

Diploma in Computer Engineering

V Semester

V SEMESTER

Sl No	Course Code	Course Name	Teaching Scheme					Examination Scheme							
			Instruction Periods per week			Total Periods per semester	Credits	Continuous Internal Evaluation			Semester End Examination				
			L	T	P					Mid Sem1	Mid Sem2	Internal Evaluation	Max Marks	Min Marks	Total Marks
1	18CM 501F	INDUSTRIAL MANAGEMENT & ENTREPRENEURSHIP	3	1	0	60	3	20	20	20	40	14	100	35	
2	18CM 502C	COMPUTER HARDWARE & SYSTEM ADMINISTRATION	3	1	0	60	3	20	20	20	40	14	100	35	
3	18CM 503C	JAVA PROGRAMMING	3	1	0	60	3	20	20	20	40	14	100	35	
4	18CM 504E	(A) PYTHON PROGRAMMING (B) ANDROID PROGRAMMING	3	1	0	60	3	20	20	20	40	14	100	35	
5	18CM 505E	(A) CLOUD COMPUTING (B) CRYPTOGRAPHY AND NETWORK SECURITY	3	1	0	60	3	20	20	20	40	14	100	35	
6	18CM 506P	COMPUTER HARDWARE & SYSTEM ADMINISTRATION LAB PRACTICE	1	0	2	45	1.5	20	20	20	40	20	100	50	
7	18CM 507P	JAVA PROGRAMMING LAB PRACTICE	1	0	2	45	1.5	20	20	20	40	20	100	50	
8	18CM 508P	(A) PYTHON PROGRAMMING LAB PACTICE (B) ANDROID PROGRAMMING LAB PRACTICE	1	0	2	45	1.5	20	20	20	40	20	100	50	
9	18CM 509P	UNIX/LINUX SHELL PROGRAMMING LAB PRACTICE	1	0	2	45	1.5	20	20	20	40	20	100	50	
10	18CM 510P	PROJECT WORK	1	0	2	45	1.5	20	20	20	40	20	100	50	
		Skill Up gradation-V	0	0	7	105	2.5	0	0	Rubrics		--	-	-	
			20	5	17	630	25	200	200	200	400	170	1000	425	
11	Activities: student performance is to be assessed through Rubrics														

INDUSTRIAL MANAGEMENT & ENTREPRENEURSHIP

Course Title :	Industrial Management & Entrepreneurship	Course Code	18CM501F
Semester	V	Course Group	Foundation
Teaching Scheme in Periods(L:T:P)	45:15:0	Credits	3
Methodology	Lecture + Tutorial	Total Contact Periods :	60 periods
CIE	60 Marks	SEE	40 Marks

This course is common with DECE, DEEE, DEIE & DFWT

Pre requisites

This course requires the basic knowledge of management and Entrepreneur skills.

Course Outcomes

CO1	To become aware of business and management concepts.
CO2	Analyze the various rules and regulations required for the planning of factory and its staff.
CO3	Analyse balance sheet and various budget issues.
CO4	Analyse the material required and its management economically.
CO5	Analyze the quality management and know the analysis procedure for quality.
CO6	Able to establish a small scale industry by knowing the entrepreneur skills.

COURSE CONTENTS

Upon completion of the course the student should be able to

1.0 Overview of Business, Management Process and Organization Management :

Business - types of business in various sectors- service, manufacturing & trade- Industrial sectors – Engineering, process, Textile, Chemical, Agro industries – Globalization and effect of globalization – advantages and Disadvantages- Intellectual Property Rights (I.P.R.)- Concept of management – levels of management – Scientific management – by FW Taylor – Principles of management- functions of management – Administration – management, Organization – types of organization(line, line & staff, staff & project) – Departmentation – Classification (centralized, decentralized, Authority, Responsibility, and span of control – Forms of Ownership – Proprietorship – Partnership – Joint stock – Co-operative society and Government sectors.

2.0 Human resource Management

Personal Management – Staffing – Introduction to HR planning – Recruitment procedures – Types of Trainings –Personal training – skill development training – Leaderships – types – Motivation – Maslow’s theory – Causes of accidents – safety precautions – Indian Factory Act – Workmen’s compensation Act – Industrial disputes Act- ESI Act.

3.0 Finance Management

Introduction – Objectives of Financial Management – Types of capitals – sources of raising capital – Types of budgets – production budgets – labour budgets – Concept of Profit loss Account – Concept of balance sheet – proforma – types of taxes – brief concepts of – Excise Tax, Service Tax, Income Tax, and custom duty.

4.0 Material Management

Inventory Management – objectives of Inventory Management – ABC Analysis – Economic order Quality – Purchasing – Objectives of purchasing – Functions – Procedures – Material Management.

5.0 Project Management

Introduction – CPM & PERT – concept of Break event Analysis – quality system - Definition of Quality , concept of Quality , Quality policy, Quality control, Quality Circle, Quality Assurance, Introduction to TQM- Kaizen 5’s and 6 sigma concepts, ISO 9000 series standards- Merits and drawbacks of ISO series standards.

6.0 Entrepreneurship and Supporting Institutions

Qualities of entrepreneur-Manager- entrepreneur and technical entrepreneur-Advantages of being an entrepreneur-Functions of entrepreneur-Types of entrepreneur and their meaning- Role of entrepreneurship in economy development-Barriers to entrepreneurship-Mention different types of industries-Definitions of small scale industry-Features of SSI-Mention the objectives of developing SSIs-Scope of SSI in terms of various activities-Merits of SSIs-Explain the important steps involved in starting an SSI-Definition of startup company-start up development basis-state level and national level-sources of information-various central Government institutions and their functions(like NSIC,SIDO,SISI and SSIB)- Telangana State industry policy-Demographic merits of Telanagana state to set up SSIs-Names of state level institutions and their functions(Like SSIDC,DIC,APIITCO)-Banks that support SSIs like SIDBI,APSFC-Thrust areas and core sector as per Telanaga state industry policy-Classification of the projects as per TSIP-Special assistance schemes for women and SC/ST entrepreneurs- Features of TS-IPASS.

Specific Learning Outcomes:

Upon completion of the course the student should be able to

1.0 Explain the basics of Business, Management and Organization

- 1.1 Define Business
- 1.2 State the Types of Business (Service, Manufacturing, Trade)
- 1.3 Explain about the various industrial sectors like engineering, process, textile, Agro based industries.
- 1.4 State the need for Globalization.
- 1.5 List the Advantages & Disadvantages of globalization w.r.t. India.
- 1.6 Explain the importance of Intellectual Property Rights (I.P.R.)
- 1.6 Define Management.
- 1.7 Explain the concept of management

- 1.8 Explain the Different Levels of management
- 1.9 Explain Administration & management
- 1.10 State the principles of Scientific management by F.W.Taylor
- 1.11 State the principles of Management by Henry Fayol (14 principles)
- 1.12 List the Functions of Management
 - i) Planning ii) Organizing iii) Directing iv) Controlling
- 1.13 Define Organization
- 1.14 List the Types of organization :a) Line b) Line & staff c) Functional d) Project
- 1.15 Explain the four types of organization.
- 1.16 Define departmentalization.
- 1.17 Explain the following types of departmentalizations
 - i) Centralized & Decentralized ii) Authority & Responsibility iii) Span of Control
- 1.18 Explain the Forms of ownership
 - i)Proprietorship ii) Partnership iii) Joint stock iv) Co-operative Society v)Govt. Sector

2.0 Appreciate the need for Human Resource Management

- 2.1 Define Personal Management.
- 2.2 Explain the functions of Personal Management
- 2.3 Define Staffing .
- 2.4 State the importance of HR Planning.
- 2.5 Explain the various Recruitment Procedures.
- 2.6 Explain the need for Training & Development .
- 2.7 State the various types of training procedures(Induction, Skill Enhancement etc)
- 2.8 State the different types of Leaderships.
- 2.9 Explain the Maslow's Theory of Motivation.
- 2.10 Explain the Causes of accident and the Safety precautions to be followed.
- 2.11 Explain the importance of various Acts – Indian Factory Act, ESI Act, Workmen Compensation Act, Industrial Dispute Act etc.

3.0 Explain the basics of Financial Management

- 3.1 State the Objectives of Financial Management.
- 3.2 State the Functions of Financial Management.
- 3.3. State the necessity of Capital Generation & Management.
- 3.4 List the types of Capitals.
- 3.5 List the Sources of raising Capital.
- 3.6 Explain the Types of Budgets
 - i) Production Budget (including Variance Report) ii) Labour Budget.
- 3.7 Explain Profit & Loss Account (only concepts) .

- 3.8 Explain the proforma of Balance Sheet.
- 3.9 Explain i) Excise Tax , ii) GST iii) Income Tax iv) Custom Duty.

4.0 Explain the importance of Materials Management

- 4.1. Define Inventory Management (No Numerical).
- 4.2 State the objectives of Inventory Management.
- 4.3 Explain ABC Analysis.
- 4.4 State Economic Order Quantity.
- 4.5 Explain the Graphical Representation of Economic Order Quantity.
- 4.6 State the objectives of Purchasing.
- 4.7 State the functions of Purchase Department.
- 4.8 Explain the steps involved in Purchasing.
- 4.9 State the Modern Techniques of Material Management.

5.0 Explain the importance of Project Management and Quality Assurance

- 5.1 State the meaning of Project Management.
- 5.2 Explain the CPM & PERT Techniques of Project Management.
- 5.3 Distinguish between CPM & PERT techniques.
- 5.4 Identify the critical path and find the project duration using CPM & PERT techniques (solve problems on CPM and PERT).
- 5.5 Explain the concept of Break Even Analysis.
- 5.6 Define Quality.
- 5.7 State the concept of Quality.
- 5.8 Explain the various Quality Management systems.
- 5.9 Explain the importance of Quality policy, Quality control, Quality Circle.
- 5.10 State the principles of Quality Assurance.
- 5.10 State the concepts of TQM, Kaizen 5's and 6 sigma.
- 5.12 State the constituents of ISO 9000 series standards.
- 5.13 Merits and draw backs of ISO 9000 series standards.

6.0. Entrepreneurship and supporting Institutions

- 6.1 Explain the concept of entrepreneurship.
- 6.2 Mention the qualities of entrepreneur.
- 6.3 Distinguish between manager-entrepreneur and technical entrepreneur.
- 6.4 Mention the advantages of being an entrepreneur.
- 6.5 List the functions of entrepreneur.
- 6.6 Mention the important types of entrepreneur and their meaning.
- 6.7 Explain the role of entrepreneurship in economic development.

- 6.8 Mention the barriers to entrepreneurship.
- 6.9 Mention different types of Industries.
- 6.10 Define Small scale industry.
- 6.11 List the features of SSI.
- 6.12 Mention the objectives of developing SSIs.
- 6.13 Explain the scope of SSI in terms of various activities.
- 6.14 List the merits of SSIs.
- 6.15 Explain the important steps involved in starting an SSI.
- 6.16 Define a start up company.
- 6.17 Explain various start up development phases
- 6.18 Name the state level and National level sources of information
- 6.19 Mention the various Central government institutions and their functions
(like NSIC , SIDO, SISI_SSIB)
- 6.20 Explain Telangana state industry policy.
- 6.21 Mention the demographic merits of Telangana state to set up SSIs.
- 6.22 Mention the names of State level institutions and their functions (like SSIDC, DIC, APITCO)
- 6.23 List the banks that support SSIs like SIDBI, APSFC.
- 6.24 List the thrust areas and Core sectors as per Telangana state industry policy.
- 6.25 Classify the projects as per TSIP.
- 6.26 Mention Special assistance schemes for women and SC/ST entrepreneurs.
- 6.27 Mention the features of TS-iPASS.

REFERENCE BOOKS:

1. Industrial Engg & Management by Dr. O.P. Khanna - Dhanpath Rai & sons New Delhi
2. Business Administration & Management Dr. S.C. Saxena & W.H. Newman & E. Kirby Warren- Sahitya Bhavan Agra
3. The process of Management by Andrew R. McGill - Prentice Hall
4. Industrial Management by Rustom S. Davar - Khanna Publication
5. Total Quality Management, S Raja Ram, M Shivashankar
6. Industrial management and organizational behaviour, K.K. Ahuja

Suggested Student Activities

1. Student visits Library to refer to Management courses.
2. Student observes the solo and partnership business establishments near by and prepare a report about the activities.
3. Identify any one product, being manufactured in local industry, study the process they are following for manufacturing the product, submit hand written report.
4. Visit a nearby industry, make a report on Plant layout, type of production, quality system is put

in practice and quality tools they are using in work place.

5. Motivate student to take case study on plant maintenance of nearby industry, observe type of maintenance they undertake in their industry.
6. Each student should prepare a detailed project report on selected product.
7. Visit a local industry and list the safety precautions carried out there.
8. Meet a local Entrepreneur and prepare a report on his success story.
9. Quiz.
10. Group discussion.
11. Surprise test.

Execution Mode:

1. Maximum of 5 students in each batch should do any one of the following type activity or similar activity related to the course and before take up, get it approved from concerned Teacher.
2. Each batch should conduct different activity and no repeating should occur.
3. Submit a brief report on the activity done on 4-6 pages, A4 size handwritten paper. Papers should be simple stapled or tagged. Avoid plastic based files for submitting of reports.
4. Activities can be carried off-class.
5. Assessment shall be made based on quality of activity/presentation / demonstration and report.

Suggested E-Learning references

1. <http://jiem.org/index.php/jiem>
2. <https://dipp.gov.in>
3. www.worldwidelearn.com/online-education-guide/business/industrial-management-major.html

CO-PO MAPPING MATRIX

Course Outcome		CL	Linked PO	Teaching Hours
CO1	To become aware of business and management.	R/U	1,2	8
CO2	Analyze the various rules and regulations required for the planning of factory and its staff.	R/U/A	1,2,5,6,7	10
CO3	Analyse the balance sheet and understanding of various budget issues.	R/U/A	1,2,9	10
CO4	Analyse the material required and its management economically.	R/U/A	1,2,5,7	10
CO5	Analyze the quality management and know the analysis procedure for quality.	R/U/A	1,2,5,10	10
CO6	Able to establish a small scale industry by knowing the entrepreneur skills.	R/U/A	1,2,3,7,10	12

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Sl No	Unit No.	Questions to be set for SEE				
		R		U	A	
1	I	4	1		9(a)	13(a)
2	II					
3	III		2		10(a)	14(a)
4	IV					
5	V		3	5, 6	9(b)	13(b)
					11(a)	15(a)
					11(b)	15(b)
6	VI			7,8	10(b)	14(b)
		12(a)			16(a)	
		12(b)			16(b)	
Total Questions		8		8	8	

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

INDUSTRIAL MANAGEMENT & ENTREPRENEURSHIP

MID SEM -1 MODEL QUESTION PAPER 18CM501F

Time: 01 hour

Total marks:20

PART- A

Answer all questions. Each question carries one mark.

4x1=4M

1. Define business.
2. Define organization.
3. What are the different types of Leaderships?
4. Define personnel management.

PART-B

Answer all questions. Each question carries three marks.

2X3=6M

5.(a) State the need for Globalization .

OR

5.(b) Briefly explain Proprietor form of business ownership.

6.(a) Briefly explain the need for Training & Development .

OR

6.(b) What are the Causes of accident in an industry.

PART-C

Answer all questions. Each question carries five marks.

2x5=10M

7.(a) State the principles of Scientific management by F.W.Taylor .

OR

7.(b) Explain the line and staff type of organisation.

8.(a) Explain the Maslow's Theory of Motivation.

OR

8.(b) Explain various features of Indian Factory Act.

MID SEM –II MODEL QUESTION PAPER 18CM501F

PART- A

Time: 01 hour

Total marks:20

Answer all questions. Each question carries one mark.

4x1=4M

1. List the types of Capitals.
2. Mention any two objectives of financial management.
3. Define inventory management.
4. List any two objectives of purchasing.

PART-B

Answer all questions. Each question carries three marks.

2x3=6M

5. (a) What is the necessity of Capital Generation?

OR

- 5.(b) Briefly explain Profit & Loss Account .

- 6.(a) State the Modern Techniques of Material Management.

OR

- 6.(b) What are the steps involved in Purchasing?

PART-C

Answer all questions. Each question carries five marks.

2x5=10M

- 7.(a) Explain about production budget.

OR

- 7.(b) Explain the proforma of balance sheet.

- 8.(a) Explain ABC analysis .

OR

8.(b) Explain the Graphical Representation of Economic Order Quantity.

SEMESTER END EXAM (SEE) - MODEL QUESTION PAPER 18CM501F

PART- A

Time: 02 hours

Total marks: 40

Answer all questions. Each question carries one mark.

8x1 = 8M

1. Define Staffing.
2. List the types of Capitals.
3. State the concept of Quality.
4. List the functions of entrepreneur.
5. What is meant by Project Management?
6. What is meant by Quality Assurance?
7. Define Small scale industry.
8. Define a start up company.

PART-B

Answer all questions. Each question carries three marks.

4x3=12M

9.(a) Write salient features of partnership type of business ownership.

OR

9.(b) Explain briefly the importance of Quality policy .

10.(a) What is meant by GST?

OR

10.(b). Mention the barriers to entrepreneurship.

11.(a) What are the concepts of TQM?

OR

11.(b) Explain the importance of Quality control.

12.(a) Explain briefly the role of entrepreneurship in economic development.

OR

12.(b) Mention the features of TS-iPASS.

PART-C

Answer all questions. Each question carries five marks.

4x5=20M

13.(a) Explain the principles of Management by Henry Fayol.

OR

13.(b) Explain the concept of Break Even Analysis .

14.(a) Explain the labour budget.

OR

14.(b) Explain the important steps involved in starting an SSI .

15.(a) Draw a network diagram and find out project duration for the following activities.

Activity	1-2	1-3	1-4	2-6	3-5	4-5	5-6	6-7
Duration in days	4	2	3	5	1	2	2	7

OR

15.(b) Explain the importance of quality circle .

16.(a) Explain briefly Telangana state industry policy .

OR

16.(b) What are the special assistance schemes provided for women entrepreneurs.

Computer Hardware and System Administration

Course Title : Computer Hardware and System Administration	Course Code : 18CM502C
Semester : V	Course Group : Core
Teaching Scheme in Periods (L:T:P) :45:15:0	Credits : 3
Type of course : Lecture + Tutorial	Total Contact Periods: 60 Periods
CIE : 60 Marks	SEE : 40 Marks

Prerequisites

Knowledge of PC components

Course Outcomes

Upon completion of the course the student shall be able to

Course Outcome	
CO1	Identify the PC components
CO2	Learn different system boards
CO3	Learn different network components
CO4	Establish different types of network
CO5	Installation and configuration of Windows 2012 server
CO6	Installation and configuration of Linux

Course Contents

1. Understand PC hardware and its Components.

7 periods

Hardware and software - the BIOS hardware interaction, importance of BIOS, BIOS functions configuration of a general purpose computer (P-IV Compatible), identification of various components on the motherboard - **Input Devices**- various input devices used with a general purpose computer, installation of Keyboard, optical and opto-mechanical mouse , flat bed scanner, Webcam - **Output Devices**- working principle of CRT Monitor ,working principle of LCD/TFT, printers(Impact and Non-Impact) working principle of Dot matrix printer, inkjet printer, Laser printer.

2. System Board and Mass storage devices

12 periods

Mother Board- motherboards based on the form factor: such as AT, ATX, micro ATX, mini ATX , Baby AT, BTX, NLX, various I/O ports available on the motherboard

Processors- various processors used in the system: INTEL P4, Celeron, XEON, Itanium processors, AMD athelon, Dual core, Core 2 Duo, Quad core and i-series (i3,i5 and i7), features of above chipset and their advantages, importance of SMPS over linear voltage power supply, connectors from SMPS and list the voltage levels of each wire in various connectors based on the standard color of the wire

RAM- static and dynamic RAM, **Mass storage devices** - Hard disk Drive, jumper settings, hard disk interfacing standards like IDE/SCSI/SATA/PATA.

3. **Introduction to Networks and LAN components** **10 periods**
Need for network-Network classification- network standards-Topologies-Network Components-connectors-network devices
4. **Network Addressing and Management** **10 periods**
Network addressing -Network protocols, Monitoring and Troubleshooting – Remote, Monitoring, Establishment of LAN, Network status.
5. **Windows-2012 server administration**
Need of system administration, responsibilities of administrator, Analyze the Installation & Configuration of Windows 2012 Server, Installation and configuration of Active directory with DNS, Discuss User & Group Managements, Know about Share Permissions for files and folders, Analyze the working of Device Manager, Drivers Signing & Signature, analyze Verification & Managing Ports, Installation and configuration of DHCP, DFS, Know about disk quotas.
6. **LINUX administration**
Introduction to Linux, pre-Installation, Installation of Linux, Discuss Desktop Environments, shells & their Types, Familiarization with LINUX editors and commands, Discuss basic filtering techniques in LINUX, Discuss basic piping techniques in LINUX, Discuss about Managing Users and Groups, Analyze the process of Configuring DHCP in LINUX , Describe Configuring DNS in LINUX, Configuring internet access, Configuring web server, Describe Linux Security , Explain the process of Backup of data in Linux.

Recommended Books

- | | | | |
|----|--|----|------------------------|
| 1 | Enhanced Guide to Managing
And Maintaining Your PC | -- | Jean Andrews (Thomson) |
| 2. | Basics of Networking | -- | NIIT PHI publications |
| 3. | PC Hardware A Beginners Guide | -- | Gilster (TMH) |
| 4. | PC Upgrading | -- | Stephen Bigelow (TMH) |
| 5. | Trouble Shooting Your PC | -- | Stone & poor |
| 6. | Computer Networks | -- | Andrew S. Tanenbaum |
| 7. | Windows server 2012 by Charlie Russel and Craig zacker | | |
| 1. | Unix and Linux System Administration hand book 4 th edition by Garth snyder | | |

Specific Learning Outcomes:

Upon completion of the course the student shall be able to

1.0 Understand PC hardware and its Components.

- 1.1 Define PC Hardware and Software
- 1.2 State the importance of BIOS
- 1.3 Explain the BIOS functions of (i) POST, (ii) Bootstrap loading
- 1.4 Identify mother board components - processor, chipset, SMPS, Disk Drives, RAM, PCI, IDE, ISA slots, mouse, AGP, Keyboard, monitor, printer, speaker, USB ports, Parallel port, Serial Port, and Modem of the system.
- 1.5 Explain various kind of input devices- keyboard, mouse(optical & opto mechanical), flat bed scanner, webcam.
- 1.6 Explain various kind of output devices - working principles of CRT Monitor, LCD/TFT, Dot matrix printer, inkjet printer & Laser printer.
- 1.7 Identify various cables that connect peripherals to the rear side of system

2.0 System Board and Mass storage devices

2.1 Mother Board

- 2.1.1 Explain various motherboards based on the form factor : such as AT, ATX, micro ATX, mini ATX , Baby AT, BTX, NLX etc
- 2.1.2 List various components on motherboard.
- 2.1.3. List the I/O ports available on motherboard

2.2 Processors

- 2.2.1 Describe the features and advantages of various processors: INTEL P4, Celeron, XEON, Itanium processors, AMD Athlon, Dual core, Core 2 Duo, Quad core and i-series (i3, i5 and i7).
- 2.2.2 State the importance of SMPS over linear voltage power supply
- 2.2.3 Use connectors from SMPS and list the voltage levels of each wire in various connectors based on the standard color of the wire

2.3 Mass storage devices

- 2.3.1 Give the constructional details and working of a Hard disk Drive
- 2.3.2 Explain the importance of jumper settings and give details of it
- 2.3.3 Familiarize with hard disk interfacing standards like IDE/SCSI /SATA /PATA
- 2.3.4 Distinguish RAM types - SDRAM, DDR(1-3), Rambus RAM
- 2.3.5 Explain the procedure to upgrade RAM capacity of the system by adding additional RAMs

3.0 Introduction to Networks and LAN components.

- 3.1 State the Need for Networking.

- 3.2 Classification of Networks –LAN, MAN, WAN
- 3.3 Explain LAN Devices such as (Repeaters, Hubs, Switches, Bridges, Network Interface Cards (NICs), Routers, Modems, Wireless network adapters.
- 3.4 Know about UTP cable, Optical Fiber Cable, and Connectors.
- 3.5 ISO/OSI Reference model.
- 3.6 TCP/TP Model.
- 3.7 Network topologies (Star, Mesh, Ring, Bus, Hybrid)

4.0 Network Addressing and Management

- 4.1 Introduction to Network Addressing.
- 4.2 Know about TCP/IP Addressing Scheme.
- 4.3 Components of IP Address
- 4.4 Know IP Address Classes
- 4.5 Understand IP Subnetting
- 4.6 Classify the two types of Internet Protocol addressing IPv4 and IPv6 and state the need for IPv6.
- 4.7 Describe Internet protocol version-6 (IPv6) addressing.
- 4.8 Wifi networking standards and encryption types.
- 4.9 Networking trouble shoot components
- 4.10 Preparation of straight and cross cable
- 4.11 Establishment of LAN

5.0 Windows-2012 server administration

- 5.1 Need for System Administration
- 5.2 Responsibilities of System Administrator
- 5.3 Analyse the Installation & Configuration of Windows 2012 Server
- 5.4 Installation and configuration of Active directory with DNS
- 5.5 Discuss User & Group Managements.
- 5.6 Know about Share Permissions for files and folders.
- 5.7 Analyze the working of Device Manager, Drivers Signing & Signature
- 5.8 Analyze Verification & Managing Ports.
- 5.9 Installation and configuration of DHCP, DFS
- 5.10 Know about disk quotas.

6.0 LINUX administration

- 6.1 Introduction to Linux, pre-Installation.
- 6.2 Installation of Linux
- 6.3 Discuss Desktop Environments, Shells.

- 6.4 Familiarization with LINUX editors and commands
- 6.5 Discuss basic filtering techniques in LINUX like, Give the working of filter commands and Discuss the usage of grep, egrep, fgrep.
- 6.6 Discuss basic piping techniques in LINUX
- 6.7 Discuss about Managing Users and Groups.
- 6.8 Analyze the process of Configuring DHCP in LINUX
- 6.9 Describe Configuring DNS in LINUX.
- 6.10 Configuring internet access
- 6.11 Configuring web server.
- 6.12 Describe Linux Security
- 6.13 Explain the process of Backup of data in Linux

Suggested Activities

Student activity like mini-project, quizzes, etc. should be done in group of 5-10 students.

1. Each group should do any one of the following type of activity or any other similar activity related to the course with prior approval from the course coordinator and programme coordinator concerned.
2. Each group should conduct different activity and no repetition should occur.
3. Explore and analyse topics to improve the level of creativity and analytical skill by taking Quiz/ tests/ assignments. Documents have to be maintained as a record.
4. Create a power point presentation on the topic relevant to course or advanced topic as an extension to the course to improve the communication skills. Documents have to be maintained as a record.
5. Visit different sites relevant to topics. Listen to the lectures and submit a handwritten report
6. Coding competitions

Suggested E-learning references

1. https://www.tutorialspoint.com/computer_fundamentals/computer_fundamentals_tutorial.pdf
2. <http://www.garfieldcs.com/wordpress/wordpress/wp-content/uploads/2011/09/Computer-Hardware-Basics.pdf>
3. <https://abiiid.files.wordpress.com/2010/12/pc-hardware-a-beginners-guide.pdf>
4. https://www.tutorialspoint.com/windows_server_2012/windows_server_2012_tutorial.pdf
5. <https://ptgmedia.pearsoncmg.com/images/9780735684690/samplepages/0735684693.pdf>
6. <https://docentinrete.files.wordpress.com/2012/05/manuale-2008-98-365-windowsserver.pdf>
7. https://www.tutorialspoint.com/linux_admin/linux_admin_tutorial.pdf
8. <https://www-uxsup.csx.cam.ac.uk/courses/moved.linuxadmin/whole.pdf>

CO-PO Mapping Matrix

Course Outcome		CL	Linked PO	Teaching Hours
CO1	Understand PC hardware and its Components	R	1,2,3,10	10
CO2	Learn different system boards & Mass storage devices	R,U,A	1,2,3,10	10
CO3	Learn different network components	R,U,A	1,2,3,10	10
CO4	Establish different types of network	R,U,A	1,2,3,10	10
CO5	Understand Windows-2012 server administration	R,U,A	1,2,3,10	10
CO6	Understand LINUX administration	R,U,A	1,2,3,10	10
		Total Sessions		60

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1		9(a)	13(a)	
2	II						
3	III		2		10(a)	14(a)	
4	IV						
5	V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
		11(b)			15(b)		
6	VI		7,8	10(b)	14(b)		
				12(a)	16(a)		
				12(b)	16(b)		
Total Questions		8		8	8		

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

STATE BOARD OF TECHNICAL EDUCATION & TRAINING:TS:HYDERABD

18CM502C, V Semester, Computer Hardware and System Administration

MID EXAM - I MODEL QUESTION PAPER

Time: 1 hour

Max. Marks: 20

PART-A

Answer All questions. Each carries 1 marks.

4X1=4 Marks

1. What is BIOS?
2. List any four out put devices?
3. What is SATA?
4. What is SMPS?

PART-B

Answer TWO questions out of Four questions. Each carries 3marks.

2X3=6 Marks

- 5(a). Difference between impact and non impact printers? (OR)
- 5(b) Write the configuration of P-IV computer
- 6(a) Distinguish between dual core and core2 duo (OR)
- 6(b). Write any two differences between static RAM and dynamic RAM

PART-C

Answer TWO questions out of four questions. Each carries 5 marks.

2X5 =10Marks

- 7(a) Explain the BIOS functions of POST (OR)
- 7(b) Explain working principal of CRT monitor
- 8(a) Explain different motherboard types (OR)
- 8(b) List the voltage levels of each wire in SMPS various connectors based on the standard color of the wire

STATE BOARD OF TECHNICAL EDUCATION & TRAINING:TS:HYDERABD

18CM502C, V Semester, Computer Hardware and System Administration

MID EXAM - II MODEL QUESTION PAPER

Time: 1 hour

Max. Marks:20

PART-A

Answer All questions. Each carries 1 marks.

4X1=4 Marks

1. Define MAN.
2. What is the need of networking?
3. List any four out put devices
4. What is an opto mechanical mouse?

PART-B

Answer TWO questions out of Four questions. Each carries 3marks.

2X3=6Marks

- 5(a) Write any two differences between impact and non impact printers (OR)
- 5(b) Explain about router
- 6(a) Write about IP Sub netting (OR)
- 6(b) Differentiate between IPV4 and IP6

PART-C

Answer TWO questions out of Four questions. Each carries 5 marks. 2X5=10Marks

- 7(a) Explain the procedure of LAN establishment with a neat diagram (OR)
- 7(b) Explain the classification of LAN, WAN and MAN
- 8(a) Describe Internet protocol version-6 (IPv6) addressing (OR)
- 8(b) Write the required steps to verify network status

C18-Semester End Examination (SEE)

Model Paper- 18CM502C, V Semester, (Computer Hardware and System Administration)

Time: 2 Hours

Total Marks: 40

PART – A

Instructions:

8 X 1 M = 8 Marks

i) Answer all the following questions:

ii) Each question carries two marks

1. What is POST?
2. What is the need of networking?
3. Define Shell.
4. Write any two differences between IPV4 and IPV6
5. Write minimum configuration required for installation of Windows 2012 Server
6. What is driver signing?
7. What is DNS?
8. List Linux editors.

PART – B

4X3=12Marks

Answer any 2 questions from each group

- 9(a). Explain working principle of flat bed scanner
Define Cache memory and explain how it improves the performance of PC (OR)
- 9(b). what is pipe? Explain piping concept with the help of example
- 10(a). Write any four applications of modem (OR)
- 10(b). Write the process of Configuring DHCP in LINUX
- 11(a) Write the procedure for installing and configuring of DFS (OR)
- 11(b) Write share permissions for files and folders
- 12(a) Write a note on any two desktop environments (OR)
- 12(b) write a note on grep, egrep and fgrep

PART – C

4X5=20Marks

Answer any Two questions from each group

- 13(a) Draw the motherboard architecture and indicate atleast 10 components (OR)
- 13(b) Explain installation procedure of Windows 2012 Server
- 14(a) Explain about IP Classes (OR)
- 14(b) Explain installation procedure of Linux
- 15(a) Explain about creation of user and group accounts in Windows 2012 server (OR)
- 15(b) Explain the installation of Active directory with DNS
- 16(a) Write the procedure to configure a web server in LINUX (OR)
- 16(b) Write any five editor commands with examples.

JAVA PROGRAMMING

Course Title : JAVA PROGRAMMING	Course Code : 18CM503C
Semester : V	Course Group : Core
Teaching Scheme in Periods (L:T:P) : 45:15:0	Credits : 3
Type of course : Lecture + Tutorial	Total Contact Periods: 60 Periods
CIE : 60 Marks	SEE : 40 Marks

Prerequisites

Knowledge of OOPs concepts and C, C++ Programming language concepts.

Course Outcomes

Upon completion of the course the student shall be able to

Course Outcome	
CO1	Understand the basics of java programming concepts and develop simple console based applications.
CO2	Develop java programs using Inheritance and interfaces.
CO3	Create user-defined packages and explore classes and interfaces within io, util packages.
CO4	Develop Applet programs and Handle events generated by AWT controls to perform various actions.
CO5	Interpret different types of Exceptions and Handle Exceptions and multi threading concept
CO6	Develop database applications to interact with different types of databases using JDBC and Develop server side programs using Servlets.

Course Contents

- 1. Introduction of Java:** **Duration: 8 Periods**
Fundamentals of Object Oriented Programming- Introduction - Object oriented Paradigm - Basic Concepts of OOP - Java history - Java Features - How Java Differs from C and C++- Java Program Structure - Simple Java Program - Java Tokens – Java data types –variables-type casting- arrays-operators - selection statements – iteration statements –jump, break, and continue statements.-classes and objects-constructors - method overloading- ‘this’ pointer-static and final members-string classes and methods-command-line arguments.
- 2. Inheritance and Interfaces:** **Duration: 8 Periods**
Inheritance and its types - different types of inheritance with examples- super keyword- method overriding - avoid overriding using ‘final’- Interfaces-class vs interface - extending and implementing interfaces - scope of variables in interfaces - multiple inheritance using interface
- 3. Packages:** **Duration: 8 Periods**
Packages - Introduction, Java API Packages- Using System Packages, Naming Conventions – Creating packages – Accessing a Package – Using a package – Adding a class to a package-importing packages-exploring io, util packages - stream classes

- 4 Concepts of Applets, AWT and Event handling** **Duration: 12 Periods**
 Applet - life cycle of an Applet - creation of Applets - AWT classes - AWT controls – Handling events - Delegation Event model - Event Classes and Event Listener interfaces-Mouse and Keyboard events.
- 5. Exception Handling and Multithreaded programming:** **Duration: 12 Periods**
 types of errors - exceptions and types of Exceptions - general form of exception-handling block - Multi-catch statements - Nested try statements - user-defined exceptions - Define thread – life cycle of thread - Creating Threads- Multi threading - Using Thread Methods - Thread priority –Synchronization- isAlive(), join(), suspend(), resume() methods - Inter thread communication – Dead locks
- 6. JDBC and Servlets** **Duration: 12 Periods**
 JDBC - JDBC Architecture - establish connection to database - statements used in jdbc- ResultSet - DDL and DML programs using jdbc - Servlet - life cycle of servlet - java servlet development kit - javax.servlet package- HTTP request and responses.

Recommended Books

1. Programming with Java, 6th edition, Balagurusamy, Mc Graw Hill, ISBN 13- 9789351343202 ISB 10- 9351343200
2. Complete Reference Java J2se, Herbert Schildt, Tata McGraw Hill, ISBN 9780070598782
3. Java 6 Programming – Black Book Wiley India Pvt ltd
4. Programming in JAVA2 – Dr. K. Somasundaram Jaico Publish
5. Programming in JAVA – S.S. Khandare – S. Chand Publish
6. “Head First Java”, Kathy Sierra, Bert Bates, O’Reilly.
7. ‘Effective Java: A Programming Language Guide’ (Java Series) 2nd Edition, by Joshua Bloch Sun copyright.
8. Mastering Java Machine Learning Paperback -Uday Kamath,Krishna Choppella, Packt publishers.
9. Core Java Volume I--Fundamentals Eleventh Edition by Cay S. Horstmann Pearson publications.
10. Java: A Beginner's Guide, Seventh Edition Paperback – by Herbert Schildt -Oracle press
11. “The Complete Reference Java2 (Third Edition)”, Patrick Naughton-Herbert Sheild, Tata McGraw hill.
12. “Advance JAVA”, Kogent learning Solution, DreamTech Press.
13. “Java2 Unleashed”, Jawroski, Techmedia.
14. “Java2 Programming”, Keyur Shah, Tata McGraw.
15. “Java EE6 for Beginners”, Sharnam Shah &Vaishali Shah, SPD.
16. “Java Server Programming Black book” , Kogent learning Solution, DreamTech Press.
17. “Java Database Programming with JDBC” by Pratik Patel - The Coriolis Group.

Specific Learning Outcomes:

Upon completion of the course the student shall be able to

- 1 Introduction of Java**
- 1.1 Explain the basic concepts of OOP
 - 1.2 Write about Java History
 - 1.3 Explain the features of Java
 - 1.4 Compare Java with C and C++.
 - 1.5 Write the structure of Java program with an example program.
 - 1.6 Describe java tokens -white space, literals, separators, keywords.
 - 1.7 Explain java datatypes
 - 1.8 Write about declaration and initialization of variables.
 - 1.9 Perform type conversion and casting features.
 - 1.10 Use one-dimensional and two-dimensional arrays.
 - 1.11 Explain various types of operators.
 - 1.12 Explain about selection and iteration statements of Java.
 - 1.13 Write the syntax of jump, break, and continue statements.

- 1.14 Create classes and objects.
- 1.15 Explain about constructors.
- 1.16 Explain method overloading.
- 1.17 Use of 'this' pointer.
- 1.18 Explain the working of static and final members.
- 1.19 Explain string classes and methods.
- 1.20 Describe the use of command-line arguments.

2 Inheritance and Interfaces

- 2.1 Define Inheritance and its types.
- 2.2 Explain different types of inheritance with examples.
- 2.3 Use of super keyword.
- 2.4 Explain method overriding and how to avoid overriding using 'final'.
- 2.5 Define an Interface and explain the concept of Interfaces.
- 2.6 Compare class and interface.
- 2.7 Explain about extending interfaces.
- 2.8 Explain the concept of implementing interfaces.
- 2.9 Explain the scope of variables in interfaces.
- 2.10 Explain multiple inheritance using the concept of interface.

3 Packages

- 3.1 Define a package.
- 3.2 Explain about java API packages.
- 3.3 Describe the concept of class path.
- 3.4 Describe the concept of Access specifiers.
- 3.5 Explain the concept of creating, accessing and using a package and subpackages.
- 3.6 Appreciate the concept of importing packages.
- 3.7 Exploring io, util packages.
- 3.8 Explain various stream classes.

4 Concepts of Applets, AWT and Event handling

- 4.1 Define Applet and life cycle of an Applet.
- 4.2 Explain the creation of Applets with example programs.
- 4.3 List and discuss AWT classes
- 4.4 Describe AWT controls with example programs
- 4.5 Explain Event handling mechanism and Delegation Event model.
- 4.6 Explain sources of Events
- 4.7 Event Classes and Event Listener interfaces.
- 4.8 Explain Mouse and Keyboard events.

5 Exception Handling and Multithreaded Programming

- 5.1 Explain the types of errors.
- 5.2 Explain how to deal with exceptions and types of Exceptions.
- 5.3 Explain the general form of exception-handling block.
- 5.4 Explain the concept of Multi-catch statements with example programs.
- 5.5 Explain Nested try statements
- 5.6 Explain throw and throws clauses.
- 5.7 Explain creation of user-defined exceptions
- 5.8 Define Thread and life cycle of a thread
- 5.9 Discuss about thread priorities
- 5.10 Explain the process of creating thread using Thread class and Runnable interface.
- 5.11 Write about the creation of multiple threads.
- 5.12 Explain the concept of synchronization
- 5.13 Describe isAlive (), join (), suspend (), resume () methods.
- 5.14 Explain Inter thread communication.
- 5.15 Discuss dead lock with example programs.

6 JDBC and Servlets

- 6.1 Know about JDBC and understand JDBC Architecture.
- 6.2 Explain how to establish connection to database.
- 6.3 Implement Simple Application and execute query.
- 6.4 Explain different statements used in jdbc.
- 6.5 Discuss about ResultSet.
- 6.6 DDL and DML programs using jdbc.
- 6.7 Define servlet and explain the life cycle of servlet.
- 6.8 Discuss about java servlet development kit.
- 6.9 Understand javax.servlet package and create simple servlet.
- 6.10 Handling HTTP request and responses with example programs.

Suggested Student Activities

Note: *The following activities or similar activities for assessing 2.5 credits (Any one)*

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

- 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 coordinator and programme co-coordinator.
 - Each group should conduct different activity and no repeating should occur.
1. Study different Integrated Development Environments (IDEs) available for executing java programs and prepare a report.
 2. Develop some simple window based applications like notepad, calculator etc using AWT and Swing components.
 3. Visit Library to refer to standard Books on core Java and Advanced java concepts, collect related material and prepare notes.
 4. Refer to online content and videos to get more knowledge on database concepts.
 5. Interact with industry people who are working in java and advanced java technologies and prepare a report.
 6. Write assignments given by course coordinator.
 7. Read all the course contents and should be able to write slip tests and surprise tests.
 8. Prepare a seminar on a specific topic that is related to latest technologies in the java and advanced java concepts and present a Power Point Presentation (PPT) to all the peers.
 9. Study IEEE papers on advanced java topics and submit a report.
 10. Prepare quiz on java course related questions and conduct.
 11. Participate in state level or national level technical conferences.
 12. Participate in various technical coding competitions related to java programming.
 13. Develop some projects to design websites like Hotel Management System, E-Bill Board, Online insurance, Online Mobile, Contributor, Online Restaurant, Public Distribution System, Secure E-banking security, District medical data centre using JDBC and Servlet and JSP concepts.

Suggested E-learning references

1. <https://www.w3schools.in/java-tutorial/>
2. <https://www.udemy.com/advanced-java-programming/>
3. <https://www.roseindia.net/java/Advanced-Java-Tutorials.shtml>
4. <http://www.javalearner.com/advanced.htm>
5. <https://www.studytonight.com>
6. <http://www.Javatpoint.com/Java-tutorial>
7. <http://www.tutorialspoint.com/Java/>
8. <http://www.indiabix.com/technical/core-Java/>
9. <https://www.geeksforgeeks.org/java/>

CO-PO Mapping Matrix

Course Outcome		CL	Linked PO	Teaching Hours
CO1	Understand the basics of java programming concepts and develop simple console based applications.	R,U, A	1,2,3,4,8,10	8
CO2	Develop java programs using Inheritance and interfaces.	R,U, A	1,2,3,4,8,10	12
CO3	Create user-defined packages and explore classes and interfaces within io, util packages.	R,U, A	1,2,3,4,8,10	8
CO4	Develop Applet programs and Handle events generated by AWT controls to perform various actions.	R,U, A	1,2,3,4,8,10	10
CO5	Interpret different types of Exceptions and Handle Exceptions and multi threading concept	R,U, A	1,2,3,4,8,10	12
CO6	Develop database applications to interact with different types of databases using JDBC and Develop server side programs using Servlets.	R,U, A	1,2,3,4,8,10	10
		Total Sessions		60

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	
MID SEM –II EXAM					
S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks
		R		U	A	
1	I	4	1	9(a)	13(a)	
2	II					
3	III		2	10(a)	14(a)	
4	IV					
5	V	4	3	5, 6	9(b)	13(b)
					11(a)	
					11(b)	
6	VI		7,8	10(b)	14(b)	
					12(a)	
					12(b)	16(b)
Total Questions		8		8	8	

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

MODEL QUESTION PAPER
BOARD DIPLOMA MID SEM-I SEMESTER EXAMINATIONS (C-18)
DCME– V-SEMESTER
18CM503C - JAVA PROGRAMMING

Duration : 1 Hour

Maximum Marks: 20

PART-A

Instructions: (1) Answer all questions.

4x1 = 4 Marks

(2) Each question carries one mark.

- 1) List out any four keywords of java
- 2) Compare Java & C++
- 3) Define inheritance.
- 4) What is 'super' keyword.

PART-B

2×3=6 Marks

Instructions: (1) Answer *one* question each from 5 and 6

(2) Each Question is of internal choice type

(3) Each question carries three marks.

5(a) Describe the java data types.

(OR)

5(b) Describe string classes and methods.

6(a) Compare class and interface.

(OR)

6(b) Briefly explain scope of variables in interfaces.

PART-C

2×5=10 Marks

Instructions: (1) Answer one question each from 7 and 8.

(2) Each Question is of internal choice type

(3) Each question carries five marks.

7(a) Develop a java program using static and final variables.

(OR)

7(b) Explain the structure of java with an example program.

8(a) Explain the concept of interfaces with an example program.

(OR)

8(b) Develop a java program to implement multiple inheritance through interfaces.

MODEL QUESTION PAPER
BOARD DIPLOMA MID SEM-II SEMESTER EXAMINATIONS (C-18)
DCME– V -SEMESTER
18CM503C - JAVA PROGRAMMING

Duration : 1 Hour

Maximum Marks: 20

PART-A

Instructions: (1) Answer all questions.

4x1 = 4 Marks

(2) Each question carries one mark.

- 1) Define package.
- 2) Write the syntax to import a package.
- 3) Define Applet.
- 4) What is Delegation Event Model?

PART-B

2×3=6 Marks

Instructions: (1) Answer *one* question each from 5 and 6

(2) Each Question is of internal choice type

(3) Each question carries three marks.

5(a) Explain the steps to create a package.

(OR)

5(b) Explore some classes in util package.

6(a) Demonstrate life cycle an Applet.

(OR)

6(b) List and discuss AWT classes.

PART-C

2×5=10 Marks

Instructions: (1) Answer one question each from 7 and 8.

(2) Each Question is of internal choice type

(3) Each question carries five marks.

7(a) Describe the concept of creating and accessing a package with an example program.

(OR)

7(b) Write a java program using to read data from a file using BufferedReader class

8(a) Create an applet to draw graphics.

(OR)

8(b) Explain to handle Mouse events with an example program.

MODEL QUESTION PAPER
BOARD DIPLOMA SEMESTER END EXAMINATION (C-18)
DCME- V -SEMESTER
18CM503C - JAVA PROGRAMMING

Duration : 2 Hours

Maximum Marks: 40

PART-A

Instructions: (1) Answer all questions.

8x1 = 8 Marks

(2) Each question carries one mark.

- 1) Write the syntax to declare a variable.
- 2) List out java API packages.
- 3) Define multithreading.
- 4) List the uses of final keyword.
- 5) List the types of errors.
- 6) Define inter thread communication.
- 7) Define JDBC.
- 8) Define Servlet.

PART-B

4×3=12 Marks

Instructions: (1) Answer *one* question each from 9,10,11 and 12.

(2) Each Question is of internal choice type

(3) Each question carries three marks.

9(a) Describe the use of command line arguments.

(OR)

9(b) Discuss about thread priorities.

10(a) Describe the concept of class path.

(OR)

10(b) List different types of JDBC drivers.

11(a) What is synchronization? When do we use it?

(OR)

11(b) Demonstrate life cycle of a thread.

12(a) Discuss about Resultset.

(OR)

12(b) List some classes in javax.servlet package.

PART-C

4×5=20 Marks

Instructions: (1) Answer one question each from 13,14, 15 and 16.

(2) Each Question is of internal choice type

(3) Each question carries five marks.

13(a) Write a java program using constructor.

(OR)

13(b) Explain the process of creating thread using Runnable interface.

14(a) Write a java program to handle keyboard events.

(OR)

14(b) Develop a java application to establish a connection to database.

15(a) Explain the concept of multi-catch statements with example programs.

(OR)

15(b) Explain deadlock with an example program.

16(a) Write a java program to insert update and delete data from a database.

(OR)

16(b) Develop a java program to handle HTTP requests.

PYTHON PROGRAMMING

Course Title : Python Programming	Course Code : 18CM504E(A)
Semester : V	Course Group : Elective
Teaching Scheme in Periods (L:T:P) : 45:15:0	Credits : 3
Type of Course : Lecture+ Tutorial	Total Contact Periods: 60 periods
CIE : 60 Marks	SEE : 40 Marks

Pre-requisites

Basic understand of computer hardware and programming.

Course Outcome

On successful completion of the course, the students will be able to attain below Course Outcome (CO):

Course outcome	
CO1	Configure Raspberry Pi with suitable OS and set up the environment for python to meet IOT applications
CO2	Use data types, operators and control structures to write simple python problems
CO3	Develop classes, modules and packages
CO4	Design Graphical user interface and Regular expressions
CO5	Develop Multithread applications and handles runtime exceptions.
CO6	Process file, database operations and implement applications using Raspberry PI

Course Contents

1 Python Introduction and Raspberry PI

6 periods

Introduction to IOT- Advantages and Disadvantages of IOT- Identify Components of Raspberry PI-3- Build a PC using Raspberry PI-3- Introduction to python programming language-Steps for the setting up execution environment for Python

2 Basic of Python programming

12 periods

Variable declaration and initialization-Comments-Indentation-data types-controls structures Operators- strings and functions

3. Classes and Packages

12 periods

Define Class- data member, methods, and constructors and create an instance of class- different types of Inheritance- Python Identity Operator- Creating and importing Modules and Packages- scope of variables- virtual environment for python application- Installing packages- math and datetime package

4. Exception handling and Multithreading

8 periods

Different Types of errors- Exception handling- Multithreading- ways of creating threads Methods in the Thread module, Thread Synchronization

5. Design Graphical user Interface and Regular Expressions

10 periods

Design a graphical interface- Discuss Geometry Managers- Widgets- Event handling Regular expression to validate the data

6. Data Processing and Programming Raspberry Pi

12 periods

Working files and folders- working with data database- Interfacing with Raspberry PI and controlling devices using python programs-Basic Electronic components

Reference Books

1. Raspberry Pi Cookbook 2014 by Simon Monk
2. Core Python Programming 2018 by R. Nageswara Rao
3. Python: For Beginners: **by Timothy C. Needham**
4. Sams Teach Yourself Python Programming for Raspberry Pi in 24 Hours Second Edition, Sams publication by Christine Bresnahan, Richard Blum
5. Python Programming Fundamentals- A Beginner's Handbook 2018 by Nischay kumar Hegde
6. The Fundamentals of Python: First Programs, 2011, Cengage Learning Kenneth A. Lambert,
7. Introduction to Computation and Programming Using Python. MIT Press John V. Guttag

Specific Learning Outcomes:

Upon completion of the course the student shall be able to

1 Python Introduction and Raspberry PI

- 1.1 Define IOT
- 1.2 List applications of IOT
- 1.2 List Advantages and Disadvantages of IOT
- 1.3 Identify Components of Raspberry PI-3
- 1.4 List General purpose input and Output pins (GPIO) on Raspberry PI
- 1.5 Build a PC using Raspberry PI-3
- 1.6 Install operating System into Raspberry PI
- 1.7 Familiarize to python programming language
- 1.8 List different versions of pythons
- 1.9 Compare Python programming language with Java Programming language
- 1.9 Lists features of Python programming
- 1.10 Sets the execution environment for Python
- 1.11 Execute Python Script (Command Prompt, Script and IDE) in different ways

2 Basic of Python programming

- 2.1 Declare and initialize variables
- 2.2 Use Comments, Indentation in programs
- 2.3 Discuss Data Types Booleans, Numbers
- 2.3 Use Decision Making Statements to solve different problems
- 2.4 Use Loop Statements with example to solve problems which are iterative
- 2.5 Perform operation on Lists, Tuples, Sets, and Dictionaries
- 2.6 Identify members of Lists, Tuples, Sets, and Dictionaries using Membership Operator
- 2.7 Process string using operators and built in functions
- 2.8 Build function with/ without arguments
- 2.9 Solve problems by using recursive method of problem solving
- 2.10 Differentiate between recursive and iterative way of problem solving

3. Classes and Packages

- 3.1 Define class with its member and create instances of class
- 3.2 Implement different types of Inheritance,
- 3.3 Use super to call methods of a super class
- 3.3 Use Python Identity Operator
- 3.4 Create and import Modules and Packages
- 3.5 Use local and global variables

- 3.6 Sets up the virtual environment for python application
- 3.7 Installs packages
- 3.8 Write programs using standard Mathematical function sqrt, cos sine, pow, degrees, and fabs etc.
- 3.9 Use datetime package in python application

- 4. Exception handling and Multithreading**
 - 4.1 Difference between compile time errors and runtime errors and logical errors.
 - 4.2 list common compile time errors and runtime errors
 - 4.3 Using try/except block, finally and else block handles exception
 - 4.4 raise statement
 - 4.5 Create User defined exceptions classes
 - 4.6 Define Multithreading
 - 4.7 List Pros and cons of Multithreading
 - 4.8 Create threads using Threading Module
 - 4.9 Create Multiple Threads which perform different tasks
 - 4.10 Design threads using, start, join, isAlive, getName, setName, activeCount and currentThread Methods
 - 4.11 Achieve thread Synchronization in multithreaded environment

- 5. Design Graphical user Interface and Regular Expressions**
 - 5.1 Design a graphical interface using TKinter library
 - 5.2 Design GUI using different Geometry Managers
 - 5.3 Uses various Widgets
 - 5.4 Lists attributes of widgets
 - 5.5 Handles Events generated by various Widgets
 - 5.6 Create patterns to using regular expression
 - 5.7 Validates data using regular expression

- 6. Data Processing and Programming Raspberry Pi**
 - 6.1 Opens, close, read, write, append of files using programs
 - 6.2 List modes of opening file
 - 6.3 Delete files and folders
 - 6.5 Connect to MySql database
 - 6.6 Perform creation of table, insert a row in a table, update an entry in a table and execute stored procedures
 - 6.7 Stores images using blob data type
 - 6.8 Use Bread board, resistor, transistors, diode, and capacitors, Inductors, Transformers and Adaptors
 - 6.8 Work with I2C and SPI interface of Raspberry PI
 - 6.9 Turn On and Off LED using python program
 - 6.10 Make a buzzing sound with the Raspberry Pi and python program
 - 6.11 Connect to Wired or Wireless network

Suggested Student Activities

Note:

- Student activity like mini-project, quizzes, etc. should be done in group of 3-5 students
- Each group should do any one of the following type of activity or any other similar activity related to the course with prior approval from the course coordinator and programme coordinator concerned.
- Each group should conduct different activity and no repetition should occur.
- Compare Intel mother board with Raspberry PI mother board

- Study IEEE paper on Block Chain and Prepare a Power point Presentation on the same paper
1. Prepare a Quiz on various Electronic Components and the rest of the class will answer the quiz.
 2. Prepare a Study report after studying three to four research papers on IOT
 3. Design a simple project that automates a task.
 4. Study the impact of recent technologies on health and environment; prepare a report that addresses the issues and solution to them.
 5. Study Recent Technologies like Data Mining, Data Analysis, and Data Scientist; and write a report that distinguishes these technologies.

Suggested E-learning references

<https://www.tutorialspoint.com/python/>

CO-PO Matrix

Course outcome		Linked PO	Teaching Hours
CO1	Configure Raspberry Pi with suitable OS and set up the environment for python to meet IOT applications	1,2,3,4,5,6,8	6
CO2	Use data types, operators and control structures to write simple python problems	1,2,3,4,7,8	12
CO3	Develop classes, modules and packages	1,2,3,4,7,8	12
CO4	Design Graphical user interface and Regular expressions	1,2,3,4,7,8	8
CO5	Develop Multithread applications and handles runtime exceptions.	1,2,3,4,5,7,9,10	10
CO6	Process file, database operations and implement applications using Raspberry PI	1,2,3,4,5,7,9,10	12
Total Session			60

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1		9(a)	13(a)	
2	II						
3	III		2		10(a)	14(a)	
4	IV						
5	V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
					11(b)	15(b)	
6	VI	7,8		10(b)	14(b)		
			12(a)	16(a)			
			12(b)	16(b)			
Total Questions		8		8	8		

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

State Board Of Technical Education
Python Programming
18CM504E(A)---V Semester
Mid SEM -1 Model Paper

Time: 1 hour

Marks : 20

PART-A

Instructions:

4 X 1 =4 marks

Answer all questions

Each question carries 1 mark

1. List the advantages of IOT
2. List the features of python programming language
3. Write the purpose of Indentation
4. Write the syntax to declare Dictionary

NOTE: 1. Answer any one question from 5 and 6.

2*3=6 marks

2. Each question carries three marks.

5(a). Explain the components of Raspberry PI

or

5(b). Write the differences between Python and Java

6(a). Explain any five string processing functions.

or

6(b). Write the differences between implementing function using loops and recursion.

PART-C

NOTE: 1. Answer any one question from 5 and 6.

2*5=10 marks

2. Each question carries three marks.

7(a). Write the steps to build a PC and install operating system into Raspberry

or

7(b). Explain the different ways of executing a python program

8(a). Write a python program to traverse, delete and add elements into list

or

8(b). Write a python program to find the next prime number of a given prime number

State Board Of Technical Education
Python Programming
18CM504E(A)---V Semester
Mid SEM -II Model Paper

Time: 1 hour

Marks : 20

PART-A

Instructions:

4 X 1 =4 marks

Answer all questions

Each question carries 1 marks

1. What is the user of super keyword?
2. Define module
3. List the keywords to handle exceptions
4. Write the purpose of join method in Threading Module

PART-B

NOTE: 1. Answer any one question from 5 and 6.

2*3=6 marks

2. Each question carries three marks.

- 5(a). Explain different types of inheritance with a diagram
or
5(b). Explain any five methods of math module
- 6(a). Explain different types of errors
or
6(b). Write the advantages and disadvantages of multithreading

PART-C

NOTE: 1. Answer any one question from 5 and 6.

2*5=10 marks

2. Each question carries three marks.

- 7(a). Write the steps to steps to create virtual environment for python application
or
7(b). Write an application where a create a module and import the same to other module
- 8(a). Write a program to create a multi threaded application.
or
8(b). Write a program to handle different types of exceptions

State Board of Technical Education, Telangana State
C18-Semester End Examination (SEE)
Model Paper- 18CM504E(A)
(Python Programming)

Time: 2 Hours

Total Marks: 40

PART – A

Instructions:

8 X1 M = 08 Marks

i) Answer all the following questions:

ii) Each question carries 1 mark

1. Write the syntax to create a dictionary type variable
2. Write the use of raise statement
3. List any four widgets for developing a GUI
4. Define Multithreading
5. What is the purpose of Geometry Managers?
6. Define regular expression
7. Write the syntax to open a file.
8. List types of transistors

PART- B

NOTE: 1. Answer any one question from 9, 10, 11 and 12.

MARKS: 4 X 3=12

2. Each question carries three marks.

9(a) Explain different components of Raspberry PI

or

9(b) Explain search, replace and match function for regular expression

10(a) Explain different types of inheritance with diagram

or

10(b) Explain how to calculate the resistance of a resistor by using color codes

11(a) Explain basic attributes of widgets

or

11(b) Explain different geometry managers

12(a) Explain the function to open, write and close a file

or

12(b) Write the process to connect MySql database.

PART-C

NOTE: 1. Answer any one question from 13, 14, 15 and 16

MARKS: 4 X 5=20

2. Each question carries five marks

13(a) Write a python program to print multiplication tables from 1 to 10

or

13(b) Design a window application that displays number of times a user a click a button

14(a) Write a python script that denies access to multiple threads to critical section.

or

14(b) Write a python program to delete record from a table

15(a) Create regular expression to validate email-id, and phone number

or

15(b) Write a python application to handle list box events

16(a) Write a python program to copy one file into another file and delete the original file

or

16(b) Write a python program and steps to turn on/off LED

ANDROID PROGRAMMING

Course Title : ANDROID PROGRAMMING	Course Code : 18CM504E(B)
Semester : V	Course Group : Elective
Teaching Scheme in Periods (L:T:P) : 45:15:0	Credits : 3
Type of course : Lecture + Tutorial	Total Contact Periods: 60 Periods
CIE : 60 Marks	SEE : 40 Marks

Prerequisites

Knowledge of Java programming and AWT event handling concepts.

Course Outcomes

Upon completion of the course the student shall be able to

Course Outcome	
CO1	Understand the categories of mobile applications and know the internal components of smart phone.
CO2	Interpret different types of mobile operating systems and know the architecture of iOS and Android OS
CO3	To demonstrate their skills of using Android software development tools
CO4	Know the components of Android to develop simple mobile applications running on emulator
CO5	Design Graphical User Interface(GUI) mobile applications and handle events generated by UI controls
CO6	Know Android services and Develop android applications to interact with SQLite database

Course Contents

1. Introduction to mobile application development and smart phone hardware architecture Duration: 8 Periods

Mobile device - types of mobile devices - mobile application development – types of mobile apps - native, web and hybrid - smart phone - evolution of smart phones - features of smart phone - System on Chip (SoC) - components of SoC - advantages and disadvantages of SoC - Digital Signal Processor(DSP) - features of different processor architectures – Traditional DSP Architecture - Modern DSP Architecture - SoC based architecture - contemporary processors used in smart phones - peripheral devices for a smart phone - future technology in smartphones

2. Understand different mobile operating systems

Duration: 8 Periods

Mobile operating system – types of mobile operating systems - history of iOS - versions of iOS - iOS Architecture - layers in iOS architecture - features of different layers of iOS - history of Android OS - versions of Android - Android OS Architecture - layers in Android OS architecture- features of different layers of Android OS - iOS vs Android OS

3. Introduction to Android Environment setup

Duration: 8 Periods

Programming languages used in Android applications - MVC Architecture - Security Aspects of Android - Android Environment Setup - Android Studio IDE - Eclipse IDE - create Android Virtual Devices(AVDs) - types of Android applications - Android development Frameworks for mobile apps - types of Android Development Tools

- 4. Understand the programming components of Android** **Duration: 12 Periods**
 Programming Components of Android – Activities – Services- Content Providers – Broadcast Receivers – create “Hello world!” application - File structure of an Android application - Main Activity File, Android Manifest file, R file, Strings file, Layout file - Intent - Types of Intents - Intent to dial a number or to send SMS - explicitly switching between activities - lifecycle of Android Activities - Activity callback functions - android application which shows callback functions
- 5. Android User Interface(UI) controls** **Duration: 12 Periods**
 User Interface Designing Layouts - Linear Layout - Relative Layout - List View Layout - Grid view Layout - Table Layout - User Interface(UI) Controls –TextView - Edit Text – Button – Checkbox - Radio Button - Toggle button – Spinner - Date picker - Time picker - Develop simple android applications using each UI control - Event handling of UI Controls with example programs - Toast message in android application to display notifications – Fragments - Life cycle of fragments - Develop android application using fragments
- 6. Android Services and Database** **Duration: 12 Periods**
 Android service - life cycle of Android Services - Develop simple Android application using Android service - Introduction to SQLite database - Creating and opening a database in SQLite database - Creating tables in SQLite database - Inserting data into SQLite database - Retrieving data from SQLite database - Updating and Deleting data from SQLite database - Develop simple android application using SQLite database

Recommended Books

1. Today’s Smartphone Architecture by Malik Wallace and Rafael Calderon - meseec.ce.rit.edu/551-projects/spring2016/2-6.pdf
2. <https://cs4720.cs.virginia.edu/slides/CS4720-MAD-iOSAppComponentComponents.pdf>
3. Professional Android 4 Application Development, Reto Meier, Wiley India, (Wrox) , 2012
4. Android Application Development for Java Programmers, James C Sheusi, Cengage Learning, 2013
5. Head First Android Development by Dawn Griffiths & David Griffiths - O'Reilly publications
6. Android App Development for Dummies 3rd edition by Michael Burton - A Wiley brand
7. Hello, Android: Introducing Google’s Mobile DevelopmentPlatform fourth edition by Ed Burnette - The pragmatic programmers
8. Busy Coder’s Guide to Android Development by Mark L Murphy -
9. Android Programming: The Big Nerd Ranch Guide By Bill Philips, Chris Stewart and Kristin
10. Android Cookbook 2nd edition by Ian F.Darwin - O'Reilly

Specific Learning Outcomes:

- 1.0 **Introduction to mobile application development and smart phone hardware architecture**
- 1.1 Define mobile device
- 1.2 List different type of mobile devices
- 1.3 Define mobile application development
- 1.4 Classify mobile application development applications: native, web and hybrid
- 1.5 Define smart phone
- 1.6 Discuss the evolution of smart phones
- 1.7 Describe the key features of smart phone
- 1.8 Define System on Chip (SoC)
- 1.9 List and briefly explain the components of SoC
- 1.10 List advantages and disadvantages of SoC
- 1.11 Define Digital Signal Processor(DSP)
- 1.12 Briefly discuss the features of different processor architectures – Traditional DSP Architecture, Modern DSP Architecture and SoC based architecture
- 1.13 List the contemporary processors used in smart phones

- 1.14 List different peripheral devices for a smart phone
- 1.15 Discuss the future technology in smartphones

2.0 Understand different mobile operating systems

- 2.1 Define mobile operating system
- 2.2 List different mobile operating systems
- 2.3 State in brief the history of iOS
- 2.4 Know the different versions of iOS
- 2.5 Draw the block diagram of iOS Architecture
- 2.6 List the layers in iOS architecture
- 2.7 Briefly explain the features of different layers of iOS
- 2.8 State in brief the history of Android OS
- 2.9 Know the different versions of Android
- 2.10 Draw the block diagram of Android OS Architecture
- 2.11 List the layers in Android OS architecture
- 2.12 Briefly explain the features of different layers of Android OS
- 2.13 Compare iOS and Android OS

3.0 Introduction to Android Environment setup

- 3.1 List the programming languages used for developing Android applications
- 3.2 Know the Concepts of MVC Architecture
- 3.3 Know the Security Aspects of Android
- 3.4 Explain the Android Environment Setup using Android Studio IDE
- 3.5 Explain the Android Environment Setup using Eclipse IDE
- 3.6 Explain the procedure to create Android Virtual Devices(AVDs)
- 3.7 Describe different types of Android applications
- 3.8 Explain different Android development Frameworks for mobile apps
- 3.9 Explain different types of Android Development Tools

4.0 Understand the programming components of Android

- 4.1 Explain the Programming Components of Android
 - 4.1.1 Activities
 - 4.1.2 Services
 - 4.1.3 Content Providers
 - 4.1.4 Broadcast Receivers
- 4.2 Explain the procedure to create “Hello world!” application and running application in emulator
- 4.3 Discuss the File structure of an Android application project like Main Activity File, Android Manifest file, R file, Strings file, Layout file
- 4.4 Explain Android Activating component: Intent
 - 4.4.1 Define Intent
 - 4.4.2 Types of Intents
 - 4.4.3 Develop and android application using Intent to dial a number or to send SMS
 - 4.4.4 Develop and android application on explicitly switching between activities
- 4.5 Explain the lifecycle of Android Activities
 - 4.5.1 List the Activity Callback functions
 - 4.5.2 Develop an android application which shows Callback functions

5.0 Android User Interface(UI) controls

- 5.1 Discuss the User Interface Designing Layouts
 - 5.1.1 Linear Layout
 - 5.1.2 Relative Layout
 - 5.1.3 List View Layout
 - 5.1.4 Grid view Layout
 - 5.1.5 Table Layout
- 5.2 Explain the usage of User Interface Controls
 - 5.2.1 TextView

- 5.2.2 Edit Text
- 5.2.3 Button
- 5.2.4 Checkbox
- 5.2.5 Radio Button
- 5.2.6 Toggle button
- 5.2.7 Spinner
- 5.2.8 Date picker
- 5.2.9 Time picker
- 5.3 Develop simple Android applications using each UI control
- 5.4 Explain Event handling of UI Controls with example programs
- 5.5 Understand the usage of Toast message in android application to display notifications
- 5.6 Understanding Fragments
 - 5.6.1 Define fragment
 - 5.6.2 Life cycle of fragments
 - 5.6.3 Develop android application using fragments

6 Android Services and Database

- 6.1 Define Android service
- 6.2 Explain the life cycle of Android Services
- 6.3 Develop simple Android application using Android service
- 6.4 Introduction to SQLite database
- 6.5 Explain the process of creating and opening a database in SQLite database
- 6.6 Explain the process of creating tables in SQLite database
- 6.7 Explain the process of inserting data into SQLite database
- 6.8 Explain the process of retrieving data from SQLite database
- 6.9 Explain the process of updating and deleting data from SQLite database
- 6.10 Develop simple android application using SQLite database

Suggested list of student activities

Note: *The following activities or similar activities for assessing 2.5 credits (Any one)*

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

- 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 coordinator and programme co-coordinator.
- Each group should conduct different activity and no repeating should occur.
 1. Study different Integrated Development Environments(IDEs) available for executing android programs and prepare a report.
 2. Develop some simple GUI based applications like calculator etc using android controls.
 3. Visit Library to refer to standard Books on Advanced java concepts, collect related material and prepare notes.
 4. Refer to online content and videos to get more knowledge on SQLite database concepts.
 5. Interact with industry people who are working in android technologies and prepare a report.
 6. Compare different types of Operating Systems used in mobiles and submit a report.
 7. Write assignments given by course coordinator.
 8. Read all the course contents and should be able to write slip tests and surprise tests.
 9. Prepare a seminar on a specific topic that is related to latest technologies in the mobile application development and present a Power Point Presentation(PPT) to all the peers.
 10. Study IEEE papers on android programming and submit a report.
 11. Prepare quiz on android programming related questions and conduct.
 12. Participate in state level or national level technical conferences.
 13. Develop simple android applications (apps).

Suggested E-learning references

1. “Android Programming for Beginners” John Horton- Packt publishing.

2. “Android Programming: The Big Nerd Ranch Guide” 2nd edition by Bill Phillips, Chris Stewart, Brian Hardy and Kristin Marsicano.
3. “Android Programming Tutorials” by Mark L. Murphy.
4. “Beginning Android Programming with Android Studio” Fourth Edition by J.F.DiMarzio.
5. “Head First Android Development” by Griffiths & Griffiths 2015-07-03.
6. <https://www.tutorialspoint.com/android/index.htm>
7. <https://developer.android.com/>
8. <https://www.sanfoundry.com/java-android-programing-examples>
9. <https://sites.google.com/site/hkustcomp4521/home/lab-exercises>
10. <https://www.vidyarthiplus.com/vp/attachment.php?aid=47906>
11. <https://www.javatpoint.com/android-tutorial>
12. <https://www.studytonight.com/android/>
13. <https://www.splessons.com/lesson/android-tutorial/>

CO-PO Mapping Matrix

Course Outcome		CL	Linked PO	Teaching Hours
CO1	Understand the categories of mobile applications and know the internal components of smart phone.	R,U, A	1,2,3,4,8,10	8
CO2	Interpret different types of mobile operating systems and know the architecture of iOS and Android OS	R,U, A	1,2,3,4,8,10	8
CO3	To demonstrate their skills of using Android software development tools	R,U, A	1,2,3,4,8,10	8
CO4	Know the components of Android to develop simple mobile applications running on emulator	R,U, A	1,2,3,4,8,10	12
CO5	Design Graphical User Interface(GUI) mobile applications and handle events generated by UI controls	R,U, A	1,2,3,4,8,10	12
CO6	Know Android services and Develop android applications to interact with SQLite database	R,U, A	1,2,3,4,8,10	12
		Total Sessions		60

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	
MID SEM –II EXAM					
S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1		9(a)	13(a)	
2	II						
3	III		2		10(a)	14(a)	
4	IV						
5	V		3	5, 6	9(b)	13(b)	
6	VI				11(a)	15(a)	
		11(b)			15(b)		
		10(b)		14(b)			
12(a)	16(a)						
12(b)	16(b)						
Total Questions		8		8	8		

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

MODEL QUESTION PAPER
BOARD DIPLOMA MID SEM-I SEMESTER EXAMINATIONS (C-18)
DCME– V-SEMESTER
18CM504E(B) – ANDROID PROGRAMMING

Duration : 1 Hour

Maximum Marks: 20

PART-A

Instructions: (1) Answer all questions.

4x1 = 4 Marks

(2) Each question carries one mark.

- 1) Define mobile device.
- 2) Define SoC.
- 3) Define mobile OS.
- 4) List the types of mobile OS.

PART-B

2×3=6 Marks

Instructions: (1) Answer *one* question each from 5 and 6

(2) Each Question is of internal choice type

(3) Each question carries three marks.

5(a) Classify different types of mobile apps.

(OR)

5(b) List the advantages and disadvantages of SoC.

6(a) Compare iOS and Android OS.

(OR)

6(b) Write the brief history of iOS.

PART-C

2×5=10 Marks

Instructions: (1) Answer one question each from 7 and 8.

(2) Each Question is of internal choice type

(3) Each question carries five marks.

7(a) Demonstrate the features of different DSP architectures.

(OR)

7(b) Explain the contemporary processors used in smart phones.

8(a) Explain different versions of iOS

(OR)

8(b) Demonstrate the layers of Android OS architecture.

MODEL QUESTION PAPER
BOARD DIPLOMA MID SEM-II SEMESTER EXAMINATIONS (C-18)
DCME– V -SEMESTER
18CM504E(B) - ANDROID PROGRAMMING

Duration : 1 Hour

Maximum Marks: 20

PART-A

Instructions: (1) Answer all questions.

4x1 = 4 Marks

(2) Each question carries one mark.

- 1) List the programming languages used for developing android applications.
- 2) List the types of android applications.
- 3) Define Intent.
- 4) Write about Android manifest file.

PART-B

2×3=6 Marks

Instructions: (1) Answer one question each from 5 and 6

(2) Each Question is of internal choice type

(3) Each question carries three marks.

5(a) Discuss the security aspects of Android.

(OR)

5(b) Write the procedure to create Android Virtual Device(AVD).

6(a) List the different types of Intents with examples.

(OR)

6(b) List the Activity callback functions.

PART-C

2×5=10 Marks

Instructions: (1) Answer one question each from 7 and 8.

(2) Each Question is of internal choice type

(3) Each question carries five marks.

7(a) Explain the steps to install Android Studio IDE.

(OR)

7(b) Explain the concept of MVC architecture.

8(a) Develop an android application using Intent to dial a number.

(OR)

8(b) Develop an android application to display “Hello World!” message on screen.

MODEL QUESTION PAPER
BOARD DIPLOMA SEMESTER END EXAMINATION (C-18)
DCME- V -SEMESTER
18CM504E(B) – ANDROID PROGRAMMING

Duration : 2 Hours

Maximum Marks: 40

PART-A

Instructions: (1) Answer all questions.

8x1 = 8 Marks

(2) Each question carries one mark.

- 1) List the peripheral devices for a smart phone.
- 2) Define Content Provider.
- 3) What is Linear Layout?
- 4) What is R.java file?
- 5) List any three UI controls.
- 6) Define fragment.
- 7) Define Service.
- 8) What is SQLite database?

PART-B

4×3=12 Marks

Instructions: (1) Answer one question each from 9,10,11 and 12.

(2) Each Question is of internal choice type

(3) Each question carries three marks.

9(a) Discuss the future technology in smartphones.

(OR)

9(b) Write about Event handling of UI controls.

10(a) Discuss different types of Android applications.

(OR)

10(b) Describe the callback methods in Android Services.

11(a) Describe about Array Adapters in List View Layout.

(OR)

11(b) Demonstrate the life cycle of fragments.

12(a) Demonstrate the life cycle of Android Services

(OR)

12(b) Discuss about creating database in SQLite database.

PART-C

4×5=20 Marks

Instructions: (1) Answer one question each from 13,14, 15 and 16.

(2) Each Question is of internal choice type

(3) Each question carries five marks.

13(a) Explain the layers of iOS architecture with a block diagram.

(OR)

13(b) Develop simple android application to find sum of two numbers using TextView ,EditText and Button controls.

14(a) Explain the process of Android Environment setup using Eclipse IDE.

(OR)

14(b) Develop simple android application using Android Service.

15(a) Develop simple android application to display notifications using Toast message.

(OR)

15(b) Develop an android application using fragments in activities.

16(a) Explain the process of inserting data into the SQLite database.

(OR)

16(b) Explain the process of retrieving data from the SQLite database.

CLOUD COMPUTING

Course Title : Cloud Computing	Course Code : 18CM505E(A)
Semester : V	Course Group : Elective
Teaching Scheme in Periods (L:T:P) : 45:15:0	Credits : 3
Type of course : Lecture + Tutorial	Total Contact Periods: 60 Periods
CIE : 60 Marks	SEE : 40 Marks

Prerequisites

Knowledge of computer science concepts.

Course Outcome

Upon completion of the course the students shall be able to:

Course Outcome	
CO1	Interpret terminologies in Cloud Computing
CO2	Use the concepts of Parallel and Distributed Computing
CO3	Classify Virtualization
CO4	Use Virtualization Technologies
CO5	Develop various types of Clouds
CO6	Develop Cloud Security and Applications

COURSE CONTENTS:

- 1. Introduction to Cloud Computing** **Duration : 8 Periods**
Recent Trends in Computing, History of Cloud Computing- Features - Principles and Challenges of Cloud Computing - Cloud Service Providers- Advantages and Disadvantages of Cloud Computing - Compare Cluster Computing - Grid Computing, Distributed Computing, Utility Computing and Cloud Computing
- 2. Parallel and Distributed Computing** **Duration : 12 Periods**
Eras of Computing - Concepts of Parallel Computing -Concepts of Distributed Computing - Parallel Vs Distributed Computing
- 3. Virtualization** **Duration : 9 Periods**
Introduction - Characteristics of Virtualized environments - Classification of Virtualization Techniques
- 4. Virtualization Technologies** **Duration : 9 Periods**
Role of Virtualization in Cloud Computing - Pros and Cons of Virtualization -Virtualization Technologies – Examples (Xen, VM ware, Microsoft Hyper-V)

5. Cloud Computing Architecture

Duration : 12 Periods

Cloud Reference Model – Architecture - Infrastructure as a Service (IaaS) - Platform as a Service (PaaS) - Software as a Service (SaaS)

Types of Clouds(Deployment models)– Public Clouds, Private Clouds, Hybrid Clouds and Community Clouds - Economics of Cloud

6. Cloud Security and Applications

Duration : 10 Periods

Security - Privacy and Trust - Infrastructure Security - Data Security - Cloud applications.

REFERENCE BOOKS

1. Cloud Computing : Principles and Paradigms – Rajkumar Buyya, James Broberg and Andrzej Goscinski
2. Mastering Cloud Computing – Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi
3. Cloud Security and Privacy – Tim Mather, Subra Kumaraswamy, Shahed Latif
4. First Steps in Cloud Computing – Navin Sabharwal, Ravi Shankar

Specific Learning Outcomes:

1.0 Introduction to Cloud Computing

- 1.1 Define the following terms related to recent trends in Computing
 - 1.1.1 Cluster Computing
 - 1.1.2 Grid Computing
 - 1.1.3 Distributed Computing
 - 1.1.4 Utility Computing
- 1.2 Define Cloud Computing
- 1.3 State the history of Cloud Computing
- 1.4 List the features of Cloud Computing
- 1.5 State the basic principles of Cloud Computing
- 1.6 List the challenges of Cloud Computing
- 1.7 List the Cloud Service Providers
- 1.8 State the advantages and disadvantages of Cloud Computing
- 1.9 Compare Cluster Computing, Grid Computing, Distributed Computing, Utility Computing and Cloud Computing

2.0 Parallel and Distributed Computing

- 2.1 Know the eras of Computing
- 2.2 Understand the concepts of Parallel Computing
 - 2.2.1 Parallel Computing
 - 2.2.2 Hardware architecture for parallel processing
 - 2.2.3 Approaches to parallel processing
 - 2.2.4 Levels of Parallelism
 - 2.2.5 Laws of Cautions
- 2.3 Understand the concepts of Distributed Computing
 - 2.3.1 General Concepts and Definitions,
 - 2.3.2 Components of a Distributed System,
 - 2.3.3 Architectural Styles for Distributed Computing
 - 2.3.3.1 Software architectural Styles
 - 2.3.3.2 System Architectural Styles
 - 2.3.4 Explain the models for Inter Process Communication
 - 2.3.5 Know the technologies for Distributed Computing
 - 2.3.5.1 Remote Procedure Call,
 - 2.3.5.2 Distributed Object Frame Work
 - 2.3.5.3 Service Oriented Computing
- 2.4 Differentiate Parallel and Distributed Computing

3.0 Virtualization

- 3.1 Define the term Virtualization
- 3.2 State the different characteristics of Virtualization

- 3.3 Classify and explain Virtualization Techniques
 - 3.3.1 Machine Reference Model
 - 3.3.2 Hardware Level Virtualization
 - 3.3.3 Hardware Virtualization Techniques
 - 3.3.4 Operating System Level Virtualization
 - 3.3.5 Programming Language Level Virtualization
 - 3.3.6 Application Level Virtualization

4.0 Virtualization Technologies

- 4.1 Explain the role of virtualization in Cloud Computing
- 4.2 State the Pros and Cons of Virtualization
- 4.3 Know the Virtualization Technologies – Examples
 - 4.3.1 Xen
 - 4.3.2 VM ware
 - 4.3.3 Microsoft Hyper – V
- 4.4 Compare Traditional Server and Virtual Server in Cloud Computing

5.0 Architecture of Cloud Computing

- 5.1 Describe the Cloud Reference Model –
 - 5.1.1 Architecture
 - 5.1.2 Infrastructure as a Service (IaaS)
 - 5.1.3 Platform as a Service (PaaS)
 - 5.1.4 Software as a Service (SaaS)
- 5.2 Explain the different types of Clouds (Deployment Models)
 - 5.2.1 Public Clouds
 - 5.2.2 Private Clouds
 - 5.2.3 Hybrid Clouds
 - 5.2.4 Community Clouds
- 5.3 Know the economics of Cloud

6.0 Cloud Security and Applications

- 6.1 Define Security, Privacy and Trust
- 6.2 Explain Infrastructure Security
 - 6.2.1 Network Level Security
 - 6.2.2 Host Level Security
 - 6.2.3 Application Level Security
- 6.3 Explain Data Security
 - 6.3.1 Aspects of Data Security
 - 6.3.2 Data Security Mitigation
- 6.4 Applications of cloud computing
 - 6.4.1 Scientific Applications
 - 6.4.1.1 Health Care
 - 6.4.1.2 Biology
 - 6.4.1.3 Geo-Science – Satellite Image Processing
 - 6.4.2 Business and Consumer Applications,
 - 6.4.2.1 Social Networking
 - 6.4.2.2 Media Applications
 - 6.4.2.3 Multiplayer Online Gaming
 - 6.4.2.4 CRM and ERP

Suggested Student Activities:

Student activity like mini-project, surveys, quizzes, etc. should be done in group of 5-10 students.

1. Each group should do any one of the following type of activity or any other similar activity related to the course with prior approval from the course coordinator and programme coordinator concerned.
2. Each group should conduct different activity and no repetition should occur.

3. Explore and analyse topics to improve the level of creativity and analytical skill by taking Quiz/ tests/ assignments. Documents have to be maintained as a record.
4. Create a power point presentation on the topic relevant to course or advanced topics an extension to the course to improve the communication skills. Documents have to be maintained as a record.
5. Visit different sites relevant to topics. Listen to the lectures and submit a handwritten report.

Suggested e-Learning Links:

- 1) https://www.tutorialspoint.com/cloud_computing/
- 2) <https://www.javatpoint.com/cloud-computing-tutorial>
- 3) <https://www.w3schools.in/cloud-computing/cloud-computing/>

CO-PO Mapping Matrix:

Course Outcome		CL	Linked PO	Teaching Hours
CO1	Interpret terminologies in Cloud Computing	R, U	1,2,3,4,6,,8,9,10	8
CO2	Use the concepts of Parallel and Distributed Computing	R, U	1,2,3,4,6,,8,9,10	12
CO3	Classify Virtualization	R,U	1,2,3,4,6,,8,9,10	9
CO4	Use Virtualization Technologies	R,U	1,2,3,4,6,,8,9,10	9
CO5	Develop various types of Clouds	R,U	1,2,3,4,6,,8,9,10	12
CO6	Develop Cloud Security	R,U	1,2,3,4,6,,8,9,10	10
		Total Sessions		60

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1			13(a)	
2	II						
3	III		2			14(a)	
4	IV						
5	V		3	5, 6	9(a)	13(b)	
						15(a)	
6	VI	7,8			14(b)		
				12(a)	16(a)		
				12(b)	16(b)		
Total Questions		8		8	8		

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

MODEL QUESTION PAPER
BOARD DIPLOMA MID-SEM-1 EXAMINATION (C-18)
DCME-V-SEMESTER
18CM505E(A) – CLOUD COMPUTING

TIME: 1 HOUR

MAXIMUM MARKS: 20

PART-A

MARKS: 4 X 1 =4

NOTE: 1. Answer all questions.

2. Each question carries one mark.

1. What is grid computing?
2. Define cloud computing.
3. Define parallel computing.
4. Compare between parallel and distributed computing.

PART-B

MARKS: 2 X 3=6

NOTE: 1. Answer any one question from 5 and 6.

2. Each question carries three marks.

5. a) Explain the features of cloud computing. (OR)
5. b) State the basic principles of cloud computing.
6. a) Explain about approaches to parallel processing. (OR)
6. b) Explain about level of parallelism.

PART-C

MARKS: 2 X 5=10

NOTE: 1. Answer any one question from 7 and 8.

2. Each question carries five marks.

7. a) Write a short notes on
 - i) Distributed computing.
 - ii) Cluster computing.
 - iii) Grid computing. (OR)
7. b) State the history of cloud computing and list the challenges of cloud computing.
8. a) Explain the hardware architecture for parallel processor. (OR)
8. b) Explain about remote procedure call.

MODEL QUESTION PAPER
BOARD DIPLOMA MID-SEM-2 EXAMINATION (C-18)
DCME-V-SEMESTER
18CM505E(A)– CLOUD COMPUTING

TIME: 1 HOUR

MAXIMUM MARKS: 20

PART-A

MARKS: 4 X 1=4

NOTE: 1. Answer all questions.

2. Each question carries one mark.

1. Define the term virtualization.
2. State the different characteristics of virtualization.
3. State pros and cons of virtualization techniques.
4. What is the role of virtualization in cloud computing?

PART-B

MARKS: 2 X 3=6

NOTE: 1. Answer any one question from 5 and 6.

2. Each question carries three marks.

5. a) Explain the hardware virtualization. (OR)
5. b) Explain the programming language level virtualization.
6. a) Explain the VMware virtualization. (OR)
6. b) Compare traditional server and virtual server in cloud computing.

PART-C

MARKS: 2 X 5=10

NOTE: 1. Answer any one question from 7 and 8.

2. Each question carries five marks.

7. a) Explain the operating system level virtualization. (OR)
7. b) Explain about Machine Virtualization.
8. a) Explain the xen architecture. (OR)
8. b) Discuss the architecture of Hyper-v.

MODEL QUESTION PAPER
BOARD DIPLOMA END SEMESTER EXAMINATION (C-18)
DCME-V-SEMESTER
18CM505E(A)– CLOUD COMPUTING

TIME: 2 HOURS

MAXIMUM MARKS: 40

PART-A

MARKS: 8 X 1=8

NOTE: 1. Answer all questions.
2. Each question carries one mark.

1. What is cloud computing?
2. State the different characteristics of virtualization.
3. Define parallel computing .
4. State pros and cons of virtualization techniques.
5. Define SaaS.
6. What is community clouds ?
7. Define Security
8. Define Privacy

PART-B

NOTE: 1. Answer any one question from 9, 10, 11 and 12.

MARKS: 4 X 3=12

2. Each question carries three marks.

9. a) Explain about approaches to parallel processing.
OR
9. b) Explain about public cloud.
10. a) Explain the VMware virtualization.
OR
10. b) Explain the data security.
11. a) Explain Platform as a Service.
OR
11. b) Explain about hybrid clouds.
12. a) Explain network level security.
OR
12. b) Explain application level security.

NOTE: 1. Answer any one question from 13, 14, 15 and 16

MARKS: 4 X 5=20

2. Each question carries five marks.

13. a) Explain about remote procedure call.
OR
13. b) Explain Infrastructure as a Service.
14. a) Explain the xen architecture
OR
14. b) Explain the data security mitigation.
15. a) Draw and explain the architecture of cloud computing.
OR
15. b) Explain private clouds.
16. a) Explain scientific application of cloud computing.
OR
16. b) Explain business and consumer applications of cloud computing.

CRYPTOGRAPHY AND NETWORK SECURITY

Course Title	CRYPTOGRAPHY AND NETWORK SECURITY	Course Code	18CM505E(B)
Semester	V	Course Group	Elective
Teaching Scheme in Pds(L:T:P)	45:15:0	Credits	3
Type of course	Lecture + Tutorial	Total Contact Periods	60 Periods
CIE	60 Marks	SEE	40 Marks

Prerequisites

Intermediate level Mathematics and computer networking concepts

Course Outcomes

Upon completion of the course the student shall be able to

Course Outcomes	
CO 1	Describe Cryptography, Identify various threats and understand network security model
CO 2	Apply the encryption techniques to generate encrypted messages for a given plain text
CO 3	Verify the authenticity of received cipher text
CO 4	Differentiate internet security and web security
CO 5	Classify malicious softwares, virus, worm and countermeasures
CO 6	Realize the importance of firewall, cybercrime and digital rights management

Course Contents

1. Introduction to Cryptography:

Duration: 7 Periods

Security-Need of Network security- security goals, cryptography and its evolution-classic vs. modern cryptography-Attacks-Mechanisms and Services-The OSI Security Architecture: Security Services- Availability Services-Security Mechanisms and Security Attacks-A model for Network Security.

2. Classical Encryption Techniques:

Duration: 15 Periods

Encryption-Decryption-Cryptanalysis,-Cryptology-Symmetric Cipher Model-Substitution Techniques : Caesar Cipher-Monoalphabetic Cipher- Playfair Cipher-Hill Cipher-Monoalphabetic Cipher-Polyalphabetic Cipher-One Time Pad-Transposition Techniques: Rail Fence Cipher-Route Cipher-Columnar transposition-Double transposition-Myszkowski transposition-Steganography.

3. Cryptographic Integrity Techniques :**Duration: 10 Periods**

Principles of Public Key Cryptosystems-Authentication Requirements-Authentication Functions-Message Authentication Codes-Hash Functions-Digital Signatures.

4. Network and Internet Security:**Duration: 8 Periods**

Web Security –Threats on Web-Approaches to Web Security-HTTPS-Wireless Security-Threats-Email Security-threats-Internet Protocol Security (IPSec)-Benefits and services.

5. System Security:**Duration:11 Periods**

Intruders-Intrusion Detection-Password Management-Backdoor-Logic Bomb-Trojan Horses-Mobile Code- and Multiple-Threat Malware-Viruses: The Nature of Viruses-Viruses Classification-Virus Kits- Macro Viruses-E-Mail Viruses-Virus Countermeasures: Antivirus Approaches-Advanced Antivirus Techniques-Worms- Difference between virus and worm-The Morris Worm-Worm Propagation Model-Recent Worm Attacks-State of Worm Technology-Mobile Phone Worms- Worm Countermeasures-back-up and data recovery.

6. Firewalls and Ethical Issues:**Duration: 9 Periods**

The Need for Firewalls-Firewall Characteristics-Types of Firewalls and their advantages-Legal and Ethical issues- Cybercrime and Computer Crime-Ethical Issues Related to Computers and Information Systems-Digital Rights Management(DRM)-Categories of users of Digital Rights Management Systems

Recommended Books

1. Cryptography and Network Security: Principles and Practices, - William Stallings - Pearson Education.
2. Cryptography and Network Security –Atul Kahate : Mc Graw Hill
3. Network Security Essentials (Applications and Standards) - William Stallings, Pearson Education.
4. Cryptography and Network Security: 2nd Edition - Behrouz a. Forouzan.
5. Fundamentals of Network Security—Eric Maiwald-Dreamtech Press.
6. computer networking a top-down approach- James F. kurose & Keith W. Ross, Pearson Education

Specific Learning Outcomes:

Upon completion of the course the student shall be able to

1. Introduction to Cryptography

- 1.1 Define security and network security.
- 1.2 Describe OSI security architecture.
- 1.3 Discuss about different security goals.
- 1.4 Define cryptography.
- 1.5 Differentiate classic cryptography and modern cryptography
- 1.6 Discuss about crypto system.
- 1.7 Discuss about authentication, Confidentiality, integrity w.r.t data.
- 1.8 Differentiate passive and active security threats.
- 1.9 List and explain categories of passive and active security attacks.

- 1.10 List and explain categories of security services.
- 1.11 List and explain categories of security mechanisms.
- 1.12 Draw the Model for network security and explain.

2 Classical Encryption Techniques

- 2.1 Define encryption and decryption
- 2.2 Define cryptanalysis and cryptology
- 2.3 List the essential ingredients of a symmetric cipher.
- 2.4 Describe two basic functions used in encryption algorithms.
- 2.5 List keys required for two people to communicate via a cipher.
- 2.6 Describe the general approaches to attacking a cipher.
- 2.7 Define substitution cipher
 - i. Discuss the Caesar cipher.
 - ii. Discuss the monoalphabetic cipher.
 - iii. Describe Playfair and Hill ciphers.
 - iv. Discuss One-Time-Pad.
 - v. Differentiate mono and polyalphabetic ciphers.
 - vi. Discuss the problems with the one-time pad.
- 2.8 Define a transposition cipher.
 - i. Discuss Rail Fence Cipher
 - ii. Route Cipher
 - iii. Explain Columnar transposition
 - iv. Explain Double transposition
 - v. Discuss Myskowski transposition
- 2.9 Define steganography.
- 2.10 Exercise all the ciphers with examples.

3. Cryptographic Data Integrity Techniques

- 3.1 List the principal elements of a public-key cryptosystem.
- 3.2 List the roles of the public and private key.
- 3.3 Define hash function and cryptographic hash function
- 3.4 Explain the features and properties of hash functions
- 3.5 Define message digest
- 3.6 Explain the applications of cryptographic hash functions in Message Authentication
- 3.7 List and explain message authentication requirements
- 3.8 List the message authentication functions
- 3.9 Explain the message authentication code.
- 3.10 Define digital signature.
- 3.11 List the properties of a digital signature should have.
- 3.12 List the digital signature requirements.

4. Network and Internet Security

- 4.1 Define Web Security
- 4.2 Compare types of security threats on web
- 4.3 Explain briefly web traffic security approaches
- 4.4 Explain HTTPS
- 4.5 Define Wireless Security
- 4.6 List and explain security threats to wireless networks
- 4.7 Classify email security threats
- 4.8 List and explain various protocols used to counter email threats
- 4.9 Define Internet Protocol Security (IPSec).
- 4.10 Explain the benefits of IPSec
- 4.11 List out the IPSec services

5. System Security

- 5.1 Discuss Intruders, intrusion detection, password management
- 5.2 Discuss malicious software like Backdoor, Logic Bomb, Trojan Horses, Mobile Code, Multiple-Threat Malware
- 5.3 Define virus and worm.
- 5.4 Discuss Virus, Virus Nature, Virus Classification, Macro Viruses, Virus Kits, E-Mail Viruses
- 5.5 Discuss Virus Countermeasures: Antivirus Approaches, Advanced Antivirus Techniques
- 5.6 Discuss Morris worm, worm attacks, worm technologies, mobile phone worms,
- 5.7 Describe how a worm propagates.
- 5.8 Discuss worm Countermeasures

6 Firewalls and Ethical Issues

- 6.1 Define Firewall.
- 6.2 List types of firewalls.
- 6.3 Discuss firewall characteristics
- 6.4 Analyze the importance of firewall
- 6.5 Explain the steps to design a firewall
- 6.5 Discuss cybercrime and computer crime,
- 6.6 Discuss the classification of computer crime based on the role that the computer plays in the criminal activity.
- 6.7 Explain digital rights management
- 6.8 List the basic conditions that must be fulfilled to claim a copyright.
- 6.9 Describe the principal categories of users of digital rights management systems.

Suggested Student Activities

- 1. Student visits Library to refer Standard Books on Cryptography and Network Security and collect related material.
- 2. Assignments
- 3. Explore and analyze topics to improve the level of creativity and analytical skill by taking Quiz Programmes. Documents have to be maintained as a record.
- 4. Surprise tests
- 5. Create a power point presentation on the topic relevant to course or advanced topic as an extension to the course to improve the communication skills. Documents have to be maintained as a record.

Suggested E-learning references

- 1) http://www.cse.iitm.ac.in/~chester/courses/16e_cns/slides/01_Introduction.pdf
- 2) <https://www.ijcsmc.com/docs/papers/January2015/V4I1201544.pdf>

CO-PO Mapping Matrix

Course Outcomes		CL	Linked POs	Teaching Hours
CO 1	Describe Cryptography, Identify various threats and understand network security model	R,U	1,2,3	7
CO 2	Apply the encryption techniques to generate encrypted messages for a given plain text	R,U,A	1,2,3,4,5,7,8,10	15
CO 3	Verify the authenticity of received cipher text	R,U,A	1,2,3,4,5,7,10	10
CO 4	Explain internet security and web security		1,2,3,4,7,9,10	8
CO 5	Classify malicious softwares, virus, worm and countermeasures	R,U,A	1,2,3,4,7,9,10	11
CO 6	Realize firewall, Identify types of cybercrime and digital rights management	R,U,A	1,2,3,4,7,8,9,10	9

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	
MID SEM –II EXAM					
S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks	
		R		U	A		
1	I	4	1		9(a)	13(a)	
2	II						
3	III		2		10(a)	14(a)	
4	IV						
5	V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
		11(b)			15(b)		
6	VI		7,8	10(b)	14(b)		
				12(a)	16(a)		
				12(b)	16(b)		
Total Questions		8		8	8		

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

MODEL QUESTION PAPER
BOARD DIPLOMA MID SEM-I SEMESTER EXAMINATIONS (C-18)
DCME– V-SEMESTER
18CM505E(B)- CRYPTOGRAPHY AND NETWORK SECURITY

Duration: 1 Hour

Maximum Marks: 20

PART-A

Instructions: (1) Answer all questions.

4x1 = 4 Marks

(2) Each question carries one mark.

- 1) Define cryptography.
- 2) Define network security.
- 3) List the essential ingredients of a symmetric cipher.
- 4) Define substitution cipher

PART-B

2×3=6 Marks

Instructions: (1) Answer one question each from 5 and 6

(2) Each Question is of internal choice type

(3) Each question carries Three marks.

5(a) Discuss crypto system.

(OR)

5(b) Discuss passive threats.

6(a) Write about two basic functions used in encryption algorithms.

(OR)

6(b) Differentiate mono and polyalphabetic ciphers

PART-C

2×5=10 Marks

Instructions: (1) Answer one question each from 7 and 8.

(2) Each Question is of internal choice type

(3) Each question carries Five marks.

7(a) Explain categories of passive and active security attacks.

(OR)

7(b) Draw the Model for network security and explain.

8(a) Explain Playfair cipher with the keyword “DECRYPTION” to encrypt the message ”

I WANT MORE MONEY”

(OR)

8(b) Explain one-time pad with an example.

MODEL QUESTION PAPER
BOARD DIPLOMA MID SEM-II SEMESTER EXAMINATIONS (C-18)
DCME– V-SEMESTER
18CM505E(B)- CRYPTOGRAPHY AND NETWORK SECURITY

Duration : 1 Hour

Maximum Marks: 20

PART-A

Instructions: (1) Answer all questions.

4x1 = 4 Marks

(2) Each question carries one mark.

- 1) Define cryptographic hash function
- 2) Define message digest
- 3) Define web security.
- 4) Define wireless security.

PART-B

2×3=6 Marks

Instructions: (1) Answer *one* question each from 5 and 6

(2)Each Question is of internal choice type

(3)Each question carries Three marks.

5(a) Discuss the principal elements of a public-key cryptosystem

(OR)

5(b) Explain the features and properties of hash functions

6(a) Compare types of security threats on web

(OR)

6(b) Classify email security threats

PART-C

2×5=10 Marks

Instructions: (1) Answer one question each from 7 and 8

(2) Each Question is of internal choice type

(3) Each question carries Five marks.

7(a) Explain the message authentication code

(OR)

7(b) Discuss briefly the message authentication requirements

8(a) Explain the benefits of Internet Protocol Security.

(OR)

8(b) List and explain security threats to wireless networks

MODEL QUESTION PAPER
BOARD DIPLOMA SEMESTER END EXAMINATION (C-18)
DCME- V-SEMESTER
18CM505E(B)- CRYPTOGRAPHY AND NETWORK SECURITY

Duration: 2 Hours

Maximum Marks: 40

PART-A

Instructions: (1) Answer all questions.

8x1 = 8 Marks

(2) Each question carries one mark.

- 1) Define cryptography.
- 2) Define message digest
- 3) Define virus.
- 4) What is a digital signature?
- 5) List types of intruders.
- 6) What is a spyware?
- 7) What is a firewall?
- 8) List types of firewall.

PART-B

4×3=12 Marks

Instructions: (1) Answer one question each from 9,10,11 and 12.

(2)Each Question is of internal choice type

(3)Each question carries Three marks.

9(a) Discuss passive threats.

(OR)

9(b) Discuss any three techniques for learning passwords.

10(a) Explain the benefits of Internet Protocol Security.

(OR)

10(b) Write about the characteristics of a firewall.

11a) Discuss the types of intruders

(OR)

11(b) Write short notes on (a) multi-threat malware (b) mobile code

12(a) Explain the steps to design a firewall

(OR)

12(b) Discuss cyber-crime.

PART-C

4×5=20 Marks

Instructions: (1) Answer one question each from 13,14, 15 and 16.

(2)Each Question is of internal choice type

(3)Each question carries Five marks.

13(a) Encrypt the message “PAY MORE MONEY” using Hill Cipher with the encryption key matrix

$\begin{pmatrix} 6 & 24 & 1 \\ 13 & 16 & 10 \\ 20 & 17 & 15 \end{pmatrix}$. Show the calculations and result.

(OR)

13(b) Explain how a worm propagates.

14(a) Explain the message authentication code.

(OR)

14(b) Explain digital rights management

15(a) Explain (a) Backdoor (b) Trojan Horse (c) Logic bomb (d) Zombie

(OR)

15(b) Discuss in detail about worm technologies.

16(a) Explain the types of firewalls.

(OR)

16(b) Describe the principal categories of users of digital rights management systems.

Computer Hardware and System Administration Lab Practice

Course Title :	Computer Hardware and System Administration Lab Practice	Course Code	18CM506P
Semester	V	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Periods:	45 Periods
CIE	60 Marks	SEE	40 Marks

Pre requisites

Basic knowledge on working of computer.

Course outcome

Course outcome	
CO1	System components and installation of device drivers
CO2	Understand the requirements of computer network, and Implementation of different computer networks
CO3	Implement Install and configure Windows 2012 server and various services.
CO4	Implement Install and configure Linux and various services in Linux.

Course Content

Unit No	Unit Name	Hours/Periods
1	System components and installation of Device drivers	6
2	Understand the Requirements of Computer Network, and Implementation of Different computer networks	13
3	Implement Install and configure Windows 2012 server and various services.	13
4	Implement Install and configure Linux and various services in Linux.	13
	Total	45

Recommended Books

- Enhanced Guide to Managing -- Jean Andrews (Thomson) and Maintaining Your PC
- PC Hardware A Beginners Guide -- Gilster (TMH)
- Computer Networks -- Andrew S. Tanenbaum
- Windows server 2012 by Charlie Russel and Craig zacker
- Mastering windows server 2012 R2 by Mark minasi
- Unix and Linux System Administration hand book 4th edition by Garth snyder
- Linux Administration by Jason cannon

E-References

- https://www.tutorialspoint.com/computer_fundamentals/computer_fundamentals_tutorial.pdf

2. <http://www.garfieldcs.com/wordpress/wordpress/wp-content/uploads/2011/09/Computer-Hardware-Basics.pdf>
3. <https://abiiid.files.wordpress.com/2010/12/pc-hardware-a-beginners-guide.pdf>
4. https://www.tutorialspoint.com/windows_server_2012/windows_server_2012_tutorial.pdf
5. <https://ptgmedia.pearsoncmg.com/images/9780735684690/samplepages/0735684693.pdf>
6. <https://docentinrete.files.wordpress.com/2012/05/manuale-2008-98-365-windowsserver.pdf>
7. https://www.tutorialspoint.com/linux_admin/linux_admin_tutorial.pdf
8. <https://www-uxsup.csx.cam.ac.uk/courses/moved.linuxadmin/whole.pdf>

Mapping Course outcomes with program outcome

Course Outcome		CL	Linked PO	Teaching Hours
CO1	Administration concepts and classification of Windows 2012 server	R, U, A	1,2,3,4,8,9,10	13
CO2	Install and configure Windows 2012 server and various services.	R, U, A	1,2,3,4,8,9,10	13
CO3	Install and configure Linux	R,U, A	1,2,3,4,8,9,10	13
CO4	Implement various services in Linux.	U, A	1,2,3,4,8,9,10	06
			Total Sessions	45

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

LIST OF EXERCISES:

1. Practice on formatting a hard disk using FAT/NTFS Format.
2. Installation of operating system software.
3. Practice on how to create a bootable disk/pendrive.
4. Trouble shooting keyboard, monitor, printer.
5. Installation of Network card and its driver software.
6. Installation of a router and connecting to internet.
7. Preparing the UTP cable for cross and straight connections using crimping tool.
8. Implementation of peer to peer network.
9. Implementation of workgroup network.
10. Implementation of Wi-Fi Network.
11. Installation of Windows 2012 server operating system.
12. Creating and managing user & group accounts in Windows-2012 server.
13. Installation & Configuration of DHCP in Windows-2012 server.
14. Installation & Configuration of DNS in Windows-2012 server.
15. Installation & Configuration of DFS in Windows-2012 server.
16. Installation of LINUX operating system.

17. Practice on Linux commands.
18. Installation of device drivers in LINUX server.
19. Creating and managing user & group accounts in LINUX server
20. Installation & Configuration of DHCP in LINUX.
21. Installation & Configuration of DNS in LINUX.

Java Programming Lab Practice

Course Title :	Java Programming Lab Practice	Course Code	18CM507P
Semester	V	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Periods:	45 Periods
CIE	60 Marks	SEE	40 Marks

Pre requisites

Knowledge of C++ programming and OOPs Concepts.

Course outcomes

On successful completion of the course, the students will be able to attain below Course Outcomes (CO):

Course Outcome	
CO1	Develop basic java console based applications.
CO2	Develop programs on inheritance and interfaces.
CO3	Develop programs on packages – io, util.
CO4	Develop programs on applets, AWT controls and event handling.
CO5	Develop programs to handle exceptions and multi threaded applications.
CO6	Develop programs to connect to database and retrieve data and Develop server side programs using Servlets.

Course Contents

Unit Number	Unit Name	Periods
1	Introduction of Java	6
2	Inheritance and Interfaces	8
3	Packages.	8

4	Concepts of Applets, AWT and Event handling	8
5	Exception Handling and Multi threaded programming	8
6	JDBC and Servlets	7
	Total	45

Recommended Books

1. "Head First Java", Kathy Sierra, Bert Bates, O'Reilly.
2. 'Effective Java: A Programming Language Guide' (Java Series) 2nd Edition, by Joshua Bloch Sun copyright.
3. Mastering Java Machine Learning Paperback -Uday Kamath,Krishna Choppella, Packt publishers.
4. Core Java Volume I--Fundamentals Eleventh Edition by Cay S. Horstmann Pearson publications.
5. Java: A Beginner's Guide, Seventh Edition Paperback – by Herbert Schildt -Oracle press
6. "The Complete Reference Java2 (Third Edition)", Patrick Naughton-Herbert Sheild, Tata McGraw hill.
7. "Advance JAVA", Kogent learning Solution, DreamTech Press.
8. "Java2 Unleashed", Jawroski, Techmedia.
9. "Java2 Programming", Keyur Shah, Tata McGraw.
10. "Java EE6 for Beginners", Sharnam Shah &Vaishali Shah, SPD.
11. "Java Server Programming Black book" , Kogent learning Solution, DreamTech Press.
12. "Java Database Programming with JDBC" by Pratik Patel - The Coriolis Group.

Suggested E-learning references

1. <https://www.w3schools.in/java-tutorial/>
2. <https://www.udemy.com/advanced-java-programming/>
3. <https://www.roseindia.net/java/Advanced-Java-Tutorials.shtml>
4. <http://www.javalearner.com/advanced.htm>
5. <https://www.studytonight.com>
6. <http://www.Javatpoint.com/Java-tutorial>
7. <http://www.tutorialspoint.com/Java/>
8. <http://www.indiabix.com/technical/core-Java/>
9. <https://www.geeksforgeeks.org/java/>

CO-PO Mapping Matrix

Course Outcome		CL	Linked PO	Teaching Periods
CO1	Develop basic java console based applications.	R,U,A	1,2,3,4,8,10	6
CO2	Develop programs on inheritance and interfaces.	R,U,A	1,2,3,4,8,10	8
CO3	Develop programs on packages – io, util.	R,U,A	1,2,3,4,8,10	8
CO4	Develop programs on applets, AWT controls and event handling.	R,U,A	1,2,3,4,8,10	8

CO5	Develop programs to handle exceptions and multi threaded applications.	R,U,A	1,2,3,4,8,10	8
CO6	Develop programs to connect to database and retrieve data and Develop server side programs using Servlets.	R,U,A	1,2,3,4,8,10	7
			Total Sessions	45

List of Experiments

1. Write a Java Program to define a class, define instance methods for setting and retrieving values of instance variables and instantiate its object.
2. Write a Java Program on control and iterative statements.
3. Write a java program to find the transpose, addition, subtraction and multiplication of a two-dimensional matrix using loops.
4. Write a Java program on command line arguments.
5. Write a Java Program to define a class, describe its constructor, overload the Constructors and instantiate its object.
6. Write a Java Program to illustrate method overloading
7. Write a java program to demonstrate static variables and static methods.
8. Write a Java program to practice using String class and its methods.
9. Write a Java program using final members.
10. Write a Java Program to sort a list of names in lexicographical order.
11. Write a Java Program to implement single inheritance.
12. Write a Java Program to implement multilevel inheritance by applying various access controls to its data members and methods.
13. Write a Java program using 'this' and 'super' keyword.
14. Write a java program to illustrate method overriding
15. Write java program to explain the use of final keyword in avoiding method overriding.
16. Write a program to demonstrate the use of interface.
17. Write a java program to implement multiple inheritance using the concept of interface.
18. Write a Java program on hybrid and hierarchical inheritance.
19. Write a Java program to implement the concept of importing classes from user defined package and creating packages.
20. Write a Java program on access modifiers.
21. Write a Java program using util packages.
22. Write a Java program using io packages.
23. Write a Java program using stream classes.
24. Write a Java program on applet life cycle.
25. Write a Java program on all AWT controls along with Events and its Listeners.
26. Write a Java program on mouse and keyboard events.
27. Write a Java program on inbuilt Exceptions.
28. Write a Java program on Exception handling.
29. Write a program to implement multi-catch statements
30. Write a java program on nested try statements.
31. Write a java program to create user-defined exceptions.
32. Write a program to create thread (i)extending Thread class (ii) implementing Runnable interface
33. Write a java program to create multiple threads and thread priorities.
34. Write a java program to implement thread synchronization.
35. Write a java program on Inter Thread Communication.
36. Write a java program on deadlock.
37. Write a Java program to establish connection.
38. Write a Java program on different types statements.
39. Write a Java program to perform DDL and DML statements using JDBC.

40. Write a Java program on Servlet life cycle.
41. Write a Java program to handle HTTP requests and responses.

Suggested Student Activities

Note: The following activities or similar activities for assessing 2.5 credits (Any one)

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

- 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 coordinator and programme co-coordinator.
 - Each group should conduct different activity and no repeating should occur.
1. Study different Integrated Development Environments (IDEs) available for executing java programs and prepare a report.
 2. Develop some simple window based applications like notepad, calculator etc using AWT and Swing components.
 3. Visit Library to refer to standard Books on core Java and Advanced java concepts, collect related material and prepare notes.
 4. Refer to online content and videos to get more knowledge on database concepts.
 5. Interact with industry people who are working in java and advanced java technologies and prepare a report.
 6. Write assignments given by course coordinator.
 7. Read all the course contents and should be able to write slip tests and surprise tests.
 8. Prepare a seminar on a specific topic that is related to latest technologies in the java and advanced java concepts and present a Power Point Presentation (PPT) to all the peers.
 9. Study IEEE papers on advanced java topics and submit a report.
 10. Prepare quiz on java course related questions and conduct.
 11. Participate in state level or national level technical conferences.
 12. Participate in various technical coding competitions related to java programming.
 13. Develop some projects to design websites like Hotel Management System, E-Bill Board, Online insurance, Online Mobile, Contributor, Online Restaurant, Public Distribution System, Secure E-banking security, District medical data centre using JDBC and Servlet and JSP concepts.

Python Programming Lab Practice

Course Title :	Python Programming Lab Practice	Course Code	18CM508P(A)
Semester	V	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Periods:	45 Periods
CIE	60 Marks	SEE	40 Marks

Pre requisites

This course requires the basic skills of programming and hardware

Course outcomes

On successful completion of the course, the students will be able to attain below Course Outcomes (CO):

Course Outcome		Teaching Hours
CO1	Build a Personal computer	3
CO2	Develop program using controls structures and applies	10
CO3	Build classes, modules and packages	6
CO4	Develop multithread application and handles runtimes exceptions	6
CO5	Design Graphical user interface and Validates data	10
CO6	Process Data and Program Raspberry Pi	10
		45

Course Contents

Sl.No	UNIT Name
1	Prepare a Personal System
2	Basic Of Python Programming
3	Classes, Modules and Packages
4	Multithreading and Exception Handling.
5	Graphical user interface and Regular expressions
6	File, Database and Interfacing to Raspberry PI

Reference Books

Raspberry Pi Cookbook 2014 by Simon Monk
Core Python Programming 2018 by R. Nageswara Rao

Suggested E-learning references

<https://www.tutorialspoint.com/python/>

Mapping outcomes with program outcomes

(Course outcome linkage to cognitive learning)

S.No	Outcome	CL	Linked PO	Teaching Hours
CO1	Build a Personal computer	R,U,A	1,2,3,4,8,10	3
CO2	Develop program using controls structures and applies	R,U,A	1,2,3,4,8,10	10
CO3	Build classes, modules and packages	R,U,A	1,2,3,4,8,10	6
CO4	Develop multithread application and handles runtimes exceptions	R,U,A	1,2,3,4,8,10	6
CO5	Design Graphical user interface and Validates data	R,U,A	1,2,3,4,8,10	10
CO6	Process Data and Program Raspberry Pi	R,U,A	1,2,3,4,8,10	10
				45

List of Experiments

1. Write a program using control structures
2. Write a program to find the factorial of a number
3. Write a program to perform matrix addition and multiplication
4. Write programs to make use of tuples, list and dictionary
5. Write a program which consists of multiple threads
6. Write a program to handle exception with multiple except statements with single try
7. Write a program using nested try statements.
8. Design Graphical user interface application
9. Design regular expression to validate given text
10. Constructing a PC using Raspberry PI and Board com processor
11. Installation of Operating system
12. Turning ON/OFF LED.
13. Buzzer sound with Raspberry PI and Python program
14. Write a program for method overload
15. Write a program for method overriding
16. Write a program for multiple inheritance
17. Write a program for hybrid inheritance
18. Write a program to perform operations on strings
19. Write a program to slice a list
20. Write a program to display multiplication tables.

ANDROID PROGRAMMING LAB PRACTICE

Course Title :	Android Programming lab practice	Course Code	18CM508P(B)
Semester	V	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Periods:	45 Periods
CIE	60 Marks	SEE	40 Marks

Pre requisites:

Knowledge of core java programming language and AWT event handling concepts.

Course outcomes

On successful completion of the course, the students will be able to attain below Course Outcomes (CO):

Course Outcome	
CO1	Setup environment to develop android applications and creating Android Virtual Device(AVD)
CO2	Use different Components of Android Studio IDE in developing applications and usage of Intents to send sms, dial a number and switching between activities.
CO3	Design GUI using User Interface elements and handle events generated by android components
CO4	Develop android applications using Android Services and to use SQLite database

Course Contents

Unit Number	Unit Name	Periods
3	Introduction to Android Environment setup	10
4	Understand the programming components of Android	10
5	Android User Interface(UI) controls	12
6	Android Services and Database	13

	Total	45
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Recommended Books

1. Today's Smartphone Architecture by Malik Wallace and Rafael Calderon - meseec.ce.rit.edu/551-projects/spring2016/2-6.pdf
2. <https://cs4720.cs.virginia.edu/slides/CS4720-MAD-iOSAppComponents.pdf>
3. Professional Android 4 Application Development, Reto Meier, Wiley India, (Wrox) , 2012
4. Android Application Development for Java Programmers, James C Sheusi, Cengage Learning, 2013
5. Head First Android Development by Dawn Griffiths & David Griffiths - Oreilly publications
6. Android App Development for Dummies 3rd edition by Michael Burton - A Wiley brand
7. Hello, Android: Introducing Google's Mobile DevelopmentPlatform fourth edition by Ed Burnette - The pragmatic programmers
8. Busy Coder's Guide to Android Development by Mark L Murphy -
9. Android Programming: The Big Nerd Ranch Guide By Bill Philips, Chris Stewart and Kristin
10. Android Cookbook 2nd edition by Ian F.Darwin - O'Reilly

Suggested E-learning references

1. <https://www.tutorialspoint.com/android/index.htm>
2. <https://developer.android.com/>
3. <https://www.sanfoundry.com/java-android-programing-examples>
4. <https://sites.google.com/site/hkustcomp4521/home/lab-exercises>
5. <https://www.vidyarthiplus.com/vp/attachment.php?aid=47906>
6. <https://www.javatpoint.com/android-tutorial>
7. <https://www.studytonight.com/android/>
8. <https://www.splessons.com/lesson/android-tutorial/>

CO-PO Matrix

Course Outcome		CL	Linked PO	Teaching Hours
CO1	Setup environment to develop android applications.	U, A	1,2,3,4,5,8,9,10	10
CO2	Use different Components of Android Studio IDE in developing applications and usage of Intents to send sms, dial a number and switching between activities.	U, A	1,2,3,4,5,8,9,10	10
CO3	Design GUI using User Interface elements and handle events generated by android components	U,A	1,2,3,4,5,8,9,10	12
CO4	Develop android applications using Android Services and to use SQLite database	U,A	1,2,3,4,5,8,9,10	13
			Total Sessions	45

List of Experiments

1. Give the steps to setup Android Environment using
 - (a) Android Studio IDE
 - (b) Using Eclipse IDE
 - (c) Create Android Virtual Device(AVD)
2. Develop an android application to display a message like “Hello World”
3. Develop android applications using following UI Layouts
 - (a) [Linear Layout](#)
 - (b) [Relative Layout](#)
 - (c) [List View](#)
 - (d) [Grid View](#)
 - (e) [Table Layout](#)
4. Create an Android app to accept two numbers in two EditText(textfields) and display the sum of them in a Toast message on clicking a button
5. Create an Android app to accept a number in EditText and display the factorial of it in a Toast message on clicking a button.
6. Design a simple calculator application to perform addition, subtraction, multiplication and division using different buttons.
7. Design a simple android application to convert various country currencies.
8. Develop an android application to illustrate the use of
 - (a) Button
 - (b) ToggleButton
 - (c) ImageButton
9. Develop an android application to illustrate the use of
 - (a) CheckBox
 - (b) RadioButton
10. Develop an android application to illustrate the use of Spinner (ComboBox) widget.
11. Develop an android application to illustrate the use of DatePicker widget.
12. Develop an android application to illustrate the use of Timepicker widget.
13. Develop an android application that uses multiple UI controls to create student registration form.
14. Develop an android application to handle events generated by user Interface controls.
15. Develop an android application to shift from one activity to another activity using a button with the help of Intents.
16. Develop an android application to send SMS using Intents.
17. Develop an android application to dial a number using Intents.
18. Explain the life cycle of Android Activities with an example program.
19. Explain the life cycle of fragments with an example program
20. Develop an android application using fragments.
21. Develop an android application using Android services.
22. Develop an android application to create and open a SQLite database.
23. Develop an android application to insert data into SQLite database
24. Develop an android application retrieve data from SQLite database
25. Develop an android application to update and delete data from SQLite database
26. Develop an android application that uses multiple UI controls to create student registration form and store the data into SQLite database.

Suggested list of student activities

Note: *The following activities or similar activities for assessing 2.5 credits (Any one)*

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

- 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 coordinator and programme co-coordinator.
- Each group should conduct different activity and no repeating should occur.

1. Study different Integrated Development Environments(IDEs) available for executing android programs and prepare a report.
2. Develop some simple GUI based applications like calculator etc using android controls.
3. Visit Library to refer to standard Books on Advanced java concepts, collect related material and prepare notes.
4. Refer to online content and videos to get more knowledge on database concepts.
5. Interact with industry people who are working in android technologies and prepare a report.
6. Compare different types of Operating Systems used in mobiles and submit a report.
7. Write assignments given by course coordinator.
8. Read all the course contents and should be able to write slip tests and surprise tests.
9. Prepare a seminar on a specific topic that is related to latest technologies in the mobile application development and present a Power Point Presentation(PPT) to all the peers.
10. Study IEEE papers on android programming and submit a report.
11. Prepare quiz on android programming related questions and conduct.
12. Participate in state level or national level technical conferences.
13. Develop simple android applications (apps).

Unix/Linux Shell Programming Lab Practice

Course Title :	Unix/Linux Shell Programming Lab Practice	Course Code	18CM509P
Semester	V	Course Group	Practical
Teaching Scheme in Periods(L:T:P)	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Periods:	45 Periods
CIE	60 Marks	SEE	40 Marks

Pre requisites:

Basic knowledge of Unix/Linux commands

Course outcomes

On successful completion of course, the students will be able to attain below Course Outcomes (CO):

Course Outcome	
CO1	Realizes the importance of shell programming and learns comments and special characters
CO2	Write small shell program using variables, arrays, command line arguments
CO3	Write shell programs using arithmetic, logical, file operators
CO4	Write shell programs using decision making statements
CO5	Write shell programs using loops and functions to solve mathematical problems

Course Contents

Unit Number	Unit Name	Periods
1	Uses of shell script, Shell special characters, comments, command separator, escaping, quoting command substitution.	5
2	shell script, Shell identifiers, Shell variables, Destroying a variable, arrays, Positional parameters & command line arguments.	8
3	Evaluating expressions, Text formatting with echo ,Arithmetic, relational and logical operators, file	10

	operators	
4	If..fi, if..else...fi, if..elif...else...fi, case,	10
5	Loops: for, while, until, select ; functions	12
	Total	45

Reference Books:

1. “UNIX - Concepts and Applications”, Sumitabha Das 4th Edition, Tata McGraw Hill, 2006.
2. “Linux Command Line and Shell Scripting Bible” Christine Bresnahan and Richard Blum, O’Reilly Media.
3. “Classic Shell Scripting: Hidden Commands that Unlock the Power of Unix” ,Nelson H. F. Beebe, O’Reilly Media.

Suggested E-learning references:

1. <http://www.freeos.com/guides/lsst/>
2. <http://heather.cs.ucdavis.edu/~matloff/Linux/LinuxInstall.pdf> (Chapter 1, Linux
3. Installation).
4. [http://docs.fedoraproject.org/en-US/Fedora/20/pdf/Installation_Guide/Fedora-20-](http://docs.fedoraproject.org/en-US/Fedora/20/pdf/Installation_Guide/Fedora-20-Installation_Guide-en-US.pdf)
5. [Installation_Guide-en-US.pdf](http://docs.fedoraproject.org/en-US/Fedora/20/pdf/Installation_Guide/Fedora-20-Installation_Guide-en-US.pdf).
6. <https://www.linuxnix.com>

CO-PO Mapping Matrix

Course Outcome		CL	Linked PO	Teaching Periods
CO1	Realizes the importance of shell programming and learns comments and special characters	R,U	2,3,4,8,10	5
CO2	Write small shell program using variables, arrays, command line arguments	R,U,A	2,3,4,8,10	8
CO3	Write shell programs using arithmetic, logical, file operators	R,U,A	2,3,4,8,10	10
CO4	Write shell programs using decision making statements	R,U,A	2,3,4,8,10	10
CO5	Write shell programs using loops and functions to solve mathematical problems	R,U,A	2,3,4,8,10	12
			Total Sessions	45

Introduction to shell programming.

- Introduction, Uses of shell script, Shell special characters, comments, command separator, escaping, quoting command substitution.
- Creating shell script, Shell identifiers, Shell variables, Destroying a Variable, Positional parameters & command line arguments.
- Evaluating expressions, Text formatting with echo
- Arithmetic, relational and logical operators, file operators

Shell control structures

- If..fi, if..else...fi, if..elif...else...fi, case,

- Loops: for, while, until,

Functions

List of Experiments

1. Write a shell script to display current date, time, username and directory.
2. Write script to determine whether given file exist or not, file name is supplied as Command line argument, also check for sufficient number of command line argument
3. Write a shell script that uses special variables related to a command line
4. Write a shell script to access the array values
5. Write shell script to show various system configuration like:
 - a) Currently logged user name and his long name
 - b) Current shell
 - c) Your home directory
6. Write shell script to show various system configuration like:
 - a) Your operating system type
 - b) Your current path setting
 - c) Your current working directory
 - d) Show all available shells
7. Write a Shell script to accept any two file names and check their file permissions.
8. Write a Shell script to read a file name and change the existing file permissions.
9. Write a shell script to read a file name and check if it is a directory or block special file or character special file
10. Write a shell script to print current month calendar and to replace the current day number by '*' or '**' respectively.
11. Write a shell program to illustrate command substitution.
12. Write a shell script to print all Arguments with script name and total number of arguments passed
13. Write a shell script to access command line arguments by shifting position
14. Write a shell script to read two numbers and perform arithmetic operations
15. Write a shell script to read two numbers and check their relation using relational operators
16. Write a shell script to read two numbers and apply Boolean operators(logical AND, OR and negation) on them
17. Write a shell script to read two strings and check whether the two strings equal or not
18. Write a shell program to print the sum of first n natural numbers
19. Write a shell program to check if the read number is Armstrong number or not
20. Write a shell program to factorial of a given number using for loop
21. Write a shell program to demonstrate select loop and case
22. Write a shell program to print the following output using nested loops


```
1 1 1 1 1
2 2 2 2 2
3 3 3 3 3
4 4 4 4 4
```
23. Write a shell program to demonstrate the use of break and continue
24. Write a shell program to demonstrate command substitution
25. Write a shell program to illustrate pass parameters to a function
26. Write a shell program to return values from a function

Student Activities

Student activity like mini-project, quizzes, etc. should be done in group of 5-10 students.

- Each group should do any one of the following type of activity or any other similar activity related to the course with prior approval from the course coordinator and programme coordinator concerned.
- Each group should conduct different activity and no repetition should occur.

1. Conduct a survey on other editors available in Unix/Linux Operating System with their features and prepare a report of 2 to 3 pages.
2. Conduct a survey on shells used on Unix/Linux Operating System with their features and prepare report.
3. Conduct a case study on handling various Networking Commands in Linux Operating System and submit a report.
4. Implement mini shell scripts programs like File Management Commands Sub-menu, Text Processing Commands Sub-menu, System Status Commands Sub-menu

PROJECT WORK

Course Title : PROJECT WORK	Course Code : 18CM510P
SEMESTER : V	Course Group : Practical
Teaching Scheme (L : T : P) : 0 : 0 : 45 (in Periods)	Credits : 1.5 Credits
Type of Course : Practical	Total Contact Periods : 45 Periods
CIE : 100 Marks	SEE : 100 Marks

Prerequisites: Students should have the knowledge of various programming languages and practices in addition to basic engineering skills.

Course Outcomes:

CO	Outcome
CO1	Analyze the realistic problem
CO2	Design the solution using various modules.
CO3	Coding using engineering tool.
CO4	Implementing and updating.

Should be in following Areas

I) Software Projects:

1. Web Designing
2. Banking
3. Income tax calculation application.
4. Examination Cell
5. Student data base management
6. Library management
7. Stores management
8. Staff data management

9. Tourism package.
10. Institution management software.
11. Pay rolls.
12. Hostel management

II) Hardware and networking projects

1. LAN Establishment
2. Printer sharing
3. ADD ON cards or any relevant
4. Voice recognizer
5. Wi-Fi enabling

CO / PO - MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	Mapped POs
CO1	3	3		1	2	1	1	3	2	3	1,2,4,5,6,7,8,9,10
CO2	3	3		1	2	1	1	3	2	3	1,2,4,5,6,7,8,9,10
CO3	3	3	2	1	2	1	1	3	2	3	1,2,3,4,5,6,7,8,9,10
CO4	3	3	2	1	2	1	1	3	2	3	1,2,3,4,5,6,7,8,9,10

SKILL UPGRADATION-V

Course Title	: Skill Upgradation -V	Course Code	: -
Semester	: V	Course	: -
Teaching Scheme in periods (L :	: 0:0:7	Credits	: 2.5
Methodology	: Activities	Total	: 105
CIE	: Rubrics	Contact SEE	: Nil

Rationale: This course is introduced for all semesters with a purpose of providing outside classroom experiences that lead to overall development of the students. One whole day is allocated for activities.

Course Objective:

1. To create an awareness on Engineering Ethics and Human Values.
2. To instill Moral, Social Values and Loyalty.
3. Create awareness about social responsibilities of Engineers
4. To improve Communication and Participation skills

Course Content and Blue Print of Marks for SEE			
Activity No	Activity	Periods	Frequency
1	Haritha Haram(plantation &Maintenance)/ Waste management /Swachh Bharat	21	7 times in a semester
2	Mini projects	18	6 times in a semester
3	Online Video Tutorials/ MOOCs in SWAYAM /NPTEL/ e-Journals	16	4 times in a semester
4	Seminars/Quizzes/ Technical Paper Presentations /Group discussions/ Participate in Tech fests and coding competitions	24	6 times in a semester
5	Field Visits/Field Practice(also within the campus)	14	2 times
6	Expert/Guest Lectures • Safety and Responsibilities of an Engineer • Occupational crime/Cyber crimes • Responsibility of engineers • Emerging technologies	12	4 Times
Total Periods		105	

Note: in case Expert faculties are not available English faculty may handle the expert lectures or Video clips on the suggested lectures may be played and the suggested activities are flexible.

Course Outcomes

CO	Outcome	CO/PO Mapping
CO1	Practice the moral values that ought to guide the Engineering profession.	1,2,5,6,7,8,9,10
CO2	Develop the set of justified moral principles of obligation, ideals that ought to be endorsed by the engineers and apply them in real life situations	8,10
CO3	Create awareness of saving environment through activities	3,4,5,8,9
CO4	Create awareness of Constitution of India	1,4,7,8,9,10

COURSE CONTENT:

SAFETY, RESPONSIBILITIES OF ENGINEERS

Safety and risk-definition- - assessment of safety and risk - risk benefit analysis and reducing risk— Personal risk-Public risk-Reducing risk-Voluntary Risk-Collegiality and loyalty–Authority- Types-collective bargaining -occupational crime –Responsibility of engineers–Types-Social responsibility-Professional responsibility-confidentiality-conflicts of interest-liability

Evaluation:

The student must maintain a record of all activities conducted on **skill upgradation/ Activities** day and prepare a soft copy of report and submit it to their mentor or upload to the institute website or mail.

The reports shall be evaluated by the mentors through rubrics and accordingly give the eligibility for 2.5 credits . The student must have participated in at least 75% of activities to get eligibility.

CO-PO Mapping Matrix

	Basic knowledge	Discipline Knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & sustainability	Ethics	Individual and Team work	Communication	Lifelong learning	Mapped PO
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	

CO1	✓				✓					✓	5,10
CO2					✓					✓	5,10
CO3						✓	✓		✓	✓	6,7,9,10
CO4					✓		✓			✓	5,7,10

FORMAT FOR STUDENT ACTIVITY ASSESSMENT

DIMENSION	Unsatisfactory 1	Developing 2	Satisfactory 3	Good 5	Exemplary 6	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	2
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	2
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	2
					TOTAL	10/4=2.5

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

NOTE : This is only an example. Appropriate rubrics may be devised by the concerned course co-ordinator for assessing the given activity.

If the average score is greater than 1(>1), then 2.5 credits will be awarded to student.