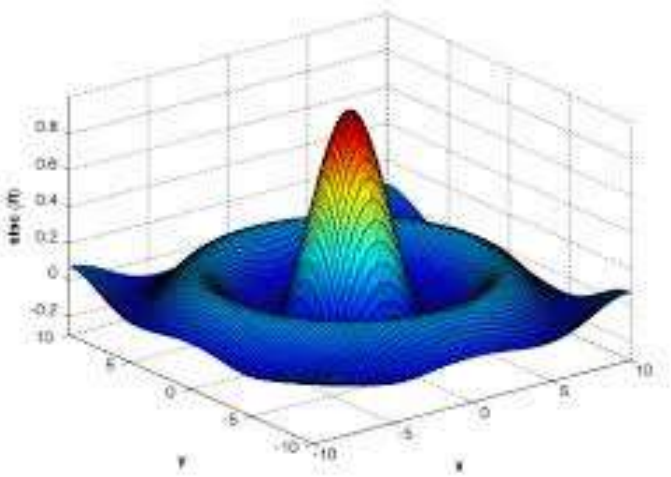
COMPUTING LAB

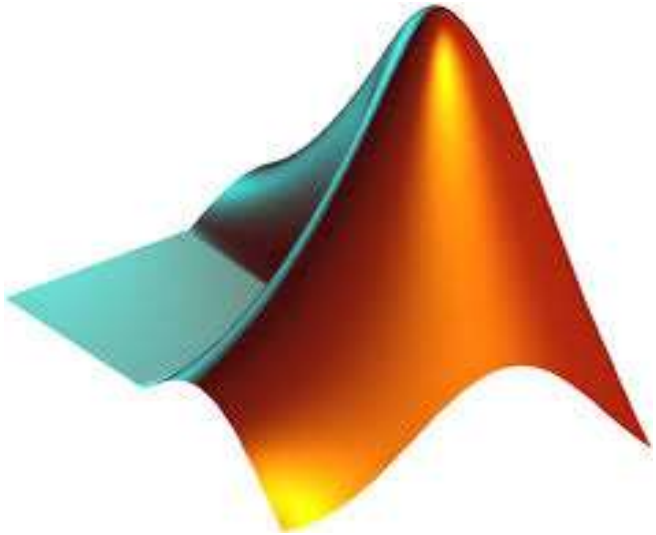
MAC-250306

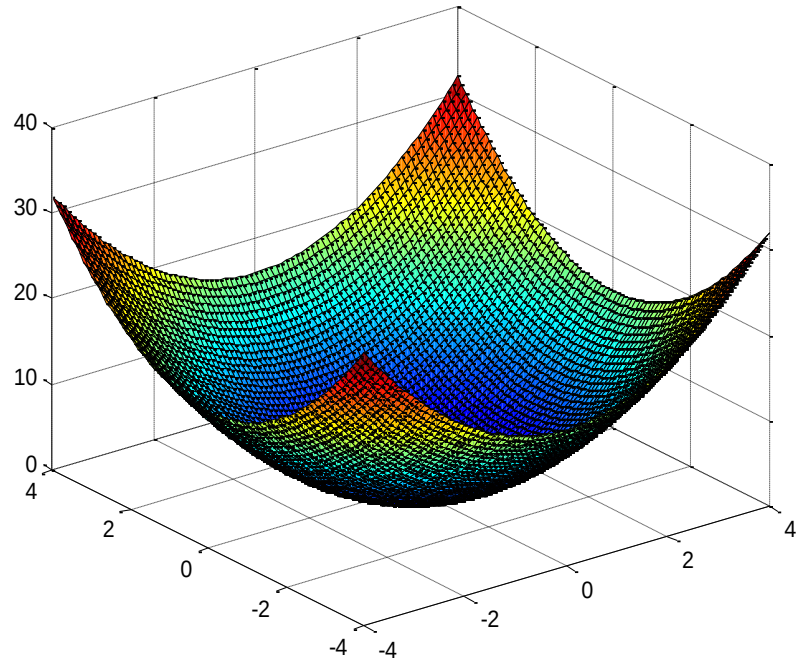
DEPARTMENT OF ENGINEERING MATHEMATICS & COMPUTING

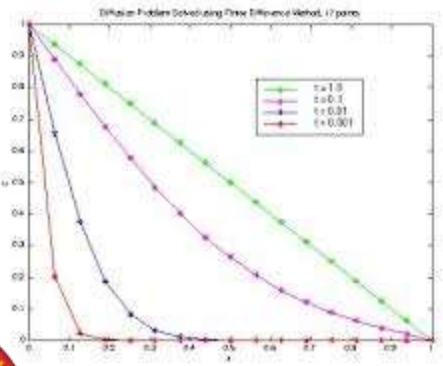
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

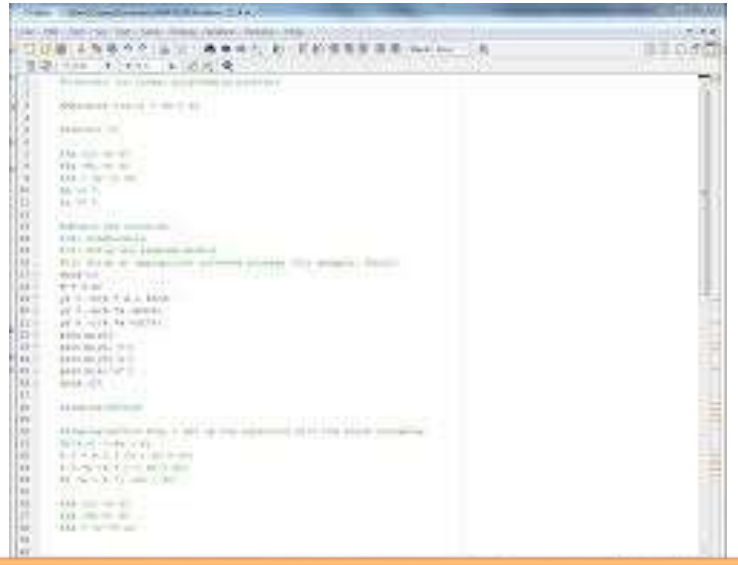
MATLAB











CONFIGURATION OF SYSTEMS

- Desktop Computers: 29
- Brief Specs-Core i7, 10th Gen 8 Core, 16 GB RAM, ITB SSD, 23.8 inches, Display, WiFi Enabled, Keyboard,Mouse, Window 10 Professional.

Lab In charge

Dr. Vijay S. Sharma

COMPUTER LAB DO'S AND DON'T

Computer Lab Safety Rules for Protecting Equipment

1. Do not bring any food or drinks near the machine.
2. Turn off the machine once you are done using it.
3. Do not plug in external devices without scanning them for computer viruses.
4. Ensure that the temperature in the room stays cool, since there are a lot of machines inside a lab as these can overheat easily.
5. This is one of the many ways of ensuring computer safety.
6. Try not to touch any of the circuit boards and power sockets when a device is connected to them and switched on.
7. Always maintain an extra copy of all your important data files.

COMPUTER LAB DO'S AND DON'T

Don'ts

1. Do not eat or drink in the laboratory.
2. Avoid stepping on electrical wires or any other computer cables.
3. Do not open the system unit casing or monitor casing particularly when the power is turned on. Some internal components hold high electric voltages which can be fatal.
4. Do not insert metal objects such as clips, pins and needles into the computer casings.
5. They may cause fire.
6. Do not remove anything from the computer laboratory without permission.
7. Do not touch, connect or disconnect any plug or cable without your lecturer/laboratory technician's permission. 7. Do not misbehave in the computer laboratory.


Computer Lab Rules
Enter & Exit Quietly
No Food or Drinks
Print Only with Permission
Organize Before Leaving
No Running No Pushing
ALT + F4
Exit Inappropriate sites
RESPECT
Respect Teachers & Students
SECURITY
Never Give Personal Info
Raise Your Hand

COURSE OBJECTIVES

To know about fundamentals of MATLAB tool .

2. To provide an overview to program curve fitting & solve Linear and Nonlinear Equations.

3. To understand the concept and importance of Numerical Techniques.

4. To gain knowledge about MATLAB Simulink & solve Various Applied problems.

COURSE OUTCOMES

Co'S	
CO1:	Students learned features of MATLAB as a programming tool. They are fully familiar to all the features of MATLAB software and easily handle the software.
CO2:	New teaching model which include theory & practical running simultaneously is introduced to our students. This method is very effective and helped to develop programming skills and technique to solve mathematical problems.
CO3:	Students learned graphic features of MATLAB and they are able to use this feature effectively in the various applications.
CO4:	Students are able to use MATLAB as a simulation tool.
CO5:	Major outcome is students are able to work as a 'MATLAB programmer' in the industry because of the hands on practical sessions. This job oriented course will helps students to get the jobs in future.

TOPICS

- Introduction to MATLAB and Simple Calculations with MATLAB
- Creating Arrays and Mathematical Operations in Matlab.
- Two Dimensional Plots in Matlab.
- User Define function and function file.
- Loops and Conditional Statements in Matlab
- Polynomial and Interpolation.
- Application on Numerical Methods :
  - Solving Algebraic Equations of one variables
  - Finding Maxima & Minima
  - Numerical Integration.
  - Ordinary Differential Equation.
- Three dimensional Plots.

LIST OF EXPERIMENTS

1. If x=[1 4; 8 3], find : a) the inverse matrix of x . b) the diagonal of x.
    1. the sum of each column and the sum of whole matrix x.
    2. the transpose of x.
2. Plot Sinc function In matlab , where Sinc (x) = sin(x) / x , and $-2\pi \leq x \leq 2\pi$
3. Root Finding
    1. Program for finding roots of f(x)=0 by newton raphsonm method
    2. Program for finding roots of f(x)=0 by bisection method
    3. Program for finding roots of f(x)=0 by Regula-Falsi method.
4. Solution of a system of simultaneous algebraic equations using the
5. Gaussian elimination procedure
6. Solution of a system of simultaneous algebraic equations using the Gauss-Seidel iterative method.
7. Program for solving to integral of a given function using Trapezoidal Rule
8. Program for solving numerical integration by simpson's 1/3 rule
9. Program for solving numerical solution of an ordinary differential equation using the Euler's method.
10. Program for solving numerical solution of an ordinary differential equation using the RungeKutta - 4th order method.