



**Aghorekamoni Prakashchandra Mahavidyalaya
(Bengai, Hooghly, West Bengal 712611)**

**Presents Add-On Course on
*ABC of SciLab Programming***



**Organized by Department of Physics
in Association with IQAC, AKPC Mahavidyalaya**

Course Title: ABC of SciLab Programming.

Course Coordinator: Dr. Satyaki Kar. (Ph. 75480975762)

Course Duration: 36 Hours.

Class Schedule: 4:30 – 6:30 PM during 15th - 20th May, 2023, 12:00 -2:00 PM & 2:30 – 4:30 PM during 22nd -27th May, 2023. Final Exam: 11:30 AM – 2:30 PM on 31st May, 2023.

Course Instructors: Dr. Somenath Jalal (Asst. Prof. Of Physics, Netaji Mahavidyalaya), Dr. Satyaki Kar (HoD Physics, AKPC Mahavidyalaya), Dr. Rajib Kumar Mondal (Assistant Professor of Physics, AKPC Mahavidyalaya), Dr. Shampa Mandal (Associate Professor of Physics, AKPC Mahavidyalaya, Mr. Surajit Guin (SACT, AKPC Mahavidyalaya).

Venue: Physics Department, AKPC Mahavidyalaya.

Program Outcome with Course Outcome:

SCILAB is a freely available scientific software package for numerical computations generally used for various scientific applications. This is an abbreviated acronym for the term “Scientific Laboratory”. SCILAB was developed in 1990 by researchers from INRIA (French National Institute for Research in Computer Science and Control) and ENPC (National School of Bridges and Roads). It is now maintained and developed by SCILAB Consortium joined to Digiteo Foundation from 2008. The current version is scilab 2023.0.0 released on Friday, 10 March 2023. It is an open source, cross-platform numerical computational software and also a high-level, numerically oriented programming language. This has similarity with MATLAB software package but unlike that SCILAB is free to use. Due to the open source nature of the software, some user contributions (define new data types and operations) have been integrated into the main program. Using SCILAB many numerical problems may be expressed in a reduced number of code lines, as compared to similar solutions using traditional languages, such as FORTRAN, C, or C++. This allows users to rapidly construct models for a range of mathematical problems. SCILAB also includes a free package called Xcos for modeling and simulation of explicit and implicit dynamical systems, including both continuous and discrete sub-systems. SCILAB is fully compatible with Linux, Mac OS X, and Windows operating systems. This course is designed for introducing the Physics students to SCILAB and its effective use in solving the problems and simulating the concepts in Physics.

Syllabus:

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| 1. Installation of Scilab and Basic Introduction | 6 credits |
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Students learn how to install Scilab in a computer and then the basic operations of Scilab.

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| 2. Programming Part I | 6 credits |
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Students learn basic programming using including solving 1st order differential equations.

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| 3. Programming Part II | 6 credits |
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Students learn solving 2nd and higher order differential equations.

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| 4. Introduction to Plotting | 4 credits |
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Plotting functions or datafiles obtained via programming is taught.

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| 5. Application of Scilab | 6 credits |
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Various application of Scilab programming in Physics problems are discussed.

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| 6. Programming with XCOS | 6 credits |
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Thereafter XCOS is defined and explained where physics problems are modelled using blocks and simulated to obtain the output plots.

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| 7. Installation in Linux operating system | 2 credits |
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Finally students also get to learn how to install & work in Scilab in Linux operating system.