K. J. SOMAIYA COLLEGE OF SCIENCE AND COMMERCE , AUTONOMOUS

Certificate course in Computational Mathematics

Course Details

Department of Mathematics

2019-2020

Course Details

- **Course type** : Certificate
- **Course Title** : Computational Mathematics
- **Preamble** :

This Course is planned for students from various field of science who requires mathematics. Some calculations in mathematics becomes very rigorous and are almost impossible to do manually, so the primary aim of this course is to tell students how software can be used to do various mathematical computation which is very difficult to do manually. Students will be able to see various graphs of one and two variable functions, which are difficult to draw manually.

- **Objectives of course** :

1. To give students an exposure of doing computations using mathematical softwares

2. To make students visualise graph of functions of one and two variables in the form of curve and surfaces.

3. To expose students for calculation such as solving algebraic and transcendental

   Equation, linear equation, matrix inversion etc

- **Learning Outcomes :**

1. Student will be able to plot graph of functions of one and two variables using software.

2. Student will be able to do certain problems of linear algebra such as computing

   determinant.

3. Finding inverse of a matrix and obtain solution to system of linear equations using software.

4. Students will be able to certain problems in calculus such finding limit, derivative,

   Integration etc. using software.

- **Prerequisites / Eligibility Criteria :**

student should have done 12^{th} with mathematics as one of the subjects.

- **Intake Capacity : 20**
- **Duration** : 15 weeks
- **Course Coordinator :** Name : Mr Prabhat Kumar
  Email: prabhatkumar@somaiya.edu

❖ **Syllabus :**

Title: Computational Mathematics Course code: 19CC1MTCM	NO.OF credit: 4 credit
Paper/Module I : Analysis	
Paper/Module II : Algebra	
Paper /Module III: Graph Theory	

COURSE DESCRIPTION:

	Paper /Module I: Analysis	
	Content	No. of Lec. + Pra.
1	Continuity	5
2	Differentiability and integration	5
3	Differential Equation	5
4	Sequence and series of real numbers also of function	5
	Paper/Module II: Algebra	
	Content	No of Lectures
1	Matrices	5
2	Eigen value and Eigen vector	5
3	Solving system of equation	5
4	Various other aspects	5
	Paper /Module III: Graph Theory	
	Content	No of Lectures
1	Plotting of graph of function of one varibles	5

2	Plotting of graph of function of two varibles	5
3	Pointing out the intersection of one variable functions	5
4	Pointing out the intersection of two variable functions	5

- **Evaluation Pattern :**

	Internal	End of the course	Total Marks	Grades offered
Theory	-			
Practical	40 marks	60marks	100	yes
Project work				

- **Reference Books :** WX maxima manual