



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

School of Science and Humanities

Department of Mathematics

1.3.2 Value Added Courses 2022- 2023

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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
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CHIEF PATRONS
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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 13th to May 12th. 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.



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, MHRD, Govt of India)
Organizes
TEN Days Online Student Development Program(SDP) on
Apps on Physics

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

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

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

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. B. Bharathi, Dean Academics
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

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	Simple Machine About App interfaces Simulate reflection and refraction of light ray Define the Snell's law Change the medium and angle of incidence to verify Snell's law
2	07/02/2023	Inclined Plane Uses of an inclined plane About Inclined Plane App interface Simulate the motion of the load on an inclined plane
3	08/02/2023	Linear Motion Simulate the motion of a car with a constant acceleration Verify Newton's first law of motion Interpret the following graphs Position v/s time Velocity v/s time Acceleration
4	09/02/2023	Forces About the App interface Show addition of vectors Explain triangle law of vectors Change the magnitude of vectors and show the formation of resultant vector About polygon
5	10/02/2023	Kepler's laws About Kepler's Laws App interfaces Define Kepler's first law Simulate Kepler's first law Define Aphelion and Perihelion distances Calculate Aphelion and Perihelion distances
6	13/02/2023	Circular motion About the App interface Simulate uniform circular motion Define uniform circular motion Show how position, velocity, acceleration and force vary with time
7	14/02/2023	Sound waves About the App interface Simulate the formation of a standing wave Define and explain a node and an antinode Simulate harmonics of a standing wave
8	15/02/2023	Reflection and Refraction About App interfaces Simulate reflection and refraction of light ray Define the Snell's law Change the medium and angle of incidence to verify Snell's law
9	16/02/2023	Convex Lenses About App interface Image formation using a convex lens Change the focal length in the App Change the object distance and object height in the App
10	17/02/2023	Interference and Diffraction About App interface. Change the wavelength and width of slit. Interpret the interference pattern. About constructive and destructive interference
11	18/02/2023	Magnetism and Electromagnetism 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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TEN Days Online Student Development Program(SDP) on
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SDP DATES: 27-01-2023 to 05-02-2023

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

Organizers :
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Assistant professor, Department of Mathematics
Dr. H. Girija Bai
Assistant professor, Department of Mathematics
Dr. G. Uma
Assistant professor, Department of Mathematics

For any queries contact: 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.

- My SQL is a RDBMS (Relational data base 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	XAMPP in Windows 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	Echo Function and Variables in PHP 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	If Statement and Switch Statement If Statement if statement - use this statement to execute some code only if a specified condition is true. if...else statement – and Switch use this statement to execute some code
4	01/02/2023	Arithmetic and Logical Operators
5	02/02/2023	Arrays and Multidimensional Arrays 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	Loops While statement Loops - While Statement The while loop executes a block of code while a condition is true.
7	04/02/2023	Functions Basic 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	Functions Advanced 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
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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.

