



# GANPAT UNIVERSITY

## FACULTY OF COMPUTER APPLICATION

<b>Programme</b>	MASTER OF SCIENCE IN INFORMATION TECHNOLOGY (INFRASTRUCTURE MANAGEMENT SERVICES) – MSC-IT (IMS)			<b>Branch/Spec.</b>	Computer Applications				
<b>Semester</b>	I			<b>Version</b>	1.0.0.1				
<b>Effective from Academic Year</b>			2020-2021		<b>Effective for the batch Admitted in</b>			JUNE - 2020	
<b>Subject code</b>		P41A1FOS		<b>Subject Name</b>		FUNDAMENTALS OF OPERATING SYSTEM			
<b>Teaching scheme</b>					<b>Examination scheme (Marks)</b>				
<b>(Per week)</b>	<b>Lecture(DT)</b>		<b>Practical(Lab.)</b>		<b>Total</b>	<b>CE</b>	<b>SEE</b>	<b>Total</b>	
	L	TU	P	TW					
Credit	2		2	-	04	Theory	20	30	50
Hours	2		4	-	06	Practical	40	60	100

### Objective

The main objectivity to learn this subject is students can get basic knowledge of Linux and get command in Linux Technology.

### Pre-requisites:

Student knows about basic of operating system fundamentals.

### Learning Outcome

Students can able to manage CLI and GUI base Linux operating System.

### Theory syllabus

Unit	Content	Hrs
1	<b>Installation and Introduction of Linux</b> Introduction of Linux, Linux history, Open source information, Linux Distribution- Red Hat, Ubuntu, Debian, Linux Desktop Environment, Installation of Red Hat Enterprise Linux, Installation types of Linux-Personal Desktop, Workstation, Server and Custom installation, kickstart installation.	08
2	<b>File System, Partition of Linux</b> Introduction of file system, use of file system, Directory Structure-/, /bin, /dev, /lib, /boot, /home, /usr, /kernel, introduction of partition in Linux, use of partition types of partition- NTFS, FAT, FAT32, ext2, ext3, ext4, swap.	07
3	<b>Basic Management of Linux Operating System</b> Getting help,cal,date, browsing file system,pwd,ls, cd, cp,md, absolute and relative path names, important directories of linux, creating users and groups, managing permission by numeric and symbolic method, changing ownership, default permissions,umask	05
4	<b>LVM Architecture and Terminology, Linux Editor</b> LVM storage management-Physical Volume, logical volume, mark physical device as physical volume, add physical volume to volume group, create logical volume from the volume group pool, format and mount the logical volumes, Why use text editor, types	05

	of editor- vi, nano, vim	
5	<b>Remote session, Logs Analysis and Network Management</b> Introduction of Open SSH, use of Open SSH, features of Open SSH, Installation of Open SSH, Configuration of Open SSH, Connect Linux system remotely, introduction of log file in Linux, reading of log, location management of log files, TCP/IP Concepts, setting up a NIC, Configure the network card, Configure an internal network	05
<b>Practical content</b>		
List of Programs specified by the subject teacher based on above mentioned topics.		
<b>Text Books</b>		
1	Red hat Linux Administration By Michael Turner and Steve Shah-McGraw-Hill Companies,Inc Publisher	
<b>Reference Books</b>		
1	Redhat Fedora linux for Dummies By NabaBarkakati-Wiley Publishing,Inc.	
2	Red hat Linux Administration By Michael Turner and Steve Shah-McGraw-Hill Companies,Inc Publisher	
3	Linux for Beginners by Jason Cannon	
<b>MOOC/Certification Course</b>		
1	Red Hat Certified System Administrator (RHCSA)	
2	Red Hat Certified Engineer (RHCE)	
3	Red Hat Certified Architect (RHCA)	
<b>Paper Structure</b>		
	Q-1 (Attempt any FIVE Out of SEVEN : each question must be 3 marks ) --- 15 Questions must be covered all possible section. Q-2 ( Must be From topics : <b>Installation and Introduction of Linux</b> (03 marks))  Q-3 ( Must be From topics : <b>File System, Partition of Linux</b> (03 marks))  Q-4 ( Must be From topics : <b>Basic Management of Linux Operating System</b> (3 marks))  Q-5 ( Must be From topics : <b>LVM Architecture and Terminology, Linux Editor</b> (3 marks))  Q-6 (Must be from topic: <b>Remote session, Logs Analysis and Network Management</b> ( 3 marks))	



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<b>Effective from Academic Year</b>			2020-2021		<b>Effective for the batch Admitted in</b>			JUNE - 2020	
<b>Subject code</b>		P41A2ICS		<b>Subject Name</b>		Introduction To Cyber Security			
<b>Teaching scheme</b>					<b>Examination scheme (Marks)</b>				
<b>(Per week)</b>	<b>Lecture(DT)</b>		<b>Practical(Lab.)</b>		<b>Total</b>	<b>CE</b>		<b>SEE</b>	<b>Total</b>
	L	TU	P	TW					
Credit	4		1	-	05	Theory	20	30	50
Hours	4		2	-	06	Practical	40	60	100
<b>Objective</b>									
The main objectivity of this subject is getting basic knowledge of cyber security with hands on practical.									
<b>Pre-requisites:</b>									
Students can able to know about the basic of Linux and fundamentals of Networking.									
<b>Learning Outcome</b>									
Student can able to know the important of cyber crime and also know the important act of it. Also student can gather information from different tools and techniuiques.									
<b>Theory syllabus</b>									
Unit	Content								Hrs
1	<b>Overview of Information Security:</b> Terminology, elements of information security, information security threats and attack: Network Threat, host threat, application threat, cloud computing threat, mobile threat, Types of attack: Operating system attack, misconfiguration attack, Kali Linux								15
2	<b>Information Gathering:</b> Vulnerability Scanning, WHOIS information gathering, dns information gathering, dns report, website information gathering, nslookup, google dork, website mirroring, case study on information gathering, Open port/ service identification, footprinting: pseudonymous footprinting, internet footprinting, footprinting, methodology, footprinting through search engine, footprinting through social networking sites : social engineering- exavesdropping, phising, shoulder surfing, dumpster diving, website footprinting, email footprinting: email tracking tool, monitis, web- stat, alexa, google alerts, whosTalkin, rankur, PR software, social mention, reputation defender, network footprinting : traceroute- path analyzer pro, visual route, Troute, 3D Traceroute								20
3	<b>Scanning and Enumeration: scanning:</b> types, objectives, port scanning, scanning techniques, nmap scripting engine, Zen map, Wireshark, network scanning, proxies- proxy server, proxy chaining, proxy tool, proxy tools for mobile, enumeration, wireless access point, firewall builder,network topology mapper,								15

	firewall and packet filter: what is firewall?, packet filter vs. firewall, how firewall protects a network, packet characteristics to filter, stateless vs. stateful firewall, NAT, port forwarding, vpn,	
4	<b>Cyber Crime</b> meaning and definition, Classification and Taxonomy of Cyber Crime, Introduction of Cyber Security: Evolution, Objectives, Cyber Infrastructure Issues, Cyber Laws In India, Cryptography, Types of Cryptography, Encryption Algorithms, Secure Shell, Case Studies,	<b>10</b>
<b>Practical content</b>		
List of Programs specified by the subject teacher based on above mentioned topics.		
<b>Text Books</b>		
1	Cyberspace and Cyber Security by Goerge K. Kostopoulos, CRC Press, Taylor and Fransis Group	
2	Cyber Security Policy Guide Book by Jenifer L. Bayuk, Jason Healey, Paul Rohmeyer, Marcus H. Sachs, Jeffery Schmidt, Joseph Weiass –Wiley	
3	Cyber Crime Law and Practice by The Institute of Company Secretaries of India	
<b>Reference Books</b>		
1	Cyber Security for You by Walter L. Turner	
2	Asset Attack Vectors, Building Effective Vulnerability Management Strategies to Protect Organizations by Morey J. Haber and Brad Hibbert Apress	
3	Kali Linux Network Scanning Cook Book by Justin Hutchens Packet Publishing Open Source.	
<b>MOOC/ Certification course</b>		
1	Certified Ethical Hacker (CEH)	
2	COMPTIA SECURITY +	
3	Certified Information Systems Security Professional (CISSP)	
<b>Paper Structure</b>		
	<p>Q-1 (Attempt any FIVE Out of SEVEN : each question must be 3 marks ) --- 15 Questions must be covered all possible section.</p> <p>Q-2 ( Must be From topics : <b>Overview of Information Security</b> (4 marks))</p> <p>Q-3 ( Must be From topics : <b>Information Gathering</b> (4 marks))</p> <p>Q-4 ( Must be From topics : <b>Scanning and Enumeration: scanning</b> (4 marks))</p> <p>Q-5 ( Must be From topics : <b>Cyber Crime</b> (3 marks))</p>	



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<b>Semester</b>	I	<b>Version</b>	1.0.0.0						
<b>Effective from Academic Year</b>	2020-2021	<b>Effective for the batch Admitted in</b>	JUNE - 2020						
<b>Subject code</b>	P41A3ANP	<b>Subject Name</b>	Architecture Of Network Planning						
<b>Teaching scheme</b>			<b>Examination scheme (Marks)</b>						
<b>(Per week)</b>	<b>Lecture(DT)</b>	<b>Practical(Lab.)</b>	<b>Total</b>	<b>CE</b>	<b>SEE</b>	<b>Total</b>			
	L	TU	P	TW					
Credit	4		0	-	04	Theory	40	60	100
Hours	4		0	-	04	Practical	-	-	-
<b>Objective</b>									
The main objectivity of this subject is how to create a new network environment for small and large scale company									
<b>Pre-requisites:</b>									
Student can know the basic knowledge of hardware and computer network.									
<b>Learning Outcome</b>									
Student get the knowledge about different type of port and routing protocols also manage the basic small scale architecture.									
<b>Theory syllabus</b>									
Unit	Content								Hrs
1	<b>Basic Methodology of Network</b> Introduction to computer network, types of computer network, Layer Approach-OSI and TCP/IP, Transmission Media, Media Standards, Networking Devices: Modem, Hub, Repeater, Switch, Bridge, Wireless AP, Router, Specialized Devices: Firewall Devices, IDS/IPS, Load Balancer, Proxy Server, Intranet and Extranet, Transmission Mode								15
2	<b>Network Protocols, Services and IP Addressing</b> TCP and UDP, Protocol Architecture, Ports and Sockets, Network services, ARP, FTP, SSH, TELNET, SMTP, DNS, DHCP, TFTP, HTTP, HTTPS, POP3, IMAP4,SNMP, Physical Addressing, IPv4 Addressing, IPv6 Addressing								18
3	<b>Routing Protocols and Considerations</b> Introduction to routing, types of routing, Static routing and dynamic routing, RIP, EIGRP, IGRP, OSPF, Identify Routing Protocol Considerations in an Enterprise Network, Design a Routing Protocol Deployment,								12
4	<b>Designing network services</b> Describe the security lifecycle, Identify Cisco technologies to mitigate security vulnerabilities, Select appropriate Cisco security solutions and deployment placement, Describe high level voice and video architectures, Identify the design considerations for voice/video services, Describe Cisco Unified Wireless Network Architectures and								15

	Features, Design wireless network using controllers	
Practical content		
Not applicable		
<b>Text Books</b>		
1	Computer and Communication Networks By Nader F.Mir - Prentice Hall Publisher	
<b>Reference Books</b>		
1	TCP/IP Network Administration , 3rd EditionBy Craig Hunt- O'Reilly Publisher	
2	CCNP Route Student Guide Cisco Official Book	
<b>MOOC/ Certificate course</b>		
1	COMPTIA N+	
2	CISCO Certified Network Associate (CCNA)	
<b>Paper Structure</b>		
	<p>Q-1 (Attempt any SIX Out of EIGHT : each question must be 5 marks ) --- 30  Questions must be covered all possible section.</p> <p>Q-2 ( Must be From topics : <b>Basic Methodology of Network</b> (07 marks))</p> <p>Q-3 ( Must be From topics : <b>Network Protocols, Services and IP Addressing</b> (8 marks))</p> <p>Q-4 ( Must be From topics <b>Routing Protocols and Considerations</b> (07 marks))</p> <p>Q-5 ( Must be From topics : <b>Designing network services</b> (8 marks))</p>	



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<b>Semester</b>	I				<b>Version</b>	1.0.0.1			
<b>Effective from Academic Year</b>			2020-2021		<b>Effective for the batch Admitted in</b>			JUNE - 2020	
<b>Subject code</b>		P41A4IPP		<b>Subject Name</b>		Introduction of Python Programming			
<b>Teaching scheme</b>					<b>Examination scheme (Marks)</b>				
<b>(Per week)</b>	<b>Lecture(DT)</b>		<b>Practical(Lab.)</b>		<b>Total</b>		<b>CE</b>	<b>SEE</b>	<b>Total</b>
	L	TU	P	TW					
Credit	1		3	-	4	Theory	20	30	50
Hours	1		6	-	7	Practical	40	60	100
<b>Objective</b>									
The main objectivity of this subject is getting basic knowledge of python programming and also hands on practical with network security.									
<b>Pre-requisites:</b>									
Basic Knowledge of Programming in C Language									
<b>Learning Outcome:</b>									
Helpful to make a Career in Python Programming Language & Python Network Security									
<b>Theory syllabus</b>									
Unit	Content								Hrs
1	<b>Fundamentals of Python</b> What is Python Programming?, Features of Python Programming, Run Python in your OS, Integrated Development Environment (IDE), Python Keywords, Multi-line statement, Python Indentation, Python Comments, Multi-line Comments, Values and Variables, Python Identifiers								04
2	<b>Expressions and Arithmetic, Conditional Execution, Iteration</b> Operators & Data Types, Boolean Expression, The if/else Statement, The pass Statement, Nested Conditionals, Conditional Expressions, While Loop, For Loop, The break statement, The continue Statement, Iteration Examples								03
3	<b>Function &amp; Module, List, Tuple, Dictionary and Set</b> Using Functions, The built-in functions, Function Basics, Parameter Passing, Lambda Expressions, List - Access Elements, Remove Elements, What is Tuple? Advantages of Tuple over List, Tuple – Create, Access, Change, Delete, Set – Create, Change, Remove Element, Directory – Create, Access Elements, Change Elements, Remove Elements, Python Dictionary - Create a Dictionary, Access Elements, Change or Add Elements, delete or remove elements								04
4	<b>Handling Exceptions, Introduction to OOP in Python</b> Common Standard Exceptions, The Catch-all Handler, Exception Handling Scope, The try statement, finally Block, Defining a Class in Python, Creating an Object in Python, Object, Methods, Encapsulation, Polymorphism, Inheritance (Multiple, Multilevel) , Operator Overloading								04

Practical content	
List of Programs specified by the subject teacher based on above mentioned topics.	
<b>Text Books</b>	
1	Introduction to Programming using Python, Y. Daniel Liang, Pearson
2	Beginning Python, James Payne, Wrox
<b>Reference Books</b>	
1	Head First Programming , A Brain Friendly Guide, Paul Barry & David Griffiths, O'Reilly
2	Python The Complete Reference, Martin C. Brown
3	Fundamentals of Python Programming, Richard L. Halterman
<b>MOOC /Certificate Course</b>	
1	Certified Entry Level Python Programmer (PCEP)
2	Certified Associate in Python Programming (PCAP)
	<p><b>Note for Examiner</b>  Q-1 must be common from any topics from syllabus.  Q-2 and onwards must be from specific topics and internal choice or option can be given</p> <p><b>Paper Structure</b>  Q-1. (Attempt any Five Out of Seven: Each Question must be 3 marks) --- 15 marks  Questions must be covered All possible Section.  Q-2 ( Must be From topics : <b>Fundamentals of Python</b> (04 marks))  Q-3 ( Must be From topics : <b>Expressions and Arithmetic, Conditional Execution, Iteration</b> (04 marks))  Q-4 ( Must be From topics : <b>Function &amp; Module, List, Tuple, Dictionary and Set</b> (04 marks))  Q-5 ( Must be From topics : <b>Handling Exceptions, Introduction to OOP in Python</b> (03 marks))</p>





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<b>Semester</b>		I				<b>Version</b>	1.0.0.0		
<b>Effective from Academic Year</b>		2020-2021				<b>Effective for the batch Admitted in</b>		JUNE - 2020	
<b>Subject code</b>		P41A5EL1		<b>Subject Name</b>		Elective I – ( Fundamental of Hardware And Network)			
<b>Teaching scheme</b>					<b>Examination scheme (Marks)</b>				
<b>(Per week)</b>	<b>Lecture(DT)</b>		<b>Practical(Lab.)</b>		<b>Total</b>		<b>CE</b>	<b>SEE</b>	<b>Total</b>
	L	TU	P	TW					
Credit	2		2	-	04	Theory	20	30	50
Hours	2		4	-	06	Practical	40	60	100
<b>Objective</b>									
The main objectivity to learn this subject is to get the fundamental of basic network hardware and fundamental of Microsoft server.									
<b>Pre-requisites:</b>									
Student have some basic knowledge of the computer hardware devices and fundamentals terms of computer hardware and network									
<b>Learning Outcome</b>									
After completing subject student can maintain the hardware and also select the best hardware for his system and also solve the hardware problem in system and also get knowledge of the Microsoft server operating system.									
<b>Theory syllabus</b>									
<b>Unit</b>	<b>Content</b>								<b>Hrs</b>
1	<b>Introduction to PC Hardware</b> PC Hardware, System Case, Motherboard, Processor Memory and I/O ports: Memory, Modems, Types of ports, Universal Serial Bus, Storage Devices: Hard disk drive, Input devices, Display adapters, Monitors and Printers								09
2	<b>Computer Organization</b> Central Processing Unit: Internal Organization of the CPU, The Instruction Execution Cycle, Advanced Technologies used in modern CPUs, Organization of the Pentium Processor. System Memory: The Memory Hierarchy, Memory Characteristics, Basic Memory Operation, Cache Memory, Main Memory, Memory Error Detection and Correction, Input / Output Device, External Device, USB Device.								06
3	<b>Basic and Advance Network Concepts</b> Introduction to TCP/IP , Data Communication Model , Network Architecture, Protocol Architecture , Delivering Data : IP addressing , Physical Address								05

4	<b>Microsoft Server Operating System (2008 R2 Enterprise Edition)</b> Basic Introduction of Microsoft server operating system with different types of Version (Enterprise, Standard, Core, DataCenter), Introduction to ADDS, Introduction to DNS, How DNS Works, Introduction to DHCP, DORA Process, FTP, Creating FTP server, Create User in server, Creating Group policy, GPO,	10
<b>Practical content</b>		
List of Programs specified by the subject teacher based on above mentioned topics.		
Text Books		
1	PC Hardware: The Complete Reference Paperback – 1 Jul 2017 by Craig Zacker, John Rourke	
<b>Reference Books</b>		
1	Microsoft SQL Server 2008 R2 Administration Cookbook by Satya Shyam K Jayanty	
2	Microsoft SQL Server 2008 R2 Unleashed 1st Edition by Ray Rankins (Author), Paul Bertucci (Author), Chris Gallelli (Author), Alex T. Silverstein (Author)	
<b>MOOC/Certificate course</b>		
1	Microsoft Technology Associate (MTA)	
2	Microsoft Certified Solutions Associate (MCSA)	
3	COMPTIA A+	
<b>Paper Structure</b>		
	<p>Q-1 (Attempt any FIVE Out of SEVEN : each question must be 3 marks) --- 15 Questions must be covered all possible section.</p> <p>Q-2 ( Must be From topics : <b>Introduction to PC Hardware</b> (4 marks))</p> <p>Q-3 ( Must be From topics : <b>Computer Organization</b> (4 marks))</p> <p>Q-4 ( Must be From topics : <b>Basic and Advance Network Concepts</b> (3 marks))</p> <p>Q-5 ( Must be From topics <b>Microsoft Server Operating System (2008 R2 Enterprise Edition)</b> (4 marks))</p>	



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<b>Semester</b>	IV				<b>Version</b>	1.0.0.1			
<b>Effective from Academic Year</b>	2020-2021				<b>Effective for the batch Admitted in</b>	JUNE - 2020			
<b>Subject code</b>	P41A6IP1		<b>Subject Name</b>	Industrial Project- I					
<b>Teaching scheme</b>					<b>Examination scheme (Marks)</b>				
<b>(Per week)</b>	<b>Lecture(DT)</b>		<b>Practical(Lab.)</b>		<b>Total</b>	<b>CE</b>		<b>SEE</b>	<b>Total</b>
	L	TU	P	TW					
Credit	-	-	4		4	Theory	-	-	-
Hours	-		8		8	Practical	40	60	100
<b>Objective</b>									
The main objectivity is to learn this subject to get how to develop a project in industry and student can increase the confident level to work in industry.									
<b>Pre-requisites:</b>									
Basic Knowledge of system analysis and design and database technology and also core technology the networking like Microsoft Server, Linux, Unix, Virtualization and Cisco technology also firewall technology									
<b>Learning Outcome:</b>									
Will be able to or manage network of any small and large organization									
Theory syllabus									
<b>Unit</b>	<b>Content</b>								<b>Hrs</b>
1	<b>Rules for the Project:</b> 1) The duration of the project will be semester term. The students can do their project work individually or in a group, but the work must be sufficient in order to justify the duration and role. 2) The passing standard in the project will be as per GNU standard. 3) The project work should be commencing after seeking prior approval from the institution. Generally the purpose of approval includes to submit their project titles and proposals with the name of internal and external guides to the Project Coordinator of Institution within 15 days of the commencement of the forth semester. In case, if the student proposal is rejected, the revised proposal in the same or other area, is required to submit and get it sanctioned within next 10 days. Failing to do this, His/her term will not be granted. 4) The students have to report to the internal guide as per schedule declared during the project life span with the progress report duly signed by external guide but in case the minimum 3 reporting is must. The reporting can be online but it needs prior approval with genuine grounds. Moreover they have to bring these reports with the final report at the time of final report at the time of external examination. 5) The external examiners appointed by the University will give the external marks								

	<p>on the basis of the heads like Presentation, Demonstration, Viva Voice, Documentation etc. The distribution of the marks to different heads may be decided at the time of evaluation of the project but it is expected to have the same distribution.</p> <p>6) The Internal Guide/Project Coordinator of Institution will give the internal marks. These marks may be given on the bases of regular reporting of the student to the internal guide.</p>	
<b>Practical content</b>		
<b>Text Books</b>		
1	A Practical Guide to Linux Commands, Editors, and Shell Programming by Mark G. Sobell	
<b>Reference Books</b>		
1	Windows Server 2012 R2: Essentials & Configuration Pocket Consultant by Stanek (Author)	
2	Microsoft Virtualization: Master Microsoft Server, Desktop, Application, and Presentation Virtualization Paperback – Import, 4 Jun 2010 <b>by Thomas Olzak , James Sabovik , Jason Boomer , Robert M Keefer .</b>	
	<b>Note for Examiner</b> Project Dissertation	
	<b>Paper Structure</b> Project Dissertation includes Presentation and Report.	