Government of Karnataka
Department of Technical Education
Bengaluru

	Course Title: **Network Administration lab**		
	Scheme (L:T:P) : **0:2:4**	Total Contact Hours: **52**	Course Code: **15CS37P**
	Type of Course: **Practical's & Student Activity**	Credit **:03**	Core/ Elective: **Core**
CIE- 25 Marks			SEE- 50 Marks

Prerequisites

Knowledge of computer operation.

Course Objectives:

1. Learn basic fault detection, assembly and disassembly of PC
2. Learn and understand OS installation and network services.

Course Outcome

On successful completion of the course, the students will be able to attain CO:

Course Outcome		Experiment linked	CL	Linked PO	Teaching Hrs
CO1	Identify the different faults related to CPU and RAM	***1 to 4***	***U, A***	1 to 10	**18**
CO2	Demonstrate the skills for assembly and disassembly of a PC and install OS	***5-6***	***A***	1 to 10	**12**
CO3	Demonstrate the skills for computer networking and its services.	***7-11***	***A***	1 to 10	**48**
			Total sessions		**78**

Legends: R = Remember U= Understand; A= Apply and above levels (Bloom's revised taxonomy)

Course-PO Attainment Matrix

Course	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
Network Administration Lab	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If ≥40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

List of Graded Practical Exercises

1. Study and measure voltages of SMPS
2. Drawing the motherboard layout (any latest processor) and studying the chipset through data books or Internet
3. CMOS setup of any latest PC
4. Fault findings: (a) Problems related to CPU (b) Problems related to RAM
5. Disassembly and Assembling of PC and Installation of Operating System
   a) Windows b) Linux. Perform dual booting also.
6. Learn parallel port, serial port and USB port testing and Installation of Scanner, Printers and ADSL/DSL Modems
7. Crimping of RJ45: Straight and Cross.
   a) Punching Cat 6 cable to I/O Box. Use punching tool.
   b) Check connectivity using LAN tester.
8. Install a Switch and Wireless router
9. Study different IP class (A, B, C) addressing. (Manual & Dynamic). Check connectivity for peer-to-peer and client-server
10. Windows Server & also install the following services
    a) Active directory b) DNS c) DHCP
11. Visit any industry / institutes (Engineering colleges, university campuses, etc) and study the following
    i) Type and Configuration of client PC's and OS (Eg: Linux, Windows, MAC etc.)
    ii) Type and Configuration of Servers and Domains used
    iii) Type of networking (Topology and media used)
    iv) Different network devices used (switch, routers, access points etc)
    v) Different types of peripheral devices used (Eg: printers, scanner, web cam etc.)
    vi) Applications used by the users.

Prepare a report of about 3 to 4 (A4 size) pages and include in the lab record.

E-learning content

1. http://www.howtogeek.com/
2. http://www.infotechguyz.com/
3. http://www.rebeladmin.com/2011/03/step-by-step-guide-to-setup-active-directory-windows-server-2008/

Suggested list of student activities

Note: The following activities or similar activities for assessing CIE (IA) for 5 marks (Any one)

Student activity like mini-project, surveys, quizzes, etc. should be done in group of 3-5 students.

1. Each group should do any one of the following type activity or any other similar activity related to the course and before conduction, get it approved from concerned course co-ordinator and programme co-ordinator
2. Each group should conduct different activity and no repeating should occur

Suggested activities

1	Study and prepare a comparative report about the make, model, configuration, etc., of different types of Printers.
2	Study and prepare a comparative report about the make, model, configuration, etc., of different types of Scanners.

3	Study and prepare a comparative report about the make, model, configuration, etc., of different types of computer systems / laptops etc.
4	Study and prepare a comparative report about the make, model, configuration, etc., of different network components and devices such as router, switches, etc.
5	Video conferencing using skpye etc.

Course Delivery

The course will be delivered through practical's and presentations

Course Assessment and Evaluation Scheme:

Method	What		To whom	When/Where (Frequency in the course)	Max Marks	Evidence collected	Course outcomes
Direct Assessment meth	CIE	IA	Students	Twice test (average of two tests)	10	Blue books	1,2,3
				Record	10	Record	
				Student activity	05	Report	
				Total	**25**		
	SEE	End Exam		**End of the course**	**50**	Answer scripts at BTE	1,2,3
Indirect Assessment	Student Feedback on course		Students	Middle of the course		Feedback forms	1,2 Delivery of course
	End of Course Survey			End of the course		Questionnaires	1,2,3 Effectiveness of Delivery of instructions & Assessment Methods

***CIE** – Continuous Internal Evaluation ***SEE** – Semester End Examination

Note:

1. I.A. test shall be conducted as per SEE scheme of valuation. However obtained marks shall be reduced to 10 marks. Average marks of two tests shall be rounded off to the next higher digit.
2. Rubrics to be devised appropriately by the concerned faculty to assess Student activities.

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No	Bloom's Category	%
1	Remembrance	10
2	Understanding	20
3	Application	70

Note to IA verifier*: *The following documents to be verified by CIE verifier at the end of semester

1. Blue books (10 marks)
2. Record (10 marks)
3. Student suggested activities report for 5 marks
4. Student feedback on course regarding Effectiveness of Delivery of instructions & Assessment Methods.

Format for Student Activity Assessment

DIMENSION	Unsatisfactory 1	Developing 2	Satisfactory 3	Good 4	Exemplary 5	Score
Collection of data	Does not collect any information relating to the topic	Collects very limited information; some relate to the topic	Collects some basic information; refer to the topic	Collects relevant information; concerned to the topic	Collects a great deal of information; all refer to the topic	3
Fulfill team's roles & duties	Does not perform any duties assigned to the team role	Performs very little duties	Performs nearly all duties	Performs all duties	Performs all duties of assigned team roles with presentation	4
Shares work equally	Always relies on others to do the work	Rarely does the assigned work; often needs reminding	Usually does the assigned work; rarely needs reminding	Does the assigned job without having to be reminded.	Always does the assigned work without having to be reminded and on given time frame	3
Listen to other Team mates	Is always talking; never allows anyone else to speak	Usually does most of the talking; rarely allows others to speak	Listens, but sometimes talk too much	Listens and contributes to the relevant topic	Listens and contributes precisely to the relevant topic and exhibit leadership qualities	3
					TOTAL	**13/4=3.25=4**

All student activities should be done in a group of 4-5 students with a team leader.

Scheme of Examination

1	Writing Procedure for two experiments (One each from Part A & Part B)	10+10=20
2	Conduction any ONE	20
3	Viva-Voce	10
	Total	**50**

***Evaluation should be based on the screen output only. No hard copy required.*

***Change of question is allowed only once. Marks of 05 should be deducted in the given question.*

Resource requirements for Network Administration Lab

(For an Intake of 60 Students [3 Batches])

Sl. No.	Equipment	Quantity
1	Servers	02
2	PC systems (latest configurations with speakers)	20
3	Laser Printers	02
4	Scanners	02
5	Web cameras	
6	Crimping Tools	10
7	Mulitmeter	10
8	I/O box Punching tool	10
9	LAN Tester	10
10	Wireless Router	04
11	CAT 6e cable	As Required
12	24 Port switches	04
13	I/O Boxes for networking	As required
14	RJ 45 connector	As required
15	Broad Band Connection	01
16	Windows server software	10 user licence

***Open Source Software should be encouraged*

MODEL QUESTION BANK
Part-A

1. Conduct an experiment to measure voltages of SMPS.
2. Conduct an experiment to study the CMOS setup of any latest PC.
3. Conduct an experiment to for parallel port, serial port and USB port testing.
4. Conduct an experiment to install Scanner.
5. Conduct an experiment to install Printer.
6. Conduct an experiment for Fault finding, problems related to CPU.
7. Conduct an experiment for Fault finding, problems related to RAM.
8. Conduct an experiment to Disassembly PC.
9. Conduct an experiment to Assemble PC.
10. Conduct an experiment to install Windows Operating System.
11. Conduct an experiment to install Linux Operating System.

Part-B

12. Conduct an experiment to perform crimping of RJ45 for Straight cabling and Check connectivity using LAN tester.
13. Conduct an experiment to perform crimping of RJ45 for Cross cabling Check connectivity using LAN tester.
14. Conduct an experiment to have manual IP addressing and check connectivity.
15. Conduct and experiment to install Windows Server & Active directory. Check connectivity using either peer-to-peer / Client-server
16. Conduct and experiment to install Windows Server & DNS. Check connectivity using either peer-to-peer / Client-server
17. Conduct and experiment to install Windows Server & DHCP. Check connectivity using either peer-to-peer / Client-server