

NAWAB SHAH ALAM KHAN COLLEGE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

LABORATORY IMPROVEMENT FOR FUTURE TRENDS (LIFT) - - -I

NAME OF THE LABORATORIES

S.No.	YEAR-SEM	NAME OF THE LAB
1	II B.TECH-ISEM	OPERATING SYSTEM

A Guide for execution of Lab Courses

VISION OF THE INSTITUTE:

To be a leading institute of world class quality technical education with strong ethical values, preparing students for leadership in their fields for the dynamic and global careers, developing breakthrough environment for professional education and research.

MISSION OF THE INSTITUTE:

M1: To enable the students to develop into outstanding professionals with high ethical standards capable of creating , developing and managing local and global engineering enterprises

M2: To ensure quality assurance by fulfilling expectations of the society and industry with state of the art technology.

M3: To attract and retain knowledgeable, creative , motivated, and highly skilled individuals whose leadership and contributions uphold the college tenets of education through student–centric learning methodologies.

M4: To provide opportunities for deserving students of all communities.

M5: To promote all round personality development of the students through interactions with alumni and academia

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VISION:

To produce quality IT professionals, with an ability to adapt to ever changing IT needs of local, national and international arena, through effective teaching & learning, interactions with alumni and industry

MISSION:

- M1: To provide a holistic learning environment for students through ethical practices.
- M2: To provide quality infrastructure through practical exposure to the latest technology requirements.
- M3: To train the students in soft skills to excel in placements and competitive exams at higher level the industry ready.
- M4: To have a healthy Industry - Institute interaction through faculty development programs, student internships, guest lectures and using latest teaching learning methodologies.
- M5: To provide effective platform to meet the industrial requirement and provide research-oriented environment for the faculty to meet the continuous societal needs.

PROGRAM SPECIFIC OUTCOMES (PSO's)

- Develop efficient information management systems using latest development tools catering to the globally changing requirements in multi-disciplinary domains
- Manage real time IT projects with consideration of human, financial, ethical and environmental factors and an understanding of policy implications.

1. AIM OF THE LIFT:

The main aim of the LIFT programme is to innovate, modify the existing facilities in labs, to create awareness among the students and develop Industry –Institution interactions and reach the standards in laboratories

2. FUNCTIONS OF THE LIFT:

- I. To create better understanding concepts of LIFT and other lab related activities among the staff and lab technicians for better improvement.
- II. To Arrange LIFT Presentations from each department about the lab activities by the staff handling the labs. (Lab Planners)
- III. To Prepare GAP ANALYSIS: This involves collection of requirements from each lab of every department, information about expansion of labs, repairs and maintenance of labs etc.
- IV. To arrange Industrial Visits/ Industrial training programs in coordination with concerned lab staff and Heads of the departments.
- V. A Report on Shadow Engineering: This involves arrangement of Industrial and Practical learning, Submission of Industrial Visit report, Technical Survey reports and Market Survey of a product for development in laboratories.
- VI. Verification of all the laboratories in every department by the LIFT Team along with the Principal and the concerned HODs, to check whether the activities are going according to LIFT guidelines, to check the Record Keeping, Lab Manuals and Viva sessions etc.
- VII. Check for LEAD Experiments and its follow up.
- VIII. Submission of proposals related to R&D, Project and Consultancy from lab staff to the Principal for further approvals.

LAB IMPROVEMENT FOR FUTURE TRENDS PROGRAMME (LIFT)

INDEX

CONTENTS:

- 1. OBJECTIVES AND RELEVANCE**
- 2. SCOPE**
- 3. PREREQUISITES**
- 4. SYLLABUS AS PER JNTUH**
- 5. LAB SCHEDULE**
- 6. SUGGESTED BOOKS**
- 7. WEBSITES (USEFUL LINKS)**

1. OBJECTIVES AND RELEVANCE:

The main objective of the LIFT concept in lab course is to provide practical hands on experience for each student by providing them with good exposure to different experiments and to uplift the knowledge levels of the student, with different applications in various fields.

2. SCOPE:

The main scope of the LIFT lab course is to cover all the experiments as per the schedule given in the prescribed week wise periods. With this, a student can better understand the concepts and operating systems so that he could get better knowledge about each lab.

3. PREREQUISITES:

The basic level idea related to each experiment should be provided to the students before conducting main lab course. Following details are to be explained related to experiment:

1. Introduction to experiment – 30 min
2. The Operating of the equipment/instrument/software
3. Record of Experimental Results.
4. Sample Calculations / Executable Programs

4. SYLLABUS AS PER JNTUH:

The lab course should be planned as per the JNTUH syllabus. In this, LEAD experiments should also be included in the cycle of experiments.

5. (A) LAB SCHEDULE:

The lab schedule should be planned once in a week. The week wise scheduled experiment should be completed.

Batches	week-1	week-2	week-3	week-4	week-5	week-6
B1	Demo	Exp.1	Exp.2	Exp.10	Exp.9	Exp.8
B2	Demo	Exp.2	Exp.10	Exp.9	Exp.8	Exp.1
B3	Demo	Exp.10	Exp.9	Exp.8	Exp.1	Exp.2
B4	Demo	Exp.9	Exp.8	Exp.1	Exp.2	Exp.10
B5	Demo	Exp.8	Exp.1	Exp.2	Exp.10	Exp.9

(B) Scheme of Evaluation:

The scheme of evaluation for internal and external exams as follows:

<u>LAB INTERNAL:</u>							
Day to Day Evaluation-15					Internal Exam-10		
Uniform	Observation & Record	Performance Of the Experiment	Result	Viva	Write up	Execution & Results	Viva
Marks-3	Marks-3	Marks-3	Marks-3	Marks-3	Marks-4	Marks-3	Marks-3
Total Marks-25							

<u>LAB EXTERNAL:</u>			
S.NO	Write up	Final Evaluation	Viva
1	1. Aim 2. Procedure 3. Program 4. Expected output.	Based on correctness of the program and Results	Based on understanding of Experiment and theoretical questions in the related subjects
Marks	20	20	10
Total Marks-50			

6. SUGGESTED BOOKS:

The suggested books should be recommended to the students as per the JNTUH syllabus prescribed.

7. WEBSITES (USEFUL LINKS):

The useful links should be provided to the students, where they can get an easy access to the knowledge of the experiment.

OPERATING SYSTEMS LAB

CONTENTS:

- 1. OBJECTIVES AND RELEVANCE**
- 2. SCOPE**
- 3. PREREQUISITES**
- 4. SYLLABUS AS PER JNTUH**
- 5. LAB SCHEDULE**
- 6. SUGGESTED BOOKS**
- 7. WEBSITES (USEFUL LINKS)**

1. OBJECTIVES AND RELEVANCE

To provide students with an understanding of the standard problems and their solutions in the area of operating systems (including process management, storage management, I/O systems design, distributed systems, protection and security) and with practical experience with one or more modern operating systems (usually some versions of Unix and Windows).

2. SCOPE

The scope of this subject is to organize and control hardware's and software's operating systems so that the device operates in an adaptable and predictable manner. An operating system gives the capacity to give out a variety of purposes, interact with computer users in a less complicated manner and stay up to date with requirements that keep changing with time. The operating system is also responsible to manage the processor, memory, devices, storage, applications interfaces and user interfaces.

3. PREREQUISITES

This lab recommends complete practice of C Programming & basics of Disk Operating System commands and GUI of window based operating system.

4. JNTUH SYLLABUS

1. Simulate the following CPU scheduling algorithms
 - a) FCFS b) SJF c) Round Robin d) Priority
2. Simulate all file allocation strategies
 - a) Sequential b) Indexed c) Linked
3. Simulate MVT and MFT
4. Simulate all File Organization Techniques
 - a) Single level directory b) Two level c) Hierarchical d) DAG
5. Simulate Bankers Algorithm for Dead Lock Avoidance
6. Simulate Bankers Algorithm for Dead Lock Prevention
7. Simulate all page replacement algorithms
 - a) FIFO b) LRU c) LFU Etc.....
8. Simulate Paging Technique of memory management.

MAIN LINKAGE OF OS THEORY WITH LAB EXPERIMENTS:

No experiments suggested as per the JNTU syllabus. Basic introduction concepts are discussed.

UNIT –II

EXPERIMENT NO.1

Introduction of CPU scheduling algorithms – FCFS, SJF, Round Robin, Priority.

OBJECTIVE:

The main objective is to understand clearly about all the process scheduling algorithms.

PRE REQUISITES:

Basic scheduling process technique.

DESCRIPTION:

1. Introduction to process techniques.
2. Introduction to scheduling techniques.
3. Implementation of scheduling algorithms.

APPLICATIONS:

1. These mechanisms can be practically applied in various Operating Systems.
2. These techniques are useful to improve the throughput.

UNIT-III

No experiments suggested as per the JNTU syllabus. Discuss synchronization techniques.

UNIT IV:

EXPERIMENT NO. 3, 7 & 8

Introduction of paging techniques.

OBJECTIVE:

The main objective is to understand clearly about all the page replacement algorithms and allocation techniques.

PRE REQUISITES:

Basic paging techniques.

DESCRIPTION:

1. Introduction to paging techniques.
2. Introduction to page replacement and allocation technique.
3. Implementation of page replacement algorithms.

APPLICATIONS:

1. These mechanisms can be practically applied in various secondary storage techniques such as disk storage.

EXPERIMENT NO.8

Simulate Paging Technique of memory management.

OBJECTIVE:

The main objective is to understand clearly about paging technique

PRE REQUISITES:

Basic paging techniques.

DESCRIPTION:

1. Introduction to paging techniques.
2. Implementation of paging technique.

APPLICATIONS:

1. These mechanisms can be practically applied in various secondary storage techniques such as disk storage.

UNIT-V**EXPERIMENT NOS. 5 & 6**

Deadlocks

OBJECTIVE:

The main objective is to understand clearly about Deadlocks technique

PREREQUISITES:

Basic knowledge of Deadlock characteristics.

DESCRIPTION:

1. Introduction to Deadlocks.
2. Deadlock detection
3. Deadlock Avoidance
4. Data Recovery from Deadlocks.
5. Deadlock prevention.

APPLICATION:

1. It gives the correct idea of Deadlocks.
2. It helps the student to know about Deadlock detection, Deadlock avoidance & prevention techniques.

UNIT-VI**EXPERIMENT NOS. 2 & 4****OBJECTIVE:**

The main objective is to understand clearly about File Organization & Implementation techniques.

PREREQUISITES:

Basic knowledge of File Accessing Procedure.

DESCRIPTION:

1. Introduction to File Organization techniques.
2. Introduction to File Implementation techniques.

APPLICATION:

1. It gives the correct idea of File Accessing technique.
2. It gives the complete knowledge to a student about the File Implementation techniques.

LEAD PROGRAM

Do a Lead Experiment on interprocess communication (IPC) using pipe and message queues using LINUX OS.

5 (A) LAB SCHEDULE: CYCLE 1:

Batches	week-1	week-2	week-3	week-4	week-5	week-6	week-7	week-8
B1(501 to 512)	Demo	Exp.1(a,b)	Exp.1(c,d)	Exp.7	Exp.3 & 8	Exp.5& 6	test	Exp.2&4
B2(513 to 524)	Demo	Exp.1(a,b)	Exp.1(c,d)	Exp.7	Exp.3 & 8	Exp.5& 6	test	Exp.2&4
B3(525 to 536)	Demo	Exp.1(a,b)	Exp.1(c,d)	Exp.7	Exp.3 & 8	Exp.5& 6	test	Exp.2&4
B4(537 to 548)	Demo	Exp.1(a,b)	Exp.1(c,d)	Exp.7	Exp.3 & 8	Exp.5& 6	test	Exp.2&4
B5(549 to 560)	Demo	Exp.1(a,b)	Exp.1(c,d)	Exp.7	Exp.3 & 8	Exp.5& 6	test	Exp.2&4

(B) VIVA SCHEDULE: The viva schedule should be planned prior to the lab experiment.

CYCLE 1:

ROUND - 1

Batches	week-1	week-2	week-3	week-4	week-5	week-6	week-7	week-8
B1,B2,B3	viva					viva		
B4,B5,B1		viva					viva	
B2,B3,B4			viva					viva
B5,B1,B2				viva				
B2,B3,B4					viva			

(C) Scheme of Evaluation:

The scheme of evaluation for internal and external exams as follows:

LAB INTERNAL:

Day to Day Evaluation-15					Internal Exam-10		
Uniform	Observation & Record	Performance Of the Experiment	Result	Viva	Write up	Execution & Results	Viva
Marks-3	Marks-3	Marks-3	Marks-3	Marks-3	Marks-4	Marks-3	Marks-3
Total Marks-25							

LAB EXTERNAL:

S.NO	Write up	Final Evaluation	Viva
1	5. Aim 6. Procedure 7. Program 8. Expected output.	Based on correctness of the program and Results	Based on understanding of Experiment and theoretical questions in the related subjects
Marks	20	20	10
Total Marks-50			

6. SUGGESTED BOOKS:

1. C programming and Data Structures, P. Padmanabham, Third Edition, BS Publications
2. Mastering C, K.R. Venugopal and S.R. Prasad, TMH Publications.
3. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
4. C Programming & Data Structures, E. Balagurusamy, TMH.
5. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, JohnWiley.

7. WEBSITES(USEFUL LINKS)

<http://www.rajalakshmi.org/dept/it/cs2257-lm.pdf>

<http://www.mamcet.com/it/e-learning/4sem/oslabmanual.pdf>

<http://www.drnnce.ac.in/files/OS-Lab%20Manual%20nisha.pdf>

http://jwfiles.net/gv6paxaa86uu/oslab_2_.doc.html