

**LNCT UNIVERSITY, BHOPAL**

**School of Computer Science & Technology**

**Scheme of Examination**

**GROUP A**

**Diploma in Computer Science**

<b>Sr. No</b>	<b>Category</b>	<b>Total no. of Credits</b>
<b>1</b>	<b>University Core(UC)</b>	<b>53</b>
<b>2</b>	<b>Programme Core(PC)</b>	<b>63</b>
<b>3</b>	<b>University Elective(UE)</b>	<b>14</b>
<b>4</b>	<b>Programme Elective(PE)</b>	<b>30</b>
	<b>Total</b>	<b>160</b>

# LNCT UNIVERSITY, BHOPAL

## School of Computer Science & Technology

### Scheme of Examination

#### GROUP A

#### Computer Science

PROGRAMME: **-DIPLOMA**

BRANCH: **- CS**

SESSION: **-2022-23**

SEMESTER: **- I**

S. No	Paper Code	Paper Name	Maximum Marks Allotted				Total Marks	Credits Allotted			Total Credits	Remark
			Theory Slot		Practical Slot			L	T	P		
			EST	CAT	ESP	CAP						
1	DCS101	COMMUNICATION SKILLS	70	30	-		100	3	1		04	One credit refers to one hour teaching in theory, tutorial and practical: 260 hour workload
2	DCS102	PHYSICS	70	30	30	20	150	3	1	2	06	
3	DCS103	MATHEMATICS	70	30	-		100	3	1		04	
4	DCS104	COMPUTER FUNDAMENTALS & ITS APPLICATIONS	70	30	30	20	150	3	1	2	06	
5	DCS105	DISASTER MANAGEMENT-I								-		
<b>Total</b>			280	120	60	40	500	12	04	04	20	

MST: Mid Semester Test      CAT: Continuous Assessment Theory

CAP: Continuous Assessment Practical      L: Lecture

EST: End Semester Theory

T: Tutorial

ESP: End Semester Practical

P: Practical

**\*\*DCS105 is a non credit course**

**Passing marks min 40% required in each CAT/CAP/EST/ESP**

# LNCT UNIVERSITY, BHOPAL

## School of Computer Science & Technology

### Scheme of Examination

#### GROUP A

#### Computer Science

PROGRAMME: -**DIPLOMA**

BRANCH: - **CS**

SESSION: - **2022-23**

SEMESTER: - **II**

SNo.	Paper Code	Paper Name	Maximum Marks Allotted				Total Marks	Credits Allotted Subject Wise			Total Credits	Remark
			Theory Slot		Practical Slot							
			EST	CAT	EST	CAP		L	T	P		
1	DCS201	PROGRAMMING IN C	70	30			100	3	1		04	One credit refers to one hour teaching in theory and 2 hour teaching for tutorial and practical:24 hour workload per week corresponding to LTP
2	DCS202	APPLIED CHEMISTRY	70	30	35	15	150	3	1	2	06	
3	DCS203	DIGITAL ELECTRONICS	70	30	-	-	100	3	1		04	
4	DCS204	BASIC ELECTRICAL ENGG.	70	30	35	15	150	3	1	2	06	
5	DCS205	INTRODUCTION OF C++	-	-	75	25	100			2	02	
6	DCS206	COMPUTER WORKSHOP	-	-	75	25	100			2	02	
7	DCS207	DISASTER MANAGEMENT-II	-	-		-						
<b>Total</b>			<b>280</b>	<b>120</b>	<b>220</b>	<b>80</b>	<b>700</b>	<b>12</b>	<b>04</b>	<b>12</b>	<b>24</b>	

MST: Mid Semester Test

CAT: Continuous Assessment Theory

EST: End Semester Theory

ESP: End Semester Practical

CAP: Continuous Assessment Practical

L:Lecture

T: Tutorial

P: Practical

**\*\*DCS207 is a non credit course**

**Passing marks min 40% required in each CAT/CAP/EST/ESP**

# LNCT UNIVERSITY, BHOPAL

## School of Computer Science & Technology

### Scheme of Examination

#### GROUP A

#### Computer Science

PROGRAMME: -**DIPLOMA**

BRANCH: - **CS**

SESSION: - **2022-23**

SEMESTER: - **III**

S.No	Paper Code	Paper Name	Maximum Marks Allotted				Total Marks	Credits Allotted			Total Credits	Remark
			Theory Slot		Practical Slot			L	T	P		
			EST	CAT	ESP	CAP						
1	DCS301	COMPUTER ARCHITECTURE	70	30	-	-	100	3	1	-	4	One credit refers to one hour teaching in theory, tutorial and practical: 38 hour workload per week corresponding to LTP
2	DCS302	OPERATING SYSTEM	70	30	35	15	150	3	1	2	6	
3	DCS303	DATA COMMUNICATION	70	30	35	15	150	3	1	2	6	
4	DCS304	DATA STRUCTURE & ALGORITHMS	70	30	35	15	150	3	1	2	6	
5	DCS305	PROGRAMMING WITH C++	70	30	35	15	150	3	1	2	6	
6	DCS306	VISUAL BASIC PROGRAMMING	-	-	-	-	-	-	-	-	-	
<b>Total</b>			<b>350</b>	<b>150</b>	<b>140</b>	<b>60</b>	<b>700</b>	<b>15</b>	<b>5</b>	<b>8</b>	<b>28</b>	

MST: Mid Semester Test      CAT: Continuous Assessment Theory

CAP: Continuous Assessment Practical      L: Lecture

EST: End Semester Theory

T: Tutorial

ESP: End Semester Practical

P: Practical

**\*\*DCS306 is a non credit course**

**Passing marks min 40% required in each CAT/CAP/EST/ESP**

# LNCT UNIVERSITY, BHOPAL

## School of Computer Science & Technology

### Scheme of Examination

#### GROUP A

#### Computer Science

PROGRAMME: -**DIPLOMA**

BRANCH: - **CS**

SESSION: - **2022-23**

SEMESTER: - **IV**

S.No	PaperCode	Paper Name	Maximum Marks Allotted				Total Marks	Credits Allotted			Total Credits	Remark
			Theory Slot		Practical Slot			L	T	P		
			EST	CAT	ESP	CAP						
1	DCS401	MICROPROCESSOR	70	30	-	-	100	3	1	-	4	One credit refers to one hour teaching in theory, tutorial and practical: 38 hour workload per week corresponding to LTP
2	DCS402	COMPUTER NETWORK	70	30	35	15	150	3	1	2	6	
3	DCS403	DBMS	70	30	35	15	150	3	1	2	6	
4	DCS404	LINUX AND SHELL PROGRAMMING	70	30	35	15	150	3	1	2	6	
5	DCS405	OOPM	70	30	35	15	150	3	1	2	6	
6	DCS406	PYTHON LANGUAGE	-	-	-	-	-	-	-	-	-	
<b>Total</b>			<b>350</b>	<b>150</b>	<b>140</b>	<b>60</b>	<b>700</b>	<b>15</b>	<b>5</b>	<b>8</b>	<b>28</b>	

MST: Mid Semester Test      CAT: Continuous Assessment Theory

CAP: Continuous Assessment Practical      L: Lecture

EST: End Semester Theory

T: Tutorial

ESP: End Semester Practical

P: Practical

**\*\*DCS406 is a non credit course**

**Passing marks min 40% required in each CAT/CAP/EST/ESP**

# LNCT UNIVERSITY, BHOPAL

## School of Computer Science & Technology

### Scheme of Examination

#### GROUP A

#### Computer Science

PROGRAMME: -**DIPLOMA**  
BRANCH: - **CS**

SESSION: - **2022-23**  
SEMESTER: - **V**

S.No	Paper Code	Paper Name	Maximum Marks Allotted					Credits Allotted			Total Credits	Remark
			Theory Slot		Practical Slot		Total Marks	L	T	P		
			EST	CAT	ESP	CAP						
1	DCS501	THEORY OF COMPUTATION&AUTOMATA	70	30	-	-	100	3	1	-	4	One credit refers to one hour teaching in theory, tutorial and practical: 38 hour workload per week corresponding to LTP
2	DCS502	WEB TECHNOLOGY	70	30	35	15	150	3	1	2	6	
3	DCS503	CYBER SECURITY	70	30			100	3	1		4	
4	DCS504	MACHINE LEARNING	70	30	35	15	150	3	1	2	6	
5	DCS505	SOFTWARE ENGINEERING	70	30	35	15	150	3	1	2	6	
6	DCS506	MINOR PROJECT	-	-	35	15	50	-	-	2	2	
<b>Total</b>			<b>350</b>	<b>150</b>	<b>140</b>	<b>60</b>	<b>700</b>	<b>15</b>	<b>5</b>	<b>8</b>	<b>28</b>	

MST: Mid Semester Test

CAT: Continuous Assessment Theory

EST: End Semester Theory

ESP: End Semester Practical

CAP: Continuous Assessment Practical

L: Lecture

T: Tutorial

P: Practical

**Passing marks min 40% required in each CAT/CAP/EST/ESP**

# LNCT UNIVERSITY, BHOPAL

## School of Computer Science & Technology

### Scheme of Examination

#### GROUP A

#### Computer Science

PROGRAMME: -**DIPLOMA**

BRANCH: - **CS**

SESSION: - **2022-23**

SEMESTER: - **VI**

S.No	Paper Code	Paper Name	Maximum Marks Allotted				Total Marks	Credits Allotted			Total Credits	Remark
			Theory Slot		Practical Slot			L	T	P		
			EST	CAT	ESP	CAP						
1	DCS601	COMPUTER GRAPHICS & MULTIMEDIA	70	30	35	15	150	3	1	-	4	One credit refers to one hour teaching in theory, tutorial and practical: 38 hour workload per week corresponding to LTP
2	DCS602	NETWORK SECURITY	70	30			100	3	1	2	6	
3	DCS603	ARTIFICIAL INTELLIGENCE	70	30	35	15	150	3	1	2	6	
4	DCS604	MAJOR PROJECT	-	-	200	100	300	-	-	4	4	
5	DCS 605	PROFESSIONAL ACTIVITY						2				
<b>Total</b>			<b>210</b>	<b>90</b>	<b>270</b>	<b>130</b>	<b>700</b>	<b>11</b>	<b>3</b>	<b>6</b>	<b>22</b>	

MST: Mid Semester Test

CAT: Continuous Assessment Theory

EST: End Semester Theory

ESP: End Semester Practical

CAP: Continuous Assessment Practical

L:Lecture

T: Tutorial

P: Practical

**\*\*DCS605 is a non credit course**

**Passing marks min 40% required in each CAT/CAP/EST/ESP**

**Diploma CSE LNCT University**  
**I Semester Syllabus**

**Communication Skills (101)/(DCS-101)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO1</b>	Learn to make communication effective. Use appropriate Determiners, Prepositions, Auxiliary verbs, and subject-verb agreement in the given situations.
<b>CO2</b>	Write short answers to the questions based on specified Passages and Short Stories. Form corrects sentences using new words in the specified Passages
<b>CO3</b>	Define communication Describe Communication Process and its types.
<b>CO4</b>	Writing paragraphs of 150 words on topics of general interest i.e. pollution, ragging in college, importance of computers, and importance of communication skill.
<b>CO5</b>	Develop paragraphs on any four topics from the specified list.

**COURSE CONTENTS:**

**UNIT I COMMUNICATION PROCESS AND ITS NEEDS:**

How to make communication effective Barriers in communication, Removal of barriers Grammar and vocabulary for correct English usage. Determiners, Prepositions, Auxiliary verbs and subject-verb agreement Rewrite as directed (change voice, correct form of verbs/ tenses)Vocabulary One word substitution, words often misused and wrongly spelt.

**UNIT II PASSAGES OF COMPREHENSION:**

Prescribed passages six from existing syllabus: Language of Science, Desalination, Desalting Process Safety Practices: Non-conventional Sources of Energy, Our Environment Entrepreneurship

**UNIT III BUSINESS COMMUNICATION:**

Writing summary, moral and characterization of any one story from the book prescribed. Principles of effective business correspondence Its parts, mechanics, styles and forms Application for job, Biodata and C.V.Letter of Enquiry Placing order Complaint.

**UNIT IV COMPOSITION & TRANSLATION:**

Writing paragraphs of 150 words on topics of general interest i.e., pollution, ragging in college, importance of computers, importance of communication skill, importance of science and technology etc. Translation (Hindi to English and vice- versa).

**UNIT V UNSEEN PASSAGES & PRECIS WRITING:**

**Reference Books: -**

1. English Conversation Practice- Grant Taylor
2. Practical English Grammar - Thomson & Martinet
3. Communication Skills for Technical Students Book – I, Book –II M/S Somaiya Publication, Bombay



4. Living English Structure S.Allen
5. English Grammar, Usage, and Composition
6. Tickoo& Subramanian, S. Chand & Co. Standard AllenLongman.
7. Essentials of Business Communication
8. Dr. Rajendra Pal & J.S. KorlahalliS.Chand& Sons, NewDelhi.

**Diploma CSE LNCT University**  
**I Semester Syllabus**

**Physics (102)/(DCS-102)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Able to make physical measurements with accuracy by minimizing different types of errors.
<b>CO-2</b>	Analyze and Differentiate different type of Motions. Evaluate speed in circular motion.
<b>CO-3</b>	Enable to understand concepts of Molecular phenomenon of solids, liquids, and gases
<b>CO-4</b>	Enable to understand principles, laws, facts, using mathematical techniques.
<b>CO-5</b>	Able to describe the basic rules of heat and thermodynamics.

**COURSE CONTENTS:**

**UNIT I UNITS & MEASUREMENT:**

Fundamental and derived units, Scalar and vector, Basic requirements to represent vector, Symbols, abbreviation and proclation, Linear measurement by vernier calipers, screw gauge and spherometer, Angular measurement by angular vernier.

**UNIT II MOTION:**

Motion and its type, Linear motion (laws and equation), Circular motion, Angular velocity and relation with linear velocity, Centripetal acceleration, Centripetal and Centrifugal forces, Rotatory motion, Axis of rotation, Moment of Inertia, Radius of gyration, Kinetic energy of rotation, Numerical problems, and solution on the topic.

**UNIT III MOLECULAR PHENOMENON OF SOLIDS, LIQUIDS AND GASES:**

Postulates Of Molecular Kinetic, Theory of Structure of matter, Brownian motion, Kinetic and Potential energy of molecules, Kinetic theory of gases, Postulates, Calculation of pressure by Kinetic theory, Prove of different gases law by Kinetic theory.

**UNIT IV PROPERTIES OF MATTER:**

Elasticity: Meaning, definition, stress, stain, Hook's law and elastic limit, Surface Tension: Meaning, definition, molecular forces, cohesive and adhesive forces, surface energy, capillary rise and capillary rise method. Viscosity: Meaning, definition, streamline and turbulent flow, critical velocity, Stock's law. Numerical problems and solution on the topic.

**UNIT V HEAT:**

Heat and temperature, concept of heat as molecular motion, Transmission of heat, Study state and variable state. Concept of heat capacity, specific, heat and latent heat. Calorimeter and its uses, Thermodynamics, Relation between heat and work, Mechanical equivalent of heat, First law of thermodynamics and its application, Second law of thermodynamics and its application Carnot cycle, Numerical problems, and solution on the topic. Heat and temperature, concept of heat as molecular motion, Transmission of heat, study state and variable state. Concept of heat

capacity, specific heat, and latent heat. Calorimeter and its uses Thermodynamics Relation between heat and work, Mechanical equivalent of heat, First law of thermodynamics and its application, Second law of thermodynamics and its application, Carnot cycle, Numerical problems, and solution on the topic, Heating effect of current and thermoelectricity, Sound ,Optics and optical instruments, Electrostatics and electromagnetic induction, Modern physics, basic electronics:

**Reference Books: -**

1. Applied Physics Vol. 1 &2,Saxena And Prabhakar
2. Physics, TitiPublication
3. Physics Vol. 1 &2Halliday AndResnicr
4. Engineering Physics,GaurAndgupta
5. Principle Of physics,Brijlal&Subramanyan

**List of suggestive core experiments: -**

1. Refractive index of prism (I-d ) curve
2. Refractive index of prism (spectrometer)
3. Focal length of a convex lens by u-v method
4. Focal length of a convex lens by displacement method
5. Verification of Ohm's law
6. To find out unknown resistance by meter bridge
7. To find out internal radius of hollow tube by vernier calipers.
8. To find out volume of given cylinder by screw gauge.
9. Surface tension by Capillary rise method.
10. Coefficient of viscosity
11. Coefficient of Thermal conductivity by searl's method.
12. Verification of Newton's cooling law.

**Diploma CSE LNCT University**  
**I Semester Syllabus**

**Mathematics (103)/(DCS-103)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Describe the algebraic processes to solve above equations by means of different concepts.
<b>CO-2</b>	Determine the identities of trigonometry and solve the problems.
<b>CO-3</b>	Explain two-dimensional co-ordinate geometry from concept of point up-to straight Lines and solve its problems.
<b>CO-4</b>	Analyze the data by means of statistical processes.
<b>CO-5</b>	Explain the concept of calculus, derived different methods of differentiation and Integration and solve its problems.

**COURSE CONTENTS:**

**UNIT I ALGEBRA:**

Permutation Meaning of factorial n Permutation of 'n' dissimilar thing taken 'r' at a time, Combination: Combination of n dissimilar things taken 'r' at a time, Binomial Theorem: Statement of the theorem for positive integer General Term, Middle term, Constant term, Partial Fractions: Define a proper-improper fraction, break a fraction into partial fraction whose denominator contains Linear, Repeated linear and Non repeated quadratic factors. Determinant: Concept & principles of determinants, Properties of determinant, Simple examples. Complex Numbers: Algebra of Complex Numbers, Polar form.

**UNIT II TRIGONOMETRY:**

Allied angles: Trigonometrical ratios of sum and difference of angles, (Only statement), Sum and difference of trigonometric ratios (C-D formula), Multiple angles (Only double angle and half angle), Properties of triangle (without proof).

**UNIT III MATRIX:**

Definition of Matrix. Types of Matrix, Row, Column, Square, Unit, Upper and lower triangular, Symmetric & Skew Symmetric, Singular and non-Singular, Matrices: Adjoint of a Matrix, Inverse of a Matrix.

**UNIT IV CO-ORDINATE GEOMETRY:**

Co-ordinate System: Cartesian and Polar, Distance, Division, Area of a triangle, Locus of a point and its equation, Slope of St. Line Angle between two St. lines, Parallel and perpendicular St. lines, Standard and general equation of St. line, Point of intersection of two st. lines.

**UNIT V STATISTICS:**

Measures of Central tendency (Mean, Mode, Median), Measures of Dispersion (Mean deviation, standard deviation), **DIFFERENTIAL CALCULUS:** Define constant, variable, function, Value of the function, Concept of limit of a function, **INTEGRAL CALCULUS:** Definition as an inverse process of differentiation, Standard Results (including inverse function), **VECTOR ALGEBRA:** Concept of Vector and Scalar Quantities, Different types of vectors, Addition and subtraction of vectors.

**Reference Books: -**

1. Mathematics for Polytechnics Vol. I andII, Prepared by T.T.T.I. Bhopal
2. Differential Calculus, Gorakh Prasad.
3. Integral Calculus, Gorakh Prasad
4. Co-ordinate Geometry, S.L.Loni
5. Engineering Mathematics (M.P. Hindi Granth Akadami), Dr. S.K. Chouksey & Manoj Singh
6. Mathematical Statistics, Ray and Sharma
7. Higher Engineering Mathematics, B.S. Grewal

**Diploma CSE LNCT University**  
**I Semester Syllabus**

**Computer Fundamentals and Its Application (104)/(DCS-104)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Understand the general computer organization and various i/o devices.
<b>CO-2</b>	Learn evolution of computer and classification of computer system and its applications. Decimal, Binary, Octal, Hexadecimal number
<b>CO-3</b>	Understand Software, programming languages, and language classification. Learn ASCII, Unicode, and Data representation- Bit, Nibble, Byte, KiloByte, MegaByte, GigaByte, TeraByte, PetaByte.
<b>CO-4</b>	Outline concept of operating system and office software.
<b>CO-5</b>	Understand the concept of various system security threats.

**COURSE CONTENTS:**

**UNIT I COMPUTER ORGANIZATION:**

Block Diagram of computer system: Central Processing Unit, Memory Unit, ALU, Control unit, Input & Output devices. Input Device Categorizing input hardware: Keyboard, Card Readers, Scanning Devices, Bar Code Readers, OCR, OMR, MICR, Pointing Device – Mouse & Its Types, Light Pen, Touch Devices, Web Camera, Microphone, Joystick, Digitizing tablet. Output Device: printers: Impact & nonimpact printers, Dot matrix, Laser, Inkjet, Thermal Printers, Plotters, Monitors: CRT, TFT, Plasma, LCD Projector, DLP Projector, Speaker.

**UNIT II EVOLUTION AND GENERATION OF COMPUTER SYSTEMS:**

Computer System Characteristics and capabilities: Speed, Accuracy, Reliability, Memory Capabilities, Repeatability, Types of Computers & its applications: Analog, Digital & Hybrid, General & Special Purpose Computer, Application of computer system, Computer Generations & Classification of Computer Systems: Characteristics of Micros, Minis, Mainframes & Supercomputer. Evolution of micro-computers: PCs: Comparative study w.r.t. Micro-processor, clock speed, data bus, controllers, memory, peripheral interface of PC to Pentium-IV computer systems.

**UNIT III NUMBER SYSTEM, CODES & DATA REPRESENTATION:**

Decimal, Binary, Octal, Hexadecimal number systems. Inter-Conversion from decimal to binary, octal, hexadecimal, conversion of binary number System to decimal, hexadecimal. Codes used for information exchange between computers – ASCII, Unicode, Data representation- Bit, Nibble, Byte, KiloByte, MegaByte, GigaByte, TeraByte, PetaByte etc.

**UNIT IV STORAGE DEVICES:**

Storage Fundamentals, Primary & Secondary Storage. RAM, dynamic and static ROM, PROM, EPROM, EEPROM, Tape storage Devices, Characteristics & limitations, Floppy & their types. Direct access Storage – Hard Disk, Disk Cartridges, Mass Storage Device Optical Disk, CD Rom, DVD, flash drive, ZIP drive, **COMPUTER SOFTWARES & LANGUAGE:** System Software V/s Application Software. Types of System Software, Operating System, Loader, Linker, Language Processor, Assembler, Compiler and Interpreter.

**UNIT V CONCEPT OF OPERATING SYSTEM:**

Introduction, Functions of operating system, Types –batch, single user, multiuser, multiprogramming, multitasking, multithreading, Realtime, embedded, Network, Distributed, CLI (Command Line Interface) and GUI modes of O.S. Booting Process, BIOS, POST, Bootstrap Loader. **SYSTEM SECURITY:** Introduction to viruses, worms, Trojans, Antiviruses scanning & Removal of Viruses, Safety measures- Firewall, updates, Patches.

**Reference Books: -**

1. Fundamentals of Computers: Balaguruswamy, Tata MacGrawhills.
2. Computer Today: S K Basandra, Galgotia Publications.
3. Digital Computer Fundamentals: Bartee, Thomas.C, Tata MacGrawhills.

**List of suggestive core experiments: -**

1. Study the uses of input and output device
2. study the uses of storage devices
3. Backup of data on tape, floppy & hard disk, CD, DVD and in PEN drive
4. use of windows media player, recording, editing playing sound and video files.
5. MICRO-SOFT DISK OPERATING SYSTEM (MS-DOS): System files: BIOS, COMMAND.COM, CONFIG.SYS, Autoexec.bat file.
6. MS-DOS COMMANDS
  - ✓ Internal Commands – dir, cd, md, rd, del, ren, date, time, vol & copy
  - ✓ External commands – Sys, format, edit, find, diskcopy, Xcopy, backup & restore
7. PRACTICE ON WINDOWS 2000/XP/Vista
  - ✓ Starting Windows, Exploring the desktop, Arranging windows, My Computer, The start button,
  - ✓ Creating Shortcuts, Practice on moving and sizing of windows.
  - ✓ Practice on Windows Explorer
  - ✓ File organization: creating, copying, moving, renaming, and deleting and use of recycle bin.
  - ✓ Practice on Windows Accessories – Notepad, WordPad and Paint, Character Map.
  - ✓ Creating editing, formatting, previewing and printing documents using WordPad.
  - ✓ Shutting down windows.
8. PRACTICE ON MS-WORD
  - ✓ Creating editing, formatting, saving, previewing and printing documents.
  - ✓ Auto Text, AutoComplete, AutoCorrect, grammar and spellchecker, Find and replace of text.
  - ✓ Insert, modify table.
  - ✓ Mail merge, Macro, Hyperlink
  - ✓ Header, footer, Watermark.
9. PRACTICE ON MICROSOFT EXCEL
  - ✓ Creating editing, formatting, saving, previewing and printing worksheet.
  - ✓ Use of formula and functions.
  - ✓ Split windows and freeze pans.
  - ✓ Create, edit, modify, print worksheet/charts.
  - ✓ Import & Export Data & worksheet
  - ✓ Pivot table- create, modify
  - ✓ Sorting & Filter data

- ✓ Header, footer, Watermark.

#### **10. PRACTICE ON POWERPOINT**

- ✓ Create, edit, insert, move, slides.
- ✓ Open and save presentation.
- ✓ Insert Object, picture, Diagram, chart, Table, Movie & Sound, Hyperlink
- ✓ Slide design, layout, background.
- ✓ slide show, setup, action button, animation scheme, custom animation, Slide transition and masterslide.

#### **11. PRACTICE ON Internet**

- ✓ Connecting to internet
- ✓ Web browsing
- ✓ Searching websites
- ✓ Email services
- ✓ Creating email accounts & sending and receiving e-mails with or without attachments.



**Diploma CSE LNCT University  
I Semester Syllabus**

**Disaster Management (105)/(DCS-105)**

**COURSE CONTENTS:**

Students must be able to know about different types of disasters

## Diploma CSE LNCT University

### II Semester Syllabus

#### Programming In C (201)/(DCS-201)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

<b>CO-1</b>	Define Program, Algorithm and flow chart, list down and Explain various program development steps. Write down algorithm and flow chart for simple problems.
<b>CO-2</b>	Develop programs using input and output operations and use of command line arguments.
<b>CO-3</b>	Understand and apply control structures of a procedural programming Language
<b>CO-4</b>	Perform tests in programs by using the "if" and "switch" control flow branching statements and repeat code segments by including "for, while,"and "do...while" control flow loops
<b>CO-5</b>	Define arrays and string handling functions and explain user-defined functions, structures and union.

#### COURSE CONTENTS:

##### UNIT I INTRODUCTION TO 'C' PROGRAMMING:

Introduction of Algorithms, Flowcharts, structured programming Concepts, History and features of 'C', 'C' Program structure, Pre-processor directives, Character set and data types, Character set of 'C', identifiers, keywords, variables, Constants, data types, int, float, double, char, Qualifiers, long, short, unsigned and signed, Comments. Operators and Expressions - Arithmetic, Relational, Logical, Assignment operators, unary & ternary operators, hierarchy of operators. • Input & Output Statements - Input and Output statements, Printf, Scanf, getchar, putchar, getch,putch, Conversion specifiers in format control string,

##### UNIT II DECISION CONTROL STATEMENTS:

Conditional branching statements: if statement, if- else, nested if use of logical operators and Compound Relational Tests • Unconditional branching: goto statement Multiple branching statements: switch case statement.

##### UNIT III LOOP CONTROL STATEMENTS:

Loop Statements: syntax and use of 'for' statement, while statement, 'Do-while' statement, 'break-continue' statement, nested looping

##### UNIT IV ARRAYS & STRINGS:

Arrays: Concept of one dimensional and multi-dimensional array, array declaration, Array initialization, operations on one- and two-dimensional arrays. • String Manipulations- Strings, gets, puts, string operations, string function (concatenation, comparison, length of a string etc.)

##### UNIT V FUNCTIONS & MACRO:

Library and User-Defined Functions Concepts of library functions, Library functions (ceil, floor, exp, log, pow, fmod, abs, fabs, rand, srand, toupper, tolower, toascii etc.) - user-defined Functions, Function declaration, Function prototype, local and global variables - Parameter passing mechanisms, recursion - Storage classes –static auto, extern, register - simples and Conditional Macros and Its expansions., pointers, structure, union, and file handling:

#### Reference Books: -

1. Programming in C Balagurusamy, Tata Mc-Graw hill Publishing Company Ltd., New Delhi, IInd Edition 2000.
2. The Complete Reference 'C' Herbert Schildt,4 edition, McGraw-Hill Osborne Media.
3. Let us Learn 'C' Yashwant Kanetkar ,BPB Publications, B-14, Connaught Place, New Delhi, IIIrd Edition,2000.
4. The Spirit of C, Mullish Cooper, Jaico Publishing House, 121, N.G. Road, Mumbai.
5. Exploring C, Yashwant Kanetkar ,BPB Publications, B-14, Connaught Place New Delhi.
6. The C Programming Language Kernighan, Brian W.; Dennis M.Ritchie, Prentice Hall

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**Applied Chemistry (202)/(DCS-202)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Illustrate and summarize the structure and properties of matter and phenomenon involved in engineering.
<b>CO-2</b>	Classify, compare and infer some essential engineering materials.
<b>CO-3</b>	Describe and interpret industrial processes
<b>CO-4</b>	Analyze the contents of essential raw materials utilized in industrial procedures
<b>CO-5</b>	Provide the required prerequisite knowledge to understand technical subjects.

**COURSE CONTENTS:**

**UNIT I ATOMIC STRUCTURE AND PERIODIC TABLE:**

Constituents of the Atom, Bohr's Model of the Atom, Quantum Number and Electronic Energy Levels, Aufbau's Principle, Pauli's Exclusion Principle, Hund's Rule,  $n + 1$  Rule, Electronic Configuration of Elements (s, p, d Block Elements), Development of Periodic Table- Modern Periodic Law, Long form of Periodic Table, Study of Periodicity in Physical and Chemical Properties with special reference to - Atomic and Ionic Radii, Ionization Potential. Electron Affinity, Electronegativity, Variation of Effective Nuclear Charge in a Period, Metallic Character.

**UNIT II METALS AND ALLOYS:**

General Principles and Terms listed in Metallurgy, Metallurgy of Iron and Steel, Different forms of Iron, Effect of Impurities on Iron and Steel, Effect of Alloying Elements in Steel, Corrosion- Definition, Theories of Corrosion- Acid Theory (Rusting), Direct Chemical Corrosion or Dry Corrosion, Wet Corrosion or Electro-Chemical Corrosion (Galvanic and Concentration Cell Corrosion), Various Methods for Protection from Corrosion.

**UNIT III ELECTRO CHEMISTRY:**

Ionization, Degree of Ionization, Factors which Influence Degree of Ionization, Hydrolysis – Degree of Hydrolysis, Hydrolysis Constant., pH Value, Buffer Solution, Electrolysis, Faraday's Laws of Electrolysis.

**UNIT IV KINETIC THEORY OF GASES:**

Postulates of kinetic Theory, Ideal Gas Equation, Pressure and Volume Corrections, Vender Walls Equations, Liquefaction of Gases, Critical Pressure and Critical Temperature for Liquefaction, Liquefaction of Gases by Joule – Thomson Effect, Claude's Method and Linde's Method

**UNIT V FUELS:**

Definition, Classification, Calorific Value (HCV and LCV) and Numerical Problems on Calorific Value, Combustion of Fuels, Numerical Problems on Combustion, Solid Fuels - Coal and Coke, Liquid Fuels- Petroleum and its Distillation, Cracking, Octane and Cetane Values of Liquid Fuels, Synthetic Petrol, Power Alcohol, Bio-Gas, Nuclear Fuels – Introduction to Fission and Fusion Reactions.

**Reference Books: -**

1. Engineering Chemistry II (Hindi) Mathur and Agarwal
2. Chemistry of Engineering Materials C.V. Agarwal
3. Engineering Chemistry P.C. Jain and Monika
4. Engineering Chemistry M.M. Uppal
5. Engineering Chemistry V.P.Mehta Jain Bros. Jodhpur
6. Practical Chemistry for Engineers Virendra Singh

**List of suggestive core experiments: -**

1. Identification of Acid and Basic Radicals in a Salt (Total Numbers = 5).
2. Analysis of a Mixture Containing Two Salts (Not Containing Interfacing Radicals). (Total Numbers = 5)
3. Determination of Percentage Purity of an Acid by Titration with Standard Acid.
4. Determination of Percentage Purity of a Base by Titration with Standard Alkali Solution.
5. Determination of the Strength of Ferrous Sulphate using Standard Ferrous Ammonium Sulphate and Potassium Dichromate as Intermediate Solution.
6. Determination of the Strength of Ferrous Sulfate Solution using Standard Solution of Thiosulphate.

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**Digital Electronics (203)/(DCS-203)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.
<b>CO-2</b>	To understand and examine the structure of various number systems and its application in digital design.
<b>CO-3</b>	The ability to understand, analyze and design various combinational and sequential circuits.
<b>CO-4</b>	Ability to identify basic requirements for a design application and propose a cost-effective solution
<b>CO-5</b>	To manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.

**COURSE CONTENTS:**

**UNIT I FUNDAMENTAL CONCEPTS:**

Introduction of digital electronics, Signals, Comparison between analog and digital signals. Different types of number system and codes used in digital computers. Conversion Decimal to Binary, Decimal to Octal, Decimal to Hexadecimal, Binary to Decimal, Octal to decimal, Hexa decimal to decimal, Octal to hexadecimal, hexadecimal to Octal etc, 1's and 2's Complements.

**UNIT II LOGIC GATES:**

Basic Logic Gates: Logic symbols and truth table of all gates: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR Realization of all other gates using universal gate.

**UNIT III BOOLEAN ALGEBRA:**

Rules and laws of Boolean algebra, Demorgan's theorem. Evaluation of logic expression, algebraic reduction of Boolean.

**UNIT IV COMBINATIONAL LOGIC DESIGN:**

Introduction to logic design Karnaugh map representation of logical functions, Simplification of logical function using K-map, (2, 3, 4 variable) Sum of products (SOP) Product of Sum (POS) Don't care conditions, Design example: half adder, full adder, Half subtractor, full subtractor, BCD to seven-segment decoder (using k-map) Gray to binary code converter (using k-map) Universal Gate.

**UNIT V COMBINATIONAL LOGIC DESIGN USING MSI AND LSI CIRCUITS:**

Multiplexer (:1) demultiplexer (1:4), Decoder (3:8) encoder (8:3) using combinational logic design. BCD adder, using (7483). ALU (74181). Digital comparator (7485), Parity generator/checkers (74180). Code converters: BCD to binary (74184), Binary to BCD (74185A) Priority encoder: Decimal to BCD (74147), Octal to binary priority encoder (74148) Hexadecimal to binary priority encoder using 74148 encoders, Decoder/drivers for display device: BCD to decimal decoder/driver (7447, 7448), logic families, sequential logic circuit.

**Reference Books: -**

1. M. Morris Mano, "Digital logic design", Pearson Education Pvt. Ltd.

2. A Anand Kumar, "Fundamentals of digital circuits ", PHI Learning Pvt Ltd.
3. A K Maini, "Digital Electronics Principles and Integrated Circuits, Wiley India Pvt Ltd.
4. R P Jain, "Modern Digital Electronics", Tata McGraw-Hill publishing company Ltd.
5. D P Kothari and J S Dhillon, "Digital Circuits and Design", Pearson Education Pvt. Ltd.

**List of suggestive core experiments: -**

1. Study and verify the truth table of logic gates (74xx series).
2. Realization of AND, OR, NOT and Ex-OR logic gates using NAND and NOR gate.
3. Verification of Demorgan's theorem.
4. Implementation of full adder, subtractor using gates.
5. Study of gray to binary code convertor using gates.
6. Study to multiplexer and demultiplexers.
7. Implementation of combination logic circuit using mux and Dmux.
8. Study of BCD adder.
9. Study of BCD to seven segment decoder.
10. Verification of truth table of flip flop using IC's.
11. Shift registers using D flip-flop.
12. Presettable shift right, shift left registers.
13. Ripple counter using J-K flip-flop.
14. Decode counter 7490.
15. Synchronous counter using J-K flip-flops.
16. Up/down counter.
17. Mod N counter using J-K flip-flop.
18. Study of 6116 RAM.
19. Study of 2732 EPROM.

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**Basic Electrical Engg(204)/(DCS-204)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Understand basic concepts and apply laws of DC circuits.
<b>CO-2</b>	Understand basic concepts of AC circuits.
<b>CO-3</b>	Understand basic concepts and apply laws of magnetic circuits.
<b>CO-4</b>	Identify and apply engineering materials in various engineering applications.
<b>CO-5</b>	Explain construction, operating principle, and applications of electrical machine.

**COURSE CONTENTS:**

**UNIT IELEMENTARY CONCEPTS:**

Prerequisite: Concept of Potential difference. Current and resistance. Ohm's law, effect of temperature on resistance, resistance temperature coefficient, insulation resistance. SI units of work Power and Energy. Conversion of energy from one form to another in electrical and thermal systems.

**UNIT IID. C. CIRCUITS:**

Kirchhoff's law, ideal and practical voltage, and current sources. Mesh and Nodal analysis (Super node and super Mesh excluded). Source transformation. Star delta transformation. Superposition theorem, Thevenin's theorem Norton's theorem, maximum power transfer theorem (Source transformation not allowed for superposition theorem, Mesh and Nodal analysis).

**UNIT IIIA.C. FUNDAMENTALS:**

Sinusoidal voltage and currents, their mathematical and graphical representation, concept of cycle period, frequency, instantaneous, peak, average, r.m.s. values, peak factor, and form factor, phase difference, lagging, leading and in phase quantities and phasor representation. Rectangular and polar representation of phasors. Study of A.C circuits of pure resistance, inductance and capacitance and corresponding voltage- current phasor diagrams, voltage – current and power waveforms.

**UNIT IVSINGLE PHASE AND POLY PHASE A. C. CIRCUITS:**

Single phase AC Circuits: Study of series and parallel R-L, R-C, R-L-C circuits, concept of impedance and admittance for different combinations, wave form and relevant voltage current phasor diagrams. Concept of active, reactive, apparent, complex power and power factor, resonance in series and parallel RLC circuit. , Polyphase AC circuits: Concept of three phase supply and phase sequence. Balanced and unbalanced loads voltage current and power relations in three phase balance star and delta loads and their phasor diagrams.

**UNIT VELECTROMAGNETISM:**

Magnetic effect of electrical current cross and dot convention, right hand thumb rule and corkscrew rule, nature of magnetic field of long straight conductor, concepts of solenoid and toroid. Concepts of m.m.f, flux, flux density, reluctance, permeability and field strength, their units and relationship. Simple series and parallel magnetic circuits. , comparison between electrical and magnetic circuits , force on current carrying conductor placed in magnetic field, Fleming's left hand rule.single phase transformer and electrostatics.

**Reference Books: -**



1. V. N. Mittal and Arvind Mittal;, “ Basic Electrical Engineering” McGraw Hill
2. Vincent DelToro, “ Electrical engineering Fundamentals”, PHI second edition 2011
3. Bolestaad, :“Electronics Devices and Circuits Theory”, Pearson Education India
4. Edward Hughes, “ Electrical Technology, ”, Pearson Education
5. D.P. Kothari and Nagrath “ Theory and Problems in electrical Engineering”, PHI edition 2011

**List of suggestive core experiments: -**

1. Wiring exercises:
  - i. study of wiring components( Wires, Switches, Fuses, sockets, plug, lamps and lamp holders, rating of different accessories)
  - ii. Control of two lamps from two switches ( looping system)
  - iii. Stair case wiring
  - iv. Use of merger for insulation testing and continuity test of wiring installation and machines
  - v. Study of safety precautions while working on electrical installations and necessity of earthing
  - vi. Introduction to energy conservation
  - vii. Study of single line diagram of power system
2. Mesh and nodal analysis
3. Verification of super position theorem
4. Study of R-L series and R-C series circuit
5. R-L- -C parallel resonance circuit
6. Power and phase measurements in three phase system by two wattmeter methopd.

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**Introduction Of C++ (205)/(DCS-205)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Understand the basic principle and concept of object oriented programming
<b>CO-2</b>	Create C++ basic structure of programs, tokens, expressions and control structures
<b>CO-3</b>	C++ data types, Symbolic constants and Reference by variables
<b>CO-4</b>	Function in C++ , the main function, Function prototyping
<b>CO-5</b>	Classes and objects in C++

**Reference Books: -**

1. Robert Lafore, Object Oriented Programming in Turbo C++, First Edition, Galgotia Publications.
2. D Ravichandran, Programming with C++, Second edition, Tata McGraw- Hil
3. E. Balagurusamy – Object Oriented Programming with C++, Fifth edition, Tata McGraw Education Hill , 2011.
4. Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, First Edition, Pearson India

**List of suggestive core experiments: -**

1. Study of Principles of Object-Oriented Programming, Beginning with C++.
2. Study of basic concepts of procedure-oriented and object-oriented programming.
3. Study of benefits and Applications of OOP.
4. Study of structure of C++ program with simple C++ program.
5. Study of C++ data types, Symbolic constants, and Reference by variables.
6. Study of Function in C++, the main function, Function prototyping.
7. Study of Classes and Objects with the help of programs.
8. Study of Private member functions & Nesting of member functions with examples.

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**Computer Workshop (206)/(DCS-206)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Understand the basic concept and structure of computer hardware and networking.
<b>CO-2</b>	Identify the existing configuration of the computers and peripherals.
<b>CO-3</b>	Apply their knowledge about computer peripherals to identify / rectify problems onboard.
<b>CO-4</b>	Integrate the PCs into local area network and re-install operating system and various application programs.
<b>CO-5</b>	Manage data backup and restore operations on computer and update application software.

**Reference Books: -**

1. Programming in C Balagurusamy ,Tata Mc-Graw hill Publishing Company Ltd., New Delhi, IIndEdition 2000.
2. The Complete Reference 'C' Herbert Schildt,4 edition, McGraw-Hill Osborne Media;
3. Let us Learn 'C' Yashwant Kanetkar ,BPB Publications, B-14, Connaught Place, New Delhi, IIIrd Edition,2000.
4. The Spirit of C, Mullish Cooper, Jaico Publishing House, 121, N.G. Road, Mumbai,.
5. Exploring C, Yashwant Kanetkar ,BPB Publications, B-14, Connaught Place New Delhi.
6. The C Programming Language Kernighan, Brian W.; Dennis M.Ritchie, Prentice Hall

**List of suggestive core experiments: -**

1. Demonstration of computer Hardware Components in Lab.
2. How to Assemble hardware like RAM, HDD etc. assemble in computer.
3. Assignment to prepare general algorithms and flow chart.
4. Study of turbo C editor -file menu, edit menu, run menu, compile menu etc.
5. Assignment to write character, operator set of C Language.
6. Assignment to identify valid and invalid variables, constants, and expressions.
7. Program based on Input/Output statements.
8. Programs based on Arithmetic expression.
9. Programs based on goto statement.

10. Programs based on 'if' and 'Nested if'.
11. A Program based on 'switch case' statement.
12. At least one program based on each:
  - I. 'for' statement.
  - II. 'while' statement.
  - III. 'do-while' statement.
  - IV. break continue statement.
13. Program based on pointer expression.
14. Program based on pointer arithmetic.
15. Program based on pointer to pointer.
16. Program based on array of pointer.
17. Program based on dynamic memory management functions.
18. Program based on two-dimensional array.
19. Program based on Library functions.
20. Programs based on string operations.
21. Programs based on functions.
22. Program based on pointer to function.
23. Program based on Parameter passing mechanisms.
24. Programs based on recursion.
25. Program based on macros.
26. Program based on storage classes.
27. Program based on structure, union and enumeration.
28. Program based on command line argument
29. Programs based on files.

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**Disaster Management-II (211)/(DCS-211)**

**After Completing the course student should be able to:**

Understand the need and significance of studying disaster management  
Explain disaster management basics and theory (cycle, phases, risk, crisis, emergency, disasters, resilience)

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**Computer Architecture (301)/(DCS-301)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	To understand the structure, function and characteristics of computer systems.
<b>CO-2</b>	To understand the design of the various functional units and components of computers.
<b>CO-3</b>	To understand control unit operations.
<b>CO-4</b>	Understand the concept of I/O organization and have ability to understand the concept of cache mapping techniques.
<b>CO-5</b>	Discuss memory organization and mapping techniques.

**COURSE CONTENTS:**

**UNIT I COMPUTER ARCHITECTURE:**

Register Transfer and Micro operations, Register Transfer: Bus and Memory Transfers. Three State Bus Buffers, Memory Transfer. Arithmetic Micro operations: Binary Adder, Binary Adder Sub tractor, Half Adder and Full Adder Binary Incrementor. Arithmetic Circuit, Logic Micro operations: List of Logic Micro operations, Hardware, Implementation. Shift Micro operations: Hardware Implementation.

**UNIT II BASIC COMPUTER ORGANIZATION AND DESIGN:**

Instruction Codes: Stored Program Organization, Indirect Address Computer Registers: Common Bus System, Computer Instruction: Instruction Set Completeness Timing and Control Instruction Cycle: Fetch and Decode, Type of Instruction, Register- Reference Instructions Memory-Reference Instructions: AND to AC, ADD to AC, Load to AC, Store to AC, Branch Unconditionally, Branch and Save Return Address, ISZ, Control Flowchart Input-Output Configuration, Input-Output Instructions, Program Interrupt, Interrupt Cycle, Complete Computer Description, Design of Basic Computer: Control Logic Gates, Control of Registers and Memory, Control of Single flip- flops, Control of Common Bus Design of Accumulator Logic: Control of AC Register, Adder and Logic Circuit, Character Manipulation, Program Interrupt.

**UNIT III CENTRAL PROCESSING UNIT:**

Introduction, General Register Organization: Control Word Stack Organization: Register Stack, Memory Stack, Reverse Polish Notation, Evaluation of Arithmetic Expressions Instruction Formats: Three Address Instructions, Two Address Instructions, One Address Instructions, Zero Address Instructions, RISC Instructions Addressing Modes Data Transfer and Manipulation: Data Transfer Instructions, Data Manipulation Instructions, Arithmetic Instructions, Logical and Bit Manipulation Instructions, Shift Instructions Program Control: Status Bit Conditions, Conditional Branch Instructions Subroutine Call and Return, Program Interrupt, Types of Interrupts Reduced Instruction Set Computer (RISC): CISC Characteristics, RISC, Characteristics, Overlapped Register Windows.

**UNIT IV INPUT OUTPUT ORGANIZATION:**

Peripheral Devices: ASCII Alphanumeric Characters Input-Output Interface: I/O Bus and Interface Modules, I/O Versus Memory Bus, Isolated versus Memory-Mapped I/O Asynchronous Data Transfer: Strobe Control, Handshaking, Asynchronous Serial Transfer, Asynchronous Communication Interface First-In, First-Out, Buffer Modes of Transfer: Interrupt-Initiated I/O, Software Considerations Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt, Priority Encoder, Software Routines, Direct Memory Access

(DMA):DMA Controller, DMA Transfer Input-Output Processor: CPU-IOP Communication  
Serial Communication: Character-Oriented Protocol, Data Transparency Bit-Oriented  
Protocol.

**UNIT V MEMORY ORGANIZATION:**

Memory Hierarchy Main Memory: RAM and ROM Chips, Memory Address Map, Memory  
Connection to CPU Auxiliary Memory: Magnetic Disks, Magnetic Tape, CD, DVD Associative  
Memory: Hardware Organization, Read Operation, Write Operation Cache Memory: Associative  
Mapping, Direct Mapping, Set-Associative Mapping, Writing into Cache, Cache Initialization  
Virtual Memory: Address Space and Memory Space, Address Mapping.

**Reference Books: -**

1. Morris Mano. M., Computer System Architecture, PHI Learning.
2. Tanenbaum, 5/e, Structured Computer Organization, PHI Learning.
3. Hwang & Brigg, Advanced Computer Architecture, McGraw Hill.
4. Stallings, 4/e, Computer Organization & Architecture.
5. Murdocca Computer Architecture & Organization Wiley India.
6. ISRD group Computer Organization TMH.
7. T.K. Ghosh, Computer Organization & Architecture TMH.
8. Computer Organization & Architecture by V. Rajaraman & T. Radha Krishnan,  
PHI Learning.
9. Computer System Architecture by P.V.S. Rao, PHI Learning.

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**Operating System (302)/(DCS-302)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Describe basics Concept of Operating System and its functionality.
<b>CO-2</b>	Describe Computer System Processes management concept and apply concept on given problem.
<b>CO-3</b>	Identify Basics of Memory Management and its Schemes and explain concept of Virtual Memory and paging.
<b>CO-4</b>	Describe techniques of file system in OS and explain the concept of file and directory system.
<b>CO-5</b>	List the type of Disk scheduling algorithms and identify RAID Technology concept.

**COURSE CONTENTS:**

**UNIT I INTRODUCTION TO OPERATING SYSTEM:**

Basics of Operating System, its functions, Objectives and Types of operating System Introduction of time sharing, real time, Parallel and Distributed Multiprocessor embedded O.S. Structure of Operating System: System components, Operating System services, System calls and Programs, System Structure.

**UNIT II PROCESS MANAGEMENT:**

Concepts of Processes; Process state (state diagram), Process Scheduling & Process control block (PCB), Operation on Processes, Threads multiprocessor scheduler. Process Scheduling & Algorithms- Basic Concepts, Scheduling criteria, Scheduling Algorithms- FCFS, SJF, Priority, RR, Multiple queues, Multiple processor Scheduling, Real time Scheduling. Dead Locks - Basic Concept of deadlock, deadlock detection, deadlock prevention, deadlock Avoidance, recovery from deadlock & Banker's algorithm.

**UNIT III MEMORY MANAGEMENT:**

Concept of Memory Management- Logical v/s Physical address, Cache Memory, Swapping, Allocation Techniques (contiguous and Non-contiguous), Fragmentation & Compaction. Concepts of paging and segmentation - Paged Segmentation & Segmented Paging. Concepts of Virtual Memory- Demand Paging, Page Fault, Page replacement and its Algorithms, Allocation of frames, Thrashing.

**UNIT IV FILE SYSTEM:**

File System interface: File Concepts, Types of Files, Access Methods, Directory Structure, File System mounting, Protection. File System Implementation: File System Structure, Allocation Methods (Contiguous, Non Contiguous, index allocations), Free space Management (Fragmentation compaction), Directory implementation, File- sharing, recovery, network file system, (NFS), Efficiency and performance.

**UNIT V DEVICE MANAGEMENT:**

Input Output System: I/O Hardware & Interface, Kernel I/O Sub System, I/O request streams. Disk Management-Disk Structure, Disk Scheduling and its algorithms, RAID TECHNOLOGY., protection & security, other operation system:

**Reference Books: -**

1. Galvin, Operating Systems, Wiley Eastern.



2. Godbole A.S Operating Systems, TMH New Delhi.
3. Pal Chaudhury, Operating system, Principals & Design PHI Learning
4. Bach M.J., Design of the UNIX Operating System, PHI
5. Milankovic, Operating Systems, TMH
6. Ray Dunkan Advance Dos Programming, BPB.
7. Donovons & Mendric, Operating Systems, TMH.
8. William stalling Operating System, pearson edu.

**List of suggestive core experiments: -**

1. BIOS Configuration.
2. Installation of Various Operation System.
  - a. Windows Vista.
  - b. Windows XP.
  - c. Linux.
  - d. Unix.
3. File Management Commands, Use of Administration Commands, System Calls.
4. Simulation of CPU Scheduling Algorithms (FCFS, SJF, RR).
5. Simulation of Memory Allocation, Paging and fragmentation.
6. Case study of UNIX, Linux, Windows Vista & Windows XP.

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**Data Communication (303)/(DCS-303)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Understand various Data communication concept & technology.
<b>CO-2</b>	Compare different types of transmission media and media access methods.
<b>CO-3</b>	Understand the concept of modulation and demodulation, Digital modulation methods.
<b>CO-4</b>	Understand the concepts of Multiplexing, Spreading and Switching.
<b>CO-5</b>	Recognize various Error Detection and Correction.

**COURSE CONTENTS:**

**UNIT I DATA COMMUNICATION CONCEPT & TECHNOLOGY:**

Data Representation, Data Transmission. Modes of Data Transmission- Analog Data, Digital Data, Communication Channels, Synchronous & Asynchronous Data & Communication, Series & Parallel data Communication, Bit rate and Baud rate, Bandwidth & Channel Capacity, Nyquist's, and Shannon's theorems.

**UNIT II TRANSMISSION MEDIA:**

Transmission Line Characteristic, Liner Distortions, Crosstalk, Twisted Pairs Cable, Coaxial Cable, UTP, STP. Optical Fiber – Multimode Fibers, Modal Dispersion, Mono Mode Fiber, Graded Index Fibers, Total Dispersion, Fiber Attenuation, Radio Media, UHF & Microwaves, Satellite Link, Equalization.

**UNIT III MODULATION AND DATA MODEMS:**

Concept of modulation and demodulation, Digital modulation methods: PCM, Amplitude, Shift-keying, Frequency Shift-keying, Quadrature PSK (QPSK), Differential PSK (DPSK), Simplex, Half Duplex, Full Duplex.

**UNIT IV MULTIPLEXING, SPREADING AND SWITCHING:**

**MULTIPLEXING:** Frequency-Division Multiplexing, Wavelength-Division Multiplexing, Synchronous Time-Division Multiplexing, Statistical Time- Division Multiplexing, **SPREAD SPECTRUM:** Frequency Hopping Spread Spectrum (FHSS), Direct Sequence Spread Spectrum. **CHANNELIZATION:** Frequency-Division Multiple Access (FDMA), Time- Division Multiple Access (TDMA), Code-Division Multiple Access (CDMA).

**UNIT V ERROR DETECTION AND CORRECTION:**

**INTRODUCTION:** Types of Errors, Redundancy, Detection Versus Correction, Forward Error Correction Reverse Error Correction. **BLOCK CODING:** Error Detection, Error Correction, Hamming Distance and Minimum Hamming Distance. Liner Block Code, CRC, Checksum, telephone and cable networks, cellular and satellite networks.

**Reference Books: -**

1. Behrouz A Forouzan, Data Communication and Networking, 4e, Tata McGraw-Hill, 2008.
2. William Stallings, Data and Computer Communications, 8e, Pearson Education, 2008.

3. Tomasi Wayne, Introduction to Data Communications and Networking, Pearson Education, 2007.
4. Rajneesh Agrawal and Bharat Bhushan Tiwari, Data Communication and Computer Networks, Vikas Publishing house Ltd., 2005.
5. S. Tanenbaum, Computer Networks, Fourth Edition, Pearson Education.
6. Leon-Gracia and I. Widjaja, Communication Networks, Tata McGraw Hill, 2004.
7. K. Pahlavan and P. Krishnamurthy, Principles of Wireless Networks, PHI Learning.

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**Data Structure & Algorithms (304)/(DCS-304)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Apply basics of data structures and algorithm design.
<b>CO-2</b>	Understand representation of arrays.
<b>CO-3</b>	Use Static symbol table, Hash tables and hashing techniques to solve real world problems.
<b>CO-4</b>	Explain the basic structure of linked list with its various operations.
<b>CO-5</b>	Illustrate stack and queue data structure.

**COURSE CONTENTS:**

**UNIT I INTRODUCTION:**

Introduction to algorithm design and data structure, Top-down and bottom-up approaches to algorithm design, Analysis of Algorithm, complexity measures in terms of time and space Concept of Pointer Variable.

**UNIT II ARRAYS:**

Representation of arrays: single and multidimensional arrays, Address calculation using column and row major ordering.

**UNIT III SYMBOL TABLES:**

Static symbol table, Hash tables, Hashing Techniques, Collision Handling Techniques.

**UNIT IV STACKS AND QUEUES:**

Representation of stacks and queues using arrays, Type of queues-Linear queue, circular queue, De-queue, Applications of stacks: Conversion from infix to postfix and prefix expressions, Evaluation of postfix expression using stacks.

**UNIT V LINKED LISTS:**

Singly linked list: operations on list, linked stacks and queues, Polynomial representation and manipulation using linked lists, Circular linked lists, Doubly linked lists, Generalized lists. searching and sorting algorithms, trees, graphs.

**Reference Books: -**

1. Sahani, Data structure & Algorithms, TMH.
2. Langsam, Tenenbaum, Data Structure using C/C++, PHI Learning
3. Data structure (Schum outline series) Indian edition, TMH
4. Drozdek Adams, Data Structures and Algorithms in C++, Vikas Publishing House Pvt. Ltd.
5. Kunth D. E., Art of Computer Programming and Fundamentals of Algorithms, Vol.-I, Narosa.
6. Kunth, Art of computer programming, Vol.-III, Sorting searching.

**List of suggestive core experiments: -**

1. Program implementation for
  - A. Reading and printing of single array and multidimensional array.
  - B. Matrix manipulation.
  - C. For one dimensional, 2D & 3D array.
2. Program implementation for creating, updating, deleting, traversing, searching, and sorting of arrays, linear and circular link, lists, doubly link list, stacks and queues, trees, post, prefix.

3. Program implementation for manipulation of strings and match algorithms.
4. Program implementation for agency matrix, traversing and searching.
5. Program implementation for adjacency creating matrix tree.

**DIPLOMA( CSE) LNCT University**  
**III Semester Syllabus**

**Programming with C++ (305)/(DCS-305)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Describe the procedural and object-oriented paradigm along with basic structure of C++ program - sequence, selection and iteration.
<b>CO-2</b>	Understand concepts of streams, classes, functions, data and objects.
<b>CO-3</b>	Understand tokens, expressions, and control structures
<b>CO-4</b>	Explain arrays and strings and create programs using them
<b>CO-5</b>	Describe and use constructors and destructors

**Reference Books: -**

1. Balguruswamy E. (2001), Object-Oriented Programming with Turbo C++, 3rd edition, TMH.
2. Lafore Rober, 2001), Object-Oriented Programming in Turbo C++, 3rd edition, Galgotia Publications.
3. M. kumar, programming with C ++,
4. Shukla, object oriented programming in C++, wiley India.
5. Stevens, Teach Yourself C++, BPB
6. Schildt H, 1997, C++ Complete Reference, TMH
7. Kanetkar Y, Programming in C++ ,BPB.
8. Mahapatra P.B, Thinking in C++, Khanna Publisher. • Bruce Euckel , Thinking in C++.
9. Introduction to object oriented programming in C++,TMH ISRD group

**List of suggestive core experiments: -**

1. Problems involving sequence, selection and iteration.
2. Small problems mainly computational to illustrate expression and operator precedence.
3. Programs such as: GCD, Sum of series, Fibonacci Series, Even and Odd series, Finding root of a function, Sequence of a numbers, Checking prime number, Largest among given number etc.
4. Problems relating to arrays: Print, Reverse, Sum, Maximum and Minimum, Insert and Delete elements etc.
5. Problems related to classes and objects.
6. Problems to illustrate constructor & destructor.
7. Problems related to inline functions.
8. Problems related to friend functions.
9. Problems related to operator overloading.
10. Problems related to default arguments, function overloading, functions overriding.
11. Problems related to different types of inheritance.
12. Moderately large function-based problems for which the solutions should be represented by coordinating modules. Formatting a text, replacing a given word in a text with another, counting the number of words, in a text.

**DIPLOMA( CSE) LNCT University**  
**III Semester Syllabus**

**Visual Basic Programming (306)/(DCS-306)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

<b>CO-1</b>	Understand the concepts of Visual Basic
<b>CO-2</b>	Learn the advantages of Controls in VB
<b>CO-3</b>	Design and develop the event- driven applications using Visual Basic framework.
<b>CO-4</b>	Apply the knowledge of database methods.
<b>CO-5</b>	Understand the concepts of Visual Basic

**Reference Books: -**

1. Visual Basic 6 by Deitel & Deitel Nietro, Person Education.
2. Programming with Visual Basic 6.0 Mohammed Azam, Vikas Publication.
3. Visual Basic 6 from the ground up, gary cornell, TMH
4. Visual Basic 6 in easy steps T.M Andercon willey India

**List of suggestive core experiments: -**

**1. Introductory Part**

- A. Knowledge of IDE of VB, Menu Bar, Tool Bar, Project Explorer, Tool Box, Properties Window, Form Designer, Form Layout, Immediate Window.
- B. Concept of Event Driven Programming.
- C. Customizing the environment: Editor Tab, Format Tab, General Tab, Docking Tab, and Environment Tab.
- D. Working with from: Loading, Showing & Hiding Form.
- E. Controlling one form from another.

**2. Practical Part**

Experiments based on:

- A. Data types of VB.
- B. Control Flow Statements and conditional Statements.
- C. Array and types of Arrays.
- D. Designing Menus and Pop-Up Menus.
- E. Use of MsgBox & InputBox.
- F. VB Controls.
- G. Control Arrays & Collections.
- H. Procedures, Subroutines & Functions.
- I. Graphics with VB.
- J. MDI

**3. Application Development Using VB Like:**

- A. Exam System
- B. Library System
- C. Banking System
- D. Hospital System
- E. Inventory & Stock System
- F. Small Gaming Program.

## DIPLOMA( CSE) LNCT University

### IV Semester Syllabus

#### Microprocessor(401)/(DCS-401)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Student is able to describe the architecture and different modes of operations of a typical microprocessor.
CO2	Student is able to understand different addressing modes and instructions of 8086, design and develop assembly language programs using software interrupts, subroutines, macros
CO3	Student is able to interface memory, I/O devices and interrupt controller with 8086 microprocessors.
CO4	Student is able to do memory interfacing using 8085/8086 /8253/DMA 8257/8279/8080 I/O Processor
CO5	Student is able to design and develop assembly language programs using 8051 microcontroller

#### COURSE CONTENTS:

##### UNIT I MICROPROCESSOR, MICROCOMPUTER & ASSEMBLY LANGUAGE

Microprocessor as programmable device, memory, input, output, microprocessor as CPU, Organization of microprocessor based system, working of microprocessor. Microprocessor instruction set and computer languages, m/c language, assembly language, high-level language.

##### UNIT II MICROPROCESSOR ARCHITECTURE & MICROCOMPUTER SYSTEMS

Microprocessor architecture, Memory map & addresses, input & output device, peripherals mapped I/O & memory mapped I/O. Pin out details and the function of each pin. Microprocessor communication & bus timings. 8085 m/c cycle & bus timings, control signals, memory read & writes. Memory interfacing, basic concepts, address decoding, interfacing of 8155-memory section.

##### UNIT III ASSEMBLY LANGUAGE PROGRAM

Instruction classification, instruction format, 1,2,3 byte instructions, addressing modes, data transfer, arithmetic, logical, branch, input/output, m/c controls operation. Writing & executing assembly language programs.

##### UNIT IV PROGRAMMING TECHNIQUES

Looping, counting, indexing, rotate, compare, 16-bit instruction, counters, time delays, stacks & subroutines. Interrupts: EI, DI instructions, RST instructions, Vectored interrupts & priorities.

##### UNIT V PERIPHERAL CHIPS & INTERFACING

Functional block diagram, pin configuration & modes of operation IC chips 8255, 8275, 8279,8237.Microprocessor application: Interfacing multiplexed displays, interfacing to a matrix keyboard, A/D converter, D/A converter ,stepper motor control, Comparison of 8085 to other microprocessor :Comparison of 8085 to 8086,80186,80286,80386 and 80486, multicore technology.

#### Reference Books: -

1. Gaonkar, Microprocessor Architecture, programming and app.
2. B.Ram, Microprocessor & microcomputers



3. Ajit Pal, Microprocessor principle & application
4. Douglas Hall, Microprocessor interfacing and programming
5. Computer System Architecture (Third Edition),. Morris Mono - Prentice Hall of India Pvt. Ltd., Eastern Economy Edition, Sept.2002
6. Peter Norton: Assembly Language for the PC, PHI.

**DIPLOMA( CSE) LNCT University**

**IV Semester Syllabus**

**Computer Networks (402)/(DCS-402)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

CO1	Describe different aspects of network, protocols, and network design models.
CO2	Examine OSI and TCP/IP Model.
CO3	Analyze Network Media and Networking Devices.
CO4	Determine various Network Layer Design Issues.
CO5	Examine the important aspects and functions of Transport Layer, Presentation layer and Application Layer in internetworking.

**COURSE CONTENTS:**

**UNIT I INTRODUCTION:**

Basics of Networks - Definition, Need, Uses and Advantages. Types of Computer Networks-Local area Networks (LAN), Wide Area Networks(WAN) ,Metropolitan Area Network(MAN).Network Architectures- Peer to Peer , client-Server, Hybrid, Intranet, Internet and Extranet. Different Topologies – Bus, Ring, Star, Hybrid etc.

**UNIT II NETWORKING MODELS AND ADDRESSES:**

Detailed Layered architecture of OSI and TCP/IP Reference Model. Comparison Between OSI Vs. TCP/IP reference Model. Introduction to various LAN and WAN Protocols. Network Address: Overview, Type of Addresses, Need, advantages and disadvantages. IP Addresses : Class Full Addressing Network ID, Host ID Special Addressing Overview Subnetting and Super netting, VLAN

**UNIT III NETWORKING COMPONENTS AND NETWORK OPERATING SYSTEM**

Networking Media – Coaxial, UTP, Shielded, Twisted Pair, Fiber Optical Cable, and wireless media. Networking Devices – NIC, Modem , Hub, Repeater, Switches, Bridge, Router, Gateway, Wi-Fi, VSAT. Structured cabling- Concept, advantages, racks, patch panel, crimping and punch tool, patch cords, RJ Connectors, Information Outlets (I/O Box) , Media Converter Types of Connectivity – Dial up, Digital Subscriber Link(DSL), Asynchronous Digital Subscriber Link (ADSL) , Leased line Non Exchange , Cable Net , WI-FI, WI- MAX, CDMA, GSM.

Introduction to Network Operating System(NOS):

**UNIT IV INTERNET PROTOCOL:**

ARP/RARP: Resolution, Packet format mapping and encapsulation Internet protocol: Virtual network, Connectionless, unreliable, Packet Delivery System. Datagram format: Datagram size, Network MTU and fragmentation, Time stamp option. IP Routing algorithm. IP Checksum. ICMP and IGMP : Introduction and message format

**UNIT V HOST TO HOST PROTOCOLS**

UDP: Introduction to User Data gram Protocol, Format of UDP Message, Pseudo Header, Multiplexing & Demultiplexing, TCP: Introduction to Transmission Control Protocol, Ports, Collections And Endpoints, TCP Segment Format, Checksum Computation, Establishing a TCP Connection, application layer protocol, Routing and Multi casting, Wireless Networking.

**Reference Books: -**

1. Computer Networks, Andrew S Tanenbaum, Publisher- PHI, NewDelhi
2. B. A. Fourouzan, TCP/IP Protocol Suite, Tata McGrawHill
3. Internetworking with TCP/IP, Douglas E. Comer, Publisher- PHI, NewDelhi
4. Hardware and networking by Vikas Gupta Publisher: Dreamtechpress
5. Network Cabling Handbook by Chris Clerk Publisher Tata Mcgraw HillsLtd.India.
6. Introduction to Networking by Richard McMohan Publisher Tata Mcgraw Hills Ltd. India.
7. TCP/IP Illustrated by Richard Stevens, Publisher- Addison –Wesley.

**List of suggestive core experiments: -**

1. Observation and Study of Various Network component and Devices. Study of Various Type of Network Topologies
2. Crimping of UTP Cable (cross , straight) and Testing of cables. Installation of Various types of Network Devices
3. Identifying valid IP Addresses, Defining Subnet IDs and Host IDs. DNS Configuration
4. Designing a network system for an organization using TCP/IP Network using
  - a) Class A address
  - b) Class B address
  - c) Class C address
5. Configuration of wireless network on mobile phone and notebook/netbook.

**DIPLOMA( CSE) LNCT University**

**IV Semester Syllabus**

**Data Base Management System (403)/(DCS-403)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

CO1	Learn and practice basics and data modeling using the entity-relationship and developing database designs
CO2	Understand the use of Structured Query Language (SQL) and learn SQL syntax.
CO3	Apply normalization techniques to normalize the database
CO4	Understand the needs of database processing and learn techniques for controlling the consequences of concurrent data access.
CO5	Understanding of basics and how to design, model and creation of database

**COURSE CONTENTS:**

**UNIT I DATABASE CONCEPTS**

Introduction to database and database management system, history of DBMS. Disadvantages of file system data management. Database system applications, Advantages and disadvantages of DBMS., Three level architecture: Mapping between views , dataindependence.DBMS users and administrators, DBMSArchitecture, DML, DDL &DCL.

**UNIT II DATA MODELS**

Introduction to datamodels.Entities, attributes & association, Relationship among entities, representation of association &relationship.Entity-Relationship model: Entity sets, relationship sets, constraints, E-R diagram, Entity- Relationship design issues, Generalization, Specialization & aggregation.Relational Model: Attributes and Domains, tuples, relations and their schemas, relation representation, keys, relationship, integrityrules, Codd’s Relational databaserules

**UNIT III DATABASE DESIGN CONCEPTS & NORMALIZATION**

Relational algebra: Basic operation, select, join, projection, additional relational algebra,queries.Functionaldependency:Definition,inference, axioms forfunctional dependency, closure, cover and equivalence of FD, ReferentialintegrityNormalizationIntroduction toNormalization.

**UNIT IV ADVANCED IN SQL**

SQL query structure for selection & join operators, defining primary keys, foreign keys in a table, CHECK constraints, removing constraints fromtable, SQL functions: SUM(), AVG(), MAX(), MIN(),COUNT(),Introduction to Triggers, stored procedures &views.

**UNIT V ADVANCE DATABASE CONCEPTS**

Introduction totransactions, Introduction to concurrency control, Data mining & DataWarehousing.Distributes & Object baseddatabase, Introduction to Cloud baseddatabase.

**Reference Books: -**

1. SilberschatzA. ,Korth, Sudarshan 6<sup>th</sup> edition, Database System Concepts, TMH NewDelhi.
2. Schaum's Outlines, Database Management System, TMH.
3. Biplin C. (2001), An Introduction to Database Management System, Galgotia Publication Pvt. Ltd., Newdelhi.
4. Ivan Byrose, SQLprogramming.
5. Peter Rob & Carlos Coronel, Database System Concepts, Indian Edition, Cengage Learning India Pvt.Ltd.
6. Date C.J., An Introduction to Database Systems, Narosa.
7. Leon, SQL complete reference, TMH.

**List of suggestive core experiments: -**

1. Execute Data Definition SQL commands like create table
2. Execute Data Manipulation SQL commands like insert, update, delete.
3. Creating users, granting & revoking permission, set roles to users.
4. Basic PL/SQL program using flow control statement functions.
5. Creating triggers, stored procedure and cursors.
6. Database access from a programming language such as JAVA or C++.

# DIPLOMA( CSE) LNCT University

## IV Semester Syllabus

### Linux & Shell Programming (404)/(DCS-404)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Understand the basic commands of linux operating system and can write shell scripts.
CO2	Create file systems and directories and operate those using programs.
CO3	Understand the processes background and fore ground by process and signals system calls.
CO4	Create shared memory segments, pipes, message queues and can exercise inter process communication.
CO5	Create sockets and semaphores to interact between process of different system.

#### COURSE CONTENTS:

##### UNIT I INTRODUCTION

**Linux Ideas and History:** Understanding Open Source, Linux Origins, Distributions, Linux Principles, **Linux Usage and Basics** Logging in to a Linux System, Switching between virtual consoles and the graphical environment, Elements of the X Window System, Starting the X server, Changing your password, The root user, Changing identities, Editing text files.

##### UNIT II LINUX BASICS AND FILE SYSTEM

Running Commands, Some Simple commands, Getting Help, The what is command, The – help Option, Reading Usage Summaries, The man command, Navigating man pages, The info command, Navigating info pages, Extended Documentation.

**File System:** Linux File Hierarchy Concepts, Some Important Directories, Current Working Directory, File and Directory Names, Absolute and Relative Pathnames, Changing Directories, Listing Directory Contents, Copying, Moving, Renaming, Creating and Removing Files & Directories, Using Nautilus, Determining File Content, The Linux File System

##### UNIT III TEXT PROCESSING AND STANDARD I/O

Vi: Opening, Modifying, saving and exiting vi text editor, mode of vi, Viewing file contents, sorting text, Eliminating Duplicate lines, Comparing files, Compressing the file.

**Standard I/O and Pipes:** Standard Input and Output, Redirecting Output to a File, Redirecting STDOUT to a Program(Piping), Combining Output and Errors, Redirecting to Multiple Targets (tee), Redirecting STDIN from a file, Sending Multiple Lines to STDIN.

##### UNIT IV SHELL PROGRAMMING AND PROCESS

Introduction of Bash shell, Bash Features, Command Line, Command Line Expansion, and Editing, gnome-terminal, **Shell Programming:** Scripting Basics, Creating Shell Scripts, Handling Input/ Output, Control Structures, Conditional Execution, File and string Tests, continue and break, Using positional parameters, Scripting at the command line, Shell Script debugging, Investigating and Managing Process

## **UNIT V SYSTEM ADMINISTRATION:**

Common Administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts –adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance, file security, password and Permissions, becoming super user using su. Getting system information – host name, disk partitions & sizes, users, kernel. Backup and restore files, linuxconf. Utility in GUI, reconfiguration hardware with kudzu. Networking services on Linux

### **Reference Books: -**

1. Sumitabha Das, UNIX/LINUX: Concepts and Applications, Tata McGraw-Hill,2008.
2. ISRD Group, Basics of OS, UNIX and SHELL Programming, Tata McGraw-Hill,2006.
3. Stephen Prata Advanced UNIX -A programmer's Guide, BPB Publication,2008.

### **List of suggestive core experiments: -**

1. Study of Basic linux commands
2. Study of files and directories
3. Study of File editors
4. Study of Vi editor
5. Write some basic programs of shell scripting
6. How to write c/c++ program on Vi editor.

**DIPLOMA( CSE) LNCT University**

**IV Semester Syllabus**

**OOPM (405)/(DCS-405)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

CO1	Students will understand the need of object oriented programming, fundamental concepts .
CO2	Student will understand how to model the real world scenario using class diagram and sequence diagram.
CO3	Students will be able to implement relationships between classes.
CO4	Students will be able to demonstrate polymorphism
CO5	Students will be able to create the concept of exceptional handling

**COURSE CONTENTS:**

**UNIT I INTRODUCTION TO OBJECT ORIENTED PROGRAMMING:**

Comparison with Procedural Programming, features of Object oriented paradigm– Merits and demerits of OO methodology; Object model; Elements of OOPS, IO processing.

**UNIT II ENCAPSULATION AND DATA ABSTRACTION-**

Concept of Objects: State, Behavior & Identity of an object; Classes: identifying classes and candidates for Classes Attributes and Services, Access modifiers, Static members of a Class, Instances, Message passing, and Construction and destruction of Objects.

**UNIT III RELATIONSHIPS –**

Inheritance: purpose and its types, ‘is a’ relationship; Association, Aggregation. Concept of interfaces and Abstract classes.

**UNIT IV POLYMORPHISM:**

Introduction, Method Overriding & Overloading, static and run time Polymorphism

**UNIT V STRINGS, EXCEPTIONAL HANDLING:**

Introduction of Multi-threading and Data collections. Case study like: ATM, Library management system.

**Reference Books: -**

1. G. Booch, “Object Oriented Analysis& Design”, Addison Wesley.
2. James Martin, “Principles of Object Oriented Analysis and Design”, Prentice Hall/PTR.
3. Peter Coad and Edward Yourdon, “Object Oriented Design”, Prentice Hall/PTR.
4. Herbert Schildt, “Java 2: The Complete Reference”, McGraw-Hill Osborne Media, 7 th Edition.
5. Object Oriented Programming with C++ by Balagurusamy



**List of suggestive core experiments: -**

1. Write a C++ program to find the sum of individual digits of a positive integer.
2. program to generate the first n terms of the sequence.
3. Write a C++ program to sort a list of numbers in ascending order
4. Write a Program to illustrate New and Delete Keywords for dynamic memory allocation
5. Program to illustrate default constructor, parameterized constructor and copy constructors
6. Write a program Illustrating Class Declarations, Definition, and Accessing Class Members
7. Write a Program to Demonstrate the i)OperatorOverloading.ii) Function Overloading.
8. Write a Program to Demonstrate Friend Function and Friend Class.
9. Write a C++ program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class.

**DIPLOMA( CSE) LNCT University**

**IV Semester Syllabus**

**Python Language (406)/(DCS-406)**

**COURSE OUTCOMES:**

After Completing the course student should be able to Know the basic fundamental concept of Python language.

# DIPLOMA( CSE) LNCT University

## V Semester Syllabus

### Theory of Computation(501)/(DCS-501)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Outline the concept of Finite Automata and Regular Expression
CO2	Illustrate the design of Context Free Grammar for any language set
CO3	Demonstrate the push down automaton model for the given language
CO4	Make use of Turing machine concept to solve the simple problems
CO5	Explain decidability or undecidability of various problems

#### COURSE CONTENTS:

##### UNIT I AUTOMATA THEORY:

Basic machine, FSM , Transition graph, Transition matrix, Deterministic and non- deterministic FSM'S, Equivalence of DFA and NDFA, Mealy & Moore machines, minimization of finite automata, Two-way finite automata.Regular Sets and Regular Grammars, Alphabet, words, Operations, Regular sets, Finite automata and regular expression, Pumping lemma and regular sets, Application of pumping lemma, closure properties of regular sets.

##### UNIT II CONTEXT –FREE GRAMMARS:

Introduction to CFG, Regular Grammars, Derivation trees and Ambiguity, Simplification of Context free grammars, Normal Forms (Chomsky Normal Form and Greibach Normal forms).

##### UNIT III PUSHDOWN AUTOMATA:

Definition of PDA, Deterministic Pushdown Automata, PDA corresponding to given CFG, CFG corresponding to a PDA.Context Free Languages: The pumping lemma for CFL's, Closure properties of CFL's, Decision problems involving CFL's.

##### UNIT IV TURING MACHINES:

Introduction, TM model, representation and languages acceptability of TM, Church's hypothesis, composite & iterated TM. Turing machine as enumerators. Properties of recursive & recursively enumerable languages, Universal Turing machine.

##### UNIT V RELATED PROBLEMS:

P, NP, NP complete and NP hard problems, examples of these problems like Hamiltonian path problem, traveling sales man problem etc.

#### Reference Books: -

1. John E. Hopcroft, Jeffery Ullman,"Introduction to Automata theory, Languages & computation", Narosa Publishers.
2. K.L.P Mishra & N.Chandrasekaran,"Theory of Computer Science", PHI Learning.
3. Michael Sipser,"Theory of Computation", Cengage Learning.
4. John C Martin, "Introduction to languages and theory of computation", McGraw Hill.

5. Daniel I.A. Cohen, "Introduction to Computer Theory", Wiley India.
6. Kohavi, "Switching & Finite Automata Theory", TMH.

# DIPLOMA( CSE) LNCT University

## V Semester Syllabus

### Web Technology(502)/(DCS-502)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Analyze web servers with their features and characteristics.
CO2	Apply web design issues for web publishing.
CO3	Develop web elements using HTML and DHTML web technologies.
CO4	Use CSS and XML for static and dynamic web development.
CO5	Differentiate e-commerce models B2B, B2C and C2C.

#### COURSE CONTENTS:

##### UNIT I INTRODUCTION TO WEB DESIGN

Web page and Web site - Web publishing Process of Web, publishing, planning, organizing, Hierarchical, Linear, Webbed. Implementing, Testing, Maintenance

##### UNIT II HTML

Introduction,Headsection–Prologue,Link,Base,Meta,Script,Style,Body Section – Header, Paragraphs, Text Formatting, Linking, Internal Linking, Embedding Images, Lists, Tables, Frames. Other Special Tags and Characters, HTML Forms

##### UNIT III JAVA SCRIPT

Introduction, Language Elements– Identifiers, Expressions, Keywords, Operators, Statements, Functions, Object of Java Scripts – Window Object, Document Object, Forms Objects, Text Boxes and Text Areas, Buttons, Radio Buttons and Check Boxes, The SelectObject, Other Object – The Date Object, The Math Object, The String Object, Regular Expressions, Arrays, WorkedExamples

##### UNIT IV DHTML

Introduction, Cascading Style Sheet (CSS) – Coding, Properties of Text, Property Values, Other Style Values, In-Line Style Sheet, Embedded Style Sheet, External Style Sheet, Grouping, Inheritance, Classes as Selector, ID as Selector, Contextual Selector, Pseudo Classes and Pseudo Elements, Positioning, Backgrounds, ElementDimensions

##### UNIT V XML BASICS

Introduction, HTML vsXML, Syntax of the XML Document, XML Attributes, **Publishing The Site** Uploading Web pages - Using FTP and using Web Page Editors, Web hosting - Shared hosting Running a Local Webserver.

#### Reference Books: -

1. Allen D.W. & Steve Johnson; the Learning Guide to Internet; B.P.B.Publication.
2. Alexis Leon and Matthew Leon; Internet for every one; Vikas publishing house Pvt. Ltd.New Delhi
3. Internet for Dummy, Pustak Mahal, NewDelhi

4. Dixit Manish (1999); Internet, An Introduction, CI Stems TMH Series ,Tata McGraw Hill publishing company limited, NewDelhi.
5. Design Web Pages, BPBPublication.

**List of suggestive core experiments: -**

1. Design a Home Page of Website using HTMLTags.
2. Write an HTML Document to provide a form that collects names and phonenumber.
3. Write a program in Java Script to compare numbers whose inputs will be taken from HTML Form.
4. Write a JAVA Script function to display current date and time using DateObject.
5. Write a Java Script to generate RandomNumbers
6. Design three pages of your Home Page and link all of them to a single style sheet.
7. Design a web page that demonstrates blinking and scrolling text.
8. Design an e-Commerce Site displaying the detail of the items that are sold in that store. The Site should provide a feature to sort the items based on the price of the items.
9. Design an XML document using basic syntax.
10. Uploading websites on FTP and Local Server.

# DIPLOMA( CSE) LNCT University

## V Semester Syllabus

### Cyber Security (503)/(DCS-503)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Evaluate the computer network and information security needs of an organization.
CO2	Describe various cybercrimes along with perceptions of cyber criminals.
CO3	Explain the law perspective of all cybercrimes.
CO4	Explain Relevancy, Admissibility, proof and probative value of e-evidence.
CO5	Describe tools and methods used in cybercrime.

#### COURSE CONTENTS:

##### UNIT I INTRODUCTION OF CYBER CRIME:

Challenges of cyber crime, Classifications of Cybercrimes: EMail Spoofing, Spamming, Internet Time Theft, Salami attack/Salami Technique,

##### UNIT II ONLINE FRAUDS:

Web jacking, Online Frauds, Software Piracy, Computer Network Intrusions, Password Sniffing, Identity Theft, cyber terrorism, Virtual Crime, Perception of cyber criminals: hackers

##### UNIT III CYBER CRIME AND CRIMINAL JUSTICE:

Concept of Cyber Crime and the IT Act, 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cheating, Defamation, Harassment and E-mail Abuse, Other IT Act Offences, Monetary Penalties, jurisdiction and Cyber Crimes.

##### UNIT IV ACTS & EVIDANCES:

The Indian Evidence Act of 1872 v. Information Technology Act, 2000: Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages.

##### UNIT V TOOLS AND METHODS IN CYBERCRIME:

Proxy Servers and Anonymizers, Password Cracking, Key loggers and Spyware, virus and worms, Trojan Horses, Backdoors, DoS and DDoS Attacks , Buffer and Overflow, Attack on Wireless Networks, Phishing : Method of Phishing, Phishing Techniques

#### Reference Books: -

1. Principles of Cyber crime, Jonathan Clough Cambridge University Press
2. John R. Vacca, Computer Forensics:Computer Crime Scene Investigation, 2nd Edition, Charles River Media, 2005
3. Cyber Law Simplified, VivekSood, Pub: TMH.
4. Cyber Security by Nina Godbole, SunitBelapure Pub: Wiley-India

5. Information Warfare: Corporate attack and defense in digital world, William Hutchinson, Mathew Warren, Elsevier.
6. Cyber Laws and IT Protection, Harish Chander, Pub:PHI.



# DIPLOMA( CSE) LNCT University

## V Semester Syllabus

### Machine Learning(504)/(DCS-504)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Describe the terminologies, definitions and basic concepts of machine learning
CO2	Explain the different supervised and unsupervised machine learning algorithms in detail
CO3	Apply the machine learning algorithms on a given dataset.
CO4	Design the different machine learning applications using the state of art Python libraries/tools.
CO5	Calculate the target values, accuracy, precision and f1-score of different algorithms

#### COURSE CONTENTS:

##### UNIT I INTRODUCTION TO MACHINE LEARNING :

Scope and limitations, advantages machine learning models, Supervised Learning, Unsupervised Principle Components Analysis etc.

##### UNIT II SUPERVISED LEARNING TECHNIQUES:-

Decision Trees, Naive Bayes, Classification, Support vector machines for classification problems, Random forest for classification and regression problems

##### UNIT III UNSUPERVISED LEARNING

Clustering: k-means, adaptive hierarchical clustering, Gaussian mixture model, Optimization Using Evolutionary Techniques.

##### UNIT IV NEURAL NETWORKS:

Introduction of Neural Network, Neural network representation, Advantages and disadvantages Neural Networks as a paradigm for parallel processing Perceptron Learning.

##### UNIT V DESIGN AND ANALYSIS OF MACHINE LEARNING EXPERIMENTS:

Factors, response and strategy of experimentation, Guidelines for machine learning experiments, cross-validation and resampling methods.

#### Reference Books: -

1. Machine Learning. Tom Mitchell. First Edition, McGraw- Hill, 1997.
2. Introduction to Machine Learning Edition 2, by EthemAlpaydin
3. Introduction to Machine learning, Nils J.Nilsson
4. Machine learning for dummies, IBM Limited ed, by Judith Hurwitz and Daniel Kirsch .

# DIPLOMA( CSE) LNCT University

## V Semester Syllabus

### Software Engineering (505)/(DCS-505)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Compare software development models with their merits and demerits and analyze agile and object-oriented model.
CO2	Illustrate functional, non-functional requirements, elicitation techniques and various types of analysis modelling in the field of software engineering.
CO3	Apply architectural, component-level design, class-level and interface-level design for software development.
CO4	Interpret use of test results of various types of testing at different levels of construction for software development.
CO5	Analyze various types of maintenance, reverse engineering for software development and to expose Advanced Topics in Software Engineering.

#### COURSE CONTENTS:

##### UNIT I INTRODUCTION TO SOFTWARE ENGINEERING

Software characteristics, Software myths. Components, application; process, methods, tools & view of S/E; software process Capability Maturity Model, life cycle models (water fall, incremental, spiral, RAD, prototyping, object oriented) fourth generation model.

##### UNIT II SOFTWARE PROJECT PLANNING

Responsibilities of Software Project manager, Project planning Objective, Software scope, Software project estimation technique, Decomposition techniques, Estimation models, Scheduling, staffing, Risk Management, Software configuration Management

##### UNIT III SOFTWARE REQUIREMENT ANALYSIS, SPECIFICATION & MODELING

Analysis principles, system specification, software requirement specifications, functional specifications, software prototyping, specification, data modeling, data flow diagrams, ER Diagram, Mechanics of structured analysis, data dictionary.

##### UNIT IV OBJECT –ORIENTED CONCEPT

Object Oriented Concepts, Unified Modeling language Diagram (Use Case Diagram, Class Diagram, Sequence Diagram, State Chart Diagram) Elements Of Object Modeling, Management Of Object Oriented Software Projects, Object Oriented Analysis, Domain Analysis, OOA Process Conventional v/s OO Approach, Object –Relationship Model

##### UNIT V DESIGN CONCEPT PRINCIPLE AND METHODS

Design Process, Design Principles, Design Concepts, Effective Modular Design, Design Documentation, Architectural Design, and Architectural Design Process, Optimization, Procedural Design, Software Testing Software Testing Fundamentals: Principles & objectives, V

model, Software Reliability And Quality Management: Concepts of S/W Quality Control and Assurance, Software Reliability, ISO 9000 & 9001, Standard SEI –CMM

**Reference Books: -**

1. Roger S. Pressman, Software Engineering A Practitioner's Approach, McGrawHill.
2. Software engineering A Precise Approach by Pankaj Jalote's , Wiley India.
3. Rajib Mall, Fundamental of Software Engineering, PHI.
4. Software Engineering by Kassem A. Saleh J.Ross Publishing

**List of suggestive core experiments: -**

1. Study of SDLC.
2. Study of DFD tools.
3. Construct DFD for Library management system.
4. Construct DFD for Railway reservation System.
5. Study of software process models.
6. Study of E-R model tools.
7. Construct E-R model for collegeS.
8. Study of COCOMO Model.

**DIPLOMA( CSE) LNCT University**

**V Semester Syllabus**

**Minor project (506)/(DCS-506)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

Develop project using different technologies.

# DIPLOMA( CSE) LNCT University

## VI Semester Syllabus

### Computer Graphics & Multimedia(601)/(DCS-601)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Understanding of different display devices, Scan conversion techniques, Line and circle drawing algorithms .
CO2	Understanding 2D Transformation, Illustrate the concept of Windowing and Clipping and respective algorithms .
CO3	Understanding 3D Transformation. Illustrate basic illumination models
CO4	Learn and understand technical aspect of multimedia systems.
CO5	Learn and understand technical aspect of animation .

#### COURSE CONTENTS:

##### UNIT I INTRODUCTION TO COMPUTER GRAPHICS

Definition of Computer Graphics, Application of Computer Graphics, Graphics Hardware, Input and Output Devices, Display Devices, Refreshing Display Devices, Raster-Scan, Random-Scan

##### UNIT II GRAPHICS PRIMITIVES:

Points and Lines, Line-drawing Algorithms: DDA, Bresenham's line Algorithm, Circle-generating Algorithm, Midpoint Circle of Algorithm, Polygon Filling Algorithm: Scan-Line

##### UNIT III TRANSFORMATION, 2-D VIEW WING AND CLIPPING

Basic Transformations (2D and 3D), Translation, Rotation, Scaling, Shear, Reflection, Composite Transformations, Rotations about a point Reflection about a line, Homogeneous Coordinate Systems, Clipping, Point Clipping, Line Clipping -Cohen-Sutherland Clipping algorithm. Polygon Clipping: Sutherland Hodgeman Algorithm, Windowing Transformation

##### UNIT IV PROJECTION

Parallel Projection: Orthographic, Axonometric, Oblique, Perspective Projection: Standard Perspective Projection General Perspective Projection, Vanishing Points

##### UNIT V SHADING, COLOUR MODEL AND ILLUMINATION

Chromaticity diagram- RGB, CMY, HSV, HLS, CIEModels-Realism in rendering, Image manipulation: Illumination models, shading models for polygons, Gouraud and Phong shading, shadows, Transparency, Image Filtering, image processing, geometric Transformation of images. Basics of Multimedia Technology: Concepts of Multimedia: Types, Data Streams, Hardware and Software Requirements and Applications, Multimedia Authoring, Digital Audio: Audio Sampling, Recording Digital Audio, Audio Standards for Multimedia Applications, MIDI File Formats, MIDI Hardware, and Software, Image Compression Standards and Types.

**Reference Books: -**

1. Computer Graphics, Multimedia and Animations by Malay K. Pakhira, PHI Learning.
2. Computer Graphics by Donald Hearn and M.Pauline Baker, PHI
3. Computer Graphics Principles and Practices second edition by James D. Foley, Andeies van Dam, Stevan K. Feiner and Johb F. Hughes, 2000, Addition Wesley.
4. Introduction to Computer Graphics By N. Krishnamurthy T.M.H
5. Graphics, GUI, Games & Multimedia Projects in C by Pilania&Mahendra, Standard Pub

**List of suggestive core experiments: -**

1. Write a program for 2D line drawing as Raster Graphics Display. Write a program for circle drawing as Raster Graphics Display. Write a program for polygon filling as Raster Graphics Display Write a program for line clipping.
2. Write a program for polygon clipping.
3. Write a program for displaying 3D objects as display using perspective transformation.
4. Devise a routine to produce the animation effect of a square transforming to a triangle and then to a circle.
5. Write a program to show a bitmap image on your computer screen. Write a program to play “wave” or “midi” format sound files.

## DIPLOMA( CSE) LNCT University

### VI Semester Syllabus

#### Network Security(602)/(DCS-602)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Understanding of external and internal threats and e familiar with how threats to an organization are discovered, analysed, and dealt with. Rogue programs effects like viruses, Trojan horses, worms, and time (or logic) bombs.
CO2	Fundamentals of secret and public cryptography.
CO3	To be familiar with various protocols for security services.
CO4	To be familiar with advanced security issues and technologies
CO5	To be familiar with network security designs using available secure solutions (such as PGP, SSL, IPSec, etc). security issues.

#### COURSE CONTENTS:

##### UNIT I INTRODUCTION

Security overview, Computer security, network security, Key principles of Network Security- Confidentially, Integrity, Availability. Threats to security, Need of security, Types of security, Security issues.

##### UNIT II INFORMATION SYSTEM SECURITY MANAGEMENT

Security Polices, Security Awareness, security control - Physical Controls, Procedural Controls, Technical Controls and Legal and liability. Identification and Authentication- Password, Biometrics, Single SignOn.

##### UNIT III SECRETE COMMUNICATION

Introduction to secrete communication, Basics of Cryptography – Substitution cipher, Cryptographic primitives. Encryption, Symmetric Encryption- Stream cipher, Block cipher, Sharing Keys, Asymmetric Encryption

##### UNIT IV NETWORK MANAGEMENT

Definition Need and advantages, .Windows NT Networking Architecture, Windows NT Operating System, Design and Basics, Open Systems and Industry Standards, Client/Server Computing, Interoperating with Other Networks, Remote Access Service-Point to point protocol, Network Security and Domain Planning- Security Model Architecture

##### UNIT V NETWORK SERVICES

Enterprise Level-Installing and Configuring TCP/IP, Configuring TCP/IP Clients, Dynamic IP Addressing Configuring DHCP, Accessing the DHCP Manager, Managing DHCP Scopes Simple Network Management Protocol (SNMP) for Network Management

**Reference Books: -**

1. Fundamentals of Network Security by John E.Canavan
2. Network Security Bible by Dr. Eric Cole, Dr. Ronald Krutz, and James W.Conley
3. Network Management: A Practical Perspective by Allan Leinwandand Karen Fang
4. Forouzan, TCP/IP Protocol Suite 4th edition,TMH
5. J.RichardBurkey, Network Management Concept and Practice,PHI



**DIPLOMA( CSE) LNCT University**

**VI Semester Syllabus**

**Artificial Intelligence (603)/(DCS-603)**

**COURSE OUTCOMES:**

**After Completing the course student should be able to:**

CO1	Illustrate various techniques for solving issues related to knowledge representation and Game playing
CO2	Describe the various searching, reasoning and learning techniques for AI based problems.
CO3	Solve the knowledge representation and Game playing problems by using appropriate AI algorithms
CO4	Apply appropriate searching.
CO5	Apply reasoning and learning algorithms for solving various problems.

**COURSE CONTENTS:**

**UNIT I INTRODUCTION TO AI**

Meaning and definition of Artificial Intelligence, Characteristics of AI Problems, Scope and Future Expectation of AI, Application of AI

**UNIT II PROBLEM SOLVING AND CONTROL STRATEGIES**

State Space Representation, Problem Characteristics, Production System and its type, Characteristics of Production System, Breadth First Search and Depth First Search, Forward and Backward Chaining, Control Strategies and its Type

**UNIT III HEURISTIC SEARCH TECHNIQUES**

Hill Climbing, Branch and Bound Technique, Best First Search Technique and algorithm, A\* Algorithm and AO\* Algorithm, Constraints Satisfaction and related numeric problems

**UNIT IV KNOWLEDGE REPRESENTATION**

Representation and Mapping, Approaches to Knowledge Representation, Issues in Knowledge Representation, Knowledge Representation using Predicate Logic and Propositional Logic, Resolution and Refutation, Deduction, Theorem Proving, Procedural Knowledge and Declarative Knowledge

**UNIT V LEARNING AND NATURAL LANGUAGE PROCESSING**

Introduction to Learning, Types of Learning, Learning in neural network, Learning Processes Error Correction Learning, Memory based Learning, Hebbian Learning, Competitive Learning, Learning with teacher, Learning without teacher. **Game Playing:** Introduction to Game Playing, Mini max Search Procedure, Alpha-Beta Cut offs

**Reference Books: -**

1. Artificial Intelligence by Elaine Rich and Kerin Knight, Tata McGraw Hill Edition
2. Introduction to AI & ES by DAN W. Patterson, PHI learning
3. Introduction to Artificial Intelligence by Eugene Charniak and Drew McDermott, Addison Wesley.
4. Principles of Artificial Intelligence by Nils J. Nilson.

**List of suggestive core experiments: -**

1. Study about Cut and Fail situation in Artificial Intelligence
2. Develop system in Prolog to demonstrate the use of domain, predicate and clause.
3. Develop system in prolog to demonstrate the use of reading and write.
4. Develop system in prolog to demonstrate the use of facts and rules.
5. Develop system in prolog to demonstrate the use of controls.
6. Develop system in prolog to implement the water jug problem
7. Develop system in prolog for medical diagnosis model/chemical syntheses.
8. Implementation of Min-Max search procedure for Game Playing.

## DIPLOMA( CSE) LNCT University

### VI Semester Syllabus

#### Major project(604)/(DCS-604)

#### COURSE OUTCOMES:

After Completing the course student should be able to:

CO1	Map the technical knowledge acquired in the previous semesters for solving real world problems.
CO2	Apply new technologies & design techniques (platform, database, etc.) concerned for devising a solution for a given problem statement
CO3	Apply project management skills (scheduling work, procuring parts and documenting Expenditures and working within the confines of a deadline).
CO4	Work with team mates, sharing due and fair credits and collectively apply effort for making project successful.
CO5	Communicate technical information by means of written and oral reports.

#### COURSE CONTENTS:

**Project Guidelines:** The focus of the Project is on preparing a working system (e.g., software system/Interface, hardware/software interface design etc.), using system analysis tools and design techniques and submit it in the form of a write-up i.e., detail project report. The student should select some real-life problems for their project and maintain proper documentation of different stages of project such as requirement specification, objectives, work plan, analysis, design, implementation, and test plan. Each student is required to prepare a project report and present the same at the final examination with a demonstration of the system.

## **DIPLOMA( CSE) LNCT University**

### **VI Semester Syllabus**

#### **Professional Activity (605)/(DCS-605)**

The mission of this program is to inform, challenge, and train our diverse student body for a constantly changing world of technology. To educate graduates who can:

- Perform as a professional in the discipline.
- Work effectively in a variety of contexts using various languages, systems and environments.
- Continue to independently learn and master new tools of the profession.