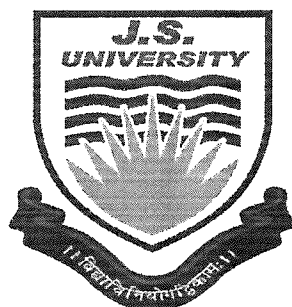


# **J.S. University, Shikohabad**

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**Value Added Course**

**(SCILAB)**

**Faculty of Science**

	<b>J.S. University, Shikohabad</b> <b>Faculty of Science</b>	<b>Value Added Course</b>
		AY: 2021-22

## SCILAB

### Learning Outcome:

This Course will provide knowledge of Scilab.

**Duration:** 30 Hours. (Theory and Practical)

### Course Outcomes: -

After completion of the course the student shall be able to:-

1. Evaluate, analyse and plot results.
2. Develop programs in SciLab
3. Understanding of linear algebra and numerical methods
4. Analyse various SciLab commands
5. Implement and illustrate 2-D graphs and 3-D graphs.

### Syllabus Outline

#### 1. Module-1

1. Check whether the following Boolean statements are true or false based on the values of a, b, c, x, and y given below.

- (i)  $a > c$
- (ii)  $a = b$
- (iii)  $(2a+b)/x^2 < 1$
- (iv)  $x^2 + 2ab + b^2 \leq 23$
- (v)  $2ac = 2cb$

2. Determine the result of the following calculations if  $a = 2.3$ ,  $b = -2.3$ ,  $c = \pi/2$ ,  $x = 2/\pi$ , and  $y = \sqrt{3}$ :

- (i)  $(a^2 + bc + x)$
- (ii)  $\sin(c) + y/c$
- (iii)  $(a+c)/(x+y)$
- (iv)  $1/(\cos(c) + \ln(x))$
- (v)  $(a+c)^3 / b$

## 2. Module-2

1. For the vectors  $u$  and  $v$ , calculate the following:

(i)  $w = u+v$

(ii)  $r = u \cdot v$

(iii)  $z = v * u$

(iv)  $t = v * u$

2. Write a program for the following operations of the matrices  $A$ ,  $B$  and  $C$  :

(i) Sum of two matrices

(ii) Product of two matrices

(iii) Product of Three matrices

## 3. Module-3

- Verify whether the given matrix is singular or non-singular and compute its inverse if exists.
- Write a program for Cramer's rule to solve the simultaneous equations (maximum of three unknowns).

## 4. Module-4

- Write a program for Gauss Jacobi iteration Method to solve the system of linear equations.
- Solving the ordinary differential equations with initial condition and solving the system of ordinary differential equations.


## 5. Module-5

- Creating and plotting 2-Dgraphs.
- Creating and plotting 3-Dgraphs.


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### References:-

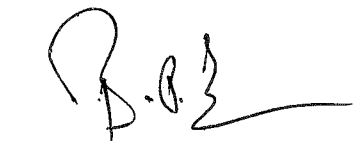
1. Er. Hema Ramachandran and Dr. Achutsankar Nair, SCILAB ,S. Chand Publishers, 2011.
- Stephen L. Campbell, Jean-Philippe Chancelier, and Ramine, Modelling and Simulation in Scilab/Scicos, 1<sup>st</sup> Edition, Spri

  
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