Introduction to Data Analytics		Semester	IV
Course Code	BAGL456C	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	0:0:2:0	SEE Marks	50
Total Hours of Pedagogy	14 sessions	Total Marks	100
Credits	01	Exam Hours	03
Examination nature (SEE)	Practical		

Course objectives:

- Gather sufficient relevant data, conduct data analytics using scientific methods, and make appropriate and powerful connections between quantitative analysis and real-world problems.
- Demonstrate a sophisticated understanding of the concepts and methods; know the exact scopes and possible limitations of each method; and show capability of using data analytics skills to provide constructive guidance in decision making.
- Use advanced techniques to conduct thorough and insightful analysis, and interpret the results correctly with detailed and useful information.
- Show substantial understanding of the real problems; conduct deep data analytics using correct methods; and draw reasonable conclusions with sufficient explanation and elaboration.
- Write an insightful and well-organized report for a real-world case study, including thoughtful and convincing details.
- Make better business decisions by using advanced techniques in data analytics.

Sl.NO	Experiments
1	Data Analytics Overview
2	Importance of Data Analytics
3	Types of Data Analytics
4	Descriptive Analytics
5	Diagnostic Analytics
6	Predictive Analytics
7	Prescriptive Analytics
8	Benefits of Data Analytics
Demonstration Experiments (For CIE)	
9	Data Visualization for Decision Making
10	Data Types, Measure Of central tendency, Measures of Dispersion
11	Graphical Techniques, Skewness & Kurtosis, Box Plot
12	Descriptive Stats and Sampling Funnel, Sampling Variation, Central Limit Theorem, Confidence interval

Course outcomes (Course Skill Set):
At the end of the course the student will be able to:

1. Student will understand what data are, how they are collected, the role of metadata in understanding a given set of data, and how to assess the quality/reliability of data.
2. Student will have intermediate proficiency in the acquisition and organization of data.
3. Students will demonstrate intermediate proficiency in the visualization of data to communicate information and patterns that exist in the data.
4. Students will be able to use at beginning level of proficiency the tools of statistics and machine learning to ask questions of and explore patterns in data.
5. For a given exploration of data, students will be able to communicate both in writing and verbally the limitations of data, the methods of acquisition, the interpretation of visualized data, and the results of statistical analysis.
6. In the context of data analysis, students will be able to reflect on the ethics of the questions asked of data, the methods of acquiring the data, the mode of data analysis/visualization, and the rhetoric used in communicating findings with data.

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).

The Sum of scaled-down marks scored in the report write-up/journal and marks of a test is the total CIE marks scored by the student.

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

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