with a constant acceleration Verify<br>Newton's first law of motion Interpret the following graphs Position<br>v/s time Velocity v/s time Acceleration |
| 4     | 09/02/2023 | <b>Forces</b><br>About the App interface Show addition of vectors Explain triangle<br>law of vectors Change the magnitude of vectors and show the<br>formation of resultant vector About polygon            |
| 5     | 10/02/2023 | <b>Kepler's laws</b><br>About Kepler's Laws App interfaces Define Kepler's first law<br>Simulate Kepler's first law Define Aphelion and Perihelion distances<br>Calculate Aphelion and Perihelion distances |
| 6     | 13/02/2023 | <b>Circular motion</b><br>About the App interface Simulate uniform circular motion Define<br>uniform circular motion Show how position, velocity, acceleration<br>and force vary with time                  |
| 7     | 14/02/2023 | <b>Sound waves</b><br>About the App interface Simulate the formation of a standing wave<br>Define and explain a node and an antinode Simulate harmonics of a<br>standing wave                               |
| 8     | 15/02/2023 | <b>Reflection and Refraction</b><br>About App interfaces Simulate reflection and refraction of light ray<br>Define the Snell's law Change the medium and angle of incidence to<br>verify Snell's law        |
| 9     | 16/02/2023 | <b>Convex Lenses</b><br>About App interface Image formation using a convex lens Change<br>the focal length in the App Change the object distance and object<br>height in the App                            |
| 10    | 17/02/2023 | <b>Interference and Diffraction</b><br>About App interface. Change the wavelength and width of slit.<br>Interpret the interference pattern. About constructive and destructive<br>interference              |
| 11    | 18/02/2023 | <b>Magnetism and Electromagnetism</b>                                                                                                                                                                       |

|  |  |                                                                                                                                              |
|--|--|----------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | Draw magnetic field lines for a bar magnet. Verify Right hand thumb rule. Verify Fleming's Left-hand rule. Verify Fleming's Right-hand rule. |
|--|--|----------------------------------------------------------------------------------------------------------------------------------------------|

**Outcomes of the course: Students able to do the following:**

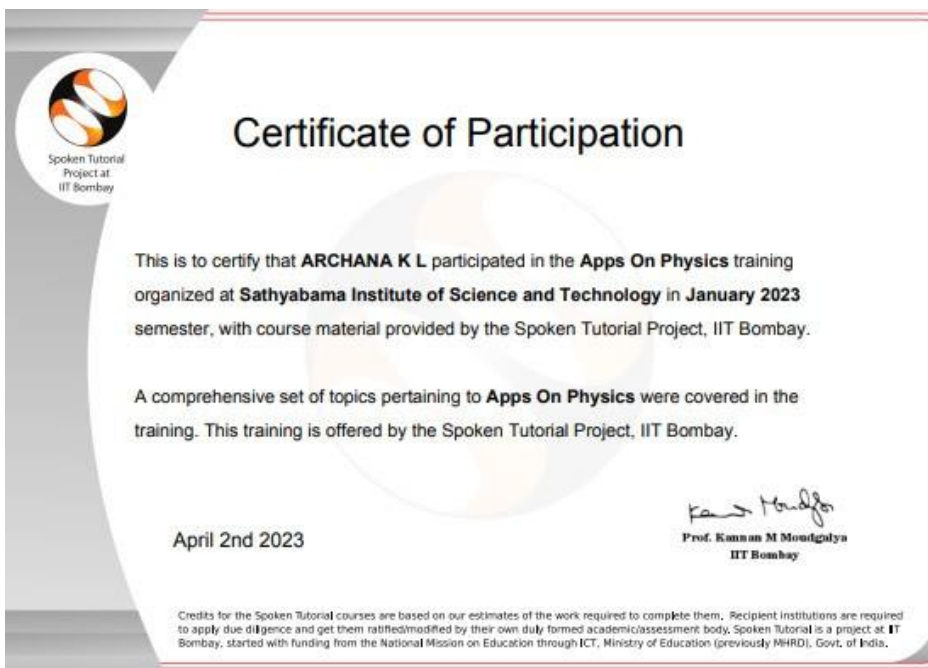
- Simulate the working of a pulley system
- Calculate the necessary force to pull the load
- Achieve a balance condition for the lever
- Find the resultant of forces using the addition of vectors
- Achieve an equilibrium condition using a parallelogram of forces
- Verify Kepler's first law using Kepler's first law simulation
- Calculate Aphelion and Perihelion distances
- Verify Kepler's second law using Kepler's second law simulation

**List of Participants**

| S.No | Register Number | Name            |
|------|-----------------|-----------------|
| 1    | 41590001        | Anuradha Sharma |
| 2    | 41590002        | ArchanaKL       |
| 3    | 41590003        | BhuvaneshwariB  |
| 4    | 41590004        | DivyabharathiS  |
| 5    | 41590005        | Durga DeviG     |
| 6    | 41590006        | HemamaliniP     |
| 7    | 41590007        | ImmanuelWeslyU  |
| 8    | 41590008        | JothikaR        |
| 9    | 41590009        | KeerthanaSN     |
| 10   | 41590010        | KirthikaM       |
| 11   | 41590011        | MariaInfantM    |
| 12   | 41590012        | MaryShamalaV    |
| 13   | 41590013        | PadmaPriyaB     |
| 14   | 41590014        | PrathyushaSY    |
| 15   | 41590015        | SangeethaV      |
| 16   | 41590016        | Sashmithan A    |
| 17   | 41590017        | ShaliniT        |
| 18   | 41590018        | Subramanian SM  |
| 19   | 41590019        | SudhakarS       |

|    |          |              |
|----|----------|--------------|
| 20 | 41590020 | TamilselvanJ |
| 21 | 41590021 | TharaniM     |
| 22 | 41590022 | Varalakshmi  |





### 3. PHP with MYSQL



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(An initiative of National Mission on Education through ICT, 11 RD, Govt of India)  
**Organizes**  
**TEN Days Online Student Development Program(SDP) on**  
**PHP with MySQL**  
**SDP DATES: 27-01-2023 to 05-02-2023**

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Spoken Tutorial project is funded by  
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Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching  
(PMMNMTT), MHRD, Govt. of India

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Dr. Rekha Chakravarthi,  
Dean, Arts and Science  
Dr. M. Nirmala  
Prof and HOD,  
Department of Mathematics

**Organizers :**  
Dr.M.Prasanna Jeyanthi  
Assistant professor, Department of Mathematics  
Dr.H.Girija Bai  
Assistant professor, Department of Mathematics  
Dr.G.Uma  
Assistant professor, Department of Mathematics

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For any queries contact: [prasannajeyanthi.maths@sathyabama.ac.in](mailto:prasannajeyanthi.maths@sathyabama.ac.in)

**Name of the Programme: PHP with MY SQL**

**Intended Participants: BSc, MSc Students**

**Duration: 27-1-2023 to 5-2-23**

- PHP: Hypertext Preprocessor “is a widely-used open-source general-purpose scripting-language that is especially suited for web development and can be embedded into HTML.

- Its syntax draws upon C, Java, and Perl, and is easy to learn. The main goal of the language is to allow web developers to write dynamically generated web pages quickly, but you can do much more with PHP.
- MySQL is a RDBMS (Relational database management system). We use such a system in order to store, retrieve and manage data related to our applications.
- Apache is an Open-Source web server in wide usage. A web-server is required to host a web-application (webpage) on a remote server and is responsible for processing the request from the client, who wants to access the application (or webpage).

### Schedule List

| S.No | Date       | Topic                                                                                                                                                                                                                              |
|------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | 27/01/2023 | <b>XAMPP in Windows</b><br>XAMPP in Windows Installing XAMPP in Windows XAMPP is a cumulative package consisting of Apache, PHP and MySQL Packages is available for Windows                                                        |
| 2    | 30/01/2023 | <b>Echo Function and Variables in PHP</b><br>Variables in PHP Variables are used for storing values, like text strings, numbers or arrays. When a variable is declared, it can be used over and over again in your script          |
| 3    | 31/01/2023 | <b>If Statement and Switch Statement</b><br>If Statement if statement - use this statement to execute some code only if a specified condition is true. if...else statement – and Switch<br>use this statement to execute some code |
| 4    | 01/02/2023 | Arithmetic and Logical Operators                                                                                                                                                                                                   |
| 5    | 02/02/2023 | <b>Arrays and Multidimensional Arrays</b><br>Arrays An array stores multiple values in one single variable. Multi-Dimensional Arrays In a multidimensional array, each element in the main array can also be an array.             |
| 6    | 03/02/2023 | <b>Loops While statement</b><br>Loops - While Statement The while loop executes a block of code while a condition is true.                                                                                                         |
| 7    | 04/02/2023 | <b>Functions Basic</b><br>Functions (Basic) To keep the script from being executed when the page loads, you can put it into a function. A function will be executed by a call to the function.                                     |
| 8    | 05/02/2023 | <b>Functions Advanced</b><br>Functions (Advanced) We can also pass parameters to functions during both the declaration and calling time. Function name (\$param1,\$param2); //during function call.                                |

### List of Participants

| S.No | Register No. | Name         |
|------|--------------|--------------|
| 1    | 42060001     | Gayathri M   |
| 2    | 42060002     | Keerthana P  |
| 3    | 42060003     | Lavanya S    |
| 4    | 42060004     | Logeshwari S |
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| 9    | 42060009     | S Palanivel  |
| 10   | 42060010     | Shelshiya P  |
| 11   | 42060011     | Subasri S    |
| 12   | 42060012     | V.Ramia      |

### Course Outcomes:

- List the major elements of the PHP & MySQL work and explain why PHP is good for web development.
- Learn how to take a static website and turn it into a dynamic website run from a database using PHP and MySQL.
- Analyse the basic structure of a PHP web application and be able to install and maintain the web server, compile, and run a simple web application.
- Learn how databases work and how to design one, as well as how to use php MyAdmin to work with MySQL.
- Learn different ways of connecting to MySQL through PHP, and how to create tables, enter data, select data, change data, and delete data. Connect to SQL Server and other data sources.

