

St. Joseph's College (Autonomous) Irinjalakuda
Department of Mathematics
Certificate course in Industrial Mathematics & Scilab

Syllabus

Industrial Mathematics

Transportation Problem

- Balanced transportation problem
- Starting Solution
- Vogel's approximation method
- Optimization

Assignment Problem

- Balanced Assignment Problem
- The Hungarian Method

Scilab

Scilab is a software for numerical mathematics and scientific visualization. It is capable of interactive calculations as well as automation of computations through programming. It provides all basic operations on matrices through built-in functions so that the trouble of developing and testing code for basic operations are completely avoided. Its ability to plot 2D and 3D graphs helps in visualizing the data we work with. All these make Scilab an excellent tool for teaching, especially those subjects that involve matrix operations. Further, the numerous toolboxes that are available for various specialized applications make it an important tool for research. Being compatible with Matlab, all available Matlab M-files can be directly used in Scilab

A large number of functionalities is included in Scilab:

- **Maths & Simulation**
For usual engineering and science applications including mathematical operations and data analysis.
- **2-D & 3-D Visualization**
Graphics functions to visualize, annotate and export data and many ways to create and customize various types of plots and charts.
- **Optimization**
Algorithms to solve constrained and unconstrained continuous and discrete optimization problems.
- **Statistics**
Tools to perform data analysis and modeling
- **Control System Design & Analysis**
Standard algorithms and tools for control system study
- **Signal Processing**
Visualize, analyze and filter signals in time and frequency domains.
- **Application Development**
Increase Scilab native functionalities and manage data exchanges with external tools.
- **Xcos - Hybrid dynamic systems modeler and simulator**
Modeling mechanical systems, hydraulic circuits, control systems...

In this course we are covering basic mathematical formula calculation using Scilab 5.5.2

