

Department of Computer Science:

I SEM - B.Sc

Subject - Mathematics

Subject Code: BSC-1

Syllabus

UNIT	Content	Hours Allotted(3hrs/week) 42Hrs
<u>Scilab</u>		
1	Various commands on algebra of matrices	3hrs/week
2	Program to check given matrix is symmetric or not . If symmetric then show that $A+AT$ is symmetric and $A-AT$ is skew symmetric. Otherwise write a given matrix as a sum of symmetric and skew symmetric matrices.	
3	Program to reduce the given matrix in to lower and upper triangular matrices using row or column operations	
4	Program to reduce the given matrix in to echelon form and normal form using row operations	
5	Program to verify the consistency of the given system of linear equations and find the solution if consistent.	
<u>Maxima</u>		
6	Program to find the eigen values and corresponding vectors of the given matrix.	3hrs/week
7	Program to find the characteristic equation of the given matrix and verify the Cayley Hamilton theorem.	
8	Finding first and second order partial derivatives for the given function.	
9	Verification of Euler's Theorem for given homogeneous function.	
10	Verification of modified Euler's Theorem for given homogeneous function.	

Statements of Course Outcomes (COs)

By the end of the course, the student will be able to

CO-1	Learn Scilab and Maxima software.
CO-2	Problem solve on matrices and partial derivatives by using scilab/maxima software.

Department of Computer Science:

II SEM - B.Sc

Subject - Mathematics

Subject Code: BSC-2

Syllabus

UNIT	Content	Hours Allotted(3hrs/week) 42Hrs
<u>Scilab/Maxima</u>		
1	Program to construct Cayley table and test abelian for given finite set using SCILAB.	42 hrs
2	Program to test abelian group properties for given finite set using SCILAB	
3	Program to find all possible cosets of the given finite group using SCILAB	
4	Program to find all generators and corresponding all possible subgroups for the given cyclic group using SCILAB	
5	Programs to verify Lagrange's theorem for given finite group.	
6	Program to verify the Euler's theorem for given finite group using SCILAB.	
7	Programs for finding limits by comparing left and right limits using MAXIMA	
8	Programs for testing continuity of the function at $x=a$ and x in $[a,b]$ using MAXIMA	
9	Programs for testing differentiability of the function at $x=a$ and x in (a,b) using MAXIMA	
10	Programs to verify Rolle's theorem for given function using MAXIMA	
11	Programs to verify Lagrange's mean value theorem for given function using MAXIMA	
12	Programs to verify Cauchy's Mean value theorem using MAXIMA	
13	Programs to verify Taylor's Mean value theorem using MAXIMA	
14	Programs to construct series using Maclaurin's series	
15	Programs to find limit of the function using L'Hospital's rule.	

Statements of Course Outcomes (COs)

By the end of the course, the student will be able to

CO-1	Learn Scilab and Maxima software.
CO-2	Problem solve on groups by using scilab/maxima software.
CO-3	Problem solve on limits, continuity, differentiability and MVT's by using scilab/maxima software.
CO-4	Problem solve on L'Hospital's rule by using scilab/maxima software.

Department of Computer Science:

III SEM - B.Sc

Subject - Mathematics

Subject Code: BSC-3

Syllabus

UNIT	Content	HoursAllotted(3hrs/week) 42HRS
<u>Groups(Scilab)</u>		
1.	Verification of Normality of subgroup of a group.	3hrs/week
2.	Verification of Homomorphism of given function.	
3.	Verification of Isomorphism of given mapping.	
<u>Differential Equations(Maxima)</u>		
4.	Maxima programs to solve Exact Differential Equations.	3hrs/week
5.	Maxima programs to solve Linear Differential Equations.	
6.	Maxima programs to solve Bernouli's Differential Equations.	
7.	Maxima programs to solve 1 st order but not of first degree differential equations – solvable for p only.	
8.	Maxima programs to solve Differential Equations with constant coefficients by Rule1 to Rule5 .	
9.	Maxima programs to solve Cauchy's and Legendre's equations.	
<u>Plotting Curves(Scilab/Maxima)</u>		
10.	Drawing curves given in Cartesian form using 2D-Plotting.	3hrs/week
11.	Drawing curves given in Polar form using 2D-Plotting.	
12.	Drawing curves given in Parametric form using 2D-Plotting.	
13.	Drawing three dimensional curve shapes using 3D-Plotting	

Statements of Course Outcomes (COs)

By the end of the course, the student will be able to

CO-1	Learn Scilab and Maxima software.
CO-2	Problem solve on normal subgroups, differential equations by using scilab/maxima software.
CO-3	Plotting graphs of 2D/3D by using scilab/maxima software.

Department of Computer Science:

IV SEM - B.Sc

Subject - Mathematics

Subject Code: BSC-2

Syllabus

UNIT	Content	Hours Allotted(3hrs/week) 42Hrs
<u>Scilab/Maxima</u>		
1	Program to find the solution of Differential Equations by finding complimentary functions	42 hrs
2	Program to find the solution of Differential Equations by changing independent variable.	
3	Program to find the solution of Differential Equations by changing dependent variable.	
4	Program to test for exactness and solve the Differential Equations of second order.	
5	Program to illustrate convergence, divergence or oscillatory of the given sequence using SCILAB/MAXIMA.	
6	Program to illustrate convergence, divergence or oscillatory of the given series using SCILAB/MAXIMA.	
7	Using Cauchy's criterion to determine convergence of the given sequence.	
8	Using Cauchy's criterion to determine convergence of the given series.	
9	Program to test the convergence of the series using Leibnitz's theorem.	

Statements of Course Outcomes (COs)

By the end of the course, the student will be able to

CO-1	Learn Scilab and Maxima software.
CO-2	Problem solve on differential equations by using scilab/maxima software.
CO-3	Problem solve on sequence by using scilab/maxima software.
CO-4	Problem solve on series by using scilab/maxima software.

