



IRD
Integrated Research and Discovery

HONORS THROUGH RESEARCH

LAB WORKBOOK

23IE01RF - INDEPENDENT STUDY AND RESEARCH

Koneru Lakshmaiah Educational Foundation

Team IRD

KL UNIVERSITY | 23IE01RF – INDEPENDENT STUDY AND RESEARCH



LAB WORKBOOK

STUDENT NAME	
REG.NO	
YEAR	
SEMESTER	
SECTION	
FACULTY	

Organization of the student lab workbook

The laboratory framework includes a creative element but shifts the time-intensive aspects outside of the Two-Hour closed laboratory period. Within this structure, each laboratory includes three parts: Prelab, In-lab, and Post-lab.

- a **Pre-Lab:** The Prelab exercise is a homework assignment that links the lecture with the laboratory period - typically takes 2 hours to complete. The goal is to synthesize the information they learn in lecture with material from their textbook to produce a working piece of software. Prelab Students attending a two-hour closed laboratory are expected to make a good-faith effort to complete the Prelab exercise before coming to the lab. Their work need not be perfect, but their effort must be real (roughly 80 percent correct).
- b **In-Lab:** The In-lab section takes place during the actual laboratory period. The First hour of the laboratory period can be used to resolve any problems the students might have experienced in completing the Prelab exercises. The intent is to give constructive feedback so that students leave the lab with working Prelab software - a significant accomplishment on their part. During the second hour, students complete the In-lab exercise to reinforce the concepts learned in the Prelab. Students leave the lab having received feedback on their Prelab and In-lab work.
- c **Post-Lab:** The last phase of each laboratory is a homework assignment that is done following the laboratory period. In the Post-lab, students analyse the efficiency or utility of a given system call. Each Post-lab exercise should take roughly 120 minutes to complete.

2024-25 EVEN SEMESTER LAB CONTINUOUS EVALUATION

Koneru Lakshmaiah Educational Foundation

23IE01RF - INDEPENDENT STUDY AND RESEARCH

IRD Team

Koneru Lakshmaiah Educational Foundation

Contents

1 Summarization Publications	5
1.1 Aim/Objective	5
1.2 Pre-Lab	5
1.3 In-Lab	6
1.4 Post-Lab	13
2 Problem definition and Objective	21
2.1 Aim/Objective	21
2.2 Pre-Lab	21
2.3 In-Lab	22
2.4 Post-Lab	24
3 Proposed Methodology	27
3.1 Aim/Objective	27
3.2 Pre-Lab	27
3.3 In-Lab	29
3.4 Post-Lab	31
4 Analytical Methodologies	33
4.1 Aim/Objective	33
4.2 Pre-Lab	33
4.3 In-Lab	34
4.4 Post-Lab	36
5 Graphical Analysis	37
5.1 Aim/Objective	37
5.2 Pre-Lab	37
5.3 In-Lab	38
5.4 Post-Lab	42

Koneru Lakshmaiah Educational Foundation

Experiment 1

Summarization of 5 refereed publications

Date of the Session:

1.1 Aim/Objective

The aim of the experiment is read literature as much as possible from recent to the bench mark papers. Then choose 5 appropriate papers of their chosen research area and summarize them.

1.2 Pre-Lab

The students should read the papers independently and understand the information and provide the details of the publication in the IEEE format.

1. Article 1:

2. Article 2:

3. Article 3:

4. Article 4:

5. Article 5:

1.3 In-Lab

Summarize the the articles listed in the earlier section and develop the expanded literature survey for the each of the articles identified.

1. **Title of chosen Article:**

(a) **Relevance of the Problem**

- (b) **Methodology / Algorithms used by other researchers for the same research problem:**

Koneru Lakshmaiah Educational Foundation

(c) **Dataset used (if any)**

Koneru Lakshmaiah Educational Foundation

(d) **Methodology / Algorithms proposed by author:**

Koneru Lakshmaiah Educational Foundation

Koneru Lakshmaiah Educational Foundation

(e) **Metrics Used:**

(f) **Observation and results**

Koneru Lakshmaiah Educational Foundation

1.4 Post-Lab

1. Title of another Article:

(a) Relevance of the Problem

Koneru Lakshmaiah Educational Foundation

(b) **Methodology / Algorithms used by other researchers for the same research problem:**

Koneru Lakshmaiah Educational Foundation

(c) **Dataset used (if any)**

Koneru Lakshmaiah Educational Foundation

(d) **Methodology / Algorithms proposed by author:**

Koneru Lakshmaiah Educational Foundation

Koneru Lakshmaiah Educational Foundation

(e) **Metrics Used:**

Koneru Lakshmaiah Educational Foundation

(f) **Observation and results**

Koneru Lakshmaiah Educational Foundation

For Evaluator's Use only**Evaluators Comments****Evaluator's Observation****Marks Secured out of 50****Full Name of the Evaluator:****Signature of the Evaluator:****Date of Evaluation:**

Experiment 2

Identification of the Problem and define the objective

Date of the Session:

2.1 Aim/Objective

The student should be able to list the possible gaps identified from the literature and formulation of 3 objectives.

2.2 Pre-Lab

The student should list the possible gap from the literature read in the last experiment.

1. Gap 1:

(a) Objective 1:

(b) Objective 2:

2.3 In-Lab

Formulation and refinement of the objective identified through discussion.

Koneru Lakshmaiah Educational Foundation

Koneru Lakshmaiah Educational Foundation

2.4 Post-Lab

Summarization and finalization of the objectives identified with respect to the research problem.

Koneru Lakshmaiah Educational Foundation

For Evaluator's Use only

Evaluators Comments

Evaluator's Observation

Marks Secured out of 50

Full Name of the Evaluator:

Signature of the Evaluator:

Date of Evaluation:

Koneru Lakshmaiah Educational Foundation

Experiment 3

Proposed methodology for solving the objective defined.

Date of the Session:

3.1 Aim/Objective

The students should be able to identify the relevant methodologies and techniques to solve the research problem.

3.2 Pre-Lab

Identify the various relevant methodologies and techniques discussed in the literature with respect to the objectives chosen. Compare and contrast the methodologies.

Koneru Lakshmaiah Educational Foundation

3.3 In-Lab

Formulate the methodology required to solve the selected objective and its relevance.

Koneru Lakshmaiah Educational Foundation

Koneru Lakshmaiah Educational Foundation

3.4 Post-Lab

Report the proposed methodology formulated to solve the research problem.

Koneru Lakshmaiah Educational Foundation

For Evaluator's Use only**Evaluators Comments****Evaluator's Observation****Marks Secured out of 50****Full Name of the Evaluator:****Signature of the Evaluator:****Date of Evaluation:**

Experiment 4

Data and result analysis using Analytical methodologies

Date of the Session:

4.1 Aim/Objective

The students will learn various analytical methods for data pre-processing and analysis of results.

4.2 Pre-Lab

1. Study of various methods for data pre-processing .

4.3 In-Lab

1. Identification of secondary data relevant to the research hypothesis.

Koneru Lakshmaiah Educational Foundation

2. Implementation of data pre-processing on secondary data relevant to the research hypothesis.

Koneru Lakshmaiah Educational Foundation

4.4 Post-Lab

1. Document the Analysis of results of pre-processing

For Evaluator's Use only	
Evaluators Comments	Evaluator's Observation
	Marks Secured out of 50
	Full Name of the Evaluator:
	Signature of the Evaluator:
	Date of Evaluation:

Experiment 5

Graphical analysis of data

Date of the Session:

5.1 Aim/Objective

- should be able identify the various kinds of data relevant the research.
- should be able to choose a graphical method appropriate for the data to discover the relationship between the variables.

5.2 Pre-Lab

1. Distinguish between continuous and discrete variables. Give an example for each type of variables.
2. List the various graphical methods for analyzing the data

5.3 In-Lab

1. Plot a histogram of the relevant data pertaining to the research problem

Koneru Lakshmaiah Educational Foundation

2. Plot a line chart showing trend over time.

Koneru Lakshmaiah Educational Foundation

3. Draw a pie-chart displaying how different categories contribute to the overall data.

Koneru Lakshmaiah Educational Foundation

4. Draw a scatter plot to visualize a relationship between 2 quantitative variables

Koneru Lakshmaiah Educational Foundation

5.4 Post-Lab

1. Document the observations on various graphical analysis and application on potential areas.

For Evaluator's Use only	
Evaluators Comments	Evaluator's Observation
	Marks Secured out of 50
	Full Name of the Evaluator:
	Signature of the Evaluator:
	Date of Evaluation:

Koneru Lakshmaiah Educational Foundation

Team IRD

K L UNIVERSITY | 23IE01RF – INDEPENDENT STUDY AND RESEARCH