ALAGAPPA UNIVERSITY

(Accredited with A+ Grade by NAAC (CGPA : 3.64) in the Third Cycle , Graded as Category-I University and granted autonomy by MHRD-UGC)

DIRECTORATE OF COLLABORATIVE PROGRAMMES

B.Sc. IT & Logistics

Regulations and Syllabus

[For those who join the Course in July 2023 and after]

CHOICE BASED CREDIT SYSTEM

GENERAL INSTRUCTIONS AND REGULATIONS

B.Sc IT & Logistics conducted by Alagappa University, Karaikudi, Tamil Nadu through its Collaborative Institution.

Applicable to all the candidates admitted from the academic year **2023** onwards.

1. **Eligibility:**
   A pass in the Higher Secondary Examination (HSC) for admission to this programme.
2. **For the Degree:**
   The candidates shall have subsequently undergone the prescribed programme of study in a institute for not less than three academic years, passed the examinations prescribed and fulfill such conditions as have been prescribed therefore.
3. **Duration of the course:**
   The course shall extend over a period of **Three years** under Semester pattern.
4. **Standard of Passing and Award of Division:**
   a. Students shall have a minimum of 40% of total marks of the University examinations in each subject. The overall passing minimum is 40% both in aggregate of Continuous Internal Assessment and external in each subject.
   b. The minimum marks for passing in each theory / Lab course shall be 40% of the marks prescribed for the paper / lab.
   c. A candidate who secures 40% or more marks but less than 50% of the aggregate marks prescribed for three years taken together, shall be awarded **THIRD CLASS.**
   d. A candidate who secures 50% or more marks but less than 60% of the aggregate marks prescribed for three years taken together, shall be awarded **SECOND CLASS.**
   e. A candidate who secures 60% or more of the aggregate marks prescribed for three years taken together, shall be awarded **FIRST CLASS.**
   f. Only Part-III subjects were considered for the ranking.
   g. The Practical / Project shall be assessed by the two examiners, by an internal examiner and an external examiner.
5. **Continuous internal Assessment:**
   a. Continuous Internal Assessment for each paper shall be by means of Written Tests, Assignments, Class tests and Seminars
   b. **25 marks** allotted for the Continuous Internal assessment is distributed for Written Test, Assignment, Class test and Seminars.
   c. One Internal Tests of 2 hours duration may be conducted during the semester for each course / subject and the best marks may be considered and one Model Examination will be conducted at the end of the semester prior to University examination. Students may be asked to submit at least five assignments in each subject. They should also participate in Seminars conducted for each subject and marks allocated accordingly.
   d. Conduct of the continuous internal assessment shall be the responsibility of the concerned faculty.
   e. The continuous internal assessment marks are to be submittedto the University at the end of every year.
   f. The valued answer papers/assignments should be given to the students after the valuation is over and they should be asked to check up and satisfy themselves about the marks they have scored.
   g. All mark lists and other records connected with the continuous internal assessments should be in the safe custody of the institution for at least one year after the assessment.

6. Attendance:

Students must have earned 75% of attendance in each course for appearing for the examination.

Students who have earned 74% to 70% of attendance to be applied for condonation in the prescribed form with the prescribed fee.

Students who have earned 69% to 60% of attendance to be applied for condonation in the prescribed form with the prescribed fee along with the medical certificate.

Students who have below 60% of attendance are not eligible to appear for the examination. They shall re-do the semester(s) after completion of the programme.

7. Examination:

Candidate must complete course duration to appear for the university examination. Examination will be conducted with concurrence of Controller of Examinations as per the Alagappa University regulations. **University may send the representatives as the observer during examinations.** University Examination will be held at the end of the each semester for duration of 3 hours for each subject. Certificate will be issued as per the AU regulations. **Hall ticket will be issued to the 1st year candidates and upon submission of the list of enrolled students along with the prescribed course fee subsequent 2nd and 3rd year hall tickets will be issued.**

8. Question Paper pattern:

Maximum: 75 Marks	Duration: 3Hours
Part A - Short answer questions with no choice	: 10 x 02=20
Part B –Brief answer with either or type	: 05 x 05=25
Part C- Essay – type questions of either or type	: 03 x 10=30

9. Miscellaneous

a. Each student posses the prescribed text books for the subject and the workshop tools as required for theory and practical classes.
b. Each student is issued with an identity card by the University to identify his / her admission to the course
c. Students are provided library and internet facilities for development of their studies.
d. Students are to maintain the record of practicals conducted in the respective laboratory in a separate Practical Record Book and the same will have to be presented for review by the University examiner.
e. Students who successful complete the course within the stipulated period will be awarded the degree by the University.
f. The Internship / Project (any other viva-voce) where external examiner is assigned from the university, there may be changes in the exam dates as per the availability of the External Examiner.

10. Fee structure

Course fee shall be as prescribed by the University and 50% of the course fee should be disbursed to University. Special fees and other fees shall be as prescribed by the

Institution and the fees structure must intimated to the University. Course fees should be only by Demand draft / NEFT and AU has right to revise the fees accordingly.

Semester Pattern

Pattern	Course Fee payment deadline
Semester	Fee must be paid before 10th September of the academic year

11. Other Regulations:

Besides the above, the common regulation of the University shall also be applicable to this programme.

B. Sc.(IT & Logistics)										
Sem.	**Part**	**Course Code**	**Courses**	**Title of the Paper**	**T/P**	**Cr.**	**Hrs./ Week**	**Max. Marks**		
								Int.	**Ext.**	**Total**
I	I	80511T/H/F/M /TU/A/S	T/OL	Tamil/Other Languages-I	T	3	5	25	75	100
	II	80512	E	General English-I	T	3	5	25	75	100
		80513	CC	Programming in C	T	4	4	25	75	100
	III	80514	CC	Programme in C – Lab	P	4	4	25	75	100
		80515	Allied	Mathematics - I	T	3	4	25	75	100
		80516	Allied	Problem Solving Techniques	T	2	4	25	75	100
	IV	80517	SEC -I	Value Education	T	2	2	25	75	100
				Library			2			
				Total		**21**	**30**	**175**	**525**	**700**
II	I	80521T/H/F/M /TU/A/S	T/OL	Tamil/Other Languages-II	T	3	3	25	75	100
	II	80522	E	General English-II	T	3	3	25	75	100
		80523	CC	Object Oriented Programming in C++	T	4	4	25	75	100
		80524	CC	Principles of Information Technology	T	4	4	25	75	100
	III	80525	CC	Object Oriented Programming in C++ Lab	P	4	4	25	75	100
		80526	Allied	Mathematics - II	T	3	3	25	75	100
		80527	Allied	Multimedia / Office Suite Specialist	T	3	3	25	75	100
		80528	Allied	Multimedia / Office Suite Specialist	P	2	4	25	75	100
	IV	80529	SEC -II	Environmental Studies	T	2	2	25	75	100
				Total		**28**	**30**	**225**	**675**	**900**
III	I	80531T/H/F/M /TU/A/S	T/OL	Tamil/Other Languages-III	T	3	3	25	75	100
	II	80532	E	General English-III	T	3	3	25	75	100
		80533	CC	Fundamentals of Logistics	T	4	4	25	75	100
		80534	CC	Introduction to Shipping	T	4	4	25	75	100
	III	80535	CC	Data Structures and Algorithms	T	4	4	25	75	100
		80536	Allied	Programming in Java	T	3	3	25	75	100
		80537	Allied	Programming in Java Lab	P	2	2	25	75	100
		80538	Allied	Statistical & Numerical Methods	T	3	3	25	75	100
		80539	SEC -III	Entrepreneurship	T	2	2	25	75	100
	IV		SEC - IV	NME- I	P	2	2	25	75	100
		805310A/ 805310B		1.Adipadai Tamil						
				2.Advance Tamil	T					
		805310C/		3.IT Skills for Employment	T					
				4. MOOC'S	T					
				Total		**30**	**30**	**250**	**750**	**1000**
IV	I	80541T/H/F/M /TU/A/S	T/OL	Tamil /Other Languages-IV	T	3	4	25	75	100
	II	80542	E	General English-IV	T	3	4	25	75	100
		80543	CC	Computer Networks	T	4	4	25	75	100

		80544	CC	Port Management	T	4	4	25	75	100
	III	80545	CC	Industry visit report	I	2	2	25	75	100
		80546	Allied	Liner Trade	T	3	3	25	75	100
		80547	Allied	Web Technologies	T	3	3	25	75	100
		80548	Allied	Practical-IIB - Web Technologies Lab	P	2	4	25	75	100
				NME- II	P					
		80549A/ 80549B	SEC -V	1.Adipadai Tamil		2	2	25	75	100
				2.Advance Tamil	T					
	IV	80549C		3. Small Business Management	T					
				4. MOOC'S	T					
				Total		**27**	**30**	**225**	**675**	**900**
V		80551	CC	Customs Law	T	4	4	25	75	100
		80552	CC	Warehousing and Inventory Management	T	4	4	25	75	100
	III	80553	DSE	Transportation & Distribution Management	T	3	4	25	75	100
		80554	DSE	E - Logistics	T	3	4	25	75	100
		80555	DSE	Database Management System	T	3	4	25	75	100
		80556	CC	RDBMS Lab	P	4	8	25	75	100
				Career Development/ Employability Skills			2			
				Total		**21**	**30**	**150**	**450**	**600**
VI	III	80561A 80561B		Project Viva Voce/ Internship	PR/ I	14	30	50	150	200
				Total	**--**	**14**	**30**	50	150	200
				Grand Total	--	**140**	**180**	**1075**	**3225**	**4300**

I – Semester					
Core	**Course Code: 80513**	**PROGRAMMING IN C**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	This course introduces the basic concepts of programming in C		**Syllabus revised**		**2023 - 24**
Course Objectives	1. This subject deals various methods programming using the C languages 2. On successful completion the students should have programming ability				
Unit – I	**INTRODUCTION:** Fundamental character set – Identifier and keywords – Data types – Constants – variables —Statements – Operators and Expressions.				
Unit - II	**CONTROL STRUCTURES:** Data input output functions – Simple C programs – Flow of control – if, if-else, while, do-while, for loop, Nested control structures – Switch, Break and continue, go to statements				
Unit – III	**FUNCTIONS:** Functions – Definition – Prototypes – Function with arguments – Function without arguments-Return type- Recursions – storage Classes – Automatic, External, Static, Register Variable				
Unit – IV	**ARRAY:** Array – Declaration – Definition –Single dimensional Array - Multi-Dimensional Arrays –String				
Unit - V	**STRUCTURES:** Structures and Union – Definition –Declaration - Pointers – Declarations — Operations on Pointers – Basic concepts of File.				

References:

1. E. Balaguruswamy, 2009, “Programming in ANSI C”, TMH publishing Company LTD
2. H. Schildt, 2008, “The Complete Reference in C”, 4th Edition, TMH
3. Gottfried, B.S, 2006, Programming with C, second edition, TMH Pub.Co.Ltd
4. Kanetkar Y, 2003, Let us C, BPB publications with ANSI & Turbo C, First edition, Pearson Education, New Delhi

Related Online Content :

1.https://microtek.ac.in/adminassets/pdf/C_programming_notes_.pdf

2. https://www.studocu.com/row/document/tribhuvan-vishwavidalaya/information-technology/c-programming-notes/2664815

Course Outcomes		**Knowledge Level**
CO – 1	The student gets wider knowledge about C Programming	K2
CO – 2	The student learns about various concepts of C Programming	K2
CO – 3	Obtain Various Knowledge Operations on Data input output functions	K3
CO – 4	Brief Knowledge about the Functions	K4
CO – 5	The Student Understand about Structures and Union	K5

I – Semester					
Core	**Course Code: 80514**	**PROGRAMMING IN C LAB**	**P**	**Credits: 4**	**Hours: 4**
Pre – requisite	The lab introduces the basic concepts of C programming		**Syllabus revised**		**2023 - 24**
Course Objectives	1. Practices the student to write simple programs using C. 2. Improves the logical thinking in C programming.				

1. Palindrome

2. Vowel count

3. String manipulation

4. Factorial

5. Npr &Ncr

6. GCD

7. Fibonacci series

8. Matrix addition

9. Matrix transpose

10. Programming using structure

11. Programming using pointer

Related Online Content : 1.https://wptripura.nic.in/C%20Programming%20Lab.pdf 2. https://srmvalliammai.ac.in/wp-content/uploads/2022/05/1901010-c-programming-lab.pdf	

I – Semester					
Allied	**Course Code: 80515**	**MATHEMATICS – I**	**T**	**Credits: 3**	**Hours: 4**
Pre – requisite			**Syllabus revised**		**2023 - 24**
Course Objectives	To develop the skills of the students in the areas of Trigonometry, Set Theory, Calculus and Algebra.				
Unit – I	**ITRIGNOMENTRY:** Introduction – Angles – Expansions of sinncosn,tann. Expansion of sin, cos, tan, in terms of - Simple problems.				
Unit - II	**SET THEORY:** Sets – Operations on sets – Relations – Relations and functions: Equivalence relations – Partial order relation.				
Unit – III	**MATRICES:** Introduction-Basic operations-Symmetric-skew symmetric-Hermitian-Skew Hermitian –Unitary orthogonal-Inverse of a matrix -Solution of linear system(Cramer's rule)- Finding the Eigen roots and Eigen vectors of a matrix-Cayley Hamilton theorem(without proof)				
Unit – IV	**THEORY OF EQUATIONS:** Polynomial, equations with real coefficients, irrational roots, complex roots, symmetric functions of roots, Transformation of equation by increasing or decreasing roots by a constant, reciprocal equations, Newton's method to find the root approximately.				
Unit - V	**DIFFERNTIAL CALCULUS:** Differentiation – Successive differentiation – Partial differentiation – Maxima and Minima of functions of two variables.				

References:

1. P.R. Vittal, "Allied Mathematics", Margham Publications, 4th Edition 2009.
2. A. Singaravelu, "Allied Mathematics", Meenakshi Agency, 2007

Related Online Content :

1. https://www.scribd.com/document/336777754/MA6151-Mathematics-I-Notes
2. https://www.akubtechbihar.in/2022/08/aku-notes-mathematics-i-calculus-linear.html

Course Outcomes		Knowledge Level
CO – 1	The student gets wider knowledge about mathematical functional	K2
CO – 2	The student learns about various concepts	K2
CO – 3	Obtain Various Knowledge Operations on sets	K3
CO – 4	Brief Knowledge about the Polynomial equations	K4
CO – 5	The Student Understand about Differentiation, Partial differentiation	K5

I – Semester					
Allied	**Course Code: 80516**	**Problem Solving Techniques**	**T**	**Credits: 2**	**Hours: 4**
Pre – requisite	To imbibe a systematic approach to problem solving		**Syllabus revised**		**2023 - 24**
Course Objectives	1. To learn C language and implement solutions using the various features of C. 2. To learn efficient algorithms to solve standard basic problems thus laying a firm foundation for designing algorithmic solutions to problems.				
Unit – I	**Introduction:** Notion of algorithms and programs – Requirements for solving problems by computer – The problem-solving aspect: Problem definition phase, Getting started on a problem, The use of specific examples, Similarities among problems, Working backwards from the solution – General problem-solving strategies - Problem solving using top-down design – Implementation of algorithms – Recursion. Basics of C Programming: Data types – Operators – Control statements: Branching, Looping, Nested control structures – Prototypes and functions – Passing by value – Arrays – Passing arrays to functions– Multi-dimensional arrays.				
Unit - II	**Structure and Union:** Fundamentals of Structures - Passing structures to functions - Nested structures - Array of structures - Array as structure element - Fundamentals of union - Difference between union and structure - Anonymous structures and unions. Preprocessor basics: Macro substitution - File inclusion directives - Compiler control directives - #pragma directive – Stringizing operator – Token pasting operator.				
Unit – III	**Pointers in C:** Concept of pointers - Pointer types - Pointer declaration - Pointer initialization - Usage of pointers - Pointer arithmetic - Pointers as function arguments - Function returning pointer - Pointers and arrays – Multiple indirection – Pointer to constant – const pointer - Functions taking variable number of arguments - Dynamic memory allocation – String representation using pointers - Operations on strings - Pointers to structures and unions - Self-referential structures. Streams: Concept of streams – Formatted I/O - File handling - File pointer - Opening, closing, processing and updating files - ASCII and binary files.				
Unit – IV	**Algorithms:** Exchanging the values of two variables – Counting - Summation of a set of numbers - Factorial computation - Sine function computation - Sorting by insertion – Linear search - Finding the smallest divisor of an integer.				
Unit - V	**Algorithms:** Finding the GCD of two integers - Generating prime numbers - Generating the prime factors of an integer - Raising a number to a large power – Computing the nth Fibonacci number – Array order reversal – Removal of duplicates from an ordered array.				

References:

1. R. G. Dromey, How to Solve it by Computer, Prentice Hall of India, 1982.
2. YashawantKanetkar, Exploring C, BPB Publications, 2008.
3. YashawantKanetkar, Understanding Pointers in C, BPB Publns,1st Indian Ed, 2001.

Related Online Content :

1.https://mycstutorial.in/introduction-to-problem-solving-notes/ 2.https://techtipnow.in/problem-solving-class-11-notes

Course Outcomes		Knowledge Level
CO – 1	Understand the notions of algorithms, programs and problem solving strategies.	K2
CO – 2	Write C programs to solve simple problems	K2
CO – 3	Identify and fix bugs in / determine output of a given code snippet.	K3
CO – 4	Explain the approach and algorithms to solving specific basic problems learnt.	K4
CO – 5	The Student Understand about Algorithms	K5

II – Semester					
Core	**Course Code: 80523**	**OBJECT ORIENTED PROGRAMMING IN C++**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	This course introduces the basic concepts of programming in C++		**Syllabus revised**		**2023 - 24**
Course Objectives	1. To improve the problem solving skills using OOPS concept 2. On successful completion the students should have programming ability on C++				
Unit – I	**PRINCIPLES OF OOP & BASICS OF C++:** Procedure oriented programming – OOP paradigm - Basic concepts of OOP - Benefits of OOP -Applications of OOP - Basics of C++ - Tokens – Keywords – Identifiers and Constants – Data types – Variables - Operators – Expressions - Control Structures-Functions.				
Unit - II	**CLASSES AND OBJECTS:** General structure of Class & object – Defining member function – private member function – public member function – Function Overloading – Inline Function – Default Arguments – Static data members – Static member functions.				
Unit – III	**CONSTRUCTORS:** Constructors – Types of Constructors – Overloading Constructors - Copy Constructors – Destructors - Arrays – Pointers – Operator Overloading – Overloading Unary Operator – Overloading Binary Operator – Rules For Overloading Operators – Type Conversions – Command Line Arguments				
Unit – IV	**INHERITANCE, RUN TIME POLYMORHSIM:** Inheritance- Access Specifiers – public derivation – private Derivation - Types of Inheritances -Virtual Base Class – virtual functions – pure virtual function				
Unit - V	**STREAMS & FILES:** C++ Streams – Stream Classes – Unformatted I/O operations – Formatted I/O operations – Manipulators – Exception Handling.				

References:

1. E.BalaGurusamy "Object Oriented Programming with C++", Tata MC Graw Hill Education.
2. D.Ravichandran-"Oriented Programming with C++", 2nd ed, TMH.
3. YashwantKanetkar-"Let Us C++", 2nd edition,McGraw Hill,2000

Related Online Content :

1. https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/

2. https://www.javatpoint.com/cpp-oops-concepts

Course Outcomes		**Knowledge Level**
CO – 1	The student gets wider knowledge about C++	K2
CO – 2	The student learns about various concepts in procedure oriented programming	K2
CO – 3	Obtain Various Knowledge in general structure of Class & object	K3
CO – 4	Brief Knowledge about the types of Constructors	K4
CO – 5	The Student Understand about C++ Streams	K5

II – Semester					
Core	**Course Code: 80524**	**PRINCIPLES OF INFORMATION TECHNOLOGY**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	To know about the principles of IT		**Syllabus revised**		**2023 - 24**
Course Objectives					
Unit – I	An Overview of the Revolution in Computers and Communications: From the analog to the digital age : The " New Story" of computers and communications - The six Elements of a Computer & Communications System - Communications: Development in Computer Technology, Developments in Communications Technology - Computer and Communications Technology Combined: Connectivity and Interactivity - The Ethics of Information Technology.				
Unit - II	Application Software: Kinds of Software - The five types of applications software - Word processing - Spreadsheets - Database software - Presentation graphics software - Communications software - Desktop accessories and personal information managers - integrated software and suites - Groupware - Internet Web browsers - Specialised software - Ethics and Intellectual property rights.				
Unit – III	Communications: The practical uses of communications and connectivity - Telephone related communications services - Video/voice communication: Video conferencing and picture phones - online information services - The Internet - Shared resources : Workgroup computing, Electronic Data Interchange, and Intranets - Telecomputing and virtual offices - Using computer to communicate: Analog and Digital Signals - modems and communication Software, ISDN lines, and Cable Modems - Communications Channels: Communications Networks - Local Networks - Factors affecting Data transmission - Cyberethics: Netiquette, Controversial material and censorship, and privacy issues.				
Unit – IV	Storage And Databases: Storage fundamentals - Compression and Decompression - Criteria for Rating Secondary Storage Devices - Diskettes - Hard Disks - Optical Disks - Magnetic Tapes - Organising Data in Secondary Storage: Databases, Data Storage - Hierarchy and the concept of the key field - File Management: Basic concepts - File Management Systems - Data Management Systems - Types of Database Organization - Features of a DBMS.				
Unit - V	Information System and Software Development: Management Information Systems - The Six phases of System Analysis and Design - The Five Steps in Programming - Five Generations of Programming Languages - Programming Languages - Object Oriented and Visual Programming - Internet Programming - HTML, XML, JAVA and ActiveX.				

References:

1. Stacey C Sawyer, Brain K Williams, Sarah E Hutchinson, Using Information Technology - A Practical Introduction to Computer and Communications, ed2, The McGraw Hill Companies.
2. J Hames O'Brien, Introduction to Information System.

Related Online Content :

1. https://mis.alagappauniversity.ac.in/siteAdmin/ddeadmin/uploads/1/UG_B.Sc._Information%20Technology_129%

2 https://slideplayer.com/slide/12806654/

Course Outcomes		Knowledge Level
CO1	Understand the basic Revolution in Computers and Communications	K2
CO2	Implement the basic concepts Information System and Software Development	K2
CO3	Implement Storage And Databases	K3
CO4	Understand the Storage And Databases	K4
CO5	Explain the concepts of communications	K5

II – Semester					
Core	**Course Code: 80525**	**OBJECT ORIENTED PROGRAMMING IN C++ LAB**	**P**	**Credits: 4**	**Hours: 4**
Pre – requisite	This course introduces the basic concepts of C++ programming		**Syllabus revised**		**2023 - 24**
Course Objectives	1. This course practices the student to write object oriented programs using C++. 2. This course improves the logical thinking in C++ programming.				

1. Write a C++ program to demonstrate Control Structures
2. Write a C++ program to calculate Simple interest using class and Object
3. Write a C++ program to sort given numbers in Ascending Order using Bubble sort
4. Write a C++ program to manipulate a given string
5. Write a C++ program to demonstrate function overloading
6. Write a C++ program to demonstrate Inline function
7. Write a C++ program to demonstrate Friend function
8. Write a C++ program to demonstrate Default Arguments
9. Write a C++ program to demonstrate Constructor
10. Write a C++ program to demonstrate Operator Overloading
11. Write a C++ program to demonstrate Single Inheritance
12. Write a C++ program to demonstrate Multi level Inheritance
13. Write a C++ program to demonstrate Multiple Inheritance
14. Write a C++ program to demonstrate virtual function
15. Write a C++ program to demonstrate pure virtual function

Related Online Content : 1. https://www.simplilearn.com/tutorials/cpp-tutorial/oops-concepts-in-cpp

II – Semester					
Allied	**Course Code: 80526**	**MATHEMATICS – II**	**T**	**Credits: 3**	**Hours: 3**
Pre – requisite			**Syllabus revised**		**2023 - 24**
Course Objectives	To impart the knowledge of Integral calculus, Differential Equations, Fourier series and Laplace transform. The course will also serve as a prerequisite for post graduate and specialized studies and research				
Unit – I	**DIFFERNTIAL CALCULUS:** Differential Calculus: Functions and limits – Differentiation – Successive Differentiation – Partial Differentiation – Maxima and Minima of Functions of two variables.				
Unit - II	**INTEGRAL CALCULUS**: Integral Calculus: Integration – Definite Integrals – Reduction Formulae				
Unit – III	**EULER'S EQUATION:** Ordinary differential equations: Second order and non-homogenous linear differential equations with constant coefficients – Second order linear differential equations with variable coefficients. (Euler's form only).				
Unit – IV	**PARTIAL EQUATION:** Formation of Partial differential equations by eliminating arbitrary constants and arbitrary function – Solutions of standard types of First order equations – f(p,q)= 0; f(x,p,q)= 0, f(y,p,q)= 0, f(z,p,q)= 0, z= px+qy+ f(p,q) – Lagrange method of solving linear partial differential equations Pp+Qq=R.				
Unit - V	**FOURIER SERIES:** Fourier series of periodic functions on the interval [c, c+2□] – Half range series.				

References:

1. Higher engineering mathematical by B.S Grewal
2. Mathematical foundations by P.R. Vittal.

Related Online Content :
1.https://www.studocu.com/in/document/dr-apj-abdul-kalam-technical-university/btech/mathematics-ii-all-unit-notes/33553028
2.https://www.goseeko.com/studymaterial/savitribai-phule-pune-university-maharashtra/engineering/computer-engineering-1/first-year/sem-2/engineering-mathematics-ii-7

Course Outcomes		**Knowledge Level**
CO – 1	The student gets wider knowledge about Differential Calculus	K2
CO – 2	The student learns about various concepts in Integral Calculus	K2
CO – 3	Obtain Various Knowledge Operations Ordinary differential equations	K3
CO – 4	Brief Knowledge about the Fourier series	K4
CO – 5	The Student Understand about Differentiation, Partial differentiation	K5

II – Semester					
Allied	**Course Code: 80527**	**Multimedia/ Office Suite Specialist**	**T**	**Credits: 3**	**Hours: 3**
Pre – requisite			**Syllabus revised**		**2023 - 24**

Course Objectives	1. To learn the fundamental aspects of multimedia systems. 2. To learn the basics of Adobe Photoshop for image manipulation 3. To learn to use the important features of Microsoft Word, Excel and Power point effectively.
Unit – I	**Introduction to Multimedia:** Sound Formats - Video Formats - Getting Started with Image file formats - Animation – Playing sounds on The Web - Playing Videos - Windows Media Formats – Working with Object Elements – Basic concepts of Media References.
Unit - II	**Adobe Photoshop:** Introduction - Navigating the Workspace - Working with Documents - Image Modes and Color Selection - Selections and Masks. Layers and Blend Modes - Adding and Working with Type - Painting Tools - Retouching Tools
Unit – III	**Macromedia Flash:** Introduction to Flash – Flash How to – Flash in HTML – Flash Tweening – Flash Guide Tween – Flash Tint Tween – Flash Shape Tween. Flash Button 1 – Flash Button 2 – Flash Animation – Flash Sound.
Unit – IV	**Microsoft Word:** Introduction - Document creation - Editing text - Formatting text – Paragraph - Font - Bullets and numbering – Find -Replace - Spellcheck - Thesaurus - Mail-merge. Styles - Page Layout – Inserting tables in a document- Header and Footer - Table of contents - Printing documents - Keyboard shortcuts.
Unit - V	**Microsoft Excel:** Introduction - Workbooks and worksheets – Inserting and Deleting worksheets - Rows and columns - Formatting cells – Header and footer – Inserting comments – Creating charts. Sort and Filter – Formulae – Protect and share workbook – Workbook views.
Unit - VI	**Microsoft Powerpoint:** Creating slides - Transitions - Animations and effects - Making slideshow - Inserting objects - Timing control - Adding hyperlinks – Adding pictures – Adding audio and video files – Master slide.

References:

1. Microsoft Press - Microsoft Office System 2007 Step by Step - Prentice Hall of India 2007.
2. Robert Reinhardt, *Macromedia Flash MX Bible*, DreamTech India Pvt. Ltd - First Edition

Related Online Content : 1.

Course Outcomes		**Knowledge Level**
CO – 1	Describe the features, concepts and types of multimedia systems	K2
CO – 2	Describe the features, tools and techniques available in Adobe Photoshop	K2
CO – 3	Understand the powerful features of the word processor, spread sheet and presentation software provided by Microsoft in its Office Suite.	K3
CO – 4	Understand how to use the various features in Microsoft Word, Excel and Power point to effectively create documents, spreadsheets and presentations.	K4
CO – 5	Describe the features, tools and techniques available in MacromediaFlash	K5

II – Semester					
Allied	**Course Code: 80528**	**Multimedia/ Office Suite Specialist**	**P**	**Credits: 2**	**Hours: 4**
Pre – requisite			**Syllabus revised**		**2023 - 24**
Course Objectives					

Adobe Photoshop:

1. Demonstrate the use of the following tools
2. Lasso tool
3. Marquee tool
4. Quick selection tool
5. Crop tool
6. Clone tool
7. Gradient tool
8. Blur tool
9. Text tool
10. Rectangle tool
11. Eyedropper tool
12. Dodge tool
13. Hand tool
14. Path Selection tool
15. Brush tool
16. Slice tool
17. Pen tool
18. Brush tool

Macromedia Flash:

1. Demonstrate the following features
2. Tweening
3. Guide Tween
4. Tint Tween
5. Shape Tween
6. Button 1
7. Button 2
8. Animation using acript
9. Anumation using action buttons
10. Animation with Sound.

Microsoft Word

A. Type a half page document describing your best friend or your favourite holiday spot. Apply the following formatting features:

1. Organize the document as paragraphs
2. Justify the paragraphs
3. Set the line spacing to 1.5
4. Set font as Times New Roman
5. Set font size as 14, for the heading and font size 12 for the paragraphs
6. Underline the heading in green color (Use different underline style), make the heading bold and italic, centre it

7. Set blue color for the heading
8. Demonstrate the change case option in Word
9. Insert a Page number in the footer at the center
10. Set the Paper size as A4 and orientation as portrait
11. Check the print preview
12. Demonstrate the find and replace feature
13. Demonstrate the Auto Correct feature
14. Apply a suitable border for the heading and fill color
15. Demonstrate the use of format painter
16. Apply a page border
17. Demonstrate spelling and Grammar feature
18. Include a bulleted list of your likes and dislikes
19. Include a numbered list of few places in India you have visited
20. Highlight your interests
21. Apply a suitable water mark for the page.
22. Include a hyperlink to a relevant website
23. Use word Art for one of the side headings.
24. Insert a picture

B. Draw a diagram to show the hierarchy of the employees in a company.

C. Create a two page document about the basics of computers. Insert a table of Contents and a cover page for the document.

D. Use Mail Merge to create invitations to invite your friends for your birthday Party.

E. Type a formal letter to the Head of your department, requesting her to grant you permission to attend a two day workshop. Insert a table giving the details about the workshop.

Microsoft Excel

A. Calculate the net pay for company employees. The following are the details given

1. Basic salary
2. Gross pay = Basic pay + allowances
3. Allowances = DA + HRA +CCA
4. PF = 12% of Basic Pay
5. IT = 10% of Basic Pay
6. Deduction = PF + IT
7. Net Pay = Gross pay – Deduction
8. Those whose Net Pay is greater than Rs. 1 lakh
9. Include diagonal column headings. Apply different colour schemes to the table.
10. Set up a page number for the sheet and place it in the footer in the centre.

B. Use built in functions in Excel to calculate and display the following:

1. Square root of a number
2. To find the factorial of a number
3. Log of a number
4. Return the remainder of a division
5. Return the sign of a number
6. Search for a word in the given text and return its position
7. Convert a string to Upper case

C. Use column chart to show the expenditure for maintenance, of a company given the year and amount

spent. (Add Data Label, Chart Title, Chart Style, Chart Layout)

D. Use 3D Column chart to display the income summary of a cookie shop, given the total revenue, expense, profit/Loss

Microsoft Powerpoint

A. Create a Powerpoint presentation on Climate Change

B. Create a Powerpoint presentation showcasing your technical capabilities, talents, interests and goals.

Related Online Content :

III – Semester					
Core	**Course Code: 80533**	**Fundamentals of Logistics**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	**Basic Knowledge of Logistics**		**Syllabus revised**		**2023 - 24**
Course Objectives	1. The aim of this Lesson is to introduce to Logistics role in Economy / organizations in terms of effective logistics service to the customers. 2. To offer wide knowledge on the fundamentals of logistics business 3. The student is expected to understand the overall logistics services and during this process, he learns to plan / implement / control / cost effectiveness and storage. Thus fulfilling the objectives of Logistics				
Unit – I	Logistics Role in the Economy/Organization - Definition of Logistics-Objectives of Logistics- Functions of Logistics. Logistics and Customer Service - Definition of Customer Service Elements of Customer Service-Phases in Customer Service-Customer Retention				
Unit - II	Procurement and Outsourcing - Definition of Procurement/Outsourcing-Benefits of Logistics Outsourcing-Critical Issues in Logistics Outsourcing. Inventory Role and Importance of Inventory - Introduction-Role of Inventory-Importance of Inventory-Functions of Inventory Costs for holding Inventory-Reasons for Carrying Inventories-Inventory Levels-Need for Inventory Control. Inventory Management - Characteristics of Inventory-Need for Inventory and its Control-Importance of Inventory Management in Supply Chain-Types of Inventory-Types of Selective Inventory Control Techniques- Inventory Planning Models-Improvement Inventory Management				
Unit – III	Materials Management - Objectives of materials management-Materials Planning-Purchasing- Basic Materials of Material Handling-Types of Material Handling Equipments-LASH Transportation - Participants in Transportation Decisions-Modes of Transportation-Factors Influencing Transport Economics-Documents in Transport Decision Making. Warehousing/Distribution - Functions of Warehouse-Benefits of Warehouse-Service Warehousing Alternatives-Warehouse Site Selection- Factors while initiating Warehouse Operations-Warehouse Management Systems				
Unit – IV	Packing and Materials Handling - Functions of Packaging-Communication-Packaging Cost Types of Packaging Material-Unitization-Containerization-Designing a Package-Factors affecting choice of Packaging Materials				
Unit - V	Global Logistics - Global Supply Chain-Organizing for Global Logistics-Strategic Issues in Global Logistics-Forces driving Globalization-Modes of Transportation in Global Logistics Barriers to Global Logistics-Markets and Competition. Logistics Strategy - Requirements for an Effective Logistics Strategy - Strategic Logistics Planning -Implementation of Strategy. Logistics Information Systems - Functions of Logistics Information System (LIS)-LIS Flow RFID Principles of Logistics Information Organization for Effective Logistics Performance - Centralized and Decentralized Structures-Stages of Functional Aggregation in Organization. Financial Issues in Logistics Performance - Supply Chain Performance Measures-Steps in ABC Costing-Financial Gap Analysis. Integrated Logistics - Need for Integration-Activity Centers in Integrated Logistics. Role of 3PL&4PL - Principles of LIS				

References:

1. Fundamentals of Logistics Management (The Irwin/Mcgraw-Hill Series in Marketing), Douglas Lambert, James R Stock, Lisa M. Ellram, McGraw-hill/Irwin, First Edition, 1998.
2. Vinod V. Sople (2009) Logistic Management (2nd Edn.) Pearson Limited.
3. Logistics Management For International Business: Text And Cases, Sudalaimuthu& S. Anthony Raj, PHI Learning, First Edition, 2009.
4. Fundamentals of Logistics Management, David Grant, Douglas M. Lambert, James R.Stock, Lisa M. Ellram, McGraw Hill Higher Education, 1997.
5. Logistics Management, Ismail Reji, Excel Book, First Edition, 2008.

Related Online Content : 1.https://www.academia.edu/28439603/FUNDAMENTALS_OF_LOGISTICS_
2. https://docplayer.net/17885150-Fundamentals-of-logistics.html

Course Outcomes		**Knowledge Level**
CO – 1	The student gets wider knowledge about Logistics Fundamentals	K2
CO – 2	The student learns to plan /implement/ control/cost effectiveness and storage.	K2
CO – 3	Obtain Various Knowledge relevant to Shipping Intermediaries	K3
CO – 4	Brief Knowledge about the Packing and Material Handling	K4
CO – 5	The Student Understand about overall Logistics Services.	K5

III – Semester					
Core	**Course Code: 80534**	**Introduction to Shipping**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	To learn the Expertise in Maritime Trade and Documentation		**Syllabus revised**		**2023 - 24**
Course Objectives	1. To comprehensive understand the Shipping Business 2. To learn the Proficiency in Chartering and Commercial Operations 3. To understand the Insight into Shipping Management and Maritime Geography 4. To understand the Financial and Legal Competence in Shipping				
Unit – I	The reasons for Sea Transport – Introduction – Why Ships – Different Shipping markets – Who Trades - Conclusion. The Supply of Ships – Brief History – Supply of Shipping – Why operate Ships – Protectionism – Ship Registration – Port State Control – Ship Classification				
Unit - II	The Ship – Tonnage & Load lines – Types of Ships The Dry Cargo Chartering market – Introduction – Chartering – Chartering Negotiations				
Unit – III	Liners – Introduction – The Development of Tankers & the Tanker Market – Types of tankers – Tanker Charter Parties - Negotiating Charter. Brief History of Liners – Containerization – Conferences & Freight Tariffs – Liner Documentation - Bill of Lading Terms & Conditions				
Unit – IV	The Practitioners in Shipping Business – The Institute of Chartered Ship Brokers – Ship Sale & Purchase – Ship Management. Maritime Geography – Introduction – Ocean & Seas – orts – Geography of trade				
Unit - V	Accounts – Introduction – Accounting – Capital – Credit- management accounting – Cash Flow- Costs – Different types of Companies- Exchange Rates- Company accounts Law of Carriage – Introduction – Fundamentals of English Law – Arbitration – The Contract – Remedies for breach of Contract – TORT- Contracts Relating to the carriage of goods by sea – Liner Bill of Lading – the Hague Visby Rules – Hamburg rules – Agency- Breach of Warranty of Authority – Protection & Indemnity Associations				

References:

1. Introduction to Shipping, Institute Of Chartered Shipbrokers, Wither by Seamanship International Ltd, 2nd Revised edition, 2009.
2. Shipping Biography Introduction: Jacob Kamm, Sean Connaughton, Gustaf Erikson, Robert Moran, Sir George Renwick, 1st Baronet, Llc Book, 1994.
3. Lambert M Surhone, Miriam T. Timpledon, Susan F. Marseken (2010) VdmVerlagDr.Mueller A & Co Ka

Related Online Content :

1. https://slideplayer.com/slide/6359103
2. https://www.studocu.com/row/document/university-of-kyrenia-girne-universitesi/maritime-management/introduction-to-shipping

Course Outcomes		**Knowledge Level**
CO1	Holistic Understanding of Shipping Industry	K2
CO2	Proficient Chartering and Negotiation Skills	K2
CO3	Mastery of Maritime Trade Dynamics	K3
CO4	Comprehensive Shipping Management Insight	K4
CO5	Financial and Legal Competence in Shipping Operations	K5

III – Semester					
Core	**Course Code: 80535**	**Data Structures and Algorithms**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	To learn linear and non-linear data structures.				
Course Objectives	1. To learn the basic algorithmic approaches and simple applications of the same. 2. To learn specific searching and sorting algorithms.				
Unit – I	**Data Structures:** Definition and Classification Algorithms: Definition - Structure and properties – Performance analysis with step-count method - Asymptotic notation - Big-Oh definition.				
Unit - II	**Arrays and Linked Lists:** Representation of Arrays – Insertion, deletion, searching in arrays - Stack (using array) - Queue (using array) - Circular queue (using array) – Singly linked list - Doubly linked list.				
Unit – III	**Graphs and Trees:** Representation of Binary tree – Binary tree traversals (only recursive model) – Representation of Graphs (Adjacency Matrix, Adjacency List) – Graph Traversals (DFS, BFS).				
Unit – IV	**Introduction to algorithmic design methods:** Divide and Conquer method: Finding Max-Min – Greedy method: Knapsack problem - Dynamic Programming method: Multistage graph. (No proofs or derivations of time/space complexity required.)				
Unit - V	**Searching and Sorting Algorithms:** Bubble Sort - Quick Sort - Merge Sort - Binary Search - Hashing.				

References:

1. Ellis Horowitz, SartajSahni, Dinesh Mehta, Fundamentals of Data Structures in C++, Second Edition, Universities Press.
2. Ellis Horowitz, SartajSahni, SanguthevarRajasekaran, Fundamentals of Computer Algorithms, Second Edition, Universities Press.
3. G. A. VijayalakshmiPai, Data Structures and Algorithms Concepts, Techniques and Applications, Tata McGraw-Hill, 2008

Related Online Content :

1. https://www.studocu.com/in/document/kalinga-institute-of-industrial-technology/data-structure-algorithm/data-structure-and-algorithms-lecture-notes/17651506
2. https://www.geektonight.com/data-structures-and-algorithms-notes/

Course Outcomes		**Knowledge Level**
CO1	Explain the various linear and non-linear data structures.	K2
CO2	Describe the computer representation of linear and non-linear data structures.	K2
CO3	Choose the appropriate data structure for simple problems.	K3
CO4	Understand how to apply the specific algorithms learnt for searching and sorting, to solve any given problem.	K4
CO5	Explain specific searching and sorting algorithms and their characteristics.	K5

III – Semester					
Allied	**Course Code: 80536**	**PROGRAMMING IN JAVA**	**T**	**Credits: 3**	**Hours: 3**
Pre – requisite	To make students familiar with oops & applet programming		**Syllabus revised**		**2023 - 24**
Course Objectives	1. Java programming can be used to develop both web based & console based application & stand-alone application 2. Java is one of the top most languages used in most of the IT companies. It is a job assured course				
Unit – I	**INTRODUCTION TO JAVA:** Introduction to Java – Features of Java – Object Oriented Concepts – Lexical Issues – Data Types – Variables – Arrays – Operators – Control Statements.				
Unit - II	**CLASSES & OBJECTS:** Classes – Objects – Constructors – Overloading methods – Static and fixed methods – Inner Classes – String Class – Inheritance – Overriding methods – Using super – Abstract class.				
Unit – III	**PACKAGES:** Packages – Access Protection – Importing packages – Exception Handling – Throw and Throws – Thread – Synchronizing – Runnable Interface – Multithreading				
Unit – IV	**INPUT/OUTPUT STREAMS:** I/O streams –File Streams–Applets–Applet Life Cycle - String Buffer–Char Array–JavaUtility classes–Calendar–Date–Random–Scanner–Timer–Vector.				
Unit - V	**AWT:** AWT - Working with windows using AWT Classes-AWT Controls-Layout Managers and Menus.				

References:

1. Cay S.Horstmann, Gary Cornell-Core Java 2 Volume 1 – Fundamentals,5th PHI,2000.
2. E.Balaguruswamy, "Programming with JAVA",3rd edition ,Tata McGraw- Hill Publications, 2007.
3. K.Arnold and J.Gosling- The Java Programming Language – Second Edition,Addison Wesley,2002.
4. P.Naughton and H.Schildt –Java2 (The Complete References)-Seventh Edition,TMH 2004.

Related Online Content :
1.https://www.studocu.com/in/document/thiruvalluvar-university/bsccomputer-science/java-programming-lecture-notes-1/9088089
2.https://www.slideshare.net/AbhishekKhune/java-notes-26001579

Course Outcomes		**Knowledge Level**
CO1	Understand the basic Object-oriented concepts.	K2
CO2	Implement the basic constructs of Core Java.	K2
CO3	Implement inheritance, Packages, Method and classes of Core Java.	K3
CO4	Understand and implement the exception Handling in core java.	K4
CO5	Implement multi-threading ,Synchronous, asynchronous programming and I/O Streams of Core Java	K5

III – Semester					
Allied	**Course Code: 80537**	**PROGRAMMING IN JAVA LAB**	**P**	**Credits: 2**	**Hours: 2**
Pre – requisite	To make students familiar with oops & applet programming		**Syllabus revised**		**2023 - 24**
Course Objectives	1. Java programming can be used to develop both web based & console based application & stand-alone application 2. Java is one of the top most languages used in most of the IT companies. It is a job assured course				

APPLICATIONS

1. Area of shapes using Overloading/Overriding/Interface concepts.
2. Substring Removal from a String.
3. Determining the order of numbers generated randomly using Random Class.
4. Usage of Calendar Class and its manipulation.
5. String Manipulation using built-in functions.
6. Usage of Vector Classes.
7. Implementation of Thread based application.
8. Implementation of Exception Handling.

APPLET

1. Working with Frames and various controls to prepare a Bio-data form.
2. Working with Dialogs and Menus.
3. Working with Panels and Layouts.
4. Working with various shapes using Graphics class.
5. Working with Colors and Fonts.

Related Online Content : 1. https://www.slideshare.net/AbhishekKhune/java-notes-26001579	

III – Semester					
III – Semester					
Allied	**Course Code: 80538**	**STATISTICAL AND NUMERICAL METHODS**	**T**	**Credits: 3**	**Hours: 3**
Pre – requisite	To learn about data analysis		**Syllabus revised**		**2023 - 24**
Course Objectives					
Unit – I	**INTRODUCTION TO STATISTICS:** Frequency distribution-Diagrammatic representation-Measures of Central Tendency: Mean, Median, Mode, Geometric mean, Harmonic mean-Measures of Dispersion: Range, Quartile Deviation, Mean Deviation, Standard Deviation, Coefficient of Variation.				
Unit - II	**CORRELATION ANALYSIS:** Introduction, Methods of Studying Correlation- Karl Pearson's Coefficient Of Correlation-Spearman's Rank Correlation Coefficient: Ranks are given, Ranks are not given, Equal ranks or Repeated Values. Regression Analysis: Two Regression Equations-Regression Equation of X on Y, Regression Equation Of Y on X.				
Unit – III	**SAMPLING:** Test of hypothesis- Test of Significance for Small Samples: t test- Single Mean, Two Mean, Paired t-test- F test-Chi Square Test: Goodness of Fit, 2X2 Contingency table.				
Unit – IV	**ROOTS OF EQUATIONS:** Graphical Method- Bisection Method- False position Method – Newton –Raphson's Method- Secant Method- Algebraic Equations: Gauss Elimination Method- Gauss- Jordan Method- Matrix Inverse Method- Gauss-Seidel Method.				
Unit - V	**NUMERICAL INTEGRATION AND DIFFERENTIATION:** Trapezoid Rule- Simpson's Rule- Application of numerical methods to differential equations: Runge- Kutta Order Methods				

References

1. Richard A.Johnson , "Probability and Statistics for Engineers 8th Economy Edition, Miller & Freund's Publications ,2010
2. B.S Grewal , "Numerical Methods in Engineering & Science ",Khanna Publishers,2010.

Related Online Content :

1. https://studentsfocus.com/ma8452-snm-notes-statistics-and-numerical-methods-notes-mech-4th-sem/
2. https://www.brainkart.com/subject/Statistics-and-Numerical-Methods_373/

Course Outcomes		**Knowledge Level**
CO1	The student gets wider knowledge about Statistics	K2
CO2	The student learns toCorrelation Analysis	K2
CO3	Obtain Various Knowledge relevant to Statistics	K3
CO4	Brief Knowledge about the Roots Of Equations	K4
CO5	The Student Understand about Numerical Integration And Differentiation:	K5

SEC - III	Course Code: 80539	Entrepreneurship	P	Credits: 2	Hours: 2
Pre – requisite			Syllabus revised		2023 - 24

Course Objectives	1. To enable the students to understand the concept of Entrepreneurship and to learn the professional behaviour about Entrepreneurship. 2. To identify significant changes and trends which create new business opportunities. 3. To analyse the environment for potential business opportunities. 4. To provide conceptual exposure on converting ideas to an entrepreneurial firms. 5. To provide an opportunity and hands-on experience in project identification and venture establishment.
Unit – I	Concept and Definitions; Significance of Entrepreneur in Economic Development; Classification and Types of Entrepreneurs; Entrepreneurial Competencies; Factor Affecting Entrepreneurial Growth–Traits/Qualities of Entrepreneurs; Manager Vs. Entrepreneur. EDP Programmes. Women Entrepreneurship – Rural Entrepreneurship - Factors affecting Entrepreneurial Growth – Ethics and Entrepreneurship – Social Responsibility in Entrepreneurship.
Unit - II	Opportunity / Identification and Product Selection: Entrepreneurial Opportunity Search and Identification-Opportunity Analysis – Ideation Techniques – ideation catalysis and inhibitions idea to opportunity maps – evaluation of idea to opportunity maps – business model – function of a business model – business modeling – benefits of business modeling – business models to business plans
Unit – III	Small enterprises An Introductory Framework - Project Identification and Selection - Project Formulation- Project Appraisal - Legal, Regulatory and Statutory Body - Clearance Approvals and NOC Compliance Financing of Enterprise Boot Strapping - Ownership Structure
Unit – IV	Institutional Finance to Entrepreneurs - Lease Financing and Hire-Purchase-Institutional Support to Entrepreneurs - Taxation Benefits to Small-Scale Industries - Government Policy for Small-Scale Enterprises.
Unit - V	Importance of family business, Succession in family business, Pitfalls of the family business, strategies for improving the capability of family business. Social Entrepreneurship: Social enterprise-need, types, characteristics and benefits of social enterprises-Social entrepreneurship challenges and opportunities.

References:

1. Khanka. S.S., Entrepreneurial Development, S.Chand& Co. Ltd.. New Delhi. 2017
2. Raj Shankar. Essentials of Entrepreneurship. Vijay Nicole Imprints Private Ltd., Chennai 2013
3. Gupta. C.B. & Khanka S.S., Entrepreneurship and Small Business Management. Sultan Chand & Sons, 7th Revised Edition- 2017.
4. Robert D Hisrich and Michael P.Peters, Entrepreneurship, Tata McGraw Hill
5. Roy, Entrepreneurship, Oxford University Press
6. MadhurimaLall&ShikhaSahai, Entrepreneurship, Excel Books
7. Raj Shankar, Entrepreneurship-Theory and Practice,Vijay Nicole

Related Online Content :
http://www.mbaexamnotes.com/entrepreneur.html

Course Outcomes		Knowledge Level
CO – 1	Comprehensive Understanding of Entrepreneurship Concepts and Professional Behavior	K2
CO – 2	Proficiency in Identifying Business Opportunities from Changing Trends	K2

CO – 3	Competence in Environmental Analysis for Business Ventures	K3
CO – 4	Profound Understanding of Idea Conversion and Startup Essentials	K4
CO – 5	Practical Experience in Project Identification and Venture Establishment	K5

IV– Semester					
Core	**Course Code: 80543**	**COMPUTER NETWORKS**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	To learn about networking		**Syllabus revised**		**2023 - 24**

Course Objectives	.
Unit – I	Introduction: Uses of Computer Networks - Network Hardware and Network Software - Reference Models - Example Networks - Network Standardisation. Physical Layer: Transmission Media - Telephone System - ISDN - Broadband and Narrowband ISDN - ISDN and ATM - Communication Satellites.
Unit - II	Data Link Layer: Design Issues - Error Detection and Correcting Codes - Elementary Datalink Protocols - Sliding Window Protocols - Protocol Specification and Verification: Finite State Models - Petri Net Models - Example Dlink Protocols: HDLC - SLIP - PPP - Media Access Sublayer: Multiple Access Protocols - ALOHA - Carrier Sense Multiple Access Protocols - Collision Free Protocols.
Unit – III	Network Layer: Design Issues - Routing Algorithms - Congestion Control Algorithms - Internetworking: Tunneling - Fragmentation - Firewalls - Network Layer in the Internet - IP - Subnets - Internet Control Protocols: Address Resolution Protocol - ICMP - RARP - Internet Multicasting - Network Layer in ATM Networks: Cell Format - Connection Setup - Routing and Switching - Services Categories - ATM LANs.
Unit – IV	Transport Layer: Transport Service - Elements of Transport Protocols: Addressing - Flow Control and Buffering - Multiplexing - Crash Recovery - Performance Issues - Measuring Network Performance - Internet Transport Protocols - TCP - UDP - Protocols for Gigabit Networks.
Unit - V	Application Layer: Network Security - Cryptography - Secret and Public Key Algorithms - DNS - SNMP - Electronic Mail - Electronic Mail Privacy - World Wide Web: Client Side - Server Side - Multimedia - Audio - Video - Data Compression - JPEG, MPEG Standards

References:

1. Andrew S. Tanenbaum, Computer Networks, 4th Edition, 2003, Prentice Hall of India.
2. Uless Black, Computer Networks, Prentice Hall.

Related Online Content : 1.https://www.studocu.com/in/document/gujarat-technological-university/computer-network/cn-notes/10296005

Course Outcomes		**Knowledge Level**
CO – 1	To Understand the fundamentals of Computer Network architecture, OSI and TCP/IP reference models and familiarize with the various networks and physical level communication.	K2
CO – 2	To gain knowledge on Transmission, Telephone systems and Satellite communications. To learn the components to build, detect and correct the Data layer.	K2
CO – 3	To impart the functions and protocols of Elementary data link layer protocols.	K3
CO – 4	To analyze the characteristics of Network layer and the various Routing and Congestion control algorithms and internet protocols.	K4
CO – 5	To understand network security and define various protocols and their services such as FTP, HTTP, Telnet, DNS	K5

IV – Semester					
Core	**Course Code: 80544**	**Port Management**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	Grasp the Fundamentals of Freight Forwarding and Containerization		**Syllabus revised**		**2023 - 24**
Course Objectives	1. It covers Internal Distribution of goods through Multimodal Transportation 2. Various methods and procedures used while loading and discharging cargoes 3. Code of safe practices while handling lifting gears and cargoes. 4. The student should be able to understand the role of Logistics through Multi Modal Transportation, Physical Multi Modal Operations, Air Transportation, Trade routes and cargoes, multi Modal Operators, sale and contact operators.				
Unit – I	Basic Concepts of Cargo Work - Bale Capacity-Grain Capacity-Stowage Factor-Broken Stowage-Load Density-Optional Cargo-Cargo Documents-Mate's Receipt-Bill of Lading Care of Cargoes - Precautions before loading/When Carrying Cargo-Sweat and Ventilation-Dew Point-Dunnage- Separation- Pilfering-Contamination-Handling / Chafing /Crushing-Lashing-Ballasting or De ballasting-Damage-Stability Lifting Gear - Safe Working Load-Breaking Stress-Factor of Safety-Simple Derrick-Union Purchase System-Heavy lift Jumbo Derrick-Precautions when handling heavy lifts- Stoeckle in Derricks-Cranes.				
Unit - II	Code of Safe Practice for Solid Bulk Cargoes Aim of Code-Solid Bulk Cargoes-Angle of Repose-Concentrates-Moisture Migration-Moisture Content-Flow Moisture Point-Transportable Moisture Limit-Hazards due to Bulk Cargoes-Structural Hazards and Precautions-Trimming Requirements-General Precautions when holding Bulk Cargoes-Safety Precautions-Properties of Concentrates-Hazards of Concentrates-Precautions when Carrying Concentrates - Some Common Cargoes – Hazards-Precautions -Hold Preparation-Cotton-Rice-Dunnage-Spar Ceiling-Loading and Ventilation-Cement, IMDG Code				
Unit – III	Aim-Application-Classification-Packing-Marking/Labelling/Placarding-DocumentsStowage Requirements-Explosives in Passenger Ships-Segregation-Types of Segregation-Precautions for Loading Dangerous Goods, Unit Loads and Containers - Forms of Unitization- Pre-slung Cargo-Palletisation- Containers- Physical Characteristics of Containers-Types of Containers-Stowage and Securing-Stability-Lifting a Container-LASH&RO-RO Ships- Refrigerated and Deck Cargoes - Types of Refrigerated Cargoes-Refrigeration Systems-Cargo Operations-Deck Cargoes, Tanker Operations Flammability-Methods of Gas Freeing Tanks-Tanker Operation Systems and their Associated Pipelines-Types of Cargo Pipeline Systems-Operational Procedures-Safety Procedures-Gas Detecting Instruments-Inert Gas System-Crude Oil Washing-Pollution-Cargo Calculations				
Unit – IV	Some Common Cargoes Hazards-Precautions-Hold Preparation-Cotton-Rice-Dunnage-Spar Ceiling-Loading and Ventilation-Cement, More Cargoes ,Sugar-Rubber-Salt-Pulp & Paper Rolls-Iron and Steel Cargoes, - Principle of Stowing Cargo-Safety of Ship and Crew-Safety of Cargo-Properties of Cargoes-Dock Labourers Act,1934 Inspectors-Powers of Inspectors-Obligations of Dock Workers				
Unit - V	Introduction – genesis of freight forwarding – understanding concepts of containerization LCL / FCL concepts – various sectors of container markets – Pre stuffing procedures De stuffing formalities – channelization of return / empty containers – reverse process.				

References:

1. Multimodal Transportation of Goods Act, 1993 Along With Allied Rules, Professional Book Publishers.
2. Laws of Carriage of Goods by Sea and Multimodal Transport In India, Dr. K. V.
3. Hariharan, Shroff Pub & Dist. Pvt. Ltd, First Edition, 2006
4. Containerisation, Multimodal Transport and Infrastructure Development in India, Dr. K. V. Hariharan, Shroff Pub & Dist. Pvt. Ltd, 2007

Related Online Content :
https://www.freightforwarderquoteonline.com/news/cargo-clearing-forwarding-procedure

Course Outcomes		**Knowledge Level**
CO – 1	To get knowledge in multi modal transport operations, stevedoring and freight forwarding.	K2
CO – 2	To have a better insight in the intermediary operations in logistics management	K2
CO – 3	To get exposed in various conventions related to marketing intermediaries international shipping industry	K3
CO – 4	Recognition of the Role of Logistics and Multimodal Operations	K4
CO – 5	Grasp of Freight Forwarding and Containerization Concepts	K5

IV – Semester					
Core	**Course Code: 80545**	**Industry visit Report**	**I**	**Credits: 2**	**Hours: 2**
Pre – requisite			**Syllabus revised**		**2023 - 24**
Course Objectives	1. The aim of this course is to understand various infrastructure / facilities / operations / costings that are involved in the logistics industry.				

The following are areas of practical visits conducted:-

Ports and terminals / Port operations / Container Freight Stations, Warehouses / Domestic warehouse / Bonded warehouse / Godowns/ Inland container depots / Empty container plots/Toll gates / Air cargo complex

STUDENT ASSESSMENT

1. The students are to prepare a practical visit report and record of the same to be maintained.
2. The students shall be assessed in any of the attended practical visits.

IV– Semester					
Allied	**Course Code: 80546**	**Liner Trade**	**T**	**Credits: 3**	**Hours: 3**
Pre – requisite	To understand the containerization and development of liner trade routes		**Syllabus revised**		**2023 - 24**

Course Objectives	1. This course is intended to offer a good understanding of nature of worldwide line shipping trade including its structure & organization specially related to the container trade. 2. To understand the methods of operations, technology and terminology used. Changes in the liner shipping in the last quarter of the 20th century – containerization and development of liner trade routes 3. To understand the methods of operations, technology and terminology used. 4. To have an idea of changes in the liner shipping of the 20th century.
Unit – I	Definitions of liner trades; tramp trades; containerization- Unitization - containerization , liner operations, port organization – Vessel loading and discharging , liner trade routes, The major ports, liner service options - Liner trade – ship types – Tonnages; basic ship layout, types of container ships, Ro-Ro barge carrying vessels, The refrigerated cargo ship conventional (Break bulk) vessels future vessel developments, economy of scale, shipboard handling equipment.
Unit - II	Cargoes & cargo equipment –Dangerous goods IMO special goods, cargo handlings other methods of lifting cargo port handling equipment, port terminals; port and terminal management; the role of ships officers - agent. Liner Shipping operations - Management and policy, ship management and operations, independent ship management, insurance, trade of commercial department, accounting, budgeting, freight collection and port disbursements agency duties.
Unit – III	Containerization unitization and inter-modalism - Growth in world trade unitization; container dimensions, types of container other container expressions container inventory, owning, leasing meeting the demand for containers tracking the container fleet, container control, FCLS LCLS & ICDS , legal & insurance implications in the container trade.
Unit – IV	The Bill of Lading and other Documentation -The Bill of Lading UK bill of lading Act 1855 and UK carriage of goods by sea Act 1992, The use of Bill of Lading in liner trades, Bill of Lading documentary credits, Bill of Lading clauses The printed clauses – The evidence of the contract, other forms of Bill of Lading other liner documents, Intl conventions relating to Bill of Lading, paperless trading
Unit - V	The Exchange of goods transfer - Transfer of funds from country to country, methods of payments in International trade who are the merchants, International contracts of sale INCO terms; Legal aspects of the liner trades - The carrier insurance the carrier's liability for the cargo the liabilities of the agent, legal aspects of the Bill of Lading, cargo claims general average (GA), security, ISPS code.

References:

1. Ship Operation Research and Development; A Program for Industry, J. Haskell, General Books Publisher, 2009.
2. Ship Operation Management, Fujita, N.H. Publisher, 1974.
3. Ship Operation Management, Bertrams Publication, 2010.
4. Handbook of Ship Calculations, Construction and Operation, Charles H. Hughes, Wexford College Press, 2008.
5. Ocean Shipping - Elements of Practical Steamship Operation, Robert Edwards Annin, Thompson

Press, 2010.

Related Online Content :
https://www.studocu.com/row/document/east-africa-institute-of-certified-studies/project-management/liner-shipping-please-help-notes

Course Outcomes		**Knowledge Level**
CO – 1	To have a good exposure about the liner trade concepts in International Shipping industry	K2
CO – 2	To strengthen the learners knowledge in unitization concept and INCOTERMs used in international business.	K2
CO – 3	To have a better understanding about the various documentation procedures in liner trade	K3
CO – 4	4. Acquiring knowledge of operational processes, technological advancements, and industry -specific terminology used in containerized liner shipping.	K4
CO – 5	5. The significance of containerization in revolutionizing shipping logistics.	K5

IV– Semester					
Allied	**Course Code: 80547**	**WEB TECHNOLOGIES**	**T**	**Credits: 3**	**Hours: 3**
Pre – requisite	To learn about networking		**Syllabus revised**		**2023 - 24**

Course Objectives	• To impart the fundamentals of Web basic concepts. • To understand the various steps in designing a creative webpage using HTML • To design static web pages using CSS • To design dynamic website using JavaScript • To explore the event handlers in JavaScript
Unit – I	Web – Basic Concepts: Internet – Internet based services – WWW – HTTP – URL – Website – Web Server – Web Browser – SMTP Server – ISP – HTML – Hyperlink – DNS – W3C – Types of Web browser – Types of Web Server – Web tools – Web domain
Unit - II	Introduction to HTML: Markup Languages-editing HTML-common tags-header-text styling-linking-images-formatting text-special characters, horizontal rulers and line breaks-unordered list –nested and ordered list –tables and formatting-forms-linking-frames.
Unit – III	CSS: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, The and tags, Conflict resolution.
Unit – IV	JavaScript: Introduction - Control Structures : Selection Structure: If structure –While structure – Assignment operators – Increment / Decrement operators - for structure – switch structure – Do...While structure – break and continue statements - Logical operators.
Unit - V	JavaScript Events: Registering Event handlers – event OnClick and onload – Event onmousemove and onmouseout – onfocus and onblur. XML: Introduction – Structuring data – XML namespace – Document Type Definition (DTD)

Books for Reference:

1. H.M.Deitel, P.J.Deital & T.R.Neito, *Internet and World wide web - How to Program*. Pearson Education Asia-Addison Wesley Longman pvt Ltd
2. Gopalan, N. P., & ADIKESAVAN, T. (2014). *Web Technology: A Developer's Perspective*. PHI Learning Pvt. Ltd
3. Duckett, J. (2011). *Beginning HTML, XHTML, CSS, and Javascript*. John Wiley & Sons.
4. Bates, C. (2002). *Web Programming Building Internet Applications*. John Wiley & Sons.
5. Srinivasan, M. (2012). *Web Technology*. Pearson Education India.

2 Related Online Content : 1https://www.geeksforgeeks.org/web-technology/

Course Outcomes		**Knowledge Level**
CO – 1	The students will understand the basics of webpages creation	K1
CO – 2	The students will learn about how to create webpages using HTML	K2
CO – 3	The students can create static webpages using CSS	K3
CO – 4	Dynamic webpage creation using JavaScript	K4
CO – 5	Able to create responsive webpages using JavaScript Event Handlers	K5

IV– Semester					
Allied	**Course Code: 80548**	**WEB TECHNOLOGIES LAB**	**P**	**Credits: 2**	**Hours: 4**
Pre – requisite					
Course Objectives	• To impart the fundamentals of Web basic concepts. • To understand the various steps in designing a creative webpage using HTML/CSS • To design dynamic website using HTML, CSS, JavaScript and XML.				

HTML

1. Table Handling
2. Designing Time Table
3. Designing an index of a book using ordered and unordered List
4. Designing an index of a book using Nesting of List
5. To scroll an image over a screen
6. Create a web page to link two or more pages.
7. Create a web page to advertise a product using Frames and Links
8. Create a Bio-data using Form tag.

CASCADING STYLE SHEET

1. Create an External Style Sheet using Font, Text and Color Properties
2. Create an Internal Style Sheet using Font, Text and Color Properties and Border Properties
3. Create an Inline Style Sheet using Font, Text , Color and Background Properties

JAVA SCRIPT

1. Simple Calculator
2. String Object
3. Array Object
4. Math Object
5. Screen Object
6. Navigator Object
7. Closing a window after a minute
8. Working with OnMouse Over Event

Related Online Content : 1. https://www.geeksforgeeks.org/web-technology/

Course Outcomes

Aftercompletingthiscourse,thestudentsareableto:

- Gettheknowledgetoanalyze the givenassignmenttoselect sustainablewebdevelopmentanddesignmethodology
- To develop interactive website creation skills and make the students to analyse the usability of a website

V – Semester					
Core	**Course Code: 80551**	**Customs Law**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	To gain an in-depth knowledge about various customs procedures pertaining to imports and exports		**Syllabus revised**		**2023 - 24**
Course Objectives	1. To learn the Efficient Customs Administration and Regulation 2. To understand the Control and Regulation of Imports and Exports 3. To learn the Prevention of Illicit Trade and Disposal 4. To learn the Effective Customs Duty Management 5. To understand the Facilitated Trade and Controlled Transit				
Unit – I	Preliminary- Definitions, Officers of Customs-Classes-Appointments-Powers of Officers of Customs- Entrustments of Functions of Board, Appointment of Customs Ports, Airports, etc – Power to approve landing places and Specify limits of Customs area-Appointment of boarding stations, Prohibitions on Importation and Exportation of Goods-Detection of illegally imported goods and prevention of the disposal thereof. [Section 1 to 11G]				
Unit - II	Prevention or Detection of Illegal Export of Goods- Power to exempt, Levy of and Exemption from Customs Duties-Dutiable goods- Duty on Pilfered goods – Valuation of Goods - Assessment of Duty- Abatement of duty on damaged or deteriorated goods, Remission of duty on lost, destroyed, or abandoned goods, Power to make rules for denaturing or mutilation of goods, Power to grant exemption from duty. [Section 11H to 25B]				
Unit – III	Refund of Export and Import duty in certain cases -Claim for Refund of Duty- Interest on delayed Refunds -Provisional Attachment to protect revenue in certain cases, Indicating Amount of Duty in Price of Goods, Etc., For purpose of Refund-Price of goods to indicate the amount of duty paid thereon. Administration of Rules of Origin under Trade Agreement, Advance Rulings-Authority for Advance Rulings-Application for Advance Ruling-Powers of Authority-Procedure of Authority. [Section 26 to 28M]				
Unit – IV	Provisions relating to Conveyances Carrying Imported or Exported Goods-Arrival of Vessels and Aircraft in India - Power to board Conveyances-Delivery of export manifest or export report- No Conveyance to leave without written order, Clearance of Imported Goods and Export Goods - Clearance of goods for home consumption - Clearance of Exported Goods, Payments through Electronic Cash Ledger and Electronic Duty Credit Ledger. [Section 29 to 51B]				
Unit - V	Goods in Transit -Transit and Transhipment of certain goods without payment-Liability of duty on goods transited or transhipped, Warehousing-Licensing of Public, Private, and Special Warehouses -Clearance of Warehoused goods for home consumption and Exportation-Cancellation and return of Warehousing bond, Drawback -Interest on drawback-Prohibition and regulation of drawback. [Section 52 to 76]				

References:

1. Guide to Customs Procedures 2009:10, GururajBn, Centax Publications Pvt Ltd
2. Customs Law Practice and Procedures,V. S. Datey, Taxmann Allied Services Pvt. Ltd., 7th Edition 2010.
3. India Customs, Trade Regulations and Procedures Handbook India Customs, Trade Regulations and Procedures Handbook, IBP USA, International Business Publications, USA, Fourth Edition, 2009.
4. Customs Manual,2023

Related Online Content : 1.https://trade.ec.europa.eu/access-to-markets/en/content/customs-clearance-

documents-and-procedures 2. https://www.freightmango.com/blog/what-import-custom-clearance-procedure-india		
Course Outcomes		**Knowledge Level**
CO – 1	A well-organized and streamlined customs administration system is established, ensuring the effective management of customs procedures and regulatory compliance.	K2
CO – 2	Controlled movement of goods across borders is maintained, preventing unauthorized trade and ensuring compliance with import and export regulations.	K2
CO – 3	Awareness among individuals possessing notified goods about the necessity to disclose their storage locations contributes to transparency in trade practices.	K3
CO – 4	Customs duties are accurately assessed on dutiable goods, leading to proper revenue collection for the government.	K4
CO – 5	Transshipment of goods without immediate duty payment facilitates smoother international trade flows and promotes seamless transit operations.	K5

V – Semester					
Core	**Course Code: 80552**	**Warehousing and Inventory Management**	**T**	**Credits: 4**	**Hours: 4**
Pre – requisite	To get knowledge in warehousing and inventory management		**Syllabus revised**		**2023 - 24**
Course Objectives	1. To know what is warehouse and needs, types and how to select the warehouse. 2. To know the function and operation of warehouse. 3. To know about centralized and decentralized storage system. 4. To know the role of supply chain management and inventory. 5. To Know the need of warehouse management system.				
Unit – I	Introduction to Warehouse Concepts Decisions and Operations: Introduction-Definition of Warehouse-Need for Warehousing-Selection of Warehouse-Sequence of Warehousing Decisions-Types of Warehouses-Factors determining location of warehouse-Characteristics of Ideal Warehouse.				
Unit - II	Factors affecting number of warehouses-Functions of Warehouse-Warehouse Operations.				
Unit – III	Centralized and Decentralized-Storage Systems-Palletized Storage Systems				
Unit – IV	Introduction to Inventory Management: Role in Supply Chain-Role in Competitive Strategy Role of Inventory Control-Functions of Inventory-Types of Inventory-Inventory Cost-Need to hold Inventory- Mechanics of Inventory Control-Selective Inventory Control-Economic Order Quantity-Just In Time System-Warehouse Management System				
Unit - V	Need of Warehouse Management System-Master Production Scheduling-Material Requirement Planning-Distribution Requirement Planning-Comparison between independent and Dependant Demand Systems-Inventory Records-ABC Inventory Control-Fundamentals of various types of material handling Equipment-Types of Conveyors-Bar Code-Benefits of Bar Coding-Tracking- Inventory Management-Validation-RFID-Principle of RFID-Benefits of RFID-Antenna-Potential Benefits of RFID.				

References:

1. Management Guide to Efficient Money Saving Warehousing, Stephen Frey, Gower, 1982.
2. Warehouse Management and Inventory Control, J P Saxena, Vikas Publication House Pvt Ltd, First Edition, 2003.
3. Warehouse Management: Automation and Organisation Of Warehouse and Order Picking Systems [With CDROM], Michael Ten Hompel, Thorsten Schmidt, Springerverlag, First Edition, 2006.

Related Online Content :

1. https://iimm.org/wp-content/uploads/2019/12/Logistics-and Warehousing-Management.pdf
2. https://vpmmpcoe.org/naac/ICT%20TOOLS/pdf-Mech/(Mr.P.V.Bapat)731%20scm%20warehouse%20management-converted-compressed.pdf

Course Outcomes		**Knowledge Level**
CO – 1	Gain a comprehensive understanding of warehouses	K2
CO – 2	Develop proficiency in explaining the core functions and operational processes that drive warehouse management	K2
CO – 3	Acquire knowledge about both centralized and decentralized storage systems	K3
CO – 4	Appreciate the integral role that supply chain management plays in warehouse operations	K4
CO – 5	Recognize the significance of implementing a Warehouse Management System (WMS) to enhance warehouse efficiency.	K5

V – Semester					
DSE	**Course Code: 80553**	**Transportation & Distribution Management**	**T**	**Credits: 3**	**Hours: 4**
Pre – requisite	To get knowledge in transportation and distribution management			**Syllabus revised**	**2023 - 24**
Course Objectives	1. Efficient Distribution Channel Design and Management 2. Effective Transportation Strategy Development: 3. Optimized Transportation Performance and Cost Management 4. Effective Transportation Routing and Technology Integration 5. Enhanced Transportation Security and Technology Utilization				
Unit – I	Role of Distribution in Supply Chain – Designing Distribution Channels				
Unit - II	Distribution Networks – Factors Influencing Distribution Network Decisions – Network Design &Optimization Approach and Techniques				
Unit – III	Role of Transportation in Supply Chain – Factors influencing Transportation Decisions – Modes of Transportation – Transportation mode Selection Process. Transportation Principles and Participants – Transportation Participants Transportation Modes, Performance Characteristics and Selection				
Unit – IV	Transportation Performance, Costs and Value Measures – Factors driving Transportation Costs – Categories of Transportation Costs – Transportation Routing Decisions				
Unit - V	Transit Operation Software – Benefits of Transportation Software – Advanced Fleet Management System – Inter modal Freight Technology – Transportation Security Initiatives and Role of Technology.				

References:

1. Management of Modern City Transportation System, M Mustafa K KDewan, Deep & Deep
2. Publications Pvt. Ltd., First Edition, 2004.
3. Transportation Management – Imperatives and Best Practices, S. Jaya Krishna, ICFAI University Press, 2007.
4. Marine Transportation Management, Henry S. Marcus, Auburn House Pub. Co.,1986.
5. Management of Transportation, Bardi Edward J., Cengage Learning (Thompson), 6th Edition 2006 [International Edition],

Related Online Content :

1. https://slideplayer.com/slide/4695957
2. https://www.coursehero.com/file/102591988/Transporation-and-Logistics-Management-Notesdocx

Course Outcomes		**Knowledge Level**
CO – 1	Enhanced visibility and coordination within distribution channels lead to reduced lead times, improved inventory management, and minimized supply chain disruptions.	K2
CO – 2	Well-defined transportation strategies are formulated that align with business goals and customer expectations, ensuring timely and reliable delivery of goods.	K2
CO – 3	Transportation performance metrics and value measures are employed to continuously monitor and improve transportation operations, ensuring on-time deliveries and efficient resource utilization.	K3
CO – 4	Integration of transportation software and advanced fleet	K4

CO – 5	The integration of advanced technologies enhances transportation security measures, reducing the risk of theft, damage, and unauthorized access to goods.	K5

V – Semester

DSE	Course Code: 80554	E – Logistics	T	Credits: 3	Hours: 4
Pre – requisite	To Understand E-Logistics Collaboration. To Analyze Future Trends		**Syllabus revised**		**2023 - 24**
Course Objectives	1. To Explore E-Logistics Concepts and digitalization in Shipping 2. To Study E-Logistics Infrastructure. To Examine E-Logistics Processes 3. To Assess Benefits and Challenges. To Learn about E-Logistics Security 4. To Explore E-Logistics Regulations. To Investigate Industry Innovations				
Unit – I	Drivers of Digital Business and Industry - Introduction to digital business and e-commerce, Market place analysis for e-commerce, Managing Digital Business Infrastructure, E-environment and Factors Driving E-Business. Different Models of E-Business. Industry 4.0 and Emerging Trends				
Unit - II	Managing Digital Business Infrastructure Technology and digital business infrastructure components, Focus on Web services, SaaS, cloud computing and service-oriented architecture(SOA), Benefits of web services or SaaS, Application programming interfaces (APIs), Challenges of deploying SaaS, Virtualisation, Service oriented architecture (SOA), Selecting hosting providers, managing service quality when selecting Internet service and cloud hosting providers, Introduction to EDI.				
Unit – III	E-Business Environment Social and legal factors for e-commerce service adoption, Understanding users' access requirements and consumers influence from online channels, Contemporary business demand for digital business services. B2B, B2C, C2C and B2G Models. Privacy and trust in e-commerce, National and International regulations on privacy and electronic communications, Marketing of e-commerce business, Forming an electronic contract (contract law and distance-selling law).Accepting payment. Protecting Intellectual Property (IP).				
Unit – IV	Digital Business Strategy The imperative for digital business strategy, Digital channel strategies, Strategy process models for digital business, Selection of digital business strategy, Competitive environment analysis, Assessing competitive threats, Sell-side and Buy-side threats, Coopetition, Competitor analysis, Resource-advantage mapping, Digital business channel priorities and its diversification, Business, service and revenue models, Marketplace restructuring, Supply chain management capabilities.				
Unit - V	E Procurement and E Logistics Understanding the Procurement process, Participants in different types of e-procurement, Drivers of e-procurement, Benefits of e-procurement, Estimating e-procurement costs, Barriers and risks of e-procurement adoption. Push and Pull Supply Chain, E- Logistics Technologies Advance Ship Notice (ASN), Tracking systems, Satellite global positioning systems (GPS) and geographic information systems (GIS), Bar-coding and scanning, Digital Signature Technology, Wireless Technology – Radio Frequency Identification and Detection (RFID).				

References:

1. Dave Chaffy, Digital Business and E commerce Management – Strategy, Implementation and Practices (Pearson)
2. Gerhard Oswald & Michael Kleinemeier, Shaping the Digital Enterprise: Trends and Use Cases in Digital Innovation and Transformation (Springer)
3. Elias. M. Awad, " Electronic Commerce", Prentice-Hall of India Pvt Ltd.

4. RaviKalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide",Addison-Wesley.
5. Efraim Turban, Jae Lee, David King, H.Michael Chung, “Electronic Commerce–AManagerial Perspective", Addison-Wesley

Related Online Content :
https://dailylogistic.com/e-logistics/

Course Outcomes		**Knowledge Level**
CO – 1	Gain a comprehensive understanding of e-maritime logistics in the shipping industry.	K2
CO – 2	Explore the technological infrastructure supporting e-maritime, including communication systems, data exchange platforms, and digital documentation.	K2
CO – 3	Evaluate the advantages of e-maritime, including enhanced efficiency, transparency, and reduced paperwork, while also understanding potential challenges and risks.	K3
CO – 4	Study international regulations and standards governing e-maritime practices, ensuring compliance and uniformity across the industry.	K4
CO – 5	Explore how different stakeholders, including shipping lines, ports, and customs, collaborate through electronic systems to optimize logistics operations.	K5

V – Semester					
DSE	**Course Code: 80555**	**DATABASE MANAGEMENT SYSTEM**	**T**	**Credits: 3**	**Hours: 4**
Pre – requisite	**This course introduces the concepts of database systems design**		**Syllabus revised**		**2023 - 24**
Course Objectives	1. This course provides hands on experience in database design and implementation 2. Describes about the fundamental data and database concepts 3. To compare and contrast the relational database model with other database models				
Unit – I	INTRODUCTION: Database concepts / basic concepts / E-R model/constraints / keys ER diagram / reduction or ER schema / UML/ design of an ER database schema / relational model / views / Tuple Relational Calculus/relational database.				
Unit - II	SQL STRUCTURE: SQL / Basic structure / set quotation / join relation / DDL / DML / DCL/ TCL commands/ Keys and constraints /embedded SQL/ Normal Forms 1NF,2NF,3NF,4NF & BCNF normal forms / decomposition. Integrity & security / triggers				
Unit – III	OBJECT RELATIONAL DATA MODEL: Object relational data model / nested relations / complex types / reference / types / querying with complex / types / functions & procedures / file Storage and file structure / file organization, data dictionary storage				
Unit – IV	INDEXING AND HASHING-BASIC: Indexing and Hashing-Basic concepts-static hashing-Dynamic/Multiple Key Access/query processing / selection operation / sorting / join operation transaction / concepts / state / atomicity and amiability / Serialisability / transaction definition in SQL / concurrency control / deadlock handling				
Unit - V	ARCHITECTURE: Database system architecture / centralized & client server architecture / server system architecture - Distributed Database-Homogeneous and Heterogeneous Database.				

References:

1. A. Silberschatz, H.F. Korth, "Database System Concepts", 5th Edition, Tata McGraw Hill, New Delhi, 2005.

Related Online Content :

1.https://beginnersbook.com/2015/04/dbms-tutorial

2.https://www.studocu.com/row/document/jomo-kenyatta-university-of-agriculture-and-technology/database-management-systems/database-systems-lecture-notes-1/22629913

Course Outcomes		**Knowledge Level**
CO – 1	Understand the various basic concepts of Data Base System. Difference between file system and DBMS and compare various data models.	K2
CO – 2	Define and understand the integrity constraints, Relational Data Model, Entity-Relationship Model.	K2
CO – 3	Design database schema using normalization and Structured Query Language.	K3
CO – 4	Classify the different functionsand join operations and handling multiple tables.	K4
CO – 5	Develop simple programs in PL/SQL using various constructs, Cursors and Exceptions.	K5

V – Semester					
Core	**Course Code: 80556**	**RDBMS LAB**	**P**	**Credits: 4**	**Hours: 8**
Pre – requisite	Oriented data-processing oriented framework				
Course Objectives	1. This course gives training in design and implementation of data bases for the selected problems. 2. To familiarize the participant with the nuances of database environments towards an information 3. To give a good formal foundation on the relational model of data				

1. Table creation using constraints and perform insert, update, delete, select commands.
2. Exercise using drop, truncate, commit, rollback
3. Exercise to implement sub queries.
4. Joins
5. Aggregate functions
6. String, math and date functions.
7. Examples for triggers.
8. Indexing.
9. Simple PL/SQL programs.
10. Cursor examples.

Related Online Content : 1. https://www.javatpoint.com/what-is-rdbms

SEMESTER –VI

80561A PROJECT VIVA VOCE
80561B INTERNSHIP
Credits:14 Hours: 30

Total Semester days: 90
Internship Training:60 days
Preparation of project:30 days
A requirement of this program is to complete a period of internship which requires two months (60 days) on the job training during which the students are expected to practice in the workplace those skills they acquired at class, thus gaining valuable 'hands on' experience and exposure to the real nature and environment of the 'world of work'.

The main objectives **of INTERNSHIP** are to:

1. Widen the student's attentiveness of workplace preparation.
2. Provide the student with relevant realistic experience.
3. Establish and maintain contacts between **INSTITUTE** and **EMPLOYERS.**
4. Monitor employers' requirements and adjust services and programs accordingly.
5. Promote final placement for students.

STUDENT ASSESSMENT

Duration: 60 days and should start from VI semester.
Practical viva: To be conducted during the period of VI semester and Internal and External marks should be submitted to University
Viva Date: Viva date will be during VI Semester exam.

UG Programme

Passing minimum

- A candidate shall be declared to have passed in each course if he/she secures not less than 40% marks in the End Semester Examinations and 40% marks in the Internal Assessment and not less than 40% in the aggregate, taking Continuous assessment and End Semester Examinations marks together.
- The passing minimum for CIA shall be 40% out of 25 marks (i.e.10 marks) in Theory/ Practical Examinations.
- The passing minimum for University Examinations shall be 40% out of 75 marks (i.e. 30 marks) for Theory /Practical papers.
- The candidates not obtain 40% in the Internal Assessment are permitted to improve their Internal Assessment marks in the subsequent semesters (2 chances will be given) by writing the CIA tests or by submitting assignments.
- Candidates, who have secured the pass marks in the End-Semester Examination and in the CIA but failed to secure the aggregate minimum pass mark (E.S.E + C I.A), are permitted to improve their Internal Assessment mark in the following semester and/or in University examinations.
- A candidate shall be declared to have passed in the Dissertation/Project report/Internship report if he/she gets not less than 40% marks in the Internal Assessment and End Semester Examinations and not less than 40% in the aggregate, taking Continuous assessment and End Semester Examinations marks together.
- A candidate who gets less than 40% in the Dissertation / Internship/ Project Report must resubmit the thesis. Such candidates need to take again the Viva-Voce on the resubmitted report/thesis.

18.2 Grading of the Courses

The following table gives the marks, Grade points, Letter Grades, and classifications meant to indicate the overall academic performance of the candidate.

Conversion of Marks to Grade Points and Letter Grade (Performance in Course / Paper)

RANGE OF MARKS	GRADE POINTS	LETTER GRADE	SCRIPTION
- 100	**9.0 – 10.0**	**O**	**tstanding**
- 89	**8.0 – 8.9**	**D+**	**:ellent**
- 79	**7.5 – 7.9**	**D**	**tinction**
- 74	**7.0 – 7.4**	**A+**	**:y Good**
- 69	**6.0 – 6.9**	**A**	**od**
- 59	**5.0 – 5.9**	**B**	**erage**
- 49	**4.0 – 4.9**	**C**	**isfactory**
- 39	**0.0**	**U**	**-appear**
SENT	**0.0**	**AAA**	**SENT**

a) Successful candidates passing the examinations and earning a GPA between 9.0 and 10.0 and marks from 90 – 100 shall be declared to have Outstanding (O).

b) Successful candidates passing the examinations and earning GPA between 8.0 and 8.9 and marks from 80 - 89 shall be declared to have Excellent (D+).

c) Successful candidates passing the examinations and earning GPA between 7.5 – 7.9 and marks from 75 - 79 shall be declared to have Distinction (D).

d) Successful candidates passing the examinations and earning GPA between 7.0 – 7.4 and marks from 70 - 74 shall be declared to have Very Good (A+).

e) Successful candidates passing the examinations and earning GPA between 6.0 – 6.9 and marks from 60 - 69 shall be declared to have Good (A).

f) Successful candidates passing the examinations and earning GPA between 5.0 – 5.9 and marks from 50 - 59 shall be declared to have Average (B).

g) Successful candidates passing the examinations and earning GPA between 4.0 – 4.9 and marks from 40 - 49 shall be declared to have Satisfactory (C).

h) Candidates earning GPA between 0.0 and marks from 00 - 39 shall be declared to have Re-appear (U).

i) Absence from an examination shall not be taken as an attempt.

From the second semester onwards the total performance within a semester and

continuous performance starting from the first semester are indicated respectively **by** Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA).

These two are calculated by the following formulate

GRADE POINT AVERAGE (GPA) = $\Sigma_i C_i \; G_i / \Sigma_i C_i$

GPA = Sum of the multiplication of grade points by the credits of the courses

Sum of the credits of the courses in a Semester

18.3 Classification of the final result

The final result of the candidate shall be based only on the CGPA earned by the candidate.

a) Successful candidates passing the examinations and earning CGPA between 9.5 and 10.0 shall be given Letter Grade (O+) and those who earned CGPA between 9.0 and 9.4 shall be given Letter Grade (O) and declared to have First Class –Exemplary*.

b) Successful candidates passing the examinations and earning CGPA between 7.5 and 7.9 shall be given Letter Grade (D), those who earned CGPA between 8.0 and 8.4 shall be given Letter Grade (D+) and those who earned CGPA between 8.5 and 8.9 shall be given Letter Grade (D++) and declared to have First Class with Distinction*.

c) Successful candidates passing the examinations and earning CGPA between 6.0 and 6.4 shall be given Letter Grade (A), those who earned CGPA between 6.5 and 6.9 shall be given Letter Grade (A+), and those who earned CGPA between 7.0 and 7.4 shall be given Letter Grade (A++) and declared to have First Class.

d) Successful candidates passing the examinations and earning CGPA between 5.0 and 5.4 shall be given Letter Grade (B) and those who earned CGPA between 5.5 and 5.9 shall be given Letter Grade (B+) and declared to have passed in the Second Class.

e) Successful candidates passing the examinations and earning CGPA between 4.0 and 4.4 shall be given Letter Grade (C) and those who earned CGPA between 4.5 and 4.9 shall be given Letter Grade (C+) and declared to have passed in the Third Class.

f) Absence from an examination shall not be taken as an attempt.

Final Result

CGPA	Grade	Classification of Final Result
9.5 – 10.0 9.0 and above but below 9.5	**O+** **O**	First Class – Exemplary*
8.5 and above but below 9.0 8.0 and above but below 8.5 7.5 and above but below 8.0	**D++** **D+** **D**	First Class with Distinction*
7.0 and above but below 7.5 6.5 and above but below 7.0 6.0 and above but below 6.5	**A++** **A+** **A**	First Class
5.5 and above but below 6.0 5.0 and above but below 5.5	**B+** **B**	Second Class
4.5 and above but below 5.0 4.0 and above but below 4.5	**C+** **C**	Third Class
0.0 and above but below 4.0	**U**	Re-appear

CUMULATIVE GRADE POINT AVERAGE (CGPA) = $\Sigma_n \Sigma_i C_{ni} G_{ni} / \Sigma_n \Sigma_i C_{ni}$

CGPA = Sum of the multiplication of grade points by the credits of the entire programme

Sum of the credits of the course for the entire Programme

Where '**Ci**' is the Credit earned for Course i in any semester; '**Gi**' is the Grade Point obtained by the student for Course i and 'n' refers to the semester in which such courses were credited.

CGPA (Cumulative Grade Point Average) = Average Grade Point of all the Courses passed starting from the first semester to the current semester.

Note: * The candidates who have passed in the first appearance and within the prescribed Semesters of the UG Programme (Major, Allied, and Elective courses alone) are eligible for this classification.