GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING (Autonomous)
Approved by AICTE, New Delhi and Affiliated to JNTU-Kakinada
Accredited by NBA & NAAC with "A" Grade with a CGPA of 3.47/4.00

DEPARTMENT OF CIVIL ENGINEERING
SCHEME OF COURSE WORK

Course Title:	**Basic Computation Lab**		
Course Code:	**19CE2156**	**L P C:**	**0 3 1.5**
Program:	**M. Tech.**		
Branch:	**Civil Engineering(Infrastructure Engineering and Management)**		
Semester:	**I**		
Prerequisites:	**Civil Engineering**		
Courses to which it is a prerequisite:	**-**		

Course Outcomes (COs):

At the end of the course, the student will be able to:

CO1: Learn the basics of programming and Machine precision

CO2: Plot the outputs

CO3: Perform regression & Interpolation for the given data

CO4: Apply programming to civil engineering problems

CO5: Compute load carrying capacity & stresses for structural problems

Program Outcomes (POs):

Post Graduates will be able to:

1. Synthesize existing and new knowledge in various sub areas of infrastructural engineering.

2. Analyse complex engineering problems critically with adequate theoretical background for practical applications.

3. Evaluate a wide range of feasible and optimal solutions after considering safety and environmental factors.

4. Demonstrate the ability to pursue research by conducting experiments and extract the relevant information through literature surveys.

5. Use state –of- the- art of modern tools for interpreting the behavior and modeling of complex engineering structures.

6. Attain the capability to work in multi-disciplinary teams to achieve common goals.

7. Demonstrate the knowledge to perform the projects efficiently in multi-disciplinary environments after consideration of economical and financial matters.

8. Communicate effectively on complex engineering activities to prepare reports and make presentations.

9. Engage in life-long learning independently to improve knowledge.

10. Understand the responsibility of carrying out professional practices ethically for sustainable development of society.

11. Examine critically and independently one's actions and take corrective measures by

learning   from   mistakes.

Course Outcome Vs Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO-1	S	S		S							
CO-2				M					S		
CO-3					S				S		
CO-4						M					M
CO-5						M				M	

S - Strongly correlated, *M - Moderately* correlated, *Blank - No correlation*

Assessment Methods:	Day to Day Analysis/ Viva / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	Topics	CO	Sample questions	Teaching-learning strategy	Assessment Method & Schedule
1	Introduction to lab	1			
2-8	1. INTRODUCTION TO PROGRAMMING: Basic commands like representing arrays, matrices, reading elements of a matrix, row and columns of matrices, random numbers, working with files: Scripts and Functions. 2. PLOTTING: Plotting tools for two dimensional and three dimensional plots, putting legends, texts, using subplot tool for multiple plots. 3. REGRESSION AND INTERPOLATION: Linear least squares regression (including lsqcurvefit function), Functional and nonlinear regression (including lsqnonlin function), polynomial regression, Interpolation using spline and pchip 4. Design of a Simply Supported under reinforced concrete beam 5. Calculation of BOD at time 't' 6. Design of horizontal	1, 2	1. Plot sine wave	Experiment	Checking Observation note book, Record correction and Viva

	curve of a highway 7. Design of extra widening at horizontal curve 8. Calculation of Stopping Sight Distance 9. Calculation of Overtaking Sight Distance on highway				
9	**MID TEST – I**				
10-16	10. Design of Super elevation of horizontal curve 11. Spot Speed Analysis of a road system 12. Find the CBR value from the given load-penetration data 13. Calculation of discharge of Venturimeter for the given data. 14. Calculation of deflection of a Cantilever beam 15. Stability analysis of a retaining wall 16. Find active and passive earth pressure from Rankine theory 17. Resultant stresses at extreme fibres in PSC beam 18. Calculation of pressure line in PSC beam 19. Find the loss of prestress 20. Find the load capacity of a welded bracket	3, 4, 5	1. Design superelevation	Experiment	Checking Observation note book, Record correction and Viva
17	**MID TEST – II**				
18	**END EXAM**				