

Tools in Scientific Computing [0-0-2]		Semester	III
Course Code	BAGL358D	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0:0:2	SEE Marks	50
Credits	01	Exam Hours	03
Examination nature (SEE)	Practical		
Course objectives: <ul style="list-style-type: none">To create different plots and chartsTo compute different functions, conditional functions and make regression analysisTo carryout iterative solutions for roots, multiple roots, optimization and non-linear regression analysisTo carryout matrix operationsTo Understand VBA and UDFTo understand VBA subroutines and MacrosTo carryout numerical integration and solving differential equations using different methods			
Sl.NO	Experiments		
1	Familiarization of Scientific computing		
2	Familiarization of Computing tool		
3	Realization of Arrays and Matrices		
4	Numerical Differentiation and Integration		
5	Solution of Ordinary Differential Equations		
6	Simple Data Visualization		
7	Simple Data Analysis with Spreadsheets		
8	Convergence of Fourier Series		
	Demonstration Experiments (For CIE)		
9	Coin Toss and the Level Crossing Problem		
10			
Course outcomes (Course Skill Set): At the end of the course the student will be able to: <ul style="list-style-type: none">Describe the needs and requirements of scientific computing and to familiarize one programming language for scientific computing and data visualization.Approximate an array/matrix with matrix decomposition.Implement numerical integration and differentiation.Solve ordinary differential equations for engineering applicationsRealize how periodic functions are constituted by sinusoidsRealize how periodic functions are constituted by sinusoidsSimulate random processes and understand their statistics.			

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50) and for the SEE minimum passing mark is 35% of the maximum marks (18 out of 50 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/course if the student secures a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together

Continuous Internal Evaluation (CIE):

CIE marks for the practical course are **50 Marks**.

The split-up of CIE marks for record/ journal and test are in the ratio **60:40**.

- Each experiment is to be evaluated for conduction with an observation sheet and record write-up. Rubrics for the evaluation of the journal/write-up for hardware/software experiments are designed by the faculty who is handling the laboratory session and are made known to students at the beginning of the practical session.
- Record should contain all the specified experiments in the syllabus and each experiment write-up will be evaluated for 10 marks.
- Total marks scored by the students are scaled down to **30 marks** (60% of maximum marks).
- Weightage to be given for neatness and submission of record/write-up on time.
- Department shall conduct a test of 100 marks after the completion of all the experiments listed in the syllabus.
- In a test, test write-up, conduction of experiment, acceptable result, and procedural knowledge will carry a weightage of 60% and the rest 40% for viva-voce.
- The suitable rubrics can be designed to evaluate each student's performance and learning ability.
- The marks scored shall be scaled down to **20 marks** (40% of the maximum marks).

Semester End Evaluation (SEE):

- SEE marks for the practical course are 50 Marks.
- SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the Head of the Institute.
- The examination schedule and names of examiners are informed to the university before the conduction of the examination. These practical examinations are to be conducted between the schedule mentioned in the academic calendar of the University.
- All laboratory experiments are to be included for practical examination.
- (Rubrics) Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. **OR** based on the course requirement evaluation rubrics shall be decided jointly by examiners.
- Students can pick one question (experiment) from the questions lot prepared by the examiners jointly.
- Evaluation of test write-up/ conduction procedure and result/viva will be conducted jointly by examiners.

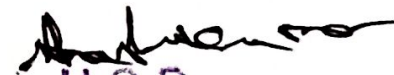
General rubrics suggested for SEE are mentioned here, writeup-20%, Conduction procedure and result in -60%, Viva-voce 20% of maximum marks. SEE for practical shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, rubrics shall be decided by the examiners)

Change of experiment is allowed only once and 15% of Marks allotted to the procedure part are to be made zero.

The minimum duration of SEE is 02 hours

Suggested Learning Resources:

- SCIENTIFIC COMPUTING LABORATORY MANUAL, Dept. Of Electronics and Communication Engineering, ICET


H.O.D.

Dept. of Agricultural Engineering
Alva's Institute of Engg. & Technology
Mijar, Moodubidire - 574225