

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Communication Skills

Semester 1

CODE: 13030105

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
2	-	-	2		30	-	70	-	100

Objectives: -

- To enhance students' communicative and linguistic approach in English
- To provide icebreaking approach through LSRW skills and soft skills
- To learn ways to enhance overall communication skills

Prerequisites:-

- Being able to communicate effectively is the most important of all life skills; hence, students are expected to have good spirit for learning English as second language.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction to Communication Skills : LSRW 1. Need for Effective communication 2. Importance of English as second language 3. Importance of Communication 4. Know What You Want To Say	6
2	Grammar Subject Verb agreement, Auxiliary and Modal auxiliary verb,	4



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	parts and types of sentences, active and passive voice, Tenses.	
3	Basics of Communication <ol style="list-style-type: none"> 1. Definition & types of Communication, 2. Cycle of communication 3. Forms of communication 4. Components of Verbal & Non-verbal communication 5. Kinesics 6. Paralinguistic/ paralanguage 7. Chronemics 8. Proxemics 	8
4	Listening Skill <ol style="list-style-type: none"> 1. Definition & Types of Listening 2. Barriers to effective listening 3. Techniques to be good listener 4. Listening audio clips (practical exercise) 	4
5	Reading Skill <ol style="list-style-type: none"> 1. Reading techniques 2. Reading Strategies 3. Comprehensive reading 4. Book review 	6
6	Speaking Skill & Phonetics transcription	6
7	Writing Skill <ol style="list-style-type: none"> 1. Answering comprehension practical 2. Business Letters 3. Email writing 	5
8	Short Stories <ul style="list-style-type: none"> • The Selfish Giant by Oscar Wilde • How Much Land Does a Man Need? By Leo Tolstoy 	3
	Total hours:	4

Learning Outcomes: -

- * Students will be able to communicate effectively.
- * They feel confident in speaking and writing English language.
- * Students will be able to improve the language skills i.e. Listening Skill, Speaking Skill, Reading Skill, and Writing Skill (LSRW).
- * To make them learn about life skills and soft skills.

Teaching & Learning Methodology:-

- Power point presentation
- Provide learning materials in different formats (written, online, audio, video podcast etc) to support key concepts/knowledge. Particularly at the start of a



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program/module or for key areas, providing online or hard copy notes before classes can aid comprehension and accessibility.

- It includes audio video clips that can provide ample number of exercise to the students
- Face- to face oral communication to provide a platform where they can perform and practice well.

Books Recommended:

1. Lesikar R V, Flatley M E ,Rentz K and Pandey Business Communication: Making Connections in a Digital World 2009: New Delhi, Tata Mcgrow Hill
2. Raman Minakshi, Communication Skills, 2011: New Delhi, Oxford University Press.
3. Leech, Geoffrey and Jan Svartvik. A Communicative Grammar of English. New Delhi: Pearson, 2009.
4. Wren & Martin, High school English Grammar, S. Chand and Co. Ltd

E-Resources:

1. <http://www.free-english-study.com/>
2. <http://www.english-online.org.uk/course.htm>
3. <http://www.english-online.org.uk/>



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Discrete Mathematics

Semester 1

Code: 13030104

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	P	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	2	0	5	4	30	50	70	0	150

Objectives:-The Maths-1 program at SSIU provides Mathematics majors with a quality undergraduate education in liberal studies, mathematics, science, to prepare them

- To, within a few years of graduation, have attained positions as professionals in industry, government, or academia;
- To have become responsible, accountable, current professionals who work effectively in multidisciplinary teams, readily adapt to broad technical challenges, and demonstrate leadership.

Prerequisites:-Maths-1 majors are expected to have cleared 12th Science stream and must have a basic understanding of calculus, physics and chemistry or computer science

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Set Theory <ul style="list-style-type: none">➤ Basic Definitions of Set theory➤ Set Operations (Union, Intersection, Complement of a set, Cartesian product of a set)➤ Properties of set operations➤ De-Morgan's Law	



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2	Limit And Differentiation <ul style="list-style-type: none"> ➤ Concept of Limit ➤ Some Standard Limits ➤ Continuity of a function ➤ Discontinuity of a Function and examples ➤ Definition of Derivative ➤ Rules for differentiation(without proof) ➤ Differentiation of function of a function ➤ Chain Rule ➤ 2nd Order Derivatives 	12
3	Indeterminate Forms <ul style="list-style-type: none"> ➤ Indeterminate Forms ➤ Improper Integrals of Type-1 and Type-2 	5
4	Sequences and Series <ul style="list-style-type: none"> ➤ Introduction of Convergence, Divergence of Sequences and infinite series ➤ Comparison Test ➤ Ratio Test ➤ Root Test ➤ Integral Test 	8
5	MATRIX <ul style="list-style-type: none"> ➤ Definition of Matrix ➤ Types of Matrix (Square, Row, Column, Zero, Diagonal, Scalar, Identity, Transpose, Symmetric, Skew-Symmetric) ➤ Arithmetic Operations of Matrices(Addition, Scalar Multiplication, Matrix Multiplication) ➤ Introduction to Determinants ➤ Invertible Matrix ➤ Rank of a Matrix ➤ Matrix Inversion Method ➤ Simultaneous Solution of a set of Linear equations using Cramer's rule 	12

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Internet Web Designing I

Semester 1

CODE: 13030103

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Theory	Tutorial	Pr	Total		Internal		External		Total
					Theory	Practical	Theory	Practical	
3	0	4	7		30	50	70		150

Objectives: -To develop the skill about the basic and important terminology of Internet.To make the students able for web site design fundamentals using HTML scripting.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction to Internet: Introduction to Internet <ul style="list-style-type: none">• How does Internet works?• Internet addressing & DNS• Internet Vs Intranet• Switching:	



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	<ul style="list-style-type: none"> o Criteria o Search Agent o About Popular search engines 	
2	Getting Started With HTML 5: <ul style="list-style-type: none"> o New Structure o New Form Elements and Attributes o Browser support • Defining HTML Markup • <u>Basic structure of HTML Document</u> o The <!DOCTYPE html> Element o The <HTML> Element o The <head> Element o The <title> Element o The <Body> Element • Modifying the background of an HTML webpage o Adding Background color o Adding Background Image • Specifying Metadata about an HTML webpage • Introduction to new elements in HTML 5 o The Markup Elements o The Media Elements o The Canvas Elements o The form elements o The Input type attribute values 	
3	Working with Text,List,Tables and Frames: <ul style="list-style-type: none"> • Adding a plain text to an HTML webpage • Adding text in new line 	

	<ul style="list-style-type: none"> o Specifying width and height of the Frame o Applying Hyperlink Target to a frame 	
4	Working with Hyperlinks, Images, Multimedia, Forms and Controls: <ul style="list-style-type: none"> • Working with Hyperlinks <ul style="list-style-type: none"> o Creating Hyperlinks o Setting hyperlink color o Linking Different sections of page • Working with Images <ul style="list-style-type: none"> o Inserting an Image on webpage o Display alternate text for an Image o Adding Border to an Image o Align an Image o Using Image as a Links • Creating Image Maps • Working with Multimedia <ul style="list-style-type: none"> o Embedding multimedia on web page o Handling Browser that do not support embedding o Creating a link to a multimedia file o Using <object> tag insert objects • Creating an HTML Form <ul style="list-style-type: none"> o Specifying the Action URL and The method to send form • Adding Controls to an HTML Form 	

	<ul style="list-style-type: none"> o Using the<input> tag o Adding Text Area<textarea> o Adding Selection Control • Understanding new form elements o The <datalist> element o The <keygen>Element • Grouping the controls of HTML Form • Specifying Label for a control 	
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Learning Outcomes: -

On the completion of the course students will:

- 1.Understand the meaning and syntax of different tags of HTML5
- 2.Learn the basic differences between HTML and HTML5
- 3.Understand the basic internet terminology and technology
- 4.To design web pages using simple and advanced tags of HTML5.
- 5.To understand the fundamental concept of Google AdSense and Analytics.

Books Recommended:

1. World wide web Design with HTML(First Edition-2010)
Tata McGraw Hill
By C Xavier
2. Web Enabled commercial application development using HTML, Javascript, DHTML and php
BPB Publication.By Ivan Bayross
3. The Complete Reference HTML and CSS (Fifth Edition)
McGraw Hill Education
Thomas A Powell



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E-Resources:

1. HTML5 Introduction(https://www.w3schools.com/html/html5_intro.asp)
2. <http://www.tutorialspoint.com/ht...>
3. <https://www.udemy.com/learn-html...>
4. HTML 5 Cheat Sheet (PDF) - Smashing Magazine
5. <http://html5please.com/>
6. <http://diveintohtml5.info/>



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Introduction to Computer & Emerging Technologies

Semester 1

CODE: 13030101

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
2	-	2	4	3	30	50	70	-	150

Objectives:-The objective of this course is introducing the fundamental in information technology. The course covers different aspects in information technology such as

- Basics of Data and Information.
- Acquisition of different types of information like numbers, text, multimedia etc.
- Issues of Data Storage and organization.
- Processing of different types of information.
- Emerging trend, societal impacts and applications of Information technology.

Prerequisites:-To familiarize the trainee with basic concepts of computer programming and developer tools. To present the syntax and semantics of the “C” language as well as data types offered by the language. To allow the trainee to write their own programs using standard language infrastructure regardless of the hardware or software platform



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Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introducing Today's Technologies: Computers, Devices, and the Web Today's Technology <ul style="list-style-type: none"> ○ Computers ○ Mobile and Game Devices ○ Data and Information ○ The Web ○ Digital Security and Privacy ○ Programs and Apps ○ Operating Systems ○ Applications ○ Communications and Networks ○ Wired and Wireless Communications ○ Networks ○ Computers and Mobile Devices ○ Mobile Computers and Desktops ○ Servers ○ Supercomputers ○ Cloud Computing ○ Ports and Connections 	8
2	Processors, Memory, Adapters and Buses Inside the case : <ul style="list-style-type: none"> ○ Motherboard ○ Processors ○ Memory ○ Adapters ○ Buses Digital Storage <ul style="list-style-type: none"> ○ Storage ○ Hard Drives ○ Portable Flash Memory Storage 	6
3	Input and Output Devices <ul style="list-style-type: none"> ○ Input Devices ○ Keyboards ○ Pointing Device ○ Touch Screens ○ Scanners and Reading Devices ○ Output Devices ○ Displays ○ Printers 	6

	<ul style="list-style-type: none"> ○ Other Output Devices 	
4	Computer Codes <ul style="list-style-type: none"> ○ Introduction to Computer Codes ○ Decimal System ○ Binary System ○ Hexadecimal System ○ Octal System ○ 4-bit BCD System ○ 8-bit BCD System ○ ASCII code ○ 16-bit Unicode 	7
5	Conversion of Numbers (includes fixed and fractional numbers) <ul style="list-style-type: none"> ○ Non-Decimal to Decimal ○ Binary to Decimal ○ Decimal to Binary ○ Binary to Octal ○ Octal to Binary ○ Octal to Decimal ○ Decimal to Octal ○ Binary to Hexadecimal ○ Hexadecimal to Binary ○ Hexadecimal to Decimal ○ Decimal to Hexadecimal 	7

Learning Outcomes:-

On the completion of the course students will be able to:

- 1) Know the fundamental terms associated with computers, mobile devices and new technologies.
- 2) Know different types of computers, mobile devices, memory and various input and output devices.
- 3) Understand the basic uses and applications of computer in business and society.
- 4) Get familiar with various computer codes

Teaching & Learning Methodology:-

During theory lectures foundations of information technology related concepts will be introduced to students. Emphasis will be given on acquisition, storage and processing of data to generate meaningful information. Students will be made familiar with applications related to information technology. Emerging trends and societal impacts of information technology will be discussed to students. Students will give practical exposure by demonstrating real information technology system.



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Books Recommended:-

1. Discovering Computers 2016 (First Edition) Cengage Learning By Misty E. Vermaat; Susan L. Sebok; Steven M. Freund; Jennifer T. Campbell; Mark Frydenberg (Shelly Cashman Series)
2. Pearson India By M. Morris R. Mano
3. Fundamentals of Computer (First Edition- 2009) Publisher: McGraw-Hill by Balaguruswamy
4. Computer Fundamentals (First Edition-2010) Publisher: Pearson by Anita Goel

E-Resources:-

1. http://sct.emu.edu.tr/courses/it/index.php?id=itec103&page_type=file_directory&lemen t_id=2 [Information Technology fundamentals]
2. <http://technology.ku.edu/software> [Information Technology related applications]
3. <http://www.managementstudyguide.com/emerging-trends-in-informationtechnology.htm> [Emerging trends in Information Technology]

Practical List:-

Sr. No.	Practical
1	Run different commands of MS DOS – CD, DIR, COPY, REN, CLS, MD, CD, RD etc.
2	Study information of Internet connectivity components line, VSAT, Broadband
3	Study information of Internet connectivity components Modem, IP Sharer, Hub, and Switch.
4	Study different web Browsers- Internet Explorer, Fire fox, downloading of files
5	Connect the Internet; open any website of your choice and save the Webpages. Search any topic related to your syllabus using any search engine and download the relevant material.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Programming in C

Semester 1

CODE: 13030102

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	0	4	7	7	30	50	70	-	150

Objectives:- The course fully covers the basics of programming in the “C” programming language and demonstrates fundamental programming techniques, customs.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction to Programming Languages: <ul style="list-style-type: none">Introduction to Machine level languageIntroduction to Assembly languageIntroduction to Higher level languageLimitations and Features.Classification of Computer Language- Procedural Language and Non Procedural Language	5
2	Tools and Techniques of Problem Analysis <ul style="list-style-type: none">Algorithm Development and Flow ChartNumerous Examples in Algorithm Development and Flow Chart	4
3	Getting Started With ‘C’ Language:	9



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	<ul style="list-style-type: none"> • Basic Structure of C • Executing C program • Character set & C Tokens • Identifiers & Keywords • DataTypes • Constants and Variables • Type Casting • o Comments 	
4	C Language Operators and Decision Making: Operators& Expression <ul style="list-style-type: none"> • TypesofOperatorsandExpression • Precedence&Associativity Console based I/O andrelated built-in/Ofunction <ul style="list-style-type: none"> • printf(),scanf(),getch(),getchar(),putchar() • Concept of HeaderFile and #include,#define Decision Making Structure <ul style="list-style-type: none"> • If • If-else • NestedIf-else • Switch 	10
5	Control Structure & Array: Loop ControlStructure <ul style="list-style-type: none"> • While • Do-While • For • Nested loop Other Statements <ul style="list-style-type: none"> • break,continue,goto,exit Array <ul style="list-style-type: none"> • One,Two – Dimensional Arrays • Initializationand workingwith Array. • Introduction to MultidimensionalArrays. 	10

Learning Outcomes:-

On the completion of the course students will be able to:

1. To create their own logic and implement using C Programming.
2. To understand how to use programming in day to day application



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TEXT BOOK/S:

1. Introduction to C Programming

Publication : Oxford

By Reema Thareja

REFERENCE BOOKS:

1. Computer Fundamentals & Programming in C

Publication :Oxford

By Pradip Dey, Manas Ghosh

2. Programming in ANSIC (Fifth Edition 2011)

Publication :McGraw Hill

By Balagurusamy

WEB RESOURCES:

1. <https://www.tutorialspoint.com/cprogramming/>

2. <http://www.javatpoint.com/c-programming-language-tutorial>

3. <https://www.programiz.com/c-programming>

4. <http://www.cprogramming.com/tutorial/c-tutorial.html>

5. <http://www.programmingsim>

Practical List:-

Sr. No.	Practical's		
1	Write a program to print "HELLO".		
2	Write a program to display multiplication table.		
3	Write a program to print $+1/2+1/3+1/4+\dots\dots\dots+1/N$ series.		
4	Write a program to find sum of all integers greater than 100 & less than 200 and are divisible by 5.		
5	Write a program to convert days into months and days		
6	Write a program to print following patterns. <div><table><tr><td>* * * * * * * * * *</td><td>1 2 3 4 5 2 3 4 5 3 4 5 4 5</td></tr></table></div>	* * * * * * * * * *	1 2 3 4 5 2 3 4 5 3 4 5 4 5
* * * * * * * * * *	1 2 3 4 5 2 3 4 5 3 4 5 4 5		



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		5	
	AAAAA BBBBB CCCCC DDDD EEEE	1 0 1 1 0 1 0 1 0 1	
7	Write a program for factorial number.		
8	Write a program to find sum of all integers greater than 100 & less than 200 and are divisible by 5.		
9	Make a programs using If, If-else, If-else-if and Nested If statements.		
10	Make a program using goto and break statement.		
11	Write a programs using while loop and do-while loop.		
12	Write a program to read array of integers and print it in reverse order		

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Database Management System

Semester 2

CODE:13030203

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	4	7	5	30	50	70	-	150

Objectives: -This course introduces students to information of data, working of related data to gain knowledge. Students also will design the real life application

Prerequisites:-(1) Elementary knowledge about computers including some experience

Using UNIX or Windows.

(2) Computer Programming & Utilization

(3) Knowledge about data structures and algorithms, corresponding to the basic course on Data Structures and Algorithms.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction: <ul style="list-style-type: none">Data Vs. InformationIntroduction of the Database and the DBMSRole, Advantage and Disadvantages of DBMSTypes of Database	4
2	Distributed Database Management Systems: <ul style="list-style-type: none">Evolution of DDBMS	2



Diksha

	<ul style="list-style-type: none"> • Distributed Processing and Distributed Database • DDBMS Advantages and Disadvantages • Characteristics of DDBMS • Components of DDBMS 	
3	Database Systems: <ul style="list-style-type: none"> • The Database System Environment • DBMS Functions • The Relational Model • The E-R Model 	4
4	The Relational Database Model: <ul style="list-style-type: none"> • A logical view of Data • Keys • Integrity Rules • Concept of Functional Dependency • Relational Set Operators • The Data Dictionary and The System Catalog • Relationship within the Relational Database 	10
5	The Entity Relationship Model: <ul style="list-style-type: none"> • Entities • Attributes • Relationships • Connectivity and Cardinality • Existence Dependence • Relationship Strength • Weak Entities • Relationship Participation • Relationship Degree • Recursive Relationship • Composite Entities • Developing an ER diagram (Using Crow's-foot Model) 	10
6	Normalization of Database Tables: <ul style="list-style-type: none"> • The need of Normalization • The Normalization process 	10

Learning Outcomes:-

Install, configure, and interact with a relational database management system; Describe, define and apply the major components of the relational database model to database design; Learn and apply the Structured Query Language (SQL) for database definition and manipulation; Utilize a database modeling technique for a single entity class, a one-to-one (1:1) relationship between entity classes, a one-to-many (1:M) relationship between entity classes, a many-to-many (M:M) relationship between entity classes, and recursive relationships; Define, develop and process single entity, 1:1, 1:M, and M:M database tables; Learn and implement the principles and concepts of information integrity, security and confidentiality; Apply ethical computing concepts and practices to database design and implementation

Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.

Books Recommended:-

1. An introduction to Database Systems, C J Date, Addison-Wesley.
- 2, C Programming: Test Your Skills, 1/e by Ashok Kamthane
- 3, Database System Concepts, Abraham Silberschatz, Henry F. Korth & S. Sudarshan, McGraw-Hill.
- 4, Understanding SQL by Martin Gruber, BPB
- 5, SQL-PL/SQL by Ivan Bayross

E-Resources:-

- 1, https://en.wikipedia.org/wiki/Database_management_system
- 2, <https://searchdatamanagement.techtarget.com/resources/Database>
- 3, <https://searchsqlserver.techtarget.com/.../database-management-system>

Practical List:-

Sr. No.	Practical
1	<p>To study DDL-create and DML-insert commands.</p> <p>(i) Create tables according to the following definition.</p> <pre>CREATE TABLE DEPOSIT (ACTNO VARCHAR2(5) ,CNAME VARCHAR2(18) , BNAME VARCHAR2(18) , AMOUNT NUMBER(8,2) ,ADATE DATE);</pre> <pre>CREATE TABLE BRANCH(BNAME VARCHAR2(18),CITY VARCHAR2(18));</pre> <pre>CREATE TABLE CUSTOMERS(CNAME VARCHAR2(19) ,CITY VARCHAR2(18));</pre> <pre>CREATE TABLE BORROW(LOANNO VARCHAR2(5), CNAME VARCHAR2(18), BNAME VARCHAR2(18), AMOUNT NUMBER (8,2));</pre> <p>(ii) Insert the data in above tables</p> <p>(iii) From the above given tables perform the following queries:</p> <ol style="list-style-type: none">(1) Describe deposit, branch.(2) Describe borrow, customers.(3) List all data from table DEPOSIT.(4) List all data from table BORROW.(5) List all data from table CUSTOMERS.(6) List all data from table BRANCH.(7) Give account no and amount of depositors.

	<p>(8) Give name of depositors having amount greater than 4000.</p> <p>(9) Give name of customers who opened account after date '1-12-96'.</p>
2	<p>Create the below given table and insert the data accordingly</p> <ol style="list-style-type: none"> 1. Create Table Job (job_id, job_title, min_sal, max_sal) 2. Create table Employee (emp_no, emp_name, emp_sal, emp_comm, dept_no) 3. Create table deposit(a_no, cname, bname, amount, a_date). 4. Create table borrow(loanno, cname, bname, amount). <p>Perform following queries</p> <ol style="list-style-type: none"> (1) Retrieve all data from employee, jobs and deposit. (2) Give details of account no. and deposited rupees of customers having account opened between dates 01-01-06 and 25-07-06. (3) Display all jobs with minimum salary is greater than 4000. (4) Display name and salary of employee whose department no is 20. Give alias name to name of employee. (5) Display employee no, name and department details of those employee whose department lies in (10, 20).
3	<p>To Perform various data manipulation commands, aggregate functions and sorting concept on all created tables.</p> <ol style="list-style-type: none"> (1) List total deposit from deposit. (2) List total loan from karolbagh branch (3) Give maximum loan from branch vrce. (4) Count total number of customers (5) Count total number of customer's cities. (6) Create table supplier from employee with all the columns. (7) Create table sup1 from employee with first two columns. (8) Create table sup2 from employee with no data (9) Insert the data into sup2 from employee whose second character should be 'n' and string should be 5 characters long in employee name field. (10) Delete all the rows from sup1. (11) Delete the detail of supplier whose sup_no is 103. (12) Rename the table sup2. (13) Destroy table sup1 with all the data. (14) Update the value dept_no to 10 where second character of emp. name is 'm'. (15) update the value of employee name whose employee number is 103.
4	<p>To study Single-row functions.</p> <ol style="list-style-type: none"> (1) Write a query to display the current date. Label the column Date (2) For each employee, display the employee number, job, salary, and salary increased by 15% and expressed as a whole number. Label the column NewSalary (3) Modify your query no 4.(2) to add a column that subtracts the old salary from the new salary. Label the column Increase (4) Write a query that displays the employee's names with the first letter capitalized and all other letters lowercase, and the length of the names, for all employees whose name starts with J, A, or M. Give each column an appropriate label. Sort the results by the employees' last names.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Digital Electronics

Semester 2

CODE: 13030205

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Learning Outcomes:

- Learn various number systems and their conversion used in digital components
- Introduce significant evolution in digital electronics
- Understand basic digital components for circuit design.
- Design basic electronics circuit for various applications and their analysis

Course outline:-

Sr.No.	Course Contents	Lectures (Hours)
1	Introduction to Computer Organization Digital computers, Basic components of digital computer, instructions, programming systems, assembly languages, high-level languages summary	3
2	Number systems Binary, Octal, Decimal, Hexadecimal numbers, addition, subtraction, multiplication, division, negative numbers, use of complements to represent negative numbers, complements in other numbering system, BCD numbers	7
3	Boolean algebra and Mapping Methods	8



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	Fundamental concepts of Boolean algebra, AND, OR, NOT, NAND, NOR gates, logical expressions, basic laws of Boolean algebra, simplification of expression, De Morgan's Theorem, sum of product, product of sum, K-maps to simplify expression (two-variable, three-variable, fourvariable), logical circuits using logical gates.	
4	Digital integrated circuits Introduction, Latch, Flip-Flop, register, multiplexer, De-multiplexer, Decoder, Encoder.	6
5	Modern Computer Organization Introduction, user and computer, computer organization, main memory, CPU operation, Interrupt concept, bus concept, booting sequence.	5
6	CPU Architecture and instruction set Introduction, CISC and RISC, Instruction set design, addressing modes, data representation, and binary data.	6

Reference Books:

1. Digital Computer Fundamentals (Sixth Edition) Thomas Bartee, McGraw-Hill
2. Computer Architecture and organization by B Govindrajalu (TMH)
3. Advanced microprocessor and interfacing by Badri Ram
4. Digital logic and computer design by M Moris Mano



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Internet Web Designing – II

Semester 2

CODE: 13030204

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Theory	Tutorial	Pr	Total		Internal		External		Total
					Theory	Practical	Theory	Practical	
3	-	2	5	4	30	50	70	-	150

Objectives: -To develop the skill about the basic and important terminology of Internet.To make the students able for web site design fundamentals using HTML scripting,CSS & XML, javascript.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction to HTML 5 Introduction <ul style="list-style-type: none">• Basic Elements of HTML 5• Markup Element <ul style="list-style-type: none">o <article>o <aside>o <command>	



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<ul style="list-style-type: none"> o <detail> o <summery> o <figure> o <footer> o <header> o <hgroup> o <mark> o <meter> o <nav> o <progress> o <ruby> o <rt> o <rp> o <section> o <time> • Media Element o <audio> o <video> o <source> o <embed> • Canvas Element • Form Elements o <detailist> o <keygen> o <output> o The Input type attribute values o tel, search, url, email, datetime, date, month, week, time, datetime-local, number, range, colo 	
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2	<p>Style sheets :</p> <ul style="list-style-type: none"> o Need for CSS o introduction to CSS o basic syntax and structure using CSS o background images o colors and properties o manipulating texts using fonts, borders and boxes o margins o padding lists o positioning using CSS, 	
3	<p>Introduction to JavaScript</p> <ul style="list-style-type: none"> • JavaScript Introduction <ul style="list-style-type: none"> o Understanding JavaScript o About Dynamic HTML o Selecting an development environment forJavaScript o HTML and JavaScript • Advanced JavaScript <ul style="list-style-type: none"> o Element of JavaScript o Variables o Operators o Flow control statement o Arrays o Functions o Event handling o Browser and JavaScript o Web page and JavaScript o Frames and JavaScript 	

	<ul style="list-style-type: none"> • Frames and Validation in JavaScript <ul style="list-style-type: none"> o Frames and JavaScript o Validating User forms 	
4	Introduction to XML and XML Document Type Definition <ul style="list-style-type: none"> • XML <ul style="list-style-type: none"> o Introduction o XML versus HTML o XML terminologies o XML standards(XML,XML namespace, DTD,CSS,XSL,XML schema, Xquery, Xlink,Xpointer,Xpath) o XHTML • XML Documentation <ul style="list-style-type: none"> o Introduction to DTD o Document type declaration o Element type declaration o Attribute declaration o Conditional sections, limitations of DTD 	

Learning Outcomes: -

On the completion of the course students will:

- 1.Understand the meaning and syntax of different tags of HTML
- 2.Learn the basic differences between HTML and HTML5
- 3.Understand the basic internet terminology and technology
- 4.To design web pages using simple and advanced tags of HTML.

Books Recommended:

1. HTML 5 in Simple Steps
Publisher: DreamTech PressByKongent solution
(Chapter-2 for unit 1)
2. Javascript 2nd Edition Step by step
Author: Steve suehring
(Chapter-22 for unit 3)



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3. XML and Related Technologies (First Edition 2009)-Pearson Education

E-Resources:

1. HTML5 Introduction(https://www.w3schools.com/html/html5_intro.asp)
2. <http://www.tutorialspoint.com/ht...>
3. <https://www.udemy.com/learn-html...>
4. HTML 5 Cheat Sheet (PDF) - Smashing Magazine
5. <http://html5please.com/>
6. <http://diveintohtml5.info/>



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Logic Development and Programming II

Semester 2

CODE: 13030202

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	0	2	5	4	30	50	70	-	150

Objectives:-The course fully covers the basics of programming in the “C” programming language and demonstrates fundamental programming techniques, customs.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Structures & Unions: Structures <ul style="list-style-type: none">Defining a structureAccessing a structure variableOperations on structure membersCopying and comparing variablesArrays of structureArrays within Structures Unions <ul style="list-style-type: none">Defining Unions	11
2	Pointer: <ul style="list-style-type: none">Definition and ConceptAdvantage of using pointer	11



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	<ul style="list-style-type: none"> • Pointer Arithmetic • Array of Pointers • Pointers and Functions • Pointers with UDFs 	
3	Dynamic Memory Allocation & Link List: <ul style="list-style-type: none"> • Dynamic Memory Allocation • Memory Allocation Function • malloc() • calloc() • realloc() • free() Linked List <ul style="list-style-type: none"> • Concepts • Advantages • Overview of types of Linked list • Operations on Singly Linked List(create, display, insert at • first, insert at last, delete at first, delete at last) • Application of Link list 	8
4	C Language Operators and Decision Making: <ul style="list-style-type: none"> • Files <ul style="list-style-type: none"> • Concepts of File Management • Files functions – fopen(), fclose(), fprintf(), fscanf(), • fseek(), ftell(), rewind(), putc(), getc(), putw(), getw() • Error handling functions • Preprocessors <ul style="list-style-type: none"> • Types of Preprocessors • Macro substitution directives • File inclusion directives • Compiler control directives 	8

Learning Outcomes:-

On the completion of the course students will:

1. To obtain in depth knowledge of C language.
2. To understand advanced features of C Programming Language.



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TEXT BOOK/S:

1. Introduction to C Programming

Publication : Oxford

By Reema Thareja

REFERENCE BOOKS:

1. Computer Fundamentals & Programming in C

Publication :Oxford

By Pradip Dey, Manas Ghosh

2. Programming in ANSIC (Fifth Edition 2011)

Publication :McGraw Hill

By Balagurusamy

WEB RESOURCES:

1. <https://www.tutorialspoint.com/cprogramming/>
2. <http://www.javatpoint.com/c-programming-language-tutorial>
3. <https://www.programiz.com/c-programming>
4. <http://www.cprogramming.com/tutorial/c-tutorial.html>
5. <http://www.programmingsim>



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Statistical Method and Operation Research Semester 2

CODE: 13030201

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	P	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	2	-	5	4	30	50	70	-	150

Objectives: -The Engineering Maths program at SSIU provides Engineering Maths majors

with a quality undergraduate education in liberal studies, mathematics, science, and engineering to prepare them

- To, within a few years of graduation, have attained positions as professionals in industry, government, or academia;
- To have become responsible, accountable, current professionals who work effectively in multidisciplinary teams, readily adapt to broad technical challenges, and demonstrate leadership.

Prerequisites:-Vector Algebra, Types of Vectors, Addition of Vectors, Multiplication of a Vector by a Scalar, Scalar and Vector Products of Vectors, Three Dimensional Geometry, Equation of a Line in Space, Angle between Two Lines, Shortest Distance between Two Lines, Plane, Co planarity of Two Lines, Angle between Two Planes, Distance of a Point from a Plane, Angle between a Line and a Plane. Integrals, Integration as an Inverse Process of Differentiation, Integrals of some Particular Functions, Integration by Partial Fractions, Integration by Parts, Definite Integral, Fundamental Theorem of Calculus, Evaluation of Definite Integrals by Substitution, Properties of Definite Integrals, Area under Simple Curves and Area between Two Curves by integration.

Course outline:-



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Sr. No.	Course Contents	Number of Hours
1	Graph Theory <ul style="list-style-type: none"> ➤ Introduction ➤ Definition of graphs and its terminology ➤ Simple graph, Multi graph ➤ Degree of a vertex ➤ Types of a graphs ➤ Sub graph and Isomorphic Graphs ➤ Path ➤ Matrix representation of graphs ➤ Tree and basic terminology ➤ Binary and complete binary tree 	12
2	Partial Derivatives <ul style="list-style-type: none"> ➤ Partial Derivatives ➤ Chain rule ➤ Implicit Function ➤ Tangent plane, Normal line ➤ Linear approximation ➤ Total differential ➤ Lagrange multipliers ➤ Jacobian 	10
3	Integration <ul style="list-style-type: none"> o Introduction to indefinite integral o Definition of Integration & Methods of Integration o Substitution Methods o Some Standard Formulae (without proof) and example based on the standard forms o Introduction to definite integration and simple examples on it 	7
4	Application of integration <ul style="list-style-type: none"> ➤ Volume by slicing ➤ Volume of solids of revolution by disk method ➤ Volume by cylindrical shell 	6
5	Eigen Values and Eigen Vectors <ul style="list-style-type: none"> ➤ Eigen value and Eigen vectors ➤ Cayley-Hamilton Theorem ➤ Diagonalization ➤ Quadratic forms ➤ Canonical forms 	7

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Data and File Structure

Semester 3

CODE: 13030301

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Objectives: -The course improves the Data structure logical ability. To introduce various techniques for representation of the data in the real world. To teach concept of protection and management of data.

Prerequisites: -Computer Programming & utilization

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction: Data management concept, Data types, Performance analysis, Time & Space Complexity, Asymptotic notations Types of Data Structure-Linear and non Linear	5
2	Linear Data Structure: Array: Representation of arrays, Applications of arrays, sparse matrix and its representation Stack: Stack-Definitions & Concepts, Operations On Stacks, Applications of Stacks, Polish Expression, Reverse Polish Expression, Queue: Representation Of Queue, Operations On Queue, Circular Queue, Priority Queue, Array representation of Priority Queue, Double Ended Queue, Applications of Queue Linked List: Singly Linked	10



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	List, Doubly Linked list, Circular linked list ,Linked implementation of Stack, Linked implementation of Queue, Applications of linked list	
3	NONLINEAR DATA STRUCTURE : Tree-Definitions and Concepts, Representation of binary tree, Binary tree traversal (Inorder, postorder, preorder), Threaded binary tree, Binary search trees, Applications Of Trees Some balanced tree mechanism, eg. AVL trees, Graph-Matrix Representation Of Graphs, Elementary Graph operations, (Breadth First Search, Depth First Search, Spanning Trees, Shortest path	11
4	HASHING : Hashing: The symbol table, Hashing Functions, Collision Resolution Techniques	7
5	Sorting & Searching: Sorting – Bubble Sort, Selection Sort, Quick Sort, Merge Sort Searching – Sequential Search and binary search	5

Learning Outcomes:-

*After learning the course the students should be able:

1. Differentiate primitive and non-primitive structures
2. Design and apply appropriate data structures for solving computing problems.
3. Apply sorting and searching algorithms to the small application

Teaching & Learning Methodology:-

The challenge that teaching and learning data structure presents, has encouraged the design and implementation of various new and innovative data structure teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.

Books Recommended:-

1. An Introduction to Data Structures with Applications. by Jean-Paul Tremblay & Paul G. Sorenson Publisher-Tata McGraw Hill.
2. Data Structures using C & C++ -By Ten Baum Publisher – Prentice-Hall International.
3. Fundamentals of Computer Algorithms by Horowitz, Sahni, Galgotia Pub. 2001 ed.
4. Fundamentals of Data Structures in C++-By Sartaj Sahani.

E-Resources:-



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1, https://www.tutorialspoint.com/data_structures_algorithms/index.htm

2, <https://www.studytonight.com/data-structures/>

Practical List:-

Sr. No.	Practical
1	Introduction to structures & pointers in C.
2	Stack operations Write a program to perform PUSH, POP, PEEK & CHANGE operations on Stack.
3	Queue Operations Write a program to implement insertion & deletion in a queue
4	Circular Queue Operations Write a program to implement insertion & deletion in a circular queue
5	Write a program for linked list insertion, deletion & copy
6	Write a program to perform Selection sort
7	Write a program to perform Selection sort
8	Write a program to sort the given number using bubble sort
9	Write a program to perform Merge sort
10	Write a program to perform Quick sort
11	Write a program to perform Sequential and binary search



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Object Oriented Programming – I

Semester 3

CODE: 13030304

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	4	7	5	30	50	70	-	150

Objectives: - This course provides in-depth coverage of object-oriented programming principles and techniques using C++. Topics include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level language features. The course briefly covers the mapping of UML design to C++ implementation and object-oriented considerations for software design and reuse. Perform object oriented programming to develop solutions to problems demonstrating

Prerequisites: - To familiarize the trainee with basic concepts of computer programming and developer tools. To present the syntax and semantics of the “C++” language as well as data types offered by the language. To allow the trainee to write their own programs using standard language infrastructure regardless of the hardware or software platform.

Major Equipment:

- Latest Desktop PCs with any C++ compiler
- Open source software dev C++



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Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Concepts of OOPC: Introduction OOP, Procedural Vs. Object Oriented Programming, Principles of OOP, Benefits and applications of OOP.	4
2	C++ Basics: Overview, Program structure, namespace, identifiers, variables, constants, enum, operators, typecasting, control structures.	6
3	C++ Function: Simple functions, Call and Return by reference, Inline functions, Macro Vs. Inline functions, Overloading of functions, default arguments, friend functions, virtual functions.	6
4	Object and Classes: Basics of object and class in C++, Private and public members, static data and function members, constructors and their types, destructors, operator overloading, type conversion.	7
5	Inheritance: Concept of Inheritance, types of inheritance: single, multiple, multilevel, hierarchical, hybrid, protected members, overriding, virtual base class.	7
6	Polymorphism: Pointers in C++, Pointers and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism.	6

Learning Outcomes:-

- * On successful completion of the course, the student will:
- * Describe the important concept of OOPC like object and class
- * Describe the important concept of OOPC like Encapsulation, inheritance, & polymorphism
- * Write the simple C++ programs using the variables, operators, control structures, function
- * Write the simple object oriented programs in C++ using objects and classes.
- * Use advance features like exception to make programs supporting reusability
- * Use standard template library for faster development.
- * Develop the applications using object oriented programming with C++.
- * Design, develop, execute, debug and validate programs in OOP environment.

Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in



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assignments provided within a course, but also in further exploration of the C++ programming challenges outside the assignments' boundaries.

Books Recommended:-

- 1) Object Oriented Design by Rumbaugh (Pearson publication)
- 2) Object-oriented programming in Turbo C++ By Robert Lafore, Galgotia Publication.
- 3) Object-oriented programming with C++ by E.Balagurusamy, 2nd Edition, TMH.
- 4) C++ Programming, Black Book, Steven Holzner, dreamtech
- 5) Object Oriented Programming with ANSI and Turbo C++, Ashok Kamthane, Pearson

E-Resources:-

- 1) C++ Fundamentals: <http://www.oupinheonline.com>
- 2) C++ Tutorials: http://www.tutorialspoint.com/cplusplus/cpp_overview.htm
- 3) Video tutorials of C++: <http://nptel.iitm.ac.in/syllabus/syllabus.php?subjectId=106101006>
- 4) Learn C++ Programming: <http://www.learncpp.com>
- 5) Complete C++: <http://www.cplusplus.com>

Practical List:-

Sr. No.	Practical
1	<ol style="list-style-type: none">1. Write C++ program to accept two numbers and display its product.2. Write a program to accept the length and breadth of rectangle from the user. Calculate and display the area and perimeter.3. Write a program to accept one int type data and one float type data. Multiply the two numbers and display the result.4. Develop minimum 5 programs using control structures (for, while, do.....While,)5. Write a program to print Fibonacci series of N numbers.
2	<ol style="list-style-type: none">1. Write a program to display a user entered number in words using Switch...Case.2. Write a program to add two numbers using function.3. Develop minimum 2 programs using arrays<ol style="list-style-type: none">I. Write a program to accept 'n' integers from users into an array and display them one in each line.II. Write a program to accept and display string
3	<ol style="list-style-type: none">1. Develop programs using reference variable, scope resolution operator, simple manipulators, and number data type.2. Write a program to swap two numbers using function. Pass the values to be swapped to this function using call by- value method.



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	<p>3. Write a program using function with argument to swap the value of a pair of integers using call by reference.</p> <p>4. Write a program to store and display the name, runs, scored and wickets taken of a cricket player using structure.</p>
4	<p>1. Write a program to find area of circle using object oriented programming such that the class circle must have three members functions namely:</p> <ol style="list-style-type: none"> Read () to accept the radius from the user. Compute () for calculating the area. Display() for displaying the result <p>2. Write a program to find area of circle using object oriented programming such that the class circle must have three inline functions namely:</p> <ol style="list-style-type: none"> Read () to accept the radius from the user. Compute () for calculating the area. Display() for displaying the result <p>3. Write a program that uses a class where the member functions are defined inside a class.</p> <p>4. Write a program that uses a class where the member functions are defined outside a class</p> <p>5. Write a program to demonstrate the use of zero argument and parameterized constructors.</p> <p>6. Write a program to demonstrate the use of dynamic constructor.</p> <p>7. Develop programs using various types of constructors and destructor.</p>
5	<p>1. Develop programs using :</p> <ol style="list-style-type: none"> Single inheritance Multilevel inheritance multiple inheritance <p>2. Define minimum 5 different classes such as student, distance, shape, employee, feet, time, data etc. with data member & member functions. Also develop programs to test those classes functionality.</p>
6	<p>1. Develop Programs using array of objects and static member functions.</p> <p>2. Write a program to demonstrate the use of static data members.</p> <p>3. Write a program to demonstrate the use of const data members.</p>
7	<p>1. Write a program to demonstrate the overloading of increment and decrement operators.</p> <p>2. Write a program to demonstrate the overloading of binary arithmetic operators.</p> <p>3. Write a program to demonstrate the overloading of memory management operators.</p>
8	<p>1. Write a program to add two complex numbers using operator overloaded by a friend function.</p> <p>2. Write a program to demonstrate function overriding.</p> <p>3. Write a program to demonstrate dynamic binding using virtual function.</p> <p>4. Write a program to demonstrate pure virtual function.</p> <p>5. Write a program to demonstrate the use of "this" pointer.</p>
9	<p>1. Write a program to write and read a string from/to file.</p>

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Operating System

3rd Semester

CODE: 13030303

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Objectives:- As a core subject of Computer Engineering/Information Technology, this course enables to understand importance of Operating System, its functionalities to manage resources of Computer and Peripherals, program development and its execution. Student will be made aware of Process Management, Memory Management, File Management and I/O Management in detail, which will be useful to them for Large Application Development in engineering field with emphasis given to Linux type of Open Source Operating System.

Prerequisites:- Data structures(stack, queue, linked list, tree, graph), hashing, File structures, Any structured Programming Language (like C)

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction: Introduction: Basics of Operating Systems: Definition – Generations of Operating systems – Types of Operating Systems, OS Service, System Calls, OS structure: Layered, Monolithic, Microkernel Operating Systems – Concept of Virtual Machine.	7
2	Process Management Processes: Definition , Process Relationship , Process states , Process State transitions , Process Control Block ,Context switching – Threads – Concept	



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	of multithreads , Benefits of threads – Types of threads Process Scheduling: Definition , Scheduling objectives ,Types of Schedulers ,Scheduling criteria : CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time (Definition only) , Scheduling algorithms : Pre emptive and Non , pre emptive , FCFS – SJF – RR , Multiprocessor scheduling : Types , Performance evaluation of the scheduling.	8
3	Inter process Communication- Race Conditions, Critical Section, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson's Solution, The Producer Consumer Problem, Semaphores, Event Counters, Monitors, Message Passing, Classical IPC Problems: Reader's & Writer Problem, Dinning Philosopher Problem Scheduling, Scheduling Algorithms.	8
4	Deadlocks: Definition, Deadlock characteristics , Deadlock Prevention , Deadlock Avoidance :banker's algorithm, Deadlock detection and Recovery	5
5	Memory Management: Basic Memory Management, Definition, Logical and Physical address map, Memory allocation: Contiguous Memory allocation – Fixed and variable partition – Internal and External fragmentation and Compaction, Paging : Principle of operation – Page allocation – Hardware support for paging –Protection and sharing – Disadvantages of paging. Virtual Memory: Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault , Working Set , Dirty page/Dirty bit – Demand paging (Concepts only) – Page Replacement policies : Optimal (OPT) , First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used (LRU)	8
6	Unix/Linux Operating System Development Of Unix/Linux, Role & Function Of Kernel, System Calls, Elementary Linux command & Shell Programming, Directory Structure, System Administration Case study: Linux, Windows Operating System	3

Learning Outcomes:-

After learning the course the students should be able to:

- ✓ Understand various generations of Operating System and functions of Operating System.
- ✓ Understand the concept of program, process and thread and Analyze various CPU Scheduling Algorithms and compare their performance.
- ✓ Solve Inter Process Communication problems using Mathematical Equations by various methods. Compare various Memory Management Schemes especially Paging and Segmentation in Operating System. Also apply various Page Replacement Techniques. Understand File Systems in Operating System like UNIX/Linux and Windows.
- ✓ Understand Input Output Management and use of Device Driver and Secondary Storage (Disk) Mechanism.
- ✓ Write shell scripts in Linux/UNIX environment.



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Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.

Books Recommended:-

1. Operating System Concepts (8th Edition) by Silberschatz, Peter B. Galvin and Greg Gagne, WileyIndian Edition (2010).
2. Modern Operating Systems (Third Edition) by Andrew S Tanenbaum, Prentice Hall India (2008).
3. Principles of Operating Systems by Naresh chauhan, Oxford Press (2014).
4. Operating Systems by D.M. Dhamdhare, Tata McGraw Hill 2nd edition.
5. Operating Systems (5th Ed) – Internals and Design Principles by William Stallings, Prentice Hall India, 2000
6. UNIX Concepts and Applications(4th Edition)– by Sumitabha Das, Tata McGraw Hill.
7. Unix Shell Programming – by Yashwant Kanetkar, BPB publications.

List of Open Source Software/learning website: -

www.nptel.ac.in

Practical List:-Practical
1. Study of Basic commands of Linux/UNIX.
2. Study of Advance commands and filters of Linux/UNIX.
3. Write a shell script to generate marksheet of a student. Take 3 subjects, calculate and display total marks, percentage and Class obtained by the student.
4. Write a shell script to find factorial of given number n.
5. Write a shell script which will accept a number b and display first n prime numbers as output.
6. Write a shell script which will generate first n fibonnacci numbers like: 1, 1, 2, 3, 5, 13,...
7. Write a menu driven shell script which will print the following menu and execute the given task.
8. MENU
9. Display calendar of current month
10. Display today's date and time
11. Display usernames those are currently logged in the system
12. Display your name at given x, y position
13. Display your terminal number Exit
14. Write a shell script to read n numbers as command arguments and sort them in descending order.
15. Write a shell script to display all executable files, directories and zero sized files from current directory.
16. Write a shell script to check entered string is palindrome or not.
17. Shell programming using filters (including grep, egrep, fgrep)
18. Study of Unix Shell and Environment Variables.
19. Write a shell script to validate the entered date. (eg. Date format is : dd-mm-yyyy).
20. Write an awk program using function, which convert each word in a given text into capital.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Relational Database Management System

Semester 3

CODE: 13030302

Sr. No.	Course Contents	Number of Hours
1	Introduction: <ul style="list-style-type: none">• Data Vs. Information• Introduction of the Database and the DBMS• Role, Advantage and Disadvantages of DBMS• Types of Database	04
2	Distributed Database Management Systems: <ul style="list-style-type: none">• Evolution of DDBMS• Distributed Processing and Distributed Database• DDBMS Advantages and Disadvantages• Characteristics of DDBMS• Components of DDBMS	02
3	Database Systems: <ul style="list-style-type: none">• The Database System Environment• DBMS Functions• The Relational Model• The E-R Model	04
4	The Relational Database Model: <ul style="list-style-type: none">• A logical view of Data• Keys• Integrity Rules• Concept of Functional Dependency• Relational Set Operators• The Data Dictionary and The System Catalog• Relationship within the Relational Database	10
5	The Entity Relationship Model: <ul style="list-style-type: none">• Entities• Attributes• Relationships• Connectivity and Cardinality• Existence Dependence• Relationship Strength• Weak Entities• Relationship Participation	08



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	<ul style="list-style-type: none"> Relationship Degree Recursive Relationship Composite Entities 	
6	Normalization of Database Tables: <ul style="list-style-type: none"> The need of Normalization The Normalization process 	10

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Teaching & Evaluation Scheme:-

Objectives: - This course introduces students to information of data, working of related data to gain knowledge. Students also will design the real life application

Prerequisites:- (1) Elementary knowledge about computers including some experience using UNIX or Windows.
 (2) Computer Programming & Utilization
 (3) Knowledge about data structures and algorithms, corresponding to the basic course on Data Structures and Algorithms.

Course outline:-

Learning Outcomes:-

After learning the course the students should be able:

1. Evaluate business information problem and find the requirements of a problem in terms of data.
2. Understand the uses the database schema and need for normalization.
3. Design the database schema with the use of appropriate data types for storage of data in database.
4. Use different types of physical implementation of database
5. Use database for concurrent use.
5. Backup data from database.



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Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.

Books Recommended:-

1. An introduction to Database Systems, C J Date, Addison-Wesley.
- 2, C Programming: Test Your Skills, 1/e by Ashok Kamthane
- 3, Database System Concepts, Abraham Silberschatz, Henry F. Korth & S. Sudarshan, McGraw-Hill.
- 4, Understanding SQL by Martin Gruber, BPB
- 5, SQL -PL/SQL by Ivan bayross

E-Resources:-

- 1, https://en.wikipedia.org/wiki/Database_management_system
- 2, <https://searchdatamanagement.techtarget.com/resources/Database>
- 3, <https://searchsqlserver.techtarget.com/.../database-management-system>

Practical List:-

1. Overview of DBMS.
2. To study commands of DDL, DML, DTL and DCL.
3. To study different operations, date – function and conversion functions.
4. To study different types of string functions.
5. To study different types of function & operators like group by clause, having clause, etc.
6. To design Entity Relation Model.
7. To study sub-queries.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Software Engineering

Semester 3

CODE : 13030305

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Objectives:

It Deliver an opportunity to students where they can deal with real life problems and learn an individual as well as teamwork approach for software development.

Prerequisites:-None

Course outline:-

Sr.No.	Course Contents	Number of Hours
1	Software process Models and lifecycle: Software Product, Product, Software Processes, Evolving Role of Software, Software Engineering: A Study of different Software Process Models, The Linear Sequential Model, The Prototyping Model, The RAD Model, Evolutionary Process Models, Process, Product and Process, Object Oriented Software Engineering	4
2	Project Management Concepts & Project Metrics: The Management Spectrum, People, Product, Process, Project, The W5HH Principle, Metrics in the Process and Project Domains (FP & LOC), Software Measurement, Metrics for Project and Software Quality	5
3	Software Project Planning, Scheduling and Tracking: Project Planning Objectives, Software Project Estimation using COCOMO Model, Software Scope and Resources, Empirical Estimation Models, Basic Concepts and Relationship Between People and Effort, Defining a Task Set for the Software Project, Selecting Software Engineering Tasks, Defining a Task Network and Scheduling, Earned Value	4



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	Analysis	
4	Software Requirements Specification: Requirement Gathering and Analysis, Software Requirement Specification(SRS), Formal requirements specification and verification - axiomatic and algebraic specifications	3
5	Analysis Modeling, Software Design Concepts and Principles: The Elements of the Analysis Model, Data Modeling, Functional Modeling and Information Flow, Behavioral Modeling and Structured Analysis, Software Design and Software Engineering, The Design Process, Design Principles, Design Concepts, Modular Design, Design Heuristics for Effective Modularity, The Design Model ,Design Documentation, Object Modeling using UML, Software Architecture and Data Design, Architectural Styles	4
6	User Interface Design, Component Level Design: User Interface Design, Task Analysis and Modeling, Interface Design Activities and Implementation Tools, Design Evaluation, Structured Programming and Comparison of Design Notation	5
7	Risk Analysis & Management: Reactive versus Proactive Risk Strategies, Software Risks (Risk Identification, Risk Projection, Risk Refinement, Risk Mitigation)	3
8	Coding, Software Testing Techniques & Software Testing Strategies: Software Testing Fundamentals and Test Case Design, White-Box Testing and Black-Box Testing, ISO/IEC/IEEE Software Testing standards, Testing for Specialized Environments, Unit Testing, Integration and Validation Testing, Software Documentation and Debugging Techniques	3
9	Software Quality Assurance and Configuration Management - Quality Concepts and Software Quality Assurance, Quality Planning and Control, Software Reviews (Formal Technical Reviews), Software Reliability and Fault Tolerance, The SCM Process Identification of Objects in the Software Configuration, Six Sigma, Version Control and Change Control	4
10	Emerging and advanced topics in Software Engineering: Security Engineering, Agile Methods, Client Server Software Engineering, Aspect Oriented Software Development, Software Engineering Aspects of Programming Languages, Re-engineering, Web Engineering	3

Learning Outcomes:-

After completion of the course students will be able to

1. Prepare SRS (Software Requirement Specification) document and SPMP (Software Project Management Plan) document.
2. Apply the concept of Functional Oriented and Object Oriented Approach for Software Design.
3. Recognize how to ensure the quality of software product, different quality standards and software review techniques.
4. Apply various testing techniques and also upgrade it using advanced Software Engineering



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Teaching & Learning Methodology:-

For teaching this subject power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work

Books Recommended:-

1. Roger S. Pressman, Software Engineering: A practitioner's approach, McGraw Hill.
2. Rajib Mall, Fundamentals of Software Engineering, Prentice Hall India.
3. Pankaj Jalote, An integrated approach to Software Engineering by Springer.
4. Ian Sommerville, Software Engineering, Addison and Wesley.

E-Resources:-

- 1) Software:-Rational Rose, Microsoft Visio, Enterprise resource planning
- 2) Project Management Tools
- 3) SCM Tools
- 4) SQA Tools
- 5) Analysis and Design Tools
- 6) User Interface Development Tools
- 7) Testing Tools
- 8) Client/Server Tools
- 9) Reengineering Tool

List of Experiments:

Prepare following document form below mentioned projects:

1.	DFD (Data Flow Diagrams)
2.	E-R Diagram
3.	Use-Case Diagram
4.	Activity Diagram
5.	Class Diagram
6.	Sequence Diagram
7.	State Diagram
8.	Implementation
9.	Test case design
10.	Program Testing
Case Study:-	
1)	Student college management System
2)	Library Information System
3)	Railway/Flight Reservation system
4)	Online Banking System
5)	Hospital Management System
6)	ATM(Automatic Teller machine)



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Data Center Management

Semester 4

CODE: 13030405

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Objectives: - Data Centre Management is well organized and thoughtfully prepared. The Subject is demanding and requires high level of self-discipline and persistence. In return, it offers deep insights in leadership, and inspires students to develop their leadership capabilities. It has been designed for the data centre industry and is great value for emerging leaders and their organizations.

Prerequisites: - Operating System and Computer Network

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Basic Introduction of Data center Architecture, Requirement, Required Physical Area for Equipment and Unoccupied Space	06
2	Required power to run all the devices, Required cooling and HVAC Required weight, Network Bandwidth	05
3	Budget Constraints, Selecting a Geographic Location Safety from Natural hazards and manmade disaster	05
4	Data Center design and planning and cabling	04
5	Data Center Maintenance monitoring, Physical and logical security	05
6	Data center Consolidation, Reasons for data center Consolidation, Consolidation opportunity, Server consolidation, Storage Consolidation, Network Consolidation, Service Consolidation, Process Consolidation, Staff Consolidation, Data Consolidation phases	04



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7	Data center servers, Server Capacity Planning System Management Best Practices, Server Cluster Best Practices, Data Storage Best Practices.	05
8	Best Practices for System Administration, System Administration Work Automation,	04

Learning Outcomes:-

After successful completion of the course students should be able to:

1. Manage Server Systems and Data Centers Infrastructure Management.
2. Utilize the Storage, Bandwidth, Efficiency of systems and other resources for Data centre.
3. Monitoring the Networks and Resources.
4. Create ability to manage and maintain Server.

Teaching & Learning Methodology:-

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures
- Experiments shall be performed in the laboratory related to course contents

Books Recommended:-

1. Administering Data Centers: Servers, Storage and Voice over IP, Kailash Jayaswal
2. Data center fundamentals, Mauricio Arregoces, Maurizio Portol
3. Enterprise Data Center: Design and Methodology by Rob Snevely

E-Resources:-

1. Software: VMware
2. Nagios, Ganglia, Untangle,
3. <https://www.techopedia.com/definition/29712/data-center-design>

Practical List:-

Sr. No.	Practical
1	Installation of any server.
2	Manage workgroup and Create domain using Active Directory
3	Create user, Groups and Organization Unit
4	Create and apply policy on different group and OU
5	Concept of structure Cabling in network based environment
6	Setup VMware workstation and manage resources
7	Manage and maintain ESXI server
8	Monitoring the cluster using Open source (Nagios/Ganglia) tools.
9	Resource allocation to clients from server
10	Case study to design a datacenter as per requirement



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Data Communication and Network

Semester 4

CODE: 13030404

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Objectives:

The aims of this module are:

- To introduce the basics of data communications and computer networks.
- To examine and understand network protocols and architectures.
- To educate the student in modern networking technologies.

Prerequisites:-

Student must have a working knowledge of fundamental of procedure oriented language(c) and data structure. For some practical aspects of the course, a working knowledge of wire shark software.

Course outline:-

Sr.No.	Course Contents	Number of Hours
1	INTRODUCTION TO DATA COMMUNICATION AND NETWORKING: Uses of Computer Networks, Network Hardware, Network Software Internet Reference Models (OSI and TCP/IP)	05
2	PHYSICAL LAYER: Basis for Data Communication, Guided Transmission Media , Wireless Transmission Medium, Circuit Switching and Telephone Network, High Speed Digital Access	08



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3	DATA LINK LAYER: Data Link Layer Design Issues, Error Detection and Correction, Data Link Control and Protocols, Example Data Link Protocol	07
4	MEDIUM ACCESS LAYER: Channel Allocation Problem, Multiple Access, CSMA, CSMA/CD, CSMA/CA	06
5	LOCAL AREA NETWORK: Ethernet, Fast Ethernet, Gigabit Ethernet, Wireless LAN, Bluetooth, Connecting Devices(Bridge, Hub, Switch, Router, Gateway)	06
6	NETWORK LAYER: Network layer design issues, Routing Algorithms (Optimality Principle, Static routing Algorithms, Shortest Path, Flooding, Dynamic routing algorithms, Dynamic Routing algorithms, Distance Vector, Link State Routing).	06

Learning Outcomes:-

Learning outcomes are a required element of the syllabus. They are statements about what students will know and be able to do with what they know upon successful completion of the course. These statements are further defined as observable and measurable - meaning that student progress on learning outcomes can and is assessed in the course.

Learning outcomes benefit faculty because they form a solid foundation for course organization and planning. Well constructed learning outcomes make the selection and design of assignments and assessments more focused. They also assist with keeping focus on the things faculty most value in the course.

Learning outcomes benefit students by providing specific learning targets to pursue. They can also help students better understand faculty actions and choices in the course.

Teaching & Learning Methodology:-

The challenge that teaching and learning computer networking presents, has encouraged implementation of various new and computer network connections. Aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the networking challenges outside the assignments' boundaries.



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Practical List:-

Sr. No.	Practical's
1	Study practical of OSI reference model.
2	Study practical of TCP/IP model.
3	Preparing LAN Cable using RJ45.
4	Preparing of Network cables.
5	Establishment of LAN Connection.
6	Troubleshooting of network.
7	Study practical of switch, Hub, Router, Gateway, Bridge.
8	Study of Wireshark packet tracer.
9	Prepare a demo Network using concept of Subnetting.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Object Oriented Programming - II

Semester 4

CODE: 13030401

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
4	-	4	8	6	30	50	70	-	150

Objectives: - To understand the concept of object oriented programming. This course Provide fundamental knowledge of the various aspects of java programming and enables students to appreciate recent development in the area of programming.

Prerequisites: - Object oriented concepts

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Basics of JAVA: Features of Java, Byte Code and Java Virtual Machine, JDK, Data types, Operator, Control Statements – If , else, nested if, if-else ladders, Switch, while, do-while, for,for-each, break, continue.,	03
2	Array and String: Single and Multidimensional Array, String class, String Buffer class, Operations on string, Command line argument, Use of Wrapper Class.	04
3	Classes, Objects and Methods: Class, Object, Object reference, Constructor, Constructor Overloading, Method Overloading, Recursion, Passing and Returning object form Method, new operator, this and static keyword, finalize() method, Access control, modifiers, Nested class, Inner class, Anonymous inner	06



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	class ,Abstract class.	
4	Inheritance and Interfaces: Use of Inheritance, Inheriting Data members and Methods, constructor in inheritance ,method overriding, super keyword ,Final keyword, Creation and Implementation of an interface , instance of operator, Interface inheritance, Dynamic method dispatch ,Comparison between Abstract Class and interface	06
5	Package: Use of Package, CLASSPATH, Import statement, Static import, Access control	04
6	Exception Handling: Exception and Error, Use of try, catch, throw, throws and finally, Built in Exception, Custom exception, Throwable Class	05
7	Multithreaded Programming: Use of Multithread programming, Thread class and Runnable interface , Thread priority, Thread synchronization , Thread communication, Deadlock	05
8	IO Programming: Introduction to Stream, Byte Stream, Character stream, Readers and Writers, File Class, File InputStream, File Output Stream, InputStreamReader, OutputStreamWriter, FileReader, FileWriter, Buffer Reader	05
9	Collection Classes : List, Abstract List, Array List, Linked List, Enumeration, Vector, Properties, Introduction to Java.util package.	05
10	Networking with java.net: InetAddress class ,Socket class, Datagram Socket class, Datagram Packet class	05

Learning Outcomes:-

After successful completion of the course students should be able to:

1. Understand object oriented programming concepts and implement in java.
2. Compare building blocks of OOPs language, inheritance, package and interfaces.
3. Identify exception handling methods.
4. Implement multithreading in object oriented programs.

Teaching & Learning Methodology:-

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures
- Experiments shall be performed in the laboratory related to course contents



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Books Recommended:-

1. Java Fundamentals A comprehensive introduction By Herbert Schildt, Dale Skrien, McGraw Hill Education.
2. Programming with Java A Primer – E.Balagurusamy,,Mc Graw hill Education.
3. The Complete Reference, Java 2 (Fourth Edition),Herbert Schild, - TMH.
4. Programming with Java, M. P. Bhav S.A. Patekar, Pearson.
5. Introduction to Java Programming 7th ed., Y. Daniel Liang, Pearson.

E-Resources:-

1. Java Development Kit:
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>
2. <http://docs.oracle.com/javase/specs/jls/se7/html/index.html>
3. <http://docs.oracle.com/javase/tutorial/java/index.html>
4. <http://www.javatpoint.com/>
5. <http://www.tutorialspoint.com/java/>
6. <http://www.learnjavaonline.org/>
7. <http://www.c4learn.com/javaprogramming/>
8. <http://www.learn-java-tutorial.com/>

Practical List:-

Sr. No.	Practical
1.	Display greatest number from three numbers.
2.	To check given number is prime or not.
3.	To reverse the given number.
4.	Display Fibonacci series.
5.	To print given pattern on screen. 1 2 3 4 3 2 1 1 2 3 3 2 1 1 2 2 1 1 1
6.	To search an element from an array.



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7.	Sort the array in ascending order.
8.	Multiplication of 3X3 matrices.
9.	Create a class Calculator with arithmetic functions such as addition, subtraction, multiplication, and division.
10.	Create a class Time with hours, minutes, and seconds as member variables and calculate sum of two Time objects.
11.	Create a class which can perform following tasks using method overloading <ul style="list-style-type: none"> a) Addition of two float values b) Addition of two arrays. c) Addition of two Strings
12.	Write an OOP to demonstrate use of following functions of String class <ul style="list-style-type: none"> 1) getChars() 2) equals() 3) equalsIgnoreCase() 4) startsWith() 5) endsWith() 6) subString()
13.	Write an OOP to demonstrate use of following functions of StringBuffer class <ul style="list-style-type: none"> 1) deleteCharAt() 2) insert()
14.	Write an OOP to sort list of strings in alphabetical order.
15.	To catch Arithmetic Exception such as division by zero
16.	To catch multiple exceptions such as ArrayIndexOutOfBoundsException , NumberFormatException, NullPointerException.
17.	Write an OOP To throw your own exception
18.	Write an OOP for copying character from one file to another.
19.	Write an OOP for writing bytes to file
20.	Write an OOP for reading bytes from a file
21.	Write an OOP for copying bytes from one file to another.
22.	Write an OOP for reading and writing primitive datatype.
23.	Write an OOP for reading and writing using a random access file.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

OPEN SOURCE TECHNOLOGY

Semester 4

CODE : 13030402

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	P	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Objectives:

This course covers the basic introduction about HTML, CSS, JAVASCRIPT and brief of LAMP (Linux, Apache, MySQL, PHP) to design static as well as Dynamic web pages. We can use Windows Operating system instead of Linux.

Prerequisites: LAMP is an Open Source Web Development platform that uses Linux as an operating system, Apache as web server , MySQL as a Relational Database Management System and PHP as a Object Oriented Scripting Language. This subject covers the wide range of web technologies both client side and server side to provide the exposure to the students to develop Rich Internet Applications using them.

Course outline:-

Sr.No.	Course Contents	Number of Hours
1	INTRODUCTION :Concept Of Internet, Introduction of HTML, XHTML, CSS and JavaScript.	6
2	XML :Introduction to XML, uses of XML, simple XML, XML key components, DTD and Schemas, Well formed, using XML with application.XML, XSL and XSLT. Introduction to XSL, XML transformed simple example, XSL elements, transforming with XSLT	6
3	INTRODUCTION OF PHP : History of PHP, Apache Web Server, MySQL and Open Source,Relationship between Apache, MySQL and PHP (AMP Module),PHP configuration in IIS, Apache Web server	6



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4	BASICS OF PHP: PHP structure and Syntax, Creating the PHP pages, rules of PHP syntax, Integrating HTML with PHP, Constants, Variables : static and global variable, Conditional Structure & Looping, PHP Operators, Arrays, foreach constructs, User defined function (argument function, Variable function, Return Function, default argument, variable length argument).	7
5	INTRODUCTION TO MYSQL : MySQL structure and syntax, Types of MySQL tables and storages engines, MySQL commands, Integration of PHP with MySQL, Connection to the MySQL server, Working with PHP and arrays of data, Referencing two tables , Joining two tables	7
6	WORKING WITH DATABASE : Basic command with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table ,names creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP myadmin and database bugs.	7

Learning Outcomes:-

After successful completion of this course, student will be able to

- Understand the basic structure of web designing technology
- Apply the concepts of web technology in designing static and dynamic web pages
- Design interactive web pages incorporating validation techniques
- We can save the data into database and get data when necessary.

Teaching & Learning Methodology:-

For teaching this subject we use notepad or notepad++ or dream viewer or net beans software, Apache Server to store, process and deliver Web pages to clients.

Books Recommended:-

- 1.Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India
2. Web Technologies, Black Book, dreamtech Press
3. HTML 5, Black Book, dreamtech Press
4. Web Design, Joel Sklar, Cengage Learning
5. Internet and World Wide Web How to program, P.J. Deitel & H.M. Deitel, Pearson

E-Resources:-

Browsers like IE, Mozilla,
FireFox etc - Server software XAMPP/WAMP/LAMP
www.apachefriends.org
www.w3.org



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Practical List:-

Sr. No.	Practical's
1	Creating the PHP page.
2	Programs using arrays and control and loop structures
3	Testing different PHP functions and user define function
4	Creating forms using buttons, textboxes and other form elements. Use (\$_POST and \$_GET to retrieve data.)
5	Passing hidden information to the form processing script via hidden form controls and a URL query string.
6	Creating forms with sessions and cookies
7	Allowing the user to upload their own images
8	View the data contained in the My SQL database.
9	Connect to the database from your website.
10	Revision of all practicals.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Object Oriented Web Technology

Semester 4

CODE: 13030403

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	-	2	5	4	30	50	70	-	150

Objectives: -

The course builds upon the procedural and object-oriented programming logic tools from earlier courses. This course covers C# development using Visual Studio .NET and focuses on C# syntax, logic constructs, application development using windows forms, and the object-oriented nature of the language. Through the experience of creating these programs and methods the student will learn the fundamentals of C# programming to solve problems in various domains.

Prerequisites: -

1. Readings in the course text
2. Exams on all covered chapters in the course text
3. Lab projects
4. Regular and prompt attendance
5. Class Participation and daily work



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Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction : <ul style="list-style-type: none"> What is .NET? What is the CLR? The FCL Primitive Types Namespaces Statements and Expressions Operators 	06
2	Classes and Objects: <ul style="list-style-type: none"> Constructors Reference Types Object Oriented Programming Access Modifiers Abstract Classes Virtual Members Static Classes Debugging and Error Handling 	04
3	ADO.NET: <ul style="list-style-type: none"> Benefits of ADO.NET ADO.NET compared to classic ADO Datasets Managed Providers Data Binding: Introducing Data Source Controls Reading and Write Data Using the Sql Data Source Control 	04
4	Windows Forms and Controls in details: <ul style="list-style-type: none"> The Windows Forms Model Creating Windows Forms Windows Forms Properties and Events Windows Form Controls, Menus -Dialogs -ToolTips 	04
5	Visual Inheritance in C#.NET: <ul style="list-style-type: none"> Apply Inheritance techniques to Forms Creating Base Forms Programming Derived Forms 	04
6	Mastering Windows Forms: <ul style="list-style-type: none"> Printing - Handling Multiple Events GDI+ Creating Windows Forms Controls 	04
7	Themes and Master Pages: <ul style="list-style-type: none"> Creating a Consistent Web Site, Themes - Master Pages Displaying Data with the GridView Control 	06

	Introducing the GridView Control <ul style="list-style-type: none"> • Filter Data in the GridView Control • Allow Users to Select from a DropDownList in the Grid • Add a Hyperlink to the Grid • Deleting a Row and Handling Errors 	
8	Managing State: <ul style="list-style-type: none"> • Preserving State in Web Applications and Page-Level State • Using Cookies to Preserve State • ASP.NET Session State • Storing Objects in Session State • Configuring Session State • Setting Up an Out-of-Process State Server • Storing Session State in SQL Server • Using Cookieless Session IDs • Application State Using the DataList and Repeater Controls • Overview of List-Bound Controls • Creating a Repeater Control and DataList Control 	06

Learning Outcomes:-

Knowledge Outcomes:

1. Articulate the basic syntax and features of the C# programming language
2. Define C# constructs which implement the three basic control structures
3. Define arithmetic, relational, and logical operators
4. Describe object-oriented (OO) concepts related to classes and objects
5. Describe the concepts behind sound user interface design
6. Describe the concepts behind variables, constants, and calculations

Skill Outcomes:

1. Demonstrate the ability to create Object-Oriented (OO) application programs
2. Demonstrate the ability to create appropriate classes and objects
3. Demonstrate the ability to create windows-based applications
4. Demonstrate the ability to create user interfaces including but not limited to various boxes, buttons, menus, dialog boxes

Teaching & Learning Methodology:-

Lectures, analysis of business practice examples, discussions, presentations of students' papers and case studies, exercises - students' individual and group work

Books Recommended:-

1. Christian Nagel, Professional C# .Net, Wrox Publication
2. Matthew Macdonald and Robert Standefer, ASP.NET Complete Reference, TMH
3. Vijay Mukhi, C# The Basics, BPB Publications



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E-Resources:-

1. <http://www.tarleton.edu/cis/studentresources.html>
2. http://online.tarleton.edu/fac_dev/applications/student_blackboard/index.htm

Practical List:-

Sr. No.	Practical
1	Write a program to check whether empty query string is entered in Asp .net
2	Write a program to change color of Label text control programmatically in Asp .Net
3	Write a program to Enable-Disable Textbox and change width of TextBox programmatically in Asp .Net
4	Write a program to increase and decrease font size programmatically.
5	Write C# code to display the asterisk pattern as shown below: ***** ***** ***** ***** *****
6	Write C# code to prompt a user to input his/her name and country name and then the output will be shown as an example below: Hello Ram from country India!
7	Write C# code to do the following - Convert binary to decimal - Convert decimal to hexadecimal - Convert decimal to binary - Convert decimal to octa
8	Write C# code to convert infix notation to postfix notation.
9	Write a C# code to convert digits to words
10	Write a C# code to Convert following currency conversion. Rupees to dollar, frank, euro.
11	Write a C# code to Perform Celsius to Fahrenheit Conversion and Fahrenheit to Celsius conversion.
12	Write ASP.Net program to Store Objects in Session State and Storing Session State in SQL Server.



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Swarinim School of Computing & IT
BCA (Honours) Programme Semester I

Course Title: Fundamentals of Computers

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA23010 1	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

- Understand the basic concepts of computer hardware and software.
- Demonstrate problem solving skills.
- Understand the structure of operating system, its applications and commands.
- To be familiar with network tools, concepts of protocols and network interfaces.
- Understands the concept of Computer's Input/output devices.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Computer Fundamentals: Block Structure of a Computer, Characteristics of Computers, Generation of Computers and Classification of Computers. Programming Languages: Classification, Machine Code, Assembly Language, Higher Level Language and Fourth Generation Languages. Number System: Bit, Byte, Binary, Decimal, Hexadecimal and Octal Systems, Conversion from One System to the Other; Binary Arithmetic Addition, Subtraction and Multiplication. 	15	30%
2	<ul style="list-style-type: none"> Information Concepts & Processing System: Evolution of Information Processing, Data, Information, Knowledge & Wisdom. Elements of a Computer Processing System: Hardware - Input-Output Devices, VDU, CPU Storage Devices and Media. Software Concepts: Type of Software, Translator, Compiler, Interpreter, Assembler, Loader. Application Software: Office Automation. 	15	35%
3	<ul style="list-style-type: none"> Operating System: Concepts as Resource Manager, Batch Processing, 	7	15%
	Multiprogramming, Multiprocessing, Time Sharing and Real Time System.		



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	<ul style="list-style-type: none"> DOS: Command Interpreter, Booting Internal & External Commands, Batch Files, exe, com, System Files, bin, txt, bmp Files. 		
4	<ul style="list-style-type: none"> Computer Network and Communication: Network Types, Network Topologies; Data Communication – Mode, Channel, and Media; OSI Reference Model, TCP/IP, Data Communication Equipment/Devices. Internet and its Applications: E-Mail, TELNET, FTP, World Wide Web, Internet and Applications. 	8	20%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	P.K. Sinha	Computer fundamentals	BPB Publication	8th edition, 2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Anita Goel	Computer Fundamentals	Pearson Education	Latest



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2	Peter Norton	Inside PC	TMH	Latest
3	Alexis Leon, Methews Leon	Fundamentals of Information Technology"	Vikas Publishing	Latest

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- "Computer" - This is the flagship magazine of the IEEE Computer Society, covering a wide range of topics related to computer science and technology. It features articles, research papers, and reviews on computer fundamentals.
- "Communications of the ACM" - This monthly publication by the Association for Computing Machinery (ACM) covers various aspects of computing, including computer fundamentals. It includes articles, research papers, and industry insights.
- "ACM Computing Surveys" - This journal focuses on surveys and tutorials that provide an overview of the fundamental concepts and developments in the field of computer science. It covers a broad range of topics and serves as a valuable resource for understanding computer fundamentals.
- "Computer Science Review" - This journal publishes review articles and surveys on various topics in computer science, including computer fundamentals. It offers in-depth coverage of foundational concepts and emerging trends.
- "IEEE Computer Architecture Letters" - This journal focuses specifically on computer architecture, which is a fundamental aspect of computer systems. It features short papers and letters that present novel ideas, designs, and analysis in computer architecture.
- "International Journal of Computer Science and Information Technologies" - This journal covers various aspects of computer science and information technology, including computer fundamentals. It features research papers, articles, and case studies.



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- "IEEE Transactions on Computers" - This journal publishes research papers, articles, and surveys on computer-related topics, including computer fundamentals. It covers a wide range of areas, including computer architecture, algorithms, and software systems.
- "Computerworld" - This popular magazine focuses on technology news, trends, and insights. While it covers a wide range of topics, it often includes articles and features related to computer fundamentals and emerging technologies.

WEB RESOURCES:

- **GeeksforGeeks (www.geeksforgeeks.org)** - GeeksforGeeks is a popular platform that offers a wide range of articles, tutorials, and coding practice exercises for C programming. It covers various topics, ranging from basic concepts to advanced algorithms and data structures.
- **Tutorialspoint (www.tutorialspoint.com)** - Tutorialspoint provides a comprehensive C programming tutorial that covers topics like basic syntax, control structures, functions, arrays, pointers, and file handling. It also offers an online compiler to practice coding.
- **Programiz (www.programiz.com)** - Programiz provides interactive C programming tutorials, examples, and exercises. It covers the fundamentals of C programming and also delves into advanced topics like data structures and algorithms.
- **Codecademy (www.codecademy.com)** - Codecademy offers an interactive online learning platform that includes a C programming course. It provides hands-on coding exercises and projects to help you practice and reinforce your understanding of C.
- **Cprogramming.com (www.cprogramming.com)** - Cprogramming.com offers tutorials, examples, and a forum community for C programming enthusiasts. It covers topics such as basic syntax, data types, control structures, and pointers.
- **Stack Overflow (stackoverflow.com)** - Stack Overflow is a popular question-and-answer platform where programmers can ask and answer questions related to C programming. It can be a valuable resource for troubleshooting and gaining insights from experienced programmers.
- **The GNU C Library Reference Manual (www.gnu.org/software/libc/manual)** - The GNU C Library (glibc) reference manual is an authoritative resource that provides detailed



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documentation on the C standard library functions. It can be helpful for understanding the usage and behavior of various library functions.

- The C Programming Language (C89/C90) Standard - The official ANSI C standard document (also known as C89 or C90) specifies the syntax and semantics of the C programming language. It is a valuable reference for understanding the language specifications.



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Swarnim School of Computing & IT
BCA (Honours) Programme Semester I

Course Title: PROGRAMMING IN C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theor y	Continuous Assessment	Practical	Theory	Practical
Core	BCA230102	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

- Analyze a given problem and develop an algorithm to solve the problem.
- Design, develop and test programs written in 'C'.
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Introduction: History, Facilities, Concepts, Uses; Basic Program Structure, Header Files, Comments; A Simple C program, Identifiers, Basic Data Types and Sizes, Constants, Variables, Arithmetic, Relational and Logical Operators, Increment and Decrement Operators, Conditional Operator, Bit-wise Operators, Assignment Operators, Expressions, Type Conversions, Conditional Expressions, Precedence and Order of Evaluation. Input-Output Functions: Data Input and Output getchar(), putchar(), scanf(), printf(), functions. 	15	30%
2	<ul style="list-style-type: none"> Control Flow: If-Else, While, Do-while, Goto, For Statements, Nested Control Structures, Switch, Break, Continue Statements, Comma Operator. 	7	15%
3	<ul style="list-style-type: none"> Arrays & Functions: Arrays Defining, Processing Array, Introduction to Multidimensional Arrays; gets(), puts() functions, Functions Types, Parameters, Prototypes, Passing Arrays to Functions, 	8	20%
	Recursion, Passing Arguments to a Function by Value;		

	<ul style="list-style-type: none"> • Storage Classes: Automatic, External, Static, Register Variables in Single File Environment. 		
4	<ul style="list-style-type: none"> • Pointer: Usage of Pointers, Addresses and Types, Pointer and Address Arithmetic, Pointer Operations and Declarations, Using Pointers as Function Arguments (Call By Reference, Call By Value), Pointer Array Duality Strings, Arrays of Pointers, Pointers to Functions, Concept of Dynamic Allocation of Memory, Pre-Processor Directives. • Other Data Types: Structures, Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions, Enumerations and Bit Fields, Typedef. • File Handling: Introduction of File Handling, Modes of File Handling Uses of fopen(), fclose(), putc(), getc(), putw(), getw(), fscanf(), fprintf(), ferror() Functions. 	15	35%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Yashavant P. Kanetkar	Let Us C	BPB Publication	19th edition, 2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Peter Vander Linden, Schaum's	Outline of theory and problems of programming with C	TMH	Latest
2	Peter Vander Linden	Expert C programming	PHI	Latest
3	Balagurusamy E.	Computing Fundamentals and C Programming	TMH	Latest

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- "C/C++ Users Journal" - This magazine focuses on C and C++ programming languages, offering tutorials, articles, and code examples.
- "The C/C++ Users Group Newsletter" - This publication provides news, articles, and resources for C and C++ programmers.
- "Journal of C Language Translation" - This journal focuses on the theory and practice of C language translation, including compiler technology and optimization.
- "ACM Transactions on Programming Languages and Systems" - A prestigious journal



that covers a broad range of programming languages, including C, and publishes research papers and articles.

- "IEEE Transactions on Software Engineering" - This journal covers various aspects of software engineering, including programming languages like C, and features research papers and articles.
- "Software: Practice and Experience" - This journal publishes research papers, case studies, and reviews related to software development and programming languages, including C.
- "Embedded Systems Design" - This magazine covers topics related to embedded systems development, including C programming for microcontrollers and other embedded platforms.
- "C Programming Expert" - An online magazine dedicated to C programming, offering tutorials, tips, and tricks for beginners and advanced programmers alike.

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Course Title: Web Development Using HTML, CSS & XML

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BCA230103	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

Certainly, here are concise one-liner course outcomes for the mentioned syllabus:

- Understand web concepts, protocols, and client-server computing principles.
- Create structured web content using HTML, CSS, and apply formatting and styling techniques.
- Apply CSS for designing layouts, navigation, forms, and enhance user experience.
- Implement dynamic elements using JavaScript, VBScript, and enhance interactivity.
- Gain an introduction to XML, its manipulation, and basic server-side technologies for web applications.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> World Wide Web, Web page, Home page, Web site, Static, Dynamic and Active web page, Overview of Protocols, Simple Mail Transfer Protocol, Gopher, Telnet, Emails, TFTP, Hyper Text Transfer Protocol, Client server computing concepts. Web Client and Web Server Web Browser, Browsers: Internet Explorer, Mozilla Firefox Client, Side Scripting Languages, VB Script and Java Script, Active X control and Plug-ins, Web Server Architecture, Image maps, CGI, API web database connectivity, DBC, ODBC 	7	15%
2	<ul style="list-style-type: none"> Dynamic HTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute. Introduction to HTML: Element, Attribute, Headings, Paragraphs, Styles, Formatting, Comments, CSS, Links, Images, Tables, Lists, Blocks, Classes, ID, frames, File Paths, Head, Entities, Symbols, Color and Background of 	15	35%

	Web Pages, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Creating Table, Frame,		
	Form and Style Sheet.		
3	<ul style="list-style-type: none"> CSS: Syntax, Colors, Backgrounds, Borders, Margins, Padding, Height/ Width, Box Model, Outline, Text, Fonts, Icons, Links, Lists, Position, Overflow, Float, Inline, Block, Align, Navigation Bar, Dropdowns, Image Gallery, Image Sprites, Attr Selectors, Forms, Counters, Website Layout, Units, Specificity. 	15	35%
4	XML: Elements, Attributes, Namespaces, Display, HTTP request, Parser, DOM, XPath, XSLT, XQuery, XLink, Validator, DTD, Schema, Server	8	15%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Shelley Powers	Dynamic Web Publishing 2	Sams.net	2 nd Edition, 1998

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Thomas A. Powell	Html & CSS: The Complete Reference	Osborne/McGraw-Hill	5th Edition
2	Heather Williamson	XML: The Complete Reference	Osborne/McGraw-Hill	6th Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- World Wide Web Journal
- Web Development Quarterly
- HTML & CSS Research Review
- XML Technologies Review
- Interactive Web Design Journal
- Web Designer Magazine
- HTML/CSS Today
- XML Insight Magazine
- Tech Web Designers' Digest
- Coding & Markup Monthly
- WebTech Times



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- Digital Web Daily
- Code Chronicle
- Tech Web Tribune
- Design & Markup News

WEB RESOURCES:

- [Khan Academy \(www.khanacademy.org\)](http://www.khanacademy.org)
- [Computer Hope \(www.computerhope.com\)](http://www.computerhope.com)
- [TechTerms \(www.techterms.com\)](http://www.techterms.com)
- [StuffWorks \(www.howstuffworks.com\)](http://www.howstuffworks.com)
- [W3Schools \(www.w3schools.com\)](http://www.w3schools.com)
- [Computer Science for Fun \(www.cs4fn.org\)](http://www.cs4fn.org)
- [Neso Academy \(www.nesoacademy.org\)](http://www.nesoacademy.org)
- [Studytonight \(www.studytonight.com\)](http://www.studytonight.com)
- [Computer Science Unplugged \(csunplugged.org\)](http://csunplugged.org)
- [Exploring Computer Science \(www.exploringcs.org\)](http://www.exploringcs.org)



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Swarrnim School of Computing & IT
BCA(Honours) Programme
Semester I

Course Title: Mathematical Foundation

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230102	4	60					
				20%	30%	-	50%	-

Course Out comes (COs):

After completing this course satisfactorily, a student will be able to:

- Understand sets and perform operations and algebra on sets.
- Identify functions and determine their properties.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Identify functions and determine their properties.
- To develop the knowledge about derivatives and know various applications of differentiation.



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Syllabus:

Module	Contents	No. of Sessions	Weight age
	<p>Set theory:</p> <ul style="list-style-type: none">• Basic definition of Set Theory• Methods of representation of Set (Property method, Listing method)• Set operations (Union, Intersection, Complement of a set, Difference of sets, Symmetric difference, Cartesian product of sets)• Properties of set operations (Commutative, Associative, Distributive, De-Morgan's laws)• Power set and Cardinality of sets• Venn diagram• Applications	12	20%



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2	Relations and Functions: <ul style="list-style-type: none"> • Relations • Equivalence relation • Examples • Introduction of Functions • Domain, Co-domain and Range of a function • Algebra of functions • Types of functions (Linear, Quadratic, Polynomial, Implicit and Explicit functions and examples related with it) • Exponential and Logarithmic with their 	17	25%
	<p>properties and related examples</p> <ul style="list-style-type: none"> • Applications 		

3	Matrices and Determinants: <ul style="list-style-type: none"> • Definition of Matrix • Types of Matrix (Square, Row, Column, Zero, Diagonal, Scalar, Identity, Transpose, Symmetric, Skew-symmetric) • Arithmetic operations of Matrices (Addition, Scalar Multiplication, Matrix Multiplication) • Introduction to Determinants with Basic properties • Invertible matrix • Computation of Inverse using Definition • Simultaneous Solution of set of Linear equations using Cramer's Rule • Matrix inversion method • Rank of Matrix • Applications 	18	30%
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4	<p>Limit, Differentiation:</p> <ul style="list-style-type: none"> • Limit <ul style="list-style-type: none"> ○ Concept of Limit ○ Some standard Limits (without proof) ○ Continuity of a function and related examples • Differentiation: <ul style="list-style-type: none"> ○ Definition of Derivative ○ Rules for Differentiation (without proof) ○ Differentiation of composite functions ○ Higher order derivatives till order 2 • Applications 	13	25%
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Basic Text Books:				
Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	D.C. Sancheti & V.K Kapoor	Business Mathematics	D.C. Sancheti & V.K Kapoor	Latest

Reference Books:				
Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	B.S. Vatsa	Discrete Mathematics	New Age International Limited Publishers	Latest
2	S. C. Gupta	Matrices	S. Chand	Latest
3	R.S. Agarwal	Differential Calculus	S. Chand	Latest



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Swarnnim School of Computing & ITBCA (Honours)
Programme Semester I

Course Title: Communication Skills

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
AEC	AEC230101	2	30	20%	30%	-	50%	

Course Outcomes(COs)

- Incultation of different skills will be added in a student's career.
- Students' employability skills will be enhanced.
- 3.Ability to speak in English will be improved through practice.
- Self Analysis tool will help the students to identify their strengths and weaknesses to work upon.
- Hesitation of speaking in public and in English will be reduced.



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Syllabus:

Module	Contents*	No of Sessions	Weightage
1	People Skills	8	26%
	Essential Skills For Success Trainer will introduce himself/herself and briefly talk about soft skills. Talk about what soft skills are and their importance.		
	SWOT Analysis Trainer will help students understand their strengths, weaknesses, opportunities and threats.		
2	Fundamentals Of Communication Trainer will talk about the importance of communication, how communication works.	4	14%
3	First Impressions	6	20%
	Self Presentation Trainer will talk about how students can present themselves to others in various settings. Selfpresentation plays a crucial role in creating initial impressions. A positive and confident selfpresentation can set the tone for successful interactions and relationships.		
	4 A'S Of Dressing Trainer will discuss the 4 A's of appearance which are: Appropriate Dressing, Authentic Dressing, Approachable Dressing and Affordable Dressing.		
	The Art of Attitude Trainer will emphasize on the importance of attitude management and provide a basic		

	understanding of how attitudes impact personal and professional growth. They will focus on cultivating positive mindsets and the transformative power of attitude.		
4	Professional Ethics	12	40%
	Polite Protocol Trainer will explain the importance of greeting etiquettes and talk about formal greetings and informal greetings.		
	Concept Of Happiness & Appreciation Trainer will explain the importance of happiness and how to identify your own happiness.		
	Professional Interaction Trainer will introduce the concept of professionalism and what are professional ethics. An interactive activity will be conducted and there will be three scenarios presented in the activity, followed by a discussion about professional ethics.		
	Types of Ethics Trainer will talk about the different ethics that a student has to keep in mind in their professional lives and understand its importance.		

*Note:

1. Activities and content topics may vary according to the feasibility of technical, environmental and physical conditions.



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Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Reference Textbooks:

Sr No:	Text Book	Author Name	Publisher	Edition
1.	Corporate Soft Skills	Sarvesh Gulati	Rupa Publications	2006
2.	Successful Communication	Ken Lawson	Axis Publishing Limited	2006
3.	Soft Skills For Dummies	John Wiley & Sons	John Wiley & Sons, Inc.,	2023



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Nitin Bhattnagar, Mamta Bhatnagar	Effective Communication And Soft Skills	Pearson Pub.	2012
2	©AICTE Approved	Communications Skills WorkBook	NA	NA
3	Roshan Lal Raina	Professional Communication	Himalaya Publishing House	2012
4	Christie Marlowe	Presenting Yourself: Business Manners, Personality, Etiquettes	Mason Crest	2014
5	Jeff Keller	Attitude is everything	Harper Collins	2017

List of Websites/ videos for reference:

- [Basics Of Communication Skills](#)
- [Essential Skills For Success](#)
- [Self Presentation](#)
- [Fundamentals Of Communication](#)
- [Appreciation And Gratitude](#)



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Core Course Title: Foundation of Entrepreneurship

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	230101	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- To know various theories of entrepreneurship and trends.
- To identify various issues and challenges in starting a new venture.
- To understand innovation and its implications
- To create entrepreneurial mindset through understanding entrepreneurial personality



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Introduction to Entrepreneurship: <ul style="list-style-type: none">• Meaning, Role of Entrepreneur,• Entrepreneurial Process and different approaches,• Motivation for becoming an entrepreneur: Maslow's theory , ' Herj burg's theory, MC Gregor's theory, McClelland 's Need -achievement theory• Importance of Entrepreneurship, Functions of an Entrepreneur, Types of Entrepreneurs, Issues & Problems in Entrepreneurial Practices, entrepreneurial education and entrepreneurial mind,• Value creation- economic value and social Value,• Intrapreneurship (Corporate Entrepreneurship, Entrepreneurship and Startup	14	50%

2	Characteristics or traits of successful entrepreneurs and myths related to entrepreneurship: <ul style="list-style-type: none"> • Characteristics or traits of successful entrepreneurs, need for studying success characteristics / traits of entrepreneurs, • How to develop successful characteristics/traits of entrepreneur 	8	25%
	<ul style="list-style-type: none"> • Myths related to entrepreneurship. 		
3	Cognitive foundations of entrepreneurship <ul style="list-style-type: none"> • Human cognition: its basic nature-andimportant limitations, • Creativity and innovation • ideas to reality 	8	25%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Nameof the Book	Publisher	Edition
1	S.S. Khanka, Gupta. C.B.	Entrepreneurship & Small Business Management	Sultan Chand and Sons	LatestEdition



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2	Sami Uddin	Entrepreneurship Development in India	Mittal Publications	Latest Edition
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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. Bhatia.R.C	Entrepreneurship :Business and Management	Sultan Chand and Sons	Latest
2	Bruce R. Barringer	Entrepreneurship: Successfully Launching New Ventures	Pearson Education	Latest
3	<u>Janakiram. B., Rizwana.M.</u>	Entrepreneurship development	Excel Books	Latest
4	Khanna. S.S.	Entrepreneurial Development	Excel Books	Latest

List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Entrepreneurship
- Journal of Small Business Management
- Journal of Entrepreneurship & Management
- AMC Indian Journal of Entrepreneurship



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Swarnnim School of Computing & IT

Course Title: Indian Science & Technology

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	IKS230101	2	30					
				20%	30%	-	50%	

Course Outcomes(COs)

- Gain an in-depth appreciation of India's technological heritage, including its contributions to metallurgy, textiles, ceramics, and more.
- Understand the historical evolution of water management systems and transportation methods in India, and their impact on society.
- Explore the intersection of mathematics and astronomy in India, from ancient mathematical texts to significant astronomical discoveries.
- Examine India's ecological wisdom and environmental practices, including their applications in agriculture, architecture, and sustainable land management.
- Recognize India's role in shaping global technology and knowledge dissemination through its historical connections and contributions to various fields.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Fundamentals: An overview of Indian contributions to technology, Technological Innovations, Metallurgy, Textile Chemistry & Pyro Technology: Copper/Bronze/Zinc: Important Mines (Zawar, Khetri mines), Iron and Wootz Steel Technology, Textile and Dyeing- Indian Specialities (Kutchi Embroidery, CottonTextile etc.), Ceramic Technology, Stone(Lapidary), Shell, Ivory, Faience & Glass Technology 	09	30%
2	<ul style="list-style-type: none"> Water Management & Transportation: Harappan and Traditional WaterManagement System of Gujarat, Historical Sites- Sringeverpur, South Indian Water Management System, Western Ghats, Cave- Kanheri, etc., Communities Involved in Water Management, Modes of Transportations and Reforms, Grand Trunk Road (Uttarapath & Dakshinapath), Development of Trading Techniques, Boat & Ship Building 	06	20%

3	<ul style="list-style-type: none"> Mathematics & Astronomy: Mathematics contained in the Sulbasutra, Weaving Mathematics into Beautiful Poetry- Bhaskaracarya, The Evolution of Sine Function in India, The Discovery of Calculus 	06	20%
	by Kerala Astronomers, Vedanga Jyotish & Measuring Time & Calendar.		
4	<ul style="list-style-type: none"> Ecology and Environment: Nakshatrara Gyaan and Agriculture, Vernacular Architecture, Forest Management and Urban Planning, Agroforestry, Tank, Lakes, and Stepwells India's Contribution to the World 	09	30%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	R.M. Pujari, Pradeep Kolhe, N. R. Kuma	'Pride of India: A Glimpse into India's Scientific Heritage'	Sanskrita Bharati Publication	2006



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Vijnana Bharati	'Indian Contribution to science'	TMH	Latest
2	Kapil Kapoor, Michel	Knowledge	CBSE	Latest
3	Danino	traditions and practices of India		



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Swarinim School of Computing & IT
BCA (Honours) Programme Semester II

Course Title: Data Structure Using C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230201	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs):

Here are concise course outcomes for the syllabus:

- Apply arrays for varied applications, understand data structure classifications and operations.
- Implement stacks and queues, perform infix-postfix conversion, and grasp recursion concepts.
- Master linked lists, including insertion, deletion, sorting, and node counting.
- Gain expertise in binary trees, traversals, and tree expression manipulation.
- Proficiently use sorting (bubble, insertion, quick) and searching (sequential, binary) techniques.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">Classification of Data Structure, Operations on Data Structure, Address Calculation, Application of arrays, Application of Arrays	7	15%
2	<ul style="list-style-type: none">Continuous Implementation (Stack): Array Representation, Operations on Stacks: Push & Pop, Applications of stack, Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stackRecursion: Recursive Definition and Processes Recursion Vs. Iteration Continuous. Implementation (Queue): Array representation and implementation of Queues.	15	35%
3	<ul style="list-style-type: none">Non-Continuous Implementation: Link Lists: Linear List concept, Linked List Terminology, Representation of Linked List in Memory, Types of Linked List, Single Linked List, Doubly Linked List, Operations on Link List: Create List Insert node (empty list, beginning, middle, end), Delete node (first, general case), Print list, Count Nodes, Sort Lists.	8	15%
4	<ul style="list-style-type: none">Trees: Introduction to Tree & its	15	35%

	Terminology, Binary trees, Types of Binary trees, Representation of Binary Tree, Traversals (Inorder, Preorder, Postorder), Tree Expression. <ul style="list-style-type: none"> • Sorting & Searching Techniques: Bubble Sort, Insertion Sort, Quick Sort, Sequential Search, Binary Search. 		
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Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S. Lipschutz	Data structures	Mc’Graw, Hill	2nd Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Aaron M. Tenenbaum	Data Structures Using C	Oxford University Press	5th Edition



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2	Y. Langsam, M. Augenstein And A. M. Tenenbaum	Data Structures Using C And C++	Prentice - Hall Of India Pvt. Ltd.	2 nd Edition
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✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- ACM Transactions on Computing Systems
- Journal of Computer Science and Technology
- Journal of the ACMIEEE Software
- CODE Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Design & Markup News

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarrnim School of Computing & IT
BCA (Honours) Programme Semester II

Course Title: Object Oriented Concepts using C++

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theor y	Continuous Assessment	Practical	Theor y	Practical
Core	BCA230202	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

Here are concise course outcomes for the syllabus:

- Understand the fundamental concepts of Object-Oriented Programming (OOP) and grasp C++ basics, including operators, data types, and identifiers.
- Master control flow structures like if-else, loops, and learn about classes, objects, encapsulation, constructors, and memory allocation.



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- Acquire proficiency in working with arrays, strings, functions (overloading, inline), and operator overloading.
- Develop a solid understanding of pointers, inheritance, class hierarchy, and abstract classes.
- Gain knowledge of file handling, exception handling, namespaces, and stream operations.

Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> • Introduction- Introducing Object – Oriented Approach, Relating to other paradigms {Functional, Data decomposition}. • Basic terms and ideas- Abstraction, Encapsulation, Inheritance, Polymorphism, Review of C, Difference between C and C++ - cin, cout, new, delete, operators. 	8	15%
2	<ul style="list-style-type: none"> • Classes and Objects: Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class declaration, State identity and behaviour of an object, Constructors and destructors, instantiation of objects, Default parameter value, object types, C++ garbage collection, dynamic memory allocation, Metaclass / abstract classes. 	15	35%

3	<ul style="list-style-type: none"> Inheritance and Polymorphism- Inheritance, Class hierarchy, derivation – public, private & protected, Aggregation, composition vs classification hierarchies, Polymorphism, Categorization of polymorphism techniques, Method polymorphism, Polymorphism by parameter, Operator overloading, Parametric Polymorphism Generic function- Template function, function name overloading, Overriding inheritance methods, Run time polymorphism, Multiple Inheritance. 	15	35%
4	<ul style="list-style-type: none"> Files and Exception Handling- Streams and files, Namespaces, Exception handling, Generic Classes 	7	15%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	A. R. Venugopal, Rajkumar, T. Ravishanker	Mastering C++	TMH	3 rd Edition



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S. B. Lippman & J. Lajoie	C++ Primer	Addison Wesley	3rd Edition
2	R. Lafore	Object Oriented Programming using C++	Galgotia Publications	6th Edition
3	D. Parsons	Object Oriented Programming using C++	BPB Publication	2 nd Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- A Journal of Object Technology
- Journal of Computer Science and Technology
- ACM Transactions on Programming Languages and Systems
- C++ Users Journal (Now defunct, but archives might be useful)
- C/C++ Users Journal (Also defunct, but archives might contain valuable content)
- Journal of Computing Sciences in Colleges
- Computer Science Education

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)



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Swarnim School of Computing & IT
BCA (Honours) Programme Semester II

Course Title: Core Java

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BCA230203	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs):

- Proficiently apply Java programming concepts including data types, control structures, arrays, strings, inheritance, packages, and exception handling.
- Proficiently apply Java programming concepts of classes and multithreading
- Design interactive Java applets using AWT controls, layout managers, and event listeners while mastering string handling.
- Gain expertise in networking with datagram and TCP/IP server sockets, and learn to establish JDBC connections and utilize connection pooling.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">Java Programming: Data types, control structures, arrays, strings, and vector, operators	10	22%
2	<ul style="list-style-type: none">classes (inheritance, package, exception handling), abstraction, multithreaded programming	10	22%
3	<ul style="list-style-type: none">Java applets, AWT controls (Button, Labels, Combo box, list and other Listeners, menu bar) layout manager, string handling (only main functions)	15	34%
4	<ul style="list-style-type: none">Networking (datagram socket and TCP/IP based server socket) event handling, JDBC: Introduction, Drivers, Establishing Connection, Connection Pooling.	10	22%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Patrick Naughton and Herbertz Schildt	Java-2 The Complete Reference	TMH	3 rd Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Herbertz Schildt	Java: A Beginner's Guide	McGraw-Hill Education	9th edition (4 April 2022)
2	Joshua Bloch	Effective Java		6th Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Computer Science and Technology
- ACM Transactions on Computing Education
- Java Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Journal of Computing Sciences in Colleges



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WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



Diksha



Swarnim School of Computing & IT
BCA (Honours) Programme Semester II

Course Title: Foundation in Statistical Methods

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theor y	Continuous Assessment	Practical	Theor y	Practical
MDC	BCA230204	3+1	60					
				20%	30%	-	50%	2

Course Outcomes(COs):

- Develop proficiency in organizing data through tabulation, frequency distribution, and graphical representation.
- Understand and compute measures like mean, median, mode, range, quartile deviation, mean deviation, and standard deviation for assessing data patterns.
- The concept of skewness and apply Karl Pearson's Coefficients of Skewness in practical scenarios.
- Gain insight into correlation types and methods, including Karl Pearson's correlation coefficient, to assess relationships between variables in datasets.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">• Classification of data, Tabulation of data, Preparation of frequency distribution, Presentation of data through histogram, frequency polygon, frequency curve	12	26%
2	<ul style="list-style-type: none">• Measures of Central Tendency: Computation of Arithmetic mean, median and mode for ungrouped data and grouped data.	10	22%
3	<ul style="list-style-type: none">• Measures of dispersion: Computation of Range, Quartile deviation, mean deviation and Standard deviation• Concept of Skewness, Karl Pearson's Coefficients of Skewness(Numerical Applications Only)	15	34%
4	<ul style="list-style-type: none">• Meaning of Correlation, types of correlation, correlation coefficient, Karl Pearson correlation coefficient. (Numerical Applications Only)	08	18%

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. S.P. Gupta	"Statistical Methods"	Sultan Chand & Sons	46th edition (1 January 2021)

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.C. Gupta & V.K. Kapoor	Fundamental of Mathematical Statistics	Sultan Chand	11th edition
2	Mode .E.B.	"Elements of Statistics"	PrenticeHall	6th Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Statistical Education
- The American Statistician
- Journal of Applied Statistics
- Journal of Statistics Education
- International Journal for Innovation Education and Research
- Mathematics Teacher: Learning and Teaching PK-12



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WEB RESOURCES:

- www.statistics.com
- stats.stackexchange.com
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org) • Studytonight (www.studytonight.com)



Aikasa



Swarinim School of Computing & IT
BCA (Honours) Programme Semester II

Core Course

Title: Identifying Entrepreneurial Opportunities

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230202	2	30					
				20%	30%	-	50%	-

Course Outcomes (COs)

- Exploration of opportunities from the market
- Check technical, market, financial and other types of Feasibility of a business idea.
- Develop business model to describe the rationale of how an organization creates, delivers, and captures value
- Identification of various Business Opportunities from the market



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Opportunities: Their nature, discovery, and Creation: <ul style="list-style-type: none">• Opportunities: Their basic nature, opportunities: Discovered, created, or both, Opportunities: The role of information, experience and social network- The role of information in opportunity recognition, The role of experience and social networks in opportunity recognition,• How entrepreneurs can become skilled at recognizing opportunities...Entrepreneurship ,Entrepreneurship and Startup	14	50%
2	Business Idea Creation & IPR <ul style="list-style-type: none">• Meaning, sources of business ideas, techniques for idea generation like brainstorming,• Focus group, six thinking hats as idea generation,• Characteristics of brilliant business ideas Introduction:	8	25%

	<ul style="list-style-type: none"> Knowledge creation, Innovation and Intellectual Property Rights, Concept of Intellectual Property, Types of IPR – Patents – Copyright – Trademark – Industrial Designs – Trade Secrets – Geographical 		
3	Business Model: <ul style="list-style-type: none"> Introduction to business model, Types of business model, Developing and testing a business model, Business modelling process, Business model canvas, Business Models and value proposition, Business Model Failure: Reasons and Remedies Reinventing business model 	8	25%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.S. Khanka, Gupta. C.B.	Entrepreneurship & Small Business Management	Sultan Chand and Sons	Latest Edition



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2	Sami Uddin	Entrepreneurship Development in	Mittal Publications	Latest Edition
		India		

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. Bhatia.R.C	Entrepreneurship :Business and Management	Sultan Chand and Sons	Latest
2	Bruce R. Barringer	Entrepreneurship :Successfully Launching New Ventures	Pearson Education	Latest
3	<u>Janakiram. B., Rizwana.M.</u>	Entrepreneurship development	Excel Books	Latest
4	Khanna. S.S.	Entrepreneurial Development	Excel Books	Latest

List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Entrepreneurship
- Journal of Small Business Management
- Journal of Entrepreneurship & Management
- AMC Indian Journal of Entrepreneurship



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Swarnnim School of Computing & IT

Course Title: Logical and Critical Thinking

Category Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
ACE	AEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Students are able to understand the basic concept of Logical and Critical Thinking and are able to solve problems
- Student analytical ability increased.
- Student can be placed in service based company, government sector, PSU and it will also help in higher study.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Simplification and Approximation (BODMAS Rule, Approximation. Short trick, Digit Sum, Square Roots and Cube roots based Question) Coding Decoding (Coding means Encryption and Decoding means Decryption among letters, alphabets and Special Symbols)	8	26%
2	Crypt arithmetic (Crypt arithmetic is a type of mathematical game consisting of Mathematical Equation) Analogy & Odd one out (An Analogy is a comparison between two objects or system of objects in which they are thought to be similar.)	4	14%

3	Direction & Distance (Description of Directions and Determination of Distance wrt. Directions, Sunrise and Sunset with Shadow Concept.) Blood Relations (In such questions, one person describes his /herrelation with another person. Pointer- narrator relations Symbols relation as well as group relation)	6	20%
4	Number System Classifications of Number System [Rational/Irrational No's, Integers, fraction, Even odd, Prime - Composite no's] Perfect number & Square , Face value-Place value Frequency of Digit Occurrence Concept of Divisibility Rule - finding the division of a number Cyclicity rule - Unit digit Concept, Trailing Zeroes Binomial Theorem - for remainder Factorizations - Prime - Composite factors, Total factors , Even-Odd factors	12	40%

Evaluation		
1	Assignments/ Quizzes/ClassParticipation / Role Play/Projectetc.	30%(Internal Assessment)
2	InternalExamination	20%(InternalAssessment)
3	ExternalExamination(UniversityExam)	50%(External Assessment)



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BasicTextBooks:

Sr. No.	Author/s	Nameof the Book	Publisher	Edition
1	R.S.AGRWAL	Reasoning for Competitive Examinations	S CHAND	2022
2	R.S. AGRWAL	Quantitative Aptitude for Competitive Examinations	S CHAND	2022

Reference Books:

Sr. No.	Author/s	Name of theBook	Publisher	Edition
1	ARUN SHARMA	How To Prepare For Quantitative Aptitude	McGraw Hill Education	10 TH 2022
2	R. PRAVEEN	Quantitative Aptitude and Reasoning	PHI Learning Pvt Ltd	3 RD 2016

Relevant Websites

- ARIHANT REASONING E-BOOK PDF
<https://parikshatop.com/arihant-reasoning-book-pdf-download-free/>
- E BOOK FOR REASONING – ARUN SHARMA
<https://z-lib.is/book/how-to-prepare-for-logical-reasoning-for-the-cat>
- E BOOK FOR APTITUDE– ARUN SHARMA
<https://z-lib.is/book/how-to-prepare-for-quantitative-aptitude-for-the-cat>



Chikara



Swarnnim School of Computing & IT
BCA (Honours) Programme SemesterII

Course Title: Environmental Studies

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
VAC	VAC230201	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Enabling students to understand and realize the multi- disciplinary nature of the environment, its components, and inter-relationship between man and environment.
- Understanding the relevance and importance of natural resources in the sustenance of life on earth and living standard. the importance of ecosystem, biodiversity, and nature.
- Correlating the human population growth and its trend to the environmental degradation and developing the awareness about his/her role towards environmental protection. Identifying different types of environmental pollution and control measures.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<p>Introduction to Environment and Environmental Studies, Natural Resources:</p> <ul style="list-style-type: none"> Definition and Components of Environment, Relationship between the different components of Environment, Man and Environment relationship, Impact of technology on Environment, Environmental Degradation, its scope. Water resources: Sources of water - Surface and Ground water sources, Indian and Global scenario. 	9	30%
	<ul style="list-style-type: none"> Land resources: Land pollution, land use, land degradation & its causes. Forest resources: Definition and Types of Forests importance and benefits of forest, Deforestation causes and effects. 		

2	<p>Ecology and Ecosystems:</p> <ul style="list-style-type: none"> Ecology: Introduction, Objectives and Classification, Concept of an ecosystem structure of ecosystem or Components of ecosystem- Producers, Consumers, Decomposers Ecosystems: Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem, Estuarine Ecosystem Human Population and Environment: Population Growth, World and Indian scenario, Population and Environmental Degradation, Malthusian theory, Optimum theory, Urbanization: Urban population growth and Environmental problems 	12	40%
3	<p>Environmental pollutions:</p> <ul style="list-style-type: none"> Water Pollution: Introduction – Water Quality standards, sources of water pollution Classification of water pollutants. Eutrophication Air Pollution: Composition of air, Structure of 	9	30%

	atmosphere, Ambient Air Quality Standards, Classification of air pollutants, <ul style="list-style-type: none"> Land Pollution: Land uses, Land degradation: causes, effects and control, soil erosion Noise Pollution: Introduction, Sound and Noise, Causes and Effects Global Environmental Issues: Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer 		
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Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Snehal Popli & B.R. Shah	Basics of Environmental studies	Mahajan Publishing House	Latest



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Prof Dr N S Varandani	Basics of Environmental Studies	LAP -Lambert Academic Publishing Germany	Latest
2	R. Rajagopalan	Environmental Studies	Oxford University Press	Latest
3	U K Khare	Basics of Environmental Studies	Tata McGraw Hill	Latest
4	Daniel B Botkin & Edward A Keller	Environmental Sciences	John Wiley & Sons.	Latest



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✦ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Environmental Standard
- Indian Journal of Environmental Research and Studies
- Journal of Environmental Science and Technology.



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B.SC.- IT SYLLABUS

Swarnnim School of Computing & IT B. Sc.- IT (Honours) Programme Semester I

Course Title: Fundamentals of Computers

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230101	4	60					
				20%	30%	-	30%	20%

Course Outcomes (COs):

- Understand the basic concepts of computer hardware and software.
- Demonstrate problem solving skills.
- Understand the structure of operating system, its applications and commands.
- To be familiar with network tools, concepts of protocols and network interfaces.
- Understands the concept of Computer's Input/output devices.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> • Computer Fundamentals: Block Structure of a Computer, Characteristics of Computers, Generation of Computers and • Classification of Computers. • Programming Languages: Classification, Machine Code, Assembly Language, Higher Level Language and Fourth Generation Languages. • Number System: Bit, Byte, Binary, Decimal, Hexadecimal and Octal Systems, Conversion from One System to the Other; Binary Arithmetic Addition, Subtraction and Multiplication. 	15	30%
2	<ul style="list-style-type: none"> • Information Concepts & Processing System: Evolution of Information Processing, Data, Information, • Knowledge & Wisdom. • Elements of a Computer Processing System: Hardware - Input-Output • Devices, VDU, CPU Storage Devices and Media. • Software Concepts: Type of Software, Translator, Compiler, Interpreter, Assembler, Loader. • Application Software: Office Automation. 	15	35%
3	<ul style="list-style-type: none"> • Operating System: Concepts as Resource Manager, Batch Processing, Multiprogramming, Multiprocessing, • Time Sharing and Real Time System. • DOS: Command Interpreter, Booting Internal & External Commands, Batch 	7	15%



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	Files, exe, com, System Files, bin, txt, bmp Files.		
4	<ul style="list-style-type: none"> Computer Network and Communication: Network Types, Network Topologies; Data Communication – Mode, Channel, and Media; OSI Reference Model, TCP/IP, Data Communication Equipment/Devices. 	8	20%
	<ul style="list-style-type: none"> Internet and its Applications: E-Mail, TELNET, FTP, World Wide Web, Internet and Applications. 		

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	P.K. Sinha	Computer fundamentals	BPB Publication	8th edition, 2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Anita Goel	Computer Fundamentals	Pearson Education	Latest
2	Peter Norton	Inside PC	TMH	Latest
3	Alexis Leon, Methews Leon	Fundamentals of Information Technology	Vikas Publishing	Latest

✠ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.



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- "Computer" - This is the flagship magazine of the IEEE Computer Society, covering a wide range of topics related to computer science and technology. It features articles, research papers, and reviews on computer fundamentals.
- "Communications of the ACM" - This monthly publication by the Association for Computing Machinery (ACM) covers various aspects of computing, including computer fundamentals. It includes articles, research papers, and industry insights.
- "ACM Computing Surveys" - This journal focuses on surveys and tutorials that provide an overview of the fundamental concepts and developments in the field of computer science. It covers a broad range of topics and serves as a valuable resource for understanding computer fundamentals.
- "Computer Science Review" - This journal publishes review articles and surveys on various topics in computer science, including computer fundamentals. It offers in-depth coverage of foundational concepts and emerging trends.
- "IEEE Computer Architecture Letters" - This journal focuses specifically on computer architecture, which is a fundamental aspect of computer systems. It features short papers and letters that present novel ideas, designs, and analysis in computer architecture.
- "International Journal of Computer Science and Information Technologies" - This journal covers various aspects of computer science and information technology, including computer fundamentals. It features research papers, articles, and case studies.
- "IEEE Transactions on Computers" - This journal publishes research papers, articles, and surveys on computer-related topics, including computer fundamentals. It covers a wide range of areas, including computer architecture, algorithms, and software systems.
- "Computerworld" - This popular magazine focuses on technology news, trends, and insights. While it covers a wide range of topics, it often includes articles and features related to computer fundamentals and emerging technologies.



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WEB RESOURCES:

1. GeeksforGeeks (www.geeksforgeeks.org) - GeeksforGeeks is a popular platform that offers a wide range of articles, tutorials, and coding practice exercises for C programming. It covers various topics, ranging from basic concepts to advanced algorithms and data structures.
2. Tutorialspoint (www.tutorialspoint.com) - Tutorialspoint provides a comprehensive C programming tutorial that covers topics like basic syntax, control structures, functions, arrays, pointers, and file handling. It also offers an online compiler to practice coding.
3. Programiz (www.programiz.com) - Programiz provides interactive C programming tutorials, examples, and exercises. It covers the fundamentals of C programming and also delves into advanced topics like data structures and algorithms.
4. Codecademy (www.codecademy.com) - Codecademy offers an interactive online learning platform that includes a C programming course. It provides hands-on coding exercises and projects to help you practice and reinforce your understanding of C.
5. Cprogramming.com (www.cprogramming.com) - Cprogramming.com offers tutorials, examples, and a forum community for C programming enthusiasts. It covers topics such as basic syntax, data types, control structures, and pointers.
6. Stack Overflow (stackoverflow.com) - Stack Overflow is a popular question-and-answer platform where programmers can ask and answer questions related to C programming. It can be a valuable resource for troubleshooting and gaining insights from experienced programmers.



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7. The GNU C Library Reference Manual (www.gnu.org/software/libc/manual) - The GNU C Library (glibc) reference manual is an authoritative resource that provides detailed documentation on the C standard library functions. It can be helpful for understanding the usage and behavior of various library functions.
8. The C Programming Language (C89/C90) Standard - The official ANSI C standard document (also known as C89 or C90) specifies the syntax and semantics of the C programming language. It is a valuable reference for understanding the language specifications.



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Swarnnim School of Computing & IT

B.Sc.- IT(Honours) Programme

Semester I

Course Title: PROGRAMMING IN C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT23010 2	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

- Analyze a given problem and develop an algorithm to solve the problem.
- Design, develop and test programs written in 'C'.
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Introduction: History, Facilities, Concepts, Uses; Basic Program Structure, Header Files, Comments; A Simple C program, Identifiers, Basic Data Types and Sizes, Constants, Variables, Arithmetic, Relational and Logical Operators, Increment and Decrement Operators, Conditional Operator, Bit-wise Operators, Assignment Operators, Expressions, Type Conversions, Conditional Expressions, Precedence and Order of Evaluation. Input-Output Functions: Data Input and Output getchar(), putchar(), scanf(), printf(), functions. 	15	30%
2	<ul style="list-style-type: none"> Control Flow: If-Else, While, Do-while, Goto, For Statements, Nested Control Structures, Switch, Break, Continue Statements, Comma Operator. 	7	15%
3	<ul style="list-style-type: none"> Arrays & Functions: Arrays Defining, Processing Array, Introduction to Multidimensional Arrays; gets(), puts() functions, Functions Types, Parameters, Prototypes, Passing Arrays to Functions, Recursion, Passing Arguments to a Function by Value; Storage Classes: Automatic, External, Static, Register Variables in Single File Environment. 	8	20%
4	<ul style="list-style-type: none"> Pointer: Usage of Pointers, Addresses and Types, Pointer and Address Arithmetic, Pointer Operations and Declarations, Using Pointers as Function Arguments (Call By Reference, Call By Value), Pointer Array Duality Strings, Arrays of Pointers, Pointers to Functions, Concept of Dynamic Allocation of Memory, Pre-Processor Directives. 	15	35%

	<ul style="list-style-type: none"> • Other Data Types: Structures, Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions, Enumerations and Bit Fields, Typedef. • File Handling: Introduction of File Handling, Modes of File Handling Uses of fopen(), fclose(), putc(), getc(), putw(), getw(), fscanf(), fprintf(), ferror() Functions. 		
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Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Yashavant P. Kanetkar	Let Us C	BPB Publication	19th edition, 2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Peter Vander Linden, Schaum's	Outline of theory and problems of programming with C	TMH	Latest
2	Peter Vander Linden	Expert C programming	PHI	Latest
3	Balagurusamy E.	Computing Fundamentals and C Programming	TMH	Latest



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✦ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- "C/C++ Users Journal" - This magazine focuses on C and C++ programming languages, offering tutorials, articles, and code examples."The C/C++ Users Group Newsletter" - This publication provides news, articles, and resources for C and C++ programmers.
- "Journal of C Language Translation" - This journal focuses on the theory and practice of C language translation, including compiler technology and optimization.
- "**ACM Transactions on Programming Languages and Systems**" - A prestigious journal that covers a broad range of programming languages, including C, and publishes research papers and articles.
- "IEEE Transactions on Software Engineering" - This journal covers various aspects of software engineering, including programming languages like C, and features research papers and articles.
- "Software: Practice and Experience" - This journal publishes research papers, case studies, and reviews related to software development and programming languages, including C.
- "Embedded Systems Design" - This magazine covers topics related to embedded systems development, including C programming for microcontrollers and other embedded platforms.
- "C Programming Expert" - An online magazine dedicated to C programming, offering tutorials, tips, and tricks for beginners and advanced programmers alike.

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarnnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester I

Course Title: Web Development Using HTML, CSS & XML

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BSCIT2301 03	4	60					
				20%	30%	-	30%	20%

Course Outcomes (COs)

Certainly, here are concise one-liner course outcomes for the mentioned syllabus:

- Understand web concepts, protocols, and client-server computing principles.
- Create structured web content using HTML, CSS, and apply formatting and styling techniques.
- Apply CSS for designing layouts, navigation, forms, and enhance user experience.
- Implement dynamic elements using JavaScript, VBScript, and enhance interactivity.
- Gain an introduction to XML, its manipulation, and basic server-side technologies for web applications.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> • World Wide Web: Web page, Home page, Web site, Static, Dynamic and Active web page, Overview of Protocols, Simple Mail Transfer Protocol, Gopher, Telnet, Emails, TFTP, Hyper Text Transfer Protocol, Client server computing concepts. Web Client and Web Server Web Browser, • Browsers: Internet Explorer, Mozilla Firefox • Client, Side Scripting Languages: VB Script and Java Script, Active X control and Plugins, Web Server Architecture, Image maps, CGI, API web database connectivity, DBC, ODBC 	7	15%
2	<ul style="list-style-type: none"> • Dynamic HTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute. • Introduction to HTML: Element, Attribute, Headings, Paragraphs, Styles, Formatting, Comments, CSS, Links, Images, Tables, Lists, Blocks, Classes, ID, frames, File Paths, Head, Entities, Symbols, Color and Background of Web Pages, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Creating Table, Frame, Form and Style Sheet. 	15	35%
3	<ul style="list-style-type: none"> • CSS: Syntax, Colors, Backgrounds, Borders, Margins, Padding, Height/ Width, Box Model, Outline, Text, Fonts, Icons, Links, Lists, Position, Overflow, Float, Inline, Block, Align, Navigation Bar, Dropdowns, Image Gallery, Image Sprites, Attr Selectors, Forms, Counters, Website Layout, Units, Specificity. 	15	35%
4	<ul style="list-style-type: none"> • XML: Elements, Attributes, Namespaces, Display, HTTP request, Parser, DOM, XPath, XSLT, XQuery, XLink, Validator, DTD, Schema, Server 	8	15%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Shelley Powers	Dynamic Web Publishing 2	Sams.net	2 nd Edition, 1998

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Thomas A. Powell	Html & CSS: The Complete Reference	Osborne/McGraw-Hill	5th Edition
2	Heather Williamson	XML: The Complete Reference	Osborne/McGraw-Hill	6th Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- World Wide Web Journal
- Web Development Quarterly
- HTML & CSS Research Review
- XML Technologies Review
- Interactive Web Design Journal
- Web Designer Magazine
- HTML/CSS Today
- XML Insight Magazine
- Tech Web Designers' Digest
- Coding & Markup Monthly
- WebTech Times
- Digital Web Daily
- Code Chronicle
- Tech Web Tribune



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- Design & Markup News

WEB RESOURCES:

- **Khan Academy** (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- **W3Schools** (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarannim School of Computing & IT B.Sc.- IT (Honours) Programme Semester I

Course Title: Mathematical Foundation

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT23010 2	4	60					
				20%	30%	-	50%	-

Course Out comes (COs):

After completing this course satisfactorily, a student will be able to:

- Understand sets and perform operations and algebra on sets.
- Identify functions and determine their properties.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Identify functions and determine their properties.
- To develop the knowledge about derivatives and know various applications of differentiation.



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Syllabus:

Module	Contents	No. of Sessions	Weight age
1	Set theory: <ul style="list-style-type: none"> Basic definition of Set Theory Methods of representation of Set (Property method, Listing method) Set operations (Union, Intersection, Complement of a set, Difference of sets, Symmetric difference, Cartesian product of sets) Properties of set operations (Commutative, Associative, Distributive, De-Morgan's laws) Power set and Cardinality of sets Venn diagram Applications 	12	20%
2	Relations and Functions: <ul style="list-style-type: none"> Relations Equivalence relation Examples Introduction of Functions Domain, Co-domain and Range of a function Algebra of functions Types of functions (Linear, Quadratic, Polynomial, Implicit and Explicit functions and examples related with it) Exponential and Logarithmic with their properties and related examples Applications 	17	25%

3	Matrices and Determinants: <ul style="list-style-type: none"> • Definition of Matrix • Types of Matrix (Square, Row, Column, Zero, Diagonal, Scalar, Identity, Transpose, Symmetric, Skew-symmetric) • Arithmetic operations of Matrices (Addition, Scalar Multiplication, Matrix Multiplication) • Introduction to Determinants with Basic properties • Invertible matrix • Computation of Inverse using Definition • Simultaneous Solution of set of Linear equations using Cramer's Rule • Matrix inversion method • Rank of Matrix • Applications 	18	30%
4	Limit, Differentiation: <ul style="list-style-type: none"> • Limit <ul style="list-style-type: none"> ○ Concept of Limit ○ Some standard Limits (without proof) ○ Continuity of a function and related examples • Differentiation: <ul style="list-style-type: none"> ○ Definition of Derivative ○ Rules for Differentiation (without proof) ○ Differentiation of composite functions ○ Higher order derivatives till order 2 <ul style="list-style-type: none"> • Applications 	13	25%

Basic Text Books:				
Sr. No.	Author/s	Name of theBook	Publisher	Edition
1	D.C. Sancheti & V.K Kapoor	Business Mathematics	D.C. Sancheti & V.K Kapoor	Latest

Reference Books:				
Sr. No.	Author/s	Name of theBook	Publisher	Edition
1	B.S.Vatsa	Discrete Mathematics	New Age International Limited Publishers	Latest
2	S. C. Gupta	Matrices	S. Chand	Latest
3	R.S. Agarwal	Differentia lCalculus	S. Chand	Latest



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Swarrnim School of Computing & IT

B. Sc.- IT(Honours) Programme

Semester I

Course Title: Communication Skills

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
AEC	AEC230101	2	30	20%	30%	-	50%	

Course Outcomes(COs)

- Incultation of different skills will be added in a student's career.
- Students' employability skills will be enhanced.
- 3.Ability to speak in English will be improved through practice.
- Self Analysis tool will help the students to identify their strengths and weaknesses to work upon.
- Hesitation of speaking in public and in English will be reduced.



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Syllabus:

Module	Contents*	No of Sessions	Weightage
1	<p>People Skills</p> <p>Essential Skills For Success</p> <p>Trainer will introduce himself/herself and briefly talk about soft skills. Talk about what soft skills are and their importance.</p> <p>SWOT Analysis</p> <p>Trainer will help students understand their strengths, weaknesses, opportunities and threats.</p>	8	26%
2	<p>Fundamentals Of Communication</p> <p>Trainer will talk about the importance of communication, how communication works.</p>	4	14%
3	<p>First Impressions</p> <p>Self Presentation</p> <p>Trainer will talk about how students can present themselves to others in various settings. Selfpresentation plays a crucial role in creating initial impressions. A positive and confident selfpresentation can set the tone for successful interactions and relationships.</p> <p>4 A'S Of Dressing</p> <p>Trainer will discuss the 4 A's of appearance which are: Appropriate Dressing, Authentic Dressing, Approachable Dressing and Affordable Dressing.</p> <p>The Art of Attitude</p> <p>Trainer will emphasize on the importance of attitude management and provide a basic understanding of how attitudes impact personal and professional growth. They will focus on cultivating positive mindsets and the transformative power of attitude.</p>	6	20%
4	<p>Professional Ethics</p> <p>Polite Protocol</p> <p>Trainer will explain the importance of greeting etiquettes and talk about</p>	12	40%



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	Concept Of Happiness & Appreciation		
	Trainer will explain the importance of happiness and how to identify your own happiness.		
	Professional Interaction		
	Trainer will introduce the concept of professionalism and what are professional ethics. An interactive activity will be conducted and there will be three scenarios presented in the activity, followed by a discussion about professional ethics.		
	Types of Ethics		
	Trainer will talk about the different ethics that a student has to keep in mind in their professional lives and understand its importance.		

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Reference Textbooks:

Sr No:	Text Book	Author Name	Publisher	Edition
1.	Corporate Soft Skills	Sarvesh Gulati	Rupa Publications	2006
2.	Successful Communication	Ken Lawson	Axis Publishing Limited	2006
3.	Soft Skills For Dummies	John Wiley & Sons	John Wiley & Sons, Inc.,	2023



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Nitin Bhattnagar, Mamta Bhatnagar	Effective Communication And Soft Skills	Pearson Pub.	2012
2	©AICTE Approved	Communications Skills WorkBook	NA	NA
3	Roshan Lal Raina	Professional Communication	Himalaya Publishing House	2012
4	Christie Marlowe	Presenting Yourself: Business Manners, Personality, Etiquettes	Mason Crest	2014
5	Jeff Keller	Attitude is everything	Harper Collins	2017

List of Websites/ videos for reference:

- [Basics Of Communication Skills](#)
- [Essential Skills For Success](#)
- [Self Presentation](#)
- [Fundamentals Of Communication](#)
- [Appreciation And Gratitude](#)



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Swarnnim School of Computing & IT B.Sc.- IT (Honours) Programme Semester I

Core Course Title: Foundation of Entrepreneurship

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	230101	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- To know various theories of entrepreneurship and trends.
- To identify various issues and challenges in starting a new venture.
- To understand innovation and its implications
- To create entrepreneurial mindset through understanding entrepreneurial personality



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Introduction to Entrepreneurship: <ul style="list-style-type: none"> • Meaning, Role of Entrepreneur, • Entrepreneurial Process and different approaches, • Motivation for becoming an entrepreneur: Maslow's theory, 'Herj burg's theory, MC Gregor's theory, McClelland 's Need -achievement theory • Importance of Entrepreneurship, Functions of an Entrepreneur, Types of Entrepreneurs, Issues & Problems in Entrepreneurial Practices, entrepreneurial education and entrepreneurial mind, • Value creation- economic value and social Value, • Intrapreneurship (Corporate Entrepreneurship, Entrepreneurship and Startup 	14	50%
2	Characteristics or traits of successful entrepreneurs and myths related to entrepreneurship: <ul style="list-style-type: none"> • Characteristics or traits of successful entrepreneurs, need for studying characteristics / traits of entrepreneurs, • How to develop successful characteristic traits of entrepreneur • Myths related to entrepreneurship. 	8	25%
3	Cognitive foundations of entrepreneurship <ul style="list-style-type: none"> • Human cognition: its basic nature- and important limitations, • Creativity and innovation • ideas to reality 	8	25%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.S. Khanka, Gupta. C.B.	Entrepreneurship & Small Business Management	Sultan Chand and Sons	Latest Edition
2	Sami Uddin	Entrepreneurship Development in India	Mittal Publications	Latest Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. Bhatia.R.C	Entrepreneurship: Business and Management	Sultan Chand and Sons	Latest
2	Bruce R. Barringer	Entrepreneurship: Successfully Launching New Ventures	Pearson Education	Latest
3	<u>Janakiram. B., Rizwana. M.</u>	Entrepreneurship development	Excel Books	Latest
4	Khanna. S.S.	Entrepreneurial Development	Excel Books	Latest

List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Entrepreneurship
- Journal of Small Business Management
- Journal of Entrepreneurship & Management
- AMC Indian Journal of Entrepreneurship



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Swarnnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester I

Course Title: Indian Science & Technology

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	IKS230101	2	30					
				20%	30%	-	50%	

Course Outcomes (COs)

- Gain an in-depth appreciation of India's technological heritage, including its contributions to metallurgy, textiles, ceramics, and more.
- Understand the historical evolution of water management systems and transportation methods in India, and their impact on society.
- Explore the intersection of mathematics and astronomy in India, from ancient mathematical texts to significant astronomical discoveries.
- Examine India's ecological wisdom and environmental practices, including their applications in agriculture, architecture, and sustainable land management.
- Recognize India's role in shaping global technology and knowledge dissemination through its historical connections and contributions to various fields.



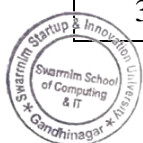
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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Fundamentals: An overview of Indian contributions to technology, Technological Innovations, Metallurgy, Textile Chemistry & Pyro Technology: Copper/Bronze/Zinc: Important Mines (Zawar, Khetri mines), Iron and Wootz Steel Technology, Textile and Dyeing- Indian Specialities (Kutchi Embroidery, Cotton Textile etc.), Ceramic Technology, Stone (Lapidary), Shell, Ivory, Faience & Glass Technology 	09	30%
2	<ul style="list-style-type: none"> Water Management & Transportation: Harappan and Traditional Water Management System of Gujarat, Historical Sites- Sringeverpur, South Indian Water Management System, Western Ghats, Cave- Kanheri, etc., Communities Involved in Water Management, Modes of Transportations and Reforms, Grand Trunk Road (Uttarapath & Dakshinapath), Development of Trading Techniques, Boat & Ship Building 	06	20%
3	<ul style="list-style-type: none"> Mathematics & Astronomy: Mathematics contained in the Sulbasutra, Weaving Mathematics into Beautiful Poetry- Bhaskaracarya, The Evolution of Sine Function in India, The Discovery of Calculus by Kerala Astronomers, Vedanga Jyotish & Measuring Time & Calendar. 	06	20%
4	<ul style="list-style-type: none"> Ecology and Environment: Nakshatrara Gyaan and Agriculture, Vernacular Architecture, Forest Management and Urban Planning, Agroforestry, Tank, Lakes, and Stepwells India's Contribution to the World 	09	30%

Evaluation

1	Assignments / Quizzes / Class Participation / Role Play/ Project etc	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	R.M. Pujari, Pradeep Kolhe, N. R. Kuma	‘Pride of India: A Glimpse into India's Scientific Heritage’	Sanskrita Bharati Publication	2006

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Vijnana Bharati	‘Indian Contribution to science’	TMH	Latest
2	Kapil Kapoor, Michel Danino	Knowledge traditions and practices of India	CBSE	Latest



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Swarnnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester II

Course Title: Data Structure Using C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT23020 1	4	60					
				20%	30%	-	30%	20%

Course Outcomes (COs):

Here are concise course outcomes for the syllabus:

- Apply arrays for varied applications; understand data structure classifications and operations.
- Implement stacks and queues, perform infix-postfix conversion, and grasp recursion concepts.
- Master linked lists, including insertion, deletion, sorting, and node counting.
- Gain expertise in binary trees, traversals, and tree expression manipulation.
- Proficiently use sorting (bubble, insertion, quick) and searching (sequential, binary) techniques.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Classification of Data Structure, Operations on Data Structure, Address Calculation, Application of arrays, Application of Arrays 	7	15%
2	<ul style="list-style-type: none"> Continuous Implementation (Stack): Array Representation, Operations on Stacks: Push & Pop, Applications of stack, Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack Recursion: Recursive Definition and Processes Recursion Vs. Iteration Continuous. Implementation (Queue): Array representation and implementation of Queues. 	15	35%
3	<ul style="list-style-type: none"> Non-Continuous Implementation: Link Lists: Linear List concept, Linked List Terminology, Representation of Linked List in Memory, Types of Linked List, Single Linked List, Doubly Linked List, Operations on Link List: Create List Insert node (empty list, beginning, middle, end), Delete node (first, general case), Print list, Count Nodes, Sort Lists. 	8	15%
4	<ul style="list-style-type: none"> Trees: Introduction to Tree & its Terminology, Binary trees, Types of Binary trees, Representation of Binary Tree, Traversals (Inorder, Preorder, Postorder), Tree Expression. Sorting & Searching Techniques: Bubble Sort, Insertion Sort, Quick Sort, Sequential Search, Binary Search. 	15	35%

Evaluation

1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S. Lipschutz	Data structures	Mc’Graw, Hill	2nd Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Aaron M. Tenenbaum	Data Structures Using C	Oxford University Press	5th Edition
2	Y. Langsam, M. Augenstein And A. M. Tenenbaum	Data Structures Using C And C++	Prentice - Hall Of India Pvt. Ltd.	2 nd Edition

† List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- ACM Transactions on Computing Systems
- Journal of Computer Science and Technology
- Journal of the ACMIEEE Software
- CODE Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Design & Markup News

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarnnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester II

Course Title: Database Management System

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230202	4	60					
				20%	30%	-	30%	20%

Course Outcomes (COs)

Here are concise course outcomes for the syllabus:

- Analyze data models and explain DBMS architecture for effective data management.
- Design and represent complex data using E-R and object modeling techniques.
- Implement file organization methods including indexing and hashing.
- Apply relational concepts and SQL for querying and programming databases.
- Convert EER and ER models into relational schemas.
- Normalize data and ensure data security through recovery and authorization techniques.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Introduction: Characteristics of database approach, data models, DBMS architecture and data independence. E-R Modeling: Entity types, Entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and object modeling, Sub classes; Super classes, inheritance, specialization and generalization. 	15	35%
2	<ul style="list-style-type: none"> File Organization: Indexed sequential access files; implementation using B & B++ trees, hashing, hashing functions, collision resolution, extendible hashing, dynamic hashing approach implementation and performance 	7	15%
3	<ul style="list-style-type: none"> Relational Data Model: Relational model concepts, relational constraints, relational algebra SQL: SQL queries, programming using SQL. 	8	15%
4	<ul style="list-style-type: none"> EER and ER to relational mapping: Data base design using EER to relational language. Data Normalization: Functional Dependencies, Normal form up to 3rd normal form. Concurrency Control: Transaction processing, locking techniques and associated, database recovery, security and authorization. Recovery Techniques, Database Security 	15	35%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Abraham Silberschatz, Henry Korth, S.Sudarshan	Database Systems Concepts	McGraw Hill	4th Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Jim Melton, Alan Simon	Understanding the new SQL: A complete Guide	Morgan Kaufmann Publishers	5th Edition
2	A.K. Majumdar, P. Bhattacharya	Database Management Systems	TMH	2 nd Edition

✦ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- ACM Transactions on Computing Systems
- Journal of Computer Science and Technology
- Journal of the ACM/IEEE Software
- CODE Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Design & Markup News

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarnnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester II

Course Title: Mobile Application Development

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BSCIT230203	4	60					
				20%	30%	-	30%	20%

Course Outcomes (COs)

Here are concise course outcomes for the syllabus:

- Design user-friendly mobile interfaces and layouts.
- Develop functional mobile applications using relevant programming languages.
- Employ effective testing and debugging techniques for app quality assurance.
- Deploy mobile apps in compliance with security and distribution guidelines.
- Stay informed about emerging trends and technologies in the mobile development landscape.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">Introduction to Mobile App Development: Understand the various mobile application development platforms and ecosystems. Describe the mobile app development lifecycle and its stages. Differentiate between native, web, and hybrid app development approaches. User Interface Design for Mobile Apps: Apply principles of mobile user interface (UI) and user experience (UX) design. Design responsive and user-friendly layouts for mobile screens. Utilize UI components effectively and implement intuitive navigation patterns.	15	35%
2	<ul style="list-style-type: none">Programming for Mobile Apps: Demonstrate proficiency in programming languages (e.g., Java, Kotlin, Swift) used in mobile app development. Implement basic mobile app logic, data storage, and integration with external services.	7	15%
3	<ul style="list-style-type: none">Testing and Debugging Mobile Apps: Apply testing techniques for mobile applications on emulators and real devices. Diagnose and resolve common errors and issues in mobile app development. Perform user acceptance testing and ensure usability standards.App Deployment and Distribution: Prepare mobile apps for deployment, adhering to platform-specific guidelines. Navigate the app store submission process and understand distribution strategies. Deploy mobile apps to target users and devices effectively.	8	15%



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4	<ul style="list-style-type: none"> Security Considerations in Mobile App Development: Identify potential security risks in mobile app development. Apply secure coding practices to protect data and enhance app security. Implement basic authentication and authorization mechanisms in mobile apps. Emerging Trends in Mobile App Development: Recognize and discuss current trends in mobile app development. Evaluate the potential of integrating emerging technologies (e.g., AR/VR) in mobile apps. Explore cross-platform development frameworks as a means of extending app reach. 	15	35%
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Evaluation

1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Bill Phillips and Chris Stewart	Android Programming: The Big Nerd Ranch Guide	Big Nerd Ranch Guides	4th Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Christian Keur, Aaron Hillegass	iOS Programming: The Big Nerd Ranch Guide	Big Nerd Ranch Guides	5th Edition
2	Jason González	Mobile First Design with HTML5 and CSS3	Packt Publishing	2 nd Edition



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† List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- ACM Transactions on Computing Systems
- Journal of Computer Science and Technology
- Journal of the ACMIEEE Software
- CODE Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Design & Markup News

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarrnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester II

Course Title: Foundation in Statistical Methods

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
MDC	BSCIT230204	3+1	60					
				20%	30%	-	50%	-

Course Outcomes (COs):

- Develop proficiency in organizing data through tabulation, frequency distribution, and graphical representation.
- Understand and compute measures like mean, median, mode, range, quartile deviation, mean deviation, and standard deviation for assessing data patterns.
- The concept of skewness and apply Karl Pearson's Coefficients of Skewness in practical scenarios.
- Gain insight into correlation types and methods, including Karl Pearson's correlation coefficient, to assess relationships between variables in datasets.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Classification of data, Tabulation of data, Preparation of frequency distribution, Presentation of data through histogram, frequency polygon, frequency curve 	12	26%
2	<ul style="list-style-type: none"> Measures of Central Tendency: Computation of Arithmetic mean, median and mode for ungrouped data and grouped data. 	10	22%
3	<ul style="list-style-type: none"> Measures of dispersion: Computation of Range, Quartile deviation, mean deviation and Standard deviation Concept of Skewness, Karl Pearson's Coefficients of Skewness (Numerical Applications Only) 	15	34%
4	<ul style="list-style-type: none"> Meaning of Correlation, types of correlation, correlation coefficient, Karl Pearson correlation coefficient. (Numerical Applications Only) 	08	18%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. S.P. Gupta	“Statistical Methods“	Sultan Chand & Sons	46th edition (1 January 2021)



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.C. Gupta & V.K. Kapoor	Fundamental of Mathematical Statistics	Sultan Chand	11th edition
2	Mode .E.B.	"Elements of Statistics"	PrenticeHall	6th Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Statistical Education
- The American Statistician
- Journal of Applied Statistics
- Journal of Statistics Education
- International Journal for Innovation Education and Research
- Mathematics Teacher: Learning and Teaching PK-12

WEB RESOURCES:

- www.statistics.com
- stats.stackexchange.com
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)



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Swarnnim School of Computing & IT
B. Sc.- IT (Honours) Programme
Semester II
Course Title: Logical and Critical Thinking

Category Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
ACE	AEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Students are able to understand the basic concept of Logical and Critical Thinking and are able to solve problems
- Student analytical ability increased.
- Student can be placed in service based company, government sector, PSU and it will also help in higher study.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Simplification and Approximation (BODMAS Rule, Approximation, Short trick, Digit Sum, Square Roots and Cube roots based Question) Coding Decoding (Coding means Encryption and Decoding means Decryption among letters, alphabets and Special Symbols)	8	26%
2	Crypt arithmetic (Crypt arithmetic is a type of mathematical game consisting of Mathematical Equation) Analogy & Odd one out (An Analogy is a comparison between two objects or system of objects in which they are thought to be similar.)	4	14%
3	Direction & Distance (Description of Directions and Determination of Distance wrt. Directions, Sunrise and Sunset with Shadow Concept.) Blood Relations (In such questions, one person describes his /her relation with another person. Pointer- narrator relations Symbols relation as well as group relation)	6	20%

4	Number System Classifications of Number System [Rational/Irrational No's, Integers, fraction, Evenodd, Prime - Composite no's] Perfect number & Square, Face value-Place value Frequency of Digit Occurrence Concept of Divisibility Rule - finding the division of a number Cyclicity rule - Unit digit Concept, Trailing Zeroes Binomial Theorem - for remainder Factorizations - Prime - Composite factors, Total factors, Even-Odd factors	12	40%
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Evaluation		
1	Assignments/ Quizzes/ClassParticipation / Role Play/Projectetc.	30%(Internal Assessment)
2	InternalExamination	20%(InternalAssessment)
3	ExternalExamination(UniversityExam)	50%(External Assessment)

BasicTextBooks:

Sr. No.	Author/s	Nameof the Book	Publisher	Edition
1	R.S.AGRWAL	Reasoning for Competitive Examinations	S CHAND	2022
2	R.S. AGRWAL	Quantitative Aptitude for Competitive Examinations	S CHAND	2022

ReferenceBooks:

Sr. No.	Author/s	Name of theBook	Publisher	Edition
1	ARUN SHARMA	How To Prepare For Quantitative Aptitude	McGraw Hill Education	10 TH 2022
2	R. PRAVEEN	Quantitative Aptitude and Reasoning	PHI Learning Pvt Ltd	3 RD 2016



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Relevant Websites

- ARIHANT REASONING E-BOOK PDF
<https://parikshatop.com/arihant-reasoning-book-pdf-download-free/>
- E BOOK FOR REASONING – ARUN SHARMA
<https://z-lib.is/book/how-to-prepare-for-logical-reasoning-for-the-cat>
- E BOOK FOR APTITUDE– ARUN SHARMA
<https://z-lib.is/book/how-to-prepare-for-quantitative-aptitude-for-the-cat>
- LINK FOR MULTIPLE QUANT E BOOK
<https://www.google.com/search?q=aptitude+book+for+placement+pdf&oq=APTITUDE+BOOK&aqs=chrome.30i512l10.12648j0j15&sourceid=chrome&ie=UTF-8>



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School of Computing & IT

Programme B. Sc.- IT

Semester II

Core Course Title: Identifying Entrepreneurial Opportunities

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Exploration of opportunities from the market
- Check technical, market, financial and other types of Feasibility of a business idea.
- Develop business model to describe the rationale of how an organization creates, delivers, and captures value
- Identification of various Business Opportunities from the market



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Opportunities: Their nature, discovery, and Creation: <ul style="list-style-type: none"> • Opportunities: Their basic nature, opportunities: Discovered, created, or both, Opportunities: The role of information, experience and social network- The role of information in opportunity recognition, The role of experience and social networks in opportunity recognition, • How entrepreneurs can become skilled at recognizing opportunities...Entrepreneurship, Entrepreneurship and Startup 	14	50%
2	Business Idea Creation & IPR <ul style="list-style-type: none"> • Meaning, sources of business ideas, techniques for idea generation like brain storming, • Focus group, six thinking hats as idea generation, • Characteristics of brilliant business ideas Introduction: • Knowledge creation, Innovation and Intellectual Property Rights, Concept of Intellectual Property, • Types of IPR – Patents – Copyright – Trademark – Industrial Designs – Trade Secrets – Geographical 	8	25%
3	Business Model: <ul style="list-style-type: none"> • Introduction to business model, Types of business model, 	8	25%
	<ul style="list-style-type: none"> • Developing and testing a business model, Business modelling process, Business model canvas, • Business Models and value proposition, Business Model Failure: Reasons and Remedies Reinventing business model 		

Evaluation		
1	Assignments / Quizzes / Class Participation e Play/ / Ro Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.S. Khanka, Gupta. C.B.	Entrepreneurship & Small Business Management	Sultan Chand and Sons	Latest Edition
2	Sami Uddin	Entrepreneurship Development in India	Mittal Publications	Latest Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. Bhatia.R.C	Entrepreneurship: Business and Management	Sultan Chand and Sons	Latest
2	Bruce R. Barringer	Entrepreneurship: Successfully Launching New Ventures	Pearson Education	Latest
3	<u>Janakiram. B., Rizwana. M.</u>	Entrepreneurship development	Excel Books	Latest
4	Khanna. S.S.	Entrepreneurial Development	Excel Books	Latest

List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

1. Journal of Entrepreneurship
2. Journal of Small Business Management
3. Journal of Entrepreneurship & Management
4. AMC Indian Journal of Entrepreneurship



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School of Computing & IT
Programme B. Sc.- IT
Semester II
Course Title: Environmental Studies

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
VAC	VAC230201	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Enabling students to understand and realize the multi- disciplinary nature of the environment, its components, and inter-relationship between man and environment.
- Understanding the relevance and importance of natural resources in the sustenance of life on earth and living standard. the importance of ecosystem, biodiversity, and nature.
- Correlating the human population growth and its trend to the environmental degradation and developing the awareness about his/her role towards environmental protection. Identifying different types of environmental pollution and control measures.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Introduction to Environment and Environmental Studies, Natural Resources: <ul style="list-style-type: none">• Definition and Components of Environment, Relationship between the different components of Environment, Man and Environment relationship, Impact of technology on Environment, Environmental Degradation, its scope.• Water resources: Sources of water - Surface and Ground water sources, Indian and Global scenario.• Land resources: Land pollution, land use, land degradation & its causes.• Forest resources: Definition and Types of Forests importance and benefits of forest, Deforestation causes and effects.	9	30%



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2	Ecology and Ecosystems: <ul style="list-style-type: none"> Ecology: Introduction, Objectives and Classification, Concept of an ecosystem structure of ecosystem or Components of ecosystem- Producers, Consumers, Decomposers Ecosystems: Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem, Estuarine Ecosystem Human Population and Environment: Population Growth, World and Indian scenario, Population and Environmental Degradation, Malthusian theory, Optimum theory, Urbanization: Urban population growth and Environmental problems 	12	40%
3	Environmental pollutions: <ul style="list-style-type: none"> Water Pollution: Introduction – Water Quality standards, sources of water 	9	30%
	<p>pollution Classification of water pollutants. Eutrophication</p> <ul style="list-style-type: none"> Air Pollution: Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Land Pollution: Land uses, Land degradation: causes, effects and control, soil erosion Noise Pollution: Introduction, Sound and Noise, Causes and Effects <ul style="list-style-type: none"> Global Environmental Issues: Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer 		

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Snehal Popli & B.R. Shah	Basics of Environmental studies	Mahajan Publishing House	Latest

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Prof Dr N S Varandani	Basics of Environmental Studies	LAP -Lambert Academic Publishing Germany	Latest
2	R. Rajagopalan	Environmental Studies	Oxford University Press	Latest
3	U K Khare	Basics of Environmental Studies	Tata McGraw Hill	Latest
4	Daniel B Botkin & Edward A Keller	Environmental Sciences	John Wiley & Sons.	Latest

† List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Environmental Standard
- Indian Journal of Environmental Research and Studies
- Journal of Environmental Science and Technology.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Master in Computer Application (MCA)

Year 1 – (Semester-1)

Subject Name: Basic Computer Science – 1(Applications of Data Structures and Applications of SQL)

Subject Code: 16110102

1. Course Objectives:

- The Main objective of this course is to develop proficiency in the specification, representation, and implementation of Data Types and Data Structures.
- Demonstrate a familiarity with the logic development algorithm.
- Analyze various algorithms for space and time complexity
- To compare various searching and sorting techniques
- To apply appropriate data structures to solve different problems.
- Design and implement SQL databases
- Understand and use the Structured Query Language - DDL, DML and DCL.

2. Prerequisites:

- Proficiency in a programming language
- Basic Concepts in Data Structure



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Unit No.	Chapter Details	Weightage	No. of Lecture
1	Fundamental of Data Structure Data Representation, Data Type, Abstract Data Types, Primitive Data Structure and their representation, Data Structure, Algorithm for Data Structure, Notations of Algorithms (Flowchart, Pseudocode, Decision Tables), Modularisation to algorithm design (Top-down approach, Bottom Up Approach), Analysis of Algorithms and Structured programming.	10%	4
2	Stacks, Queues and Recursion Stacks and Queues: Introduction, Array Implementation of Stacks, Applications of Stack, Queue: Introduction, Queue Implementation Using Arrays. Recursion: Basic concepts, implementation, The Tower of Hanoi, Time and Space Requirements, Recursion vs. Iterations.	20%	8

3. Contents:

3	Lists, Linked Lists, Sorting and Searching Sequential List, Linked Lists, List Implementations, Application of Linked List, Pointer Based Implementation of Linked Lists, Application of linked list. Sorting Techniques, Sorting on Multiple Keys.	20%	10
4	Database Design Database Design Life Cycle, Database Design strategies, Centralized vs Decentralized	10%	3



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5	SQL Basics Introduction to SQL, features of SQL, Rules for SQL, SQL Components (DDL, DML, DCL, TCL, DQL), Data Types, , Data Constraints Creating table, Inserting table data, Viewing Table data (All, rows and all columns, Selected columns and all rows, Selected columns and selected rows) , Sorting data in a table , Creating table from another table , Deleting data (All rows, Specific rows), Updating data (All rows and conditionally), Renaming tables, Truncating table, Destroying tables, Creating and dropping synonym	20%	8
6	Advanced SQL Functions, Group by and Having Clause, Sub Query, Exist and Not Exist Operator, Different types of Joins, Set Operators : Union, Intersect and Minus Indexes, Views, SEQUENCE, Clusters, Granting and revoking privileges	20%	7

1. Text Books:

1. “Data Structures using C”, Samir K. Bandyopadhyay, Kashi N. Dey, Pearson Education (2009).
2. Peter Rob, Carlos Coronel, “Database Systems : Design, Implementation and Management”, 8th Edition, Cengage Learning
3. SQL By Ivan Byross, BPB Publications.

2. Reference Books:

1. “Data Structures and algorithm analysis in C”, second edition Mark Allen Weiss.
2. "An Introduction to Data Structures with Applications", Jean-Paul Tremblay, Paul G. Sorenson, Tata McGraw-Hill, 2nd Edition, (2007)
3. “Data Structures using C”, A. K. Sharma, Pearson Education (2011).
4. “Fundamentals of Data Structures in C”, Horowitz, Sahni, Anderson-Freed, University Press (2nd edition-2007)
5. Kevin Loney, Oracle Database 11g :The Complete Reference, Oracle Press, McGrawHill
6. Ms. Anjali Jivani and Ms. Amisha Shingala , “ Practice book on SQL and PL/SQL



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with examples”, Nirav and Roopal Publications, Third Edition

3. Chapter Wise Coverage from Text Book:

Unit No.	Text Books	Topics/Subtopics	No. of Lectures
1	Book-1	Chapter 1, 2	4
2	Book-1	Chapter 6,7	8
3	Book-1	Chapter 8, 9,10,11	10
4	Book 2	Chapter 9 (Section 9.3, 9.4 and 9.5)	3
5	Book 3	Chapter 1 (Page 9 to 12) , Chapter 7,8,9	8
6	Book 3	Chapter 10, 11, 12	7

4. Accomplishments of the student after completing the course :

Student will be able to understand the concept of Data Structure and Database Design, implementation. They will be able to understand SQL Language and its components.

5. Suggestions for Lab Sessions :

a) Suggested Lab Activities

Sr. #	Sub Task Description
DS	Introduction to Program flowcharts, Pseudocode and structured programming.
	Implementation of Stacks and Queues in C/C++ Programming language.
	Implementation of Linked List (Array Based and Pointer Based), Circular, Doubly Linked List in C/C++ Programming language.
	C/C++ program for Sorting and Searching.



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SQL	Introduction to SQL, Constraints, Table Creation.
	DDL and DML Commands.
	Select Statement, Types of Joins, Set Operators.
	Advanced SQL Queries

Reference Books:

1. “Data Structures using C”, Samir K. Bandyopadhyay, Kashi N. Dey, Pearson Education (2009).
2. Ms. Anjali Jivani and Ms. Amisha Shingala , “ Practice book on SQL and PL/SQL with examples”, Nirav and Roopal Publications, Third Edition

PS: Above is a suggestive list so student can perform on any database available at institute.



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SWARNIM STARTUP & INNOVATION UNIVERSITY

Swarnim School of Business

Master of Computer Applications

Year 1 – (Semester-1)

Subject Name: Basic Computer Science – 2: Applications of Operating Systems and Applications of Systems Software

Subject Code: 16110103

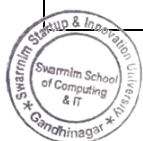
1. Course Objectives:

- The Main objective of this course is to develop proficiency in the specification, representation, and implementation of various concepts of System Software and Operating system basics.

2. Prerequisites: NIL

3. Contents:

Unit No.	Chapter Details	Weightage	No. of Lecture
1	Introduction, Language Processing What is System Software? , Programming Languages and Language Processors, Language Processing Activities, Fundamentals of Language Processing	10%	4



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2	Scanning and Parsing Programming Language Grammars, Scanning, Parsing	15%	6
3	Assemblers Elements of Assembly Language Processing, A Simple Assembly Scheme, Pass Structure of Assemblers, Design of a Two-Pass Assembler	15%	6
4	Compilers Cause of a Large Semantic Gap, Scope Rules, Memory Allocation (Static and Dynamic Memory Allocation, Dynamic Memory Allocation and Access, Memory Allocation and Deallocation – Accessing Local and Nonlocal variables), Compilation of Expression (Postfix Notation, Triples and Quadruples), Code Optimization (Optimizing Transformations)	10%	4
5	Introduction to Operating System Operating System Objectives and Functions Process Description and Control: Process States, Process Description, Process Control, UNIX Process Management. Threads: Processes and Threads.	10%	6
6	Concurrency: Mutual Exclusion and Synchronization: Principles of Concurrency, Mutual Exclusion, Software Approaches, Mutual Exclusion: Hardware Support, Semaphores, Monitors, Message Passing, Reader/Writer Problem. Concurrency: Deadlock and Starvation: Principles of Deadlock, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, An Integrated Deadlock Strategy, Dining Philosophers Problem.	15%	6
7	Memory: Memory: Memory Management: Memory Management Requirements, Memory Partitioning, Paging, Segmentation. Virtual Memory: Hardware and Control Structures, OS Software, UNIX Memory Management	15%	6
8	Uni-processor Scheduling: Types of Scheduling, Scheduling, Algorithms, Traditional UNIX Scheduling.	10%	2

4. Text Books:

- a. Systems Programming and Operating Systems by D M Dhamdhere, Tata McGraw Hill Education Private Limited, 2nd Revised Edition

OR

Systems Programming by D M Dhamdhere, Tata McGraw Hill Education Private Limited

- b. Stallings W, “Operating Systems”, 7th edition, Prentice Hall India.

5. Reference Books:

- a. Systems Programming by Srimanta Pal, Oxford University Press
- b. System Software - An Introduction to Systems Programming by Leland L. Beck, Pearson Education Asia, 3rd Edition, 2000
- c. Silberschatz, A., Peter B. Galvin and Greg Gagne, “Operating System Principles”, Wiley-Indian Edition, 8th Ed., 2009
- d. Tanenbaum A.S., “Modern Operating Systems”, 4th Edition, PHI, 2001



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6. Chapter Wise Coverage from Text Book:

Unit No.	Text Books	Topics/Subtopics	No. of Lectures
1	1	Introduction, Language Processing 1.1, 1.2, 1.3, 1.4 [2.1, 2.2, 2.3 from alternative book mentioned of 4 (a)]	4
2	1	Scanning and Parsing 3.1, 3.2 [6.1, 6.2, 6.3 from alternative book mentioned of 4 (a)]	6
3	1	Assemblers 4.1, 4.2, 4.3, 4.4 [3.1, 3.2, 3.3, 3.4 from alternative book mentioned of 4 (a)]	6
4	1	Compilers 6.1, 6.2, 6.3, 6.5 [7.1, 7.4, 7.5 ,7.6, 7.8 from alternative book mentioned of 4 (a)]	4
5	2	Chapter 1 (Page 4-8), Chapter 2 (Page 65-101), Chapter 3(Page 116-129)	6
6	2	Chapter 4 (Page 159-203),5 (Page 221-243)	6
7	2	Chapter 6(Page 268-288) , Chapter 7 (Page 305-348)	6
8	2	Chapter 8 (Page 360-386)	2

7. Accomplishments of the student after completing the course:

Student will be able to understand the concept of System Software, How Language processing activities are done, importance of scanner and parser, Basic concepts of Assembly language and Assembler Design and Few aspects of compilation process.



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8. Suggestions for Lab Sessions :

a) Suggested Lab Activities

Sr#	Sub Task Description
SS	Token recognizer (Scanning) based on regular expression [Using LINUX command and regular expressions]
	Top Down Parsing (LL(1) Parser, Recursive Descent parser), Bottom Up Parser (Operator Precedence parser) [Using LINUX command and regular expressions]
	Pass I of the Assembler, Pass II of the Assembler [Using LINUX command and regular expressions]
OS	LINUX Commands; date, ls, who, cal, ps, wc, cat, uname, pwd, mkdir, rmdir, cd, cp, rm, mv, diff, chmod, grep, sed, head, tail, cut, paste, sort, find, awk
	LINUX Shell Scripts

Reference Books:

PS: Above is a suggestive list so student can perform on any LINUX/UNIX, Turbo C available at institute.



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SWARNIM STARTUP & INNOVATION UNIVERSITY

Swarnim School of Business

Master in Computer Application (MCA)

Year 1 – (Semester-1)

Subject Name: Basic Mathematics

Subject Code: 16110101

Objective

The objective of this course is to present the foundations of many basic mathematical topics used in Computer Science including RDBMS, Data Structures, Analysis of Algorithms, Theory of Computation, Cryptography, Artificial Intelligence and others. This course will enhance the student's ability to think logically and mathematically.

Prerequisites: Binary number system



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Unit No.	Chapter Details	Weightage	No. of Lecture
1	<p>Set Theory, Propositional & Predicate Logic</p> <p>Set Theory: Basic Concepts of Set Theory: Definition, Notion, Inclusion, and Equality of Sets; the Power Set, Some Operations on Sets, Venn Diagrams; Some Basic Set Identities</p> <p>Propositional Logic: Definition, Statements & Notation, Truth Values, Connectives, Statement Formulas & Truth Tables, Well-formed Formulas, Tautologies, Equivalence of Formulas, Duality Law, Tautological Implications, Examples</p> <p>Predicate Logic: Definition of Predicates; Statement Functions, Variables, Quantifiers, Predicate Formulas, Free & Bound Variables; The Universe of Discourse, Examples, Valid Formulas & Equivalences, Examples</p>	20%	08
2	<p>Natural Numbers, Matrices, Recursion</p> <p>Natural Numbers: Peano's Axioms; Mathematical Induction, Principles of Mathematical Induction; Examples; Cardinality, Cardinal Numbers, Denumerable and Non-denumerable Set; Countable Set; Enumeration</p> <p>Matrices: Representation, Matrix Operations: Addition, Subtraction, Multiplication, Transpose; Special matrices: Null, Unit, Triangular Matrices; Inverse of a Matrix</p>	25%	09
	<p>Recursion: Recursive Functions, Sets & Predicates; Examples; Primitive Recursive Functions; Examples; Algorithms of Prime Numbers, & Perfect Numbers; Recursion in Programming languages</p>		

3	<p>Relations and Functions</p> <p>Relations: Definition, Binary Relation, Representation, Domain, Range, Universal Relation, Void Relation, Union, Intersection, and Complement Operations on Relations, Properties of Binary Relations in a Set: Reflexive, Symmetric, Transitive, Anti-symmetric Relations, Relation Matrix and Graph of a Relation; Partition and Covering of a Set, Equivalence Relation, Equivalence Classes, Compatibility Relation, Maximum Compatibility Block, Composite Relation, Converse of a Relation, Transitive Closure of a Relation R in Set X</p> <p>Partial Ordering: Definition, Examples, Simple or Linear Ordering, Totally Ordered Set (Chain), Frequently Used Partially Ordered Relations, Representation of Partially Ordered Sets, Hasse Diagrams, Least & Greatest Members, Minimal & Maximal Members, Least Upper Bound (Supremum), Greatest Lower Bound (infimum), Well-ordered Partially Ordered Sets (Posets). Lattice as Posets, Definition & examples.</p> <p>Functions: Introduction & definition, argument. Co-domain, range, image, value of a function; Examples, Peano's successor function; onto (surjective), Into, one-to-one (injective), many- to-one, bijective (one-to-one and onto); examples; Composition of functions, examples; Inverse function, Identity map, condition of a function to be invertible, examples; Inverse of composite functions, Properties of Composition of functions; Binary and n-ary operations as mappings (functions), Properties of Binary operations; Characteristic function of a set; properties, examples; Hashing functions: Division method, and Mid-square method, examples;</p>	25%	10
4	<p>Graph Theory & Trees</p> <p>Graphs: Introduction, definition, examples; Nodes, edges, adjacent nodes, directed and undirected edge, Directed graph, undirected graph, examples; Initiating and terminating nodes, Loop (sling), Distinct edges, Parallel edges, Multi-graph, simple graph, weighted graphs, examples, Isolated nodes, Null graph; Isomorphic graphs, examples; Degree, In- degree, out-degree, total degree of a node, examples; Subgraphs: definition, examples; Converse (reversal or directional dual) of a digraph, examples;</p>	30%	12

	<p>Path: Definition, Paths of a given graph, length of path, examples; Simple path (edge simple), elementary path (node simple), examples; Cycle (circuit), elementary cycle, examples; Reachability: Definition, geodesic, distance, examples; Properties of reachability, the triangle inequality; Reachable set of a given node, examples, Node base, examples</p> <p>Connectedness: Definition, weakly connected, strongly connected, unilaterally connected, examples; Strong, weak, and unilateral components of a graph, examples, Applications to represent Resource allocation status of an operating system, and detection and correction of deadlocks;</p> <p>Matrix representation of graph: Definition, Adjacency matrix, boolean (or bit) matrix, examples; Determine number of paths of length n through Adjacency matrix, examples; Path (Reachability) matrix of a graph, examples; Warshall's algorithm to produce Path matrix, Flowchart.</p> <p>Trees: Definition, branch nodes, leaf (terminal) nodes, root, examples; Different representations of a tree, examples; Binary tree, m-ary tree, Full (or complete) binary tree, examples; Converting any m-ary tree to a binary tree, examples; Representation of a binary tree: Linked-list; Tree traversal: Pre-order, in-order, post-order traversal, examples, algorithms; Applications of List structures and graphs</p>		
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Text Books:

1. J. P. Tremblay and R. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw-Hill (2010)
2. D. S. Malik & M. K. Sen, "Discrete Mathematics", Cengage Learning, (2004)

Reference Books:

1. K. H. Rosen, "Discrete Mathematics and its applications", Tata McGraw-Hill, 6th edition,
2. Bernard Kolmann & others, "Discrete Mathematical Structure", Pearson Education, Sixth Edition
3. Edgar G. Goodaire, Michael M. Parmenter. "Discrete Mathematics with Graph Theory", PHI,
4. J. P. Tremblay and W. K. Grassman. "Logic and Discrete Mathematics", Pearson Education,



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Chapter wise coverage from the Text Books:

Unit	Chapter wise coverage
1	Book-1: Set Theory: 2-1 Propositional Logic: Book-2: 1.2, 1.3 Predicate Logic: Book-2: 1.4
2	Natural Numbers: Book-1: 2-5 Matrices: Book-2: 4.1 Recursion: Book-1: 2-6
3	Relations: Book-1: 2-3 Functions: Book-1: 2-4
4	Graph Theory: Book-1: 5-1 (5-1.1 to 5-1.3), Trees: Book-1: 5-1.4, 5-2

Accomplishment of the student after completing the course:

The student will be able to understand various algorithms and implement them in C language. More specifically, she will be able to understand and apply the concepts of sets, cross product of sets and relation, recursion, functions, hash functions, matrices, and basic algorithms related with binary tree and graphs.



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SWARNIM STARTUP & INNOVATION UNIVERSITY

MASTERS IN COMPUTER APPLICATION

Year – I (Semester – I)

Subject Name: Programming in python

Subject Code: 16110106

1. Objectives

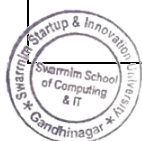
- To learn about the data types, operators and functions in python programming language.
- To be able to write code in python programming language for simple problems

2. Prerequisites

- A. Knowledge about data structures and algorithms, corresponding to the basic course on Data Structures and Algorithms.
- B. Computer Programming & Utilization

3. Course Contents

Module	Course Content	No. of Sessions
1	INTRODUCTION TO PYTHON Overview of Python, History of Python, Python Features, The Basic Elements of Python(Objects Expressions and Numerical Types, Variables and Assignment), IDLE, Branching Programs, String and Input, Functions and Scoping, Recursion, Global Variables, Setting Path at Windows, Modules, Files, Tuples, Lists and Mutability, Functions as Objects, Strings, Tuples and Lists, Dictionaries.	07
2	NUMPY What Is NumPy?, Environment Setup and Installation, NumPy Basics, Introduction to NumPy Arrays, NumPy Data Types, Creating NumPy Arrays(Using Array Method, -Using Arrange Method, -Using Ones Method, -Using Zeros Method, -Using Eyes Method, -Using Random Method, -Printing NumPy Arrays, - Adding Items in a NumPy Array, -Removing Items from a NumPy Array, NumPy Array Manipulation, -Sorting Numeric Arrays, - Sorting Text Arrays, -Sorting Boolean Arrays, -Sorting 2-D Arrays, -Sorting in Descending Order, -Reshaping from Lower to Higher Dimensions, -Reshaping from Higher to Lower Dimensions, - Copying NumPy Arrays), NumPy Tips and Tricks, Statistical Operations with NumPy(-Finding the Mean, -Finding the Median, -Finding the Max and Min Values, -Finding Standard Deviation, - Finding Correlations), Reversing a NumPy Array, Importing and	07



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	Exporting CSV Files, Saving a NumPy File as CSV, Loading CSV Files into NumPy Arrays.	
3	PANDAS Introduction to Pandas, How to Install Pandas in Python?, Creating a Pandas DataFrame, Python Pandas Series, Creating a Pandas Series, Viewing Data(Pandas Dataframe/Series.head() method, Pandas Dataframe/Series.tail() method, Pandas DataFrame describe() Method), Selection & Slicing(Dealing with Rows and Columns in Pandas DataFrame, Pandas Extracting rows using .loc[], Extracting rows using Pandas .iloc[] in Python, Indexing and Selecting Data with Pandas, Boolean Indexing in Pandas, Pandas DataFrame.ix[], Pandas Series.str.slice()).	10
4	INTRODUCTION TO MATPLOTLIB Introduction to Matplotlib, Pyplot in Matplotlib, Matplotlib – Axes Class, Multiple Plots, How to create multiple subplots in Matplotlib in Python?, Add Title to Subplots in Matplotlib?, Set a Single Main Title for All the Subplots in Matplotlib?, Turn Off the Axes for Subplots in Matplotlib, Create Different Subplot Sizes in Matplotlib, Set the spacing between subplots in Matplotlib in Python, Working with Legends Matplotlib.pyplot.legend() in Python, Matplotlib.axes.Axes.legend() in Python, Change the legend position in Matplotlib, How to Change Legend Font Size in Matplotlib.	10
5	MATPLOTLIB-2 Line Chart, Bar Plot, Histogram, Scatter Plot, Pie Chart, 3D Plots	06

2. Text Book(s)

- A. Gowrishankar S, Veena A, “Introduction to Python Programming”, 1st Edition, CRC Press/Taylor & Francis, 2018. ISBN-13: 978-0815394372

3. Other Reference Books

- A. Core Python Programming by Dr. R. Nageswara Rao, 2017 edition
 B. Python Tutorial (Release 3.6.4) By Guido van Rossum and the Python development team.
 C. A Byte of Python By Swaroop C H 4. Python Cookbook, Recipes of Mastering Python 3 by David Beazely & Brian K. Jones.

4. Web Resources

- A. <https://www.geeksforgeeks.org/python-programming-language>
 B. <https://www.tutorialspoint.com/>

5. Practical List

1. Write a python program to print basic details of students.
2. Write a python program to calculate simple interest.
3. Write a Python program which accepts the radius of a circle from the user and compute the area.
4. Write a python program that accepts two numbers in A and B interchange value of A and B variable.
5. Write a python program to demonstrate the use of Arithmetic operators by getting two numbers from the user

6. Write a python program that accepts three numbers from the user and print maximum of



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them.

7. Write a python program that reads the marks for five subjects of a student. Calculate and print the grade for the student [i.e. Grade A,B,C,D and F] using elif ladder.

8. Write a python program that do $\text{sum} = 1 + 3 + 5 + \dots + N$ terms Print value of Sum.

9. Write a python program to print the Fibonacci Series [i.e 1,1,2,3,5,8,13...N terms].

10. Write a python program that accepts a number from the user and print prime numbers from 0 to that number.

11. Write a Python program to reverse the order of the items in the array

12. Write a Python program to print all even numbers from a given numbers list in the same order and stop the printing if any numbers that come after 23 in the sequence.

Numbers = [386, 462, 47, 418, 907, 344, 236, 375, 823, 566, 597, 978, 328, 23, 953, 345, 399, 162, 758, 219, 918, 237, 412, 566, 826, 248, 866, 950, 626, 949, 687, 217, 815, 23, 104, 58, 512, 24, 892, 894, 767, 553, 81, 379, 843, 831, 445, 742, 717, 958, 743].

13. Write a Python program to get the ASCII value of a character

14. Write a Python program to count the number occurrence of a specific character in a string.

15. Write a Python program to get a new string from a given string where "The" has been added to the front. If the given string already begins with "The" then return the string unchanged.

16. Write a python program to check whether entered string is palindrome or not.

17. Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument.

18. Write a python program to demonstrate the Library function for string.

19. Write a Python program to display the current date and time.

20. Write a Python program to print the calendar of a given month and year.

21. Write a Python program to get the current username.

22. Write a Python program to get OS name, platform and release information.

23. Import the numpy package under the name np

24. Print the numpy version and the configuration

25. Create a null vector of size 10

26. How to find the memory size of any array

27. How to get the documentation of the numpy add function from the command line?

28. Create a null vector of size 10 but the fifth value which is 1

29. Create a vector with values ranging from 10 to 49

30. Reverse a vector (first element becomes last)



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31. Create a 3x3 matrix with values ranging from 0 to 8
32. Find indices of non-zero elements from [1, 2, 0, 0, 4, 0]
33. Create a 3x3 identity matrix
34. Create a 3x3x3 array with random values
35. Create a 10x10 array with random values and find the minimum and maximum values
36. Create a random vector of size 30 and find the mean value
37. Create a 2d array with 1 on the border and 0 inside
38. How to add a border (filled with 0's) around an existing array?
39. What is the result of the following expression?

```
print(0 * np.nan)
print(np.nan == np.nan)
print(np.inf > np.nan)
print(np.nan - np.nan)
print(np.nan in set([np.nan]))
print(0.3 == 3 * 0.1)
```
40. Create a 5x5 matrix with values 1,2,3,4 just below the diagonal
41. Create a 8x8 matrix and fill it with a checkerboard pattern
42. Consider a (6,7,8) shape array, what is the index (x,y,z) of the 100th element?
43. Create a checkerboard 8x8 matrix using the tile function
44. Normalize a 5x5 random matrix
45. Create a custom dtype that describes a color as four unsigned bytes (RGBA)
46. Multiply a 5x3 matrix by a 3x2 matrix (real matrix product)
47. Given a 1D array, negate all elements which are between 3 and 8, in place.
48. How to get the dates of yesterday, today and tomorrow?
49. Write a program to create a 4x4 ndarray having values ranging 0 to 15(both inclusive)
50. Write a NumPy program to create a 10x10 matrix , in which all the elements on the border will be equal to 1 and inside 0
51. Write a Numpy program to extract all odd numbers from a 1-D array
52. Write a Numpy program to convert a 1D array into a 2D array with 3 rows.
53. Write a NumPy program to create a 3x3 identity matrix, i.e. diagonal elements are 1, the rest are 0. Replace all 0 to random number from 10 to 20
54. Write a NumPy program to create a 3x3 identity matrix, i.e. non diagonal elements are 1, the rest are 0. Replace all 0 to random number from 1 to 10
55. Write program to find and plot the linear regression line for the 2 set of data: [10,20,30,40,50] [400,800,1100,1700,2100]
56. Create a ndarray with values ranging from 10 to 49 each saved with a difference of 3.
57. Write a program to create the two one dimensional random array of size 10 between the range



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- of 1 to 10. Display the elements which are equal
58. Appending a new row to DataFrame
 59. Append a DataFrame to another DataFrame
 60. Accessing a DataFrame with a boolean index
 61. Applying a boolean mask to a dataframe
 62. Creating large random datasets
 63. Create a sample DataFrame
 64. Show contents of dataframe
 65. Create a sample DataFrame using Numpy
 66. Create a sample DataFrame from multiple collections using Dictionary
 67. Create a DataFrame from a list of tuples
 68. Create a DataFrame from a dictionary of lists
 69. Create a sample DataFrame with datetime
 70. Create a sample DataFrame with MultiIndex
 71. Save and Load a DataFrame in pickle (.pkl) format
 72. Create a DataFrame from a list of dictionaries
 73. Checking the types of columns
 74. Changing dtypes
 75. Changing the type to numeric
 76. Changing the type to datetime
 78. Changing the type to timedelta
 79. Selecting columns based on dtype
 80. Select duplicated data
 81. Drop duplicated data
 82. Counting and getting unique elements
 83. Get unique values from a column
 84. Create graphs for Line Plot
 85. Create graphs for Bar Chart
 86. Create graphs for Histogram
 87. Create graphs for Scatter Plot
 88. Create graphs for Pie Chart



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SWARNIM STARTUP & INNOVATION UNIVERSITY
Swarnim School of Computing & IT

Master in Computer Application (MCA)

Year 1 – (Semester-1)

Subject Name :Information Security

Course Objectives

- To Prepare Students to understand Security basics
- Understand Cryptography and comprehensive study of the principles and practices of computer system security
- Understand operating system security, network security, software security and web security.
- Understand common attacking techniques such as virus, trojan, worms and common security policies and the basic cryptography.
- Understand ethical issues in computer security.

Unit Wise Syllabus:

Unit 1
Introduction Security, Attacks, Computer Crime, Security Services, Security Mechanisms, Cyber Crimes, Information Technology ACT, Cryptography, Substitution Ciphers, Transpositions Cipher, Block Cipher, Stream Cipher

Unit 2
Confusion, Diffusion, Symmetric key, Asymmetric key, Encryption, DES Algorithm, Hash function, Digital Signatures, Digital Certificates.

Unit 3
Program Security, Program Errors, Malicious Codes, Virus, Trapdoors, Salami Attacks, Threats, Covert channels, Control Against program, Program Security issues, Protecting Programs.

Unit 4
Protection in OS: Memory and Address Protection, Access control, File Protection, User Authentication.

Unit 5
Database Security, Requirements, Reliability, Integrity, Sensitive Data, Inference, Multilevel Security, Types of Crimes, Ethical issues in Security, Protecting data.

Unit 6
Security in Networks, Threats in Networks, Security Controls, firewalls, Intrusion detection systems, Secure e-mails, Adminstrating Security, Security Planning, Risk Analysis, Organisational Security Policy, Physical Security.



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Expected Outcomes

The students shall be able to understand

- The common threats faced today,
- Foundational theory behind information security,
- The basic principles and techniques when designing a secure system.
- Attacks and defenses work in practice,



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Swarnim School of Business

Master in Computer Application Year 1 – (Semester-2)

Subject Name: Android Programming
Subject Code: 16110213

1. Learning Objectives :

- To be able to understand the process of developing software for the mobile
- To be able to create mobile applications on the Android Platform
- To be able to create mobile applications involving data storage in SQLite database.

2. Prerequisites: Knowledge of the Core Java Programming, database concepts

3. Contents :

Unit No.	Course Content	No Of Lectures
1	Introduction to ANDROID : <ul style="list-style-type: none">• ANDROID SDK Features, Introduction to Development Features Basics of ANDROID <ul style="list-style-type: none">• Developing for ANDROID, developing for mobile and embedded devices, ANDROID development tools Creating Applications using ANDROID Basics of an ANDROID application, introduction to manifest, externalizing resources, application lifecycle, ANDROID activities	06



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2	Building user interfaces <ul style="list-style-type: none"> Introduction to layouts, introduction to fragments, creating new views, introduction to adapters Intents and broadcast receivers <ul style="list-style-type: none"> Introduction to intents, creating intents and broadcast receivers Using Internet resources <ul style="list-style-type: none"> Downloading and parsing internet resources, using the download manager, using internet services 	09
3	Files, saving state and preferences <ul style="list-style-type: none"> Creating, saving and retrieving shares preferences, including static files as resources, working with the file system Database and content providers <ul style="list-style-type: none"> Introducing ANDROID databases, content values and cursors, working with SQLite databases, creating content providers, using content providers, native ANDROID content providers 	09

	Working in background <ul style="list-style-type: none"> Introducing services, using background threads, using alarms 	
4	Enhancing user experience <ul style="list-style-type: none"> Introduction and addition of action bar, menus and dialogs, drawables and gradients, custom animations Hardware sensors <ul style="list-style-type: none"> Sensors and sensor manager, monitoring devices' movement and orientation Maps and location based services <ul style="list-style-type: none"> Using location based services, selecting a location provider, finding your current location, creating map based activities 	08
5	Audio, video and using the camera <ul style="list-style-type: none"> Playing audio and video, manipulating raw audio, using camera to take pictures, recording video, adding media to media store Telephony and SMS <ul style="list-style-type: none"> Hardware support for telephony, using telephony, introducing SMS and MMS Monetizing, promoting and distributing the applications <ul style="list-style-type: none"> Signing and publishing applications, distributing applications, introduction to monetizing applications 	07

4. Text Book:

1. Reto Meier Professional ANDROID 4 Application Development, WROX Latest Edition

5. Reference Books:

1. Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education, 2nd ed. (2011)
2. Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd(2009)
3. Sayed Y Hashimi and Satya Komatineni, “Pro Android”, Wiley India Pvt Ltd(2009)

6. Chapter wise Coverage from Text Book:

Unit No	Book#	Chapters
1	1	Chapter 1,2,3
2	1	Chapter 4,5,6
3	1	Chapter 7,8,9
4	1	Chapter 10,11,12,13
5	1	Chapter 15, 17,19

Tools/Technologies to be used:

- 1 ANDROID Studio
2. ANDROID Version

7. Accomplishments of the student after completing the course :

- Student will visualize the real world mobile application scenario and enables them for development and implementation of mobile applications

8. Suggestions for Lab Sessions :

- Create mobile application



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SWARNIM STARTUP & INNOVATION UNIVERSITY

Swarnim School of Business

Master in Computer Application **Year 1 – (Semester-2)**

Subject Name: Basic Computer Science 3 – Computer Networking

Subject Code: 16110202

1. Learning Objectives:

- To introduce the basics of Computer Networks
- To understand the functionality of each layer of OSI and TCP/IP models and interactions between them
- To gain basic insight of programming for network solutions

Prerequisites:

C Programming, Basic Knowledge of Linux OS, Java Programming (Core Java)



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Course Contents:

Unit No.	CourseContent	%age	No of Lectures
1	Introduction to Computer Networks Need to share resources, Concepts of Layering, Distributed System and Networks, Prerequisites, Definition, Categories and Components, Connections, Layers and Services, Applications of Computer Networks, Data Communication Fundamentals- Introduction, Frequency and Band, Analog and Digital Signals and Transmission, Coding Mechanism, Modulation, Multiplexing and De-multiplexing, TDM, FDM, Switching and Routing, Transmission and Errors	20%	10
2	Physical Layer Introduction, Duties of Physical Layer, Infrared and Millimeter Waves, ISM Bands, Optical Lights and Free Space Optics, Wired Physical Layer, Wireless Physical Layer	20%	08
3	The Data Link Layer Duties of Data Link Layer, The Error, The Protocols	10%	05
4	The Medium Access Sub layer Introduction, Wired MAC Layer, The LLC Layer, Wireless MAC, The MAC Layer, The Generic Frame Structure, Connecting Device at Data Link Layer, Virtual LAN	15%	08
5	The Network Layer Introduction, Duties of Network Layer, Connection Oriented Forwarding using Virtual Circuits, Connection Less Forwarding using Datagram, Connection Oriented Vs Connectionless Forwarding, Forwarding Examples, Routing Algorithms, Congestion, Network Layer Switching	15%	06
6	The Transport Layer Introduction, Duties of Transport Layer Connection Management at Transport Layer, Congestion Control, Comparison with Data Link Layer	10%	04
7	The Application Layer Introduction, Domain Name System: Name Space, Registration Process, Name Servers, Resource Records, Types of Resource Records, Dynamic DNS, WWW and HTTP, Bluetooth	10%	04

Text Book (Theory):

1. Bhushan H Trivedi ,“Computer Networks”, Oxford University Press

Other Reference Book (Theory):

1. Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, Fourth Edition

Andrew S. Tanenbaum, "Computer Networking", Prentice Hall, Fourth Edition



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Chapter Wise Coverage from Text Book:

Unit	Topics/ .subtopics
1	1.1,1.2.1,1.2.2,1.2.3,1.2.4,1.2.5,1.2.6,1.2.7,1.2.8.1.2.10,1.3 2.1 to 2.4 3.1, 3.2, 3.3,3.4, 3.5, 3.6, 3.8,3.9,3.10,3.11, 3.12
2	4.1 to 4.7.10
3	5.1.1 to 5.1.2, 5.2.1 to 5.2.11, 5.3.1 to 5.3.10
4	6.1 to 6.6, 6.8, 6.11
5	7.1 to 7.7,7.11, 7.12
6	8.1 to 8.5
7	9.1, 9.2.1 to 9.2.5, 9.3.1 to 9.3.9, 9.12.1 to 9.12.8

Students are not required to reproduce the entire algorithms/protocol code in the theory exam for any protocols and routing algorithms. Concepts based on these algorithms/protocols should be asked in theory exam.



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SWARNIM STARTUP & INNOVATION UNIVERSITY

Swarnim School of Business

Master in Computer Application Year1 – (Semester-2)

**Subject Name: Basic Computer
Science 4-Software Engineering (SE)**

Subject Code: 16110203

1. Learning Objectives:

- To understand the concepts of software Engineering
- To understand how to Select and apply Appropriate Process Model to All Stages of Software Development Life Cycle (SDLC)
- To understand how to manage user's Requirement
- To understand how to Analyze, Design, Build and test software
- To understand software effort size, and estimation models.
- To understand object modelling
- To understand Use Case, Activity, Sequence, Class and Deployment diagram.

Prerequisites: Systems & Object Oriented Design Methodologies



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Contents:

Unit No.	Course Content	%age	No of Lectures
1	Introduction to Software Engineering & Process Models Software Engineering, Software Process Process Models – Waterfall, Incremental, Evolutionary Process Model – Prototype, Spiral and concurrent Development Model Agile Process; Extreme Programming (XP); Brief Overview of Other Agile Process Models: Adaptive Software Development, Scrum Case Study: Identify process model and activities for Online Shopping Application	05%	04
2	Requirement Engineering Requirements Engineering; Groundwork for Understanding of Software Requirements; Overview of Eliciting Requirements, Developing Use Cases, Building the Requirements Model; Negotiating Requirements; Validating Requirements; Requirement Modeling Strategies; Overview of Flow-Oriented Modelling, Behavioral Modeling; Case Study: Prepare SRS for Online Shopping Application	15%	06
3	Design Concepts Design Concepts, Design Model; Architectural Styles, Architectural Design, Assessing Alternative architectural Designs, Architectural mapping Using Data Flow User Interface Design: Golden Rules of User Interface Design; User Interface Analysis and Design; Interface Analysis; Interface Design steps Case Study: Prepare Architecture Design, Data flow and UI for Online Shopping Application	15%	06
4	Software Review; Software Testing Overview of Review Techniques: Formal Technical Review (FTR) A Strategic Approach to Software Testing; Test Strategies for Conventional Software; Test Strategies for Object Oriented Software; Test Strategies for WebApps; System Testing; Debugging; Software Testing Fundamentals; White-Box Testing; Basic Path Testing; Control Structure Testing; Black-Box Testing; Case Study: Prepare Test Cases for Online Shopping Application	10%	06

5	Project Management Concepts, Software Estimation And Scheduling The Management Spectrum people, Product, process, Project, W5HH principle. Software Project Estimation; Decomposition Techniques; Empirical Estimation Models; Estimation for O_O Projects, Estimation for Agile Development and webapps projects Overview of Project Scheduling Case Study: Prepare Timeline Chart for online Shopping Application	10%	04
6	Object Modeling Concepts Introduction, Modeling as a design technique, Class Modeling-Object and Classes, Association, Generalization, aggregation, Abstract class, Multiple inheritance, Metadata, Reification, Constraints, Derived data, Packages, State Modeling- State, Transitions and Conditions, State Diagrams, Nested state diagrams , Nested States, Signal Generalization, Concurrency Case Study: Draw Class and state diagram for online Shopping Application	20%	10
7	Behavioral Modeling Interactions, Use Cases, Use Case Diagrams, Interaction Diagrams, Activity Diagrams Case Study: Draw Usecase, Activity and Sequence for online Shopping Application	20%	12

Reference Book(s):

1. Roger S. Pressman, "Software Engineering – A Practitioner's Approach", 7th Edition, McGraw Hill Publications
2. Object-Oriented Modeling and Design with UML by Michael Blaha, James Rumbaugh, Pearson Education Publication, 2nd Edition, 2007 Reprint
3. The Unified Modeling Language - User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education Publication, 2009 Reprint

Suggested Additional Reading:

1. Chandramouli Subramanian, , Saikat Dutt., Chandramouli Seetharaman, B G Geetha, Software Engineering, Pearson
2. Sommerville, "Software Engineering", 8th Edition, Pearson Education
3. Waman S. Jawadekar, "Software Engineering – Principles and Practices", TMGH Publication
4. Pankaj Jalote, "Software Engineering – A Precise Approach", Wiley India
5. Waman S. Jawadekar, "Software Engineering – A Primer", TMGH Publication
6. Shari Lawrence Pfleeger and Joanne M. Atlee, "Software Engineering – Theory and Practice", 3rd Edition, Pearson Education
7. M. G. Limaye, "Software Testing – Principles, Techniques and Tools", TMGH



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Chapter wise Coverage from Main Reference Book(s):

Unit	Book#	Topics
1	1	1.3,1.4, 2.1 to 2.3, 3.3, 3.4, 3.5.1 ,3.5.2
2	1	Ch-5, 7.1 to 7.3
3	1	Ch-8.3, 8.4, 9.1.1, 9.3,9.4,9.5, 9.6, 11.1 to 11.4
4	1	Ch-15 , 17, 18.1 to 18.6,
5	1	Ch. 24, 26.5 to 26.8, 27.5
6	2	Ch. 1 to 6
7	3	Ch. 15 to 19

Note:

Reference for Case Study of SRS

- Chapter 3 of Pankaj Jalote, “Software Engineering – A Precise Approach”, Wiley India
- Chandramouli Subramanian, , Saikat Dutt,, Chandramouli Seetharaman, B G Geetha, Software Engineering, Pearson

Suggestions for Laboratory Sessions :

I) Activity : UML Diagrams

- A) Tool : Dia (It can be downloaded from http://sourceforge.net/projects/dia-installer/?source=typ_redirect)

Or any other open source.

Tasks

- a. Creation of Use case,
- b. Creation of Activity diagram Creation of Sequence
- c. Creation of Class diagram
- d. Deployment Diagram
- e. State transition Diagram



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Sample Case Study

1	<p>Consider the air transportation system. Many flights land And depart from city's airport. Some of the big cities may have more than one airports. Every flight belongs to specific airline. The planes may have many flights to different airports. Each plane is identified with serial number and model. E.g. hypersonic. There are specific pilots for each airline and they fly many flights. Each flight is identified by flight number and date on which flight is scheduled. The passenger reserves a seat for a flight. The seat is identified by a location.</p> <p>1) Draw Use case for system, Admin and Passengers 2) Draw Activity Diagram for Login & Book flight 3) Draw Sequence Diagram for Login & Book flight 4) Draw Class diagram.</p>
2	<p>Consider Online Learning (e.g. coursera.org) web site.</p> <p>1) Draw Deployment diagram</p>
3	<p>Draw the State Transition diagram for Washing Machine.</p> <p>Possible states may be Wash, Rinse and Dry</p>

Accomplishments

Students will understand a high-level overview of the software development process. Student will understand various process models available for software engineering, activities of software engineering like software requirements, software design, software construction, software management, and software quality etc.



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SWARNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Master in Computer Application Year 1 – (Semester-2)

Subject Name: Basic Statistics
Subject Code: 16110201

Objectives: To understand and apply various concepts, techniques and methods used in Descriptive Statistics and Inferential Statistics. The knowledge and skills gained will equip students in carrying out preliminary Data Analytics tasks, and to prepare foundation to understand and apply the statistical techniques in various fields such as Total Quality Management, Simulation, Game Theory, Operations Research, etc in addition to Computer Science topics such as Machine Learning, Cryptography, Artificial Intelligence, Operating Systems, Data Structures and Algorithms, etc.

Prerequisites: Preliminary mathematical concepts

Contents:

1. **Introduction to Statistics and Descriptive Statistics** [10 Lectures]
Introduction, Broad areas (classification) of Statistics; **Describing Data Visually:** Frequency Distributions and Histograms; Line Charts; Bar Charts; Pareto Chart, ScatterPlots (Degree of Association); Pie Charts;
Descriptive Statistics: Central Tendency: Mean and its Characteristics, Median and its Characteristics, Quartiles and Percentiles, Mode; **Dispersion:** Range, Variance, Standard Deviation and its Characteristics, Coefficient of Variation; Standardized Data: Chebyshev's Theorem, Outliers; Mean Absolute Deviation, Interquartile Range (IQR); **Box Plots:** Fences and Unusual Data Values;
Grouped Data: Nature, Mean and Standard Deviation, Accuracy Issues;
Skewness: Coefficient of Skewness; **Kurtosis:** Leptokurtic, Platykurtic, Mesokurtic;
Measures of Association: Correlation, Coefficient of Correlation; Correlation and Causation



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2. **Probability and Probability Distributions** [12 Lectures]
 Introduction: Common Framework: Experiment, Event, Elementary Events, Sample Space; Definition of Probability; Marginal Probability; Probability of Union of Events (Addition Laws), Probability Matrix; Probability of Complement of a Union; Probability of Joint Events (General Laws of Multiplication); Conditional Probability; Mutually Exclusive Events, Independent Events; Revision of Probabilities: Bayes' Rule
Discrete Probability Distributions: Introduction, Binomial Distribution, Poisson Distribution, Applications; Overview of other Discrete Probability Distribution
Probability Distributions: Introduction, Normal Distribution, Exponential Distribution, Applications; Overview of other Continuous Probability Distribution

3. **Sampling, Sampling Distributions and Estimation** [12 Lectures]
 Types of Sampling: Random, Nonrandom; Sampling Distribution of \bar{x} ; Central Limit Theorem; z Formula for Sample Mean; Standard Error of Mean; Sampling from a Finite Population; Sampling Distribution of a Proportion, Standard Error of Proportion
Estimation for Single Population: Estimating the Population Mean using z Statistic (σ Known); Estimating the Population Mean using the z Statistic when the Sample Size is Small; Estimating the Population Mean using t Statistic (σ Unknown); Estimating the Population Proportion; Estimating the Population Variance; Estimating Sample Size

4. **One Sample Hypothesis Tests** [10 Lectures]
 Introduction; Null Hypothesis, Alternate Hypothesis; Type I & Type II Errors, Testing Hypotheses about a Population Mean using z Statistic (σ Known); Using Critical Value Method to test Hypotheses, Examples; Population Mean Testing Hypotheses about a Population Mean using t Statistic (σ Unknown); Testing Hypotheses about a Proportion; Testing Hypotheses about a Variance
Overview: Statistical Inferences about Two Populations; Analysis of Variance

5. **Regression** [08 Lectures]
 Introduction, Simple Regression Analysis, Least Square Analysis to Determine the Equation of Regression Line; Residual Analysis, Using Residual to Test the Assumptions of the Regression Model; Standard Error of the Estimate; Coefficient of Determination; Hypothesis Testing for the Slope of the Regression Model; Testing the Overall Model; Using Regression to Develop a Forecasting Trend Line
Overview: Multiple Regression Model; Mathematical Transformation of Nonlinear Models

Text Books:

1. Ken Black, "Business Statistics for Contemporary Decision Making", Wiley Student Edition, 2010

Reference Books:

1. David P. Doane, Lori E. Seward, "Applied Statistics in Business and Economics" Tata McGraw-Hill, 2010
2. Anderson, Sweeney, Williams, "Statistics for business and economics", 9 th edition, Thompson Publication
3. Bharat Jhunjhunwala, "Business Statistics", first edition, S Chand, 2008
4. Richard Levin, David Rubin, "Statistics for Management", 7 th edition, PHI
5. Nabendu Pal, Sahadeb Sarkar, "Statistics-Concepts and Applications", 2 nd edition, PHI



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6. J. Susan Milton & Jesse Arnold, "Introduction to Probability & Statistics: Principles & Applications for Engineering & Computing Sciences", McGraw-Hill Education
7. S P Gupta, "Statistical Methods", 30th edition, S Chand

Chapter wise coverage from the Text Books:

Unit-1: Chapters 1, 2, 3

Unit-2: Chapters 4, 5, 6

Unit-3: Chapters 7, 8

Unit-4: Chapters 9, 10, 11

Unit-5: Chapters 14, 15, 16

Accomplishment of the student after completing the course:

The student will be able to understand various algorithms and implement them in C language. More specifically, she will be able to understand and apply the concepts of sets, cross product of sets and relation, recursion, functions, hash functions, matrices, and basic algorithms related with binary tree and graphs.



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SWARNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Master in Computer Applications

Year 1 – (Semester-2)

Subject Name: Network Security (NS)

Subject Code: 16110204

1. Learning Objectives:

After completion of this course student will be able to:

- Understand OSI security architecture, threats, vulnerabilities and various types of attacks.
- Understand and apply the various symmetric key algorithms.
- Understand and apply the various asymmetric key algorithms.
- Understand the concepts of hashing with algorithms and apply them.
- Understand and use the message authentication and its requirement.
- Understand the concepts of digital signature and digital certificates.
- Analyze the use of Authentication applications, Web, IP and Email security.
- Evaluate the need of Intrusion Detection and Firewalls.

2. Prerequisites:

Fundamentals of Networking, Mathematical Concepts: Number theory, finite fields and Random number.



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3. Contents:

Unit No.	Chapter Details	Weightage	No. of Lecture
1	Introduction Computer Security Concepts, The OSI Security Architecture, Security Attacks, Security Services, Security Mechanisms, A Model for Network Security.	05%	2
2	Cryptography: Symmetric Encryption, Message Confidentiality, Public-Key Cryptography and Message Authentication Symmetric Encryption Principles, Symmetric Block Encryption Algorithms, Random and Pseudorandom Numbers, Stream Ciphers and RC4, Cipher Block Modes of Operation. Approaches to Message Authentication, Secure Hash Functions, Message Authentication Codes, Public-Key Cryptography Principles, Public-Key Cryptography Algorithms, Digital Signatures.	25%	10
3.	Key Distribution and User Authentication, Transport-Level Security, HTTPS and SSH Symmetric Key Distribution Using Symmetric Encryption, Kerberos, Key Distribution Using Asymmetric Encryption, X.509 Certificates, Public-Key Infrastructure. Web Security Considerations, Secure Socket Layer and Transport Layer Security, Transport Layer Security, HTTPS, Secure Shell (SSH) .	25%	10
4.	Wireless Network Security Overview of IEEE 802.11 WLAN, IEEE 802.11i Wireless LAN Security.	10%	3
5	E-MAIL & IP Pretty Good Privacy, S/MIME , IP Security Overview, IP Security Policy, Encapsulating Security Payload, Combining Security Associations.	20%	7
6.	System Security and Malicious Software Intruders, Intrusion Detection, Password Management, Types of Malicious Software, Viruses, Virus Countermeasures, Worms, Distributed Denial of Service Attacks, The Need for Firewalls, Firewall Characteristics, Types of Firewalls, Firewall Basing, Firewall Location and Configurations.	15%	8

4. Text Books:

1. William Stallings, “Network Security Essentials: Applications and Standards”, 4th Edition, Pearson Education, 2011.

5. Reference Books:

1. Charlie Kaufman, Radia Perlman and Mike Speciner, “Network Security: Private communication in a public world”, Second Edition, Pearson India Education, 2017
2. Behrouz A. Ferouzan, “Cryptography & Network Security”, Tata Mc Graw Hill, 2007.
3. Nina Godbole, “Information Systems Security”, Wiley Publication, 2009
4. Nirbhay Chaubey, “Securing AODV Routing Protocol in Design of Mobile Ad-Hoc Networks”, LAP Lambert Academic Publishing, 2015
5. Bruce Schneier “Applied Cryptography: Protocols, Algorithms, and Source Code in C”, Wiley India, 1996
6. Man Young Rhee, “Internet Security: Cryptographic Principles”, “Algorithms and Protocols”, Wiley Publications, 2003.
7. Charles P. Pfleeger, Shari Lawrence Pfleeger, “Security in Computing”, 4th Edition, Prentice Hall of India, 2006.
8. Bruce Schneier and Neils Ferguson, “Practical Cryptography”, First Edition, Wiley Dreamtech India Pvt Ltd, 2003.



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6. Chapter Wise Coverage from Text Book:

Unit No.	Text Books	Topics/Subtopics
1	Book-1	Chapter - 1.1 to 1.6
2	Book-1	Chapter - 2.1 to 2.5, 3.1 to 3.6
3	Book-1	Chapter - 4.1 to 4.5, 5.1 to 5.5
4	Book-1	Chapter - 6.1 to 6.2
5	Book-1	Chapter - 7.1, 7.2, 8.1 to 8.4
6	Book-1	Chapter - 9.1 to 9.3, 10.1 to 10.5, 11.1 to 11.5

7. Accomplishments of the student after completing the course :

- Student will be able to understand the importance of network security in today's world and apply security services and mechanisms in evaluating networked systems and also while creating new applications.
- Analyze and use apply best suited Network Security mechanisms and standards in various applications.
- Design Secure applications

8. Suggestions for Lab Sessions :

a) Suggested Lab Activities



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Sr. #	Sub Task Description
NS	Implement DES.
	Implement 3DES.
	Implement AES algorithms.
	Implement HMAC, Hashing a Session Key, Duplicating a Hash, encoding and decoding a hash message, signing a hash and verifying the hash signature.
	Implement a basic MD5 algorithms.
	Implement RC4 encryption algorithm.
	Implement Diffi-Hellmen Key exchange Method.
	Implement RSA encryption-decryption algorithm.
	Write a program to generate SHA-1 hash.
	Write a program to generate SHA-512 hash.
PS: Above are suggestive lists so student can perform on any programming language C,C++/Java available at institute.	

Additional Assignment: List of Open Source Software/learning website:

- Download Software: cryptool (www.cryptool.org) and Perform various encryption/decryption techniques with cryptool.
- Download Software: Wireshark (network packet analyzer): (www.wireshark.org) to study and use the Wireshark for the various network protocols.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Introduction to Computer & Emerging Technologies

Semester 1

CODE: 13030101

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	Pr	Total		Internal		External		Total
					Th	Pr	Th	Pr	
2	-	2	4	3	30	50	70	-	150

Teaching & Evaluation Scheme:-

Objectives:-The objective of this course is introducing the fundamental in information technology. The course covers different aspects in information technology such as

- o Basics of Data and Information.
- o Acquisition of different types of information like numbers, text, multimedia etc.
- o Issues of Data Storage and organization. o Processing of different types of information.
- o Emerging trend, societal impacts and applications of Information technology.

Prerequisites:-To familiarize the trainee with basic concepts of computer programming and developer tools. To present the syntax and semantics of the C ++ language as well



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as data types offered by the language. To allow the trainee to write their own programs using standard language infrastructure regardless of the hardware or software platform

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introducing Today's Technologies: Computers, Devices, and the Web Today's Technology o Computers o Mobile and Game Devices o Data and Information o The Web o Digital Security and Privacy o Programs and Apps o Operating Systems o Applications o Communications and Networks o Wired and Wireless Communications o Networks o Computers and Mobile Devices o Mobile Computers and Desktops o Servers o Supercomputers o Cloud Computing o Ports and Connections	8
2	Processors, Memory, Adapters and Buses Inside the case : o Motherboard o Processors o Memory o Adapters o Buses Digital Storage o Storage o Hard Drives o Portable Flash Memory Storage	6
3	Input and Output Devices o Input Devices o Keyboards o Pointing Device o Touch Screens o Scanners and Reading Devices o Output Devices o Displays o Printers o Other Output Devices	6

4	Computer Codes o Introduction to Computer Codes o Decimal System o Binary System o Hexadecimal System o Octal System o 4-bit BCD System	7
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	0 8-bit BCD System o ASCII code 0 16-bit Unicode	
5	Conversion of Numbers (includes fixed and fractional numbers) o Non-Decimal to Decimal o Binary to Decimal o Decimal to Binary o Binary to Octal o Octal to Binary o Octal to Decimal o Decimal to Octal o Binary to Hexadecimal o Hexadecimal to Binary o Hexadecimal to Decimal o Decimal to Hexadecimal	7

Learning Outcomes:-

On the completion of the course students will be able to:

- 1) Know the fundamental terms associated with computers, mobile devices and new technologies.
- 2) Know different types of computers, mobile devices, memory and various input and output devices.
- 3) Understand the basic uses and applications of computer in business and society.
- 4) Get familiar with various computer codes

Teaching & Learning Methodology:-

During theory lectures foundations of information technology related concepts will be introduced to students. Emphasis will be given on acquisition, storage and processing of data to generate meaningful information. Students will be made familiar with applications related to information technology. Emerging trends and societal impacts of information technology will be discussed to students. Students will give practical exposure by demonstrating real information technology system.

Books Recommended:-

1. Discovering Computers 2016 (First Edition) Cengage Learning By Misty E. Vermaat; Susan L. Sebok; Steven M. Freund; Jennifer T. Campbell; Mark Frydenberg (Shelly Cashman Series)
2. Pearson India By M. Morris R. Mano
3. Fundamentals of Computer (First Edition- 2009) Publisher: McGraw-Hill By Balaguruswamy



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4. Computer Fundamentals(First Edition-2010) Publisher: Pearson by Anita Goel

E-Resources:-

1. http://sct.emu.edu.tr/courses/it/index.php?id=itec103&page_type=file_directory&element_id=2 [Information Technology fundamentals]
2. <http://technology.ku.edu/software> (Information Technology related applications]
3. <http://www.nnanagctncntstudyguidc.com/cmcrgring-trends-ininformationtcchnology.htm> (Emerging trends in Information Technology]

Practical List:-

Sr. No.	Practical
1	Run different commands of MS DOS - CD, DIR, copy, REN, CLS, MD, CD, RD etc.
2	Study information of Internet connectivity components line, VSAT, Broadband
3	Study information of Internet connectivity components Modem, IP Sharer, Hub, and Switch.
4	Study different web Browsers- Internet Explorer, Fire fox, downloading of files
5	Connect the Internet; open any website of your choice and save the Webpages. Search any topic related to your syllabus using any search engine and download the relevant material.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Programming in C

Semester 1

CODE: 13030102

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
			Total		Internal		External		Total
3	0	4	7	7	30	50	70		150

Objectives:-Thecourse fully covers the basics of programming in the "C" programming language anddemonstrates fundamental programming techniques, customs.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introductionto Programming Languages: Introduction to Machine level language Introduction to Assembly language Introduction to Higher level language Limitations and Features. Classification of Computer Language- Procedural Language and Non Procedural Language	5
2	Tools and Techniques of Problem Analysis <ul style="list-style-type: none">Algorithm Development and Flow ChartNumerous Examples in Algorithm Development and Flow Chart	4
3	Getting Started With 'C' Language: <ul style="list-style-type: none">Basic Structure of C	9



A handwritten signature in blue ink, appearing to read 'Nikasa'.

	Executing C program Character set & C Tokens Identifiers & Keywords DataTypes Constants and Variables Type Casting <ul style="list-style-type: none"> o Comments 	
4	C Language Operators and Decision Making: Operators& Expression <ul style="list-style-type: none"> TypesofOperatorsandExpression Precedence&Associativity Console based I/O andrelated built-inl/Ofunction <ul style="list-style-type: none"> printf(),scanf(),getch(),getchar(),putchar() Concept of HeaderFile and #include,#define Decision Making Structure If-else NestedIf-else Switch	10
5	Control Structure & Array: Loop ControlStructure While Do-While For Nested loop Other Statements <ul style="list-style-type: none"> break,continue,goto,exit Array One,Two — Dimensional Arrays Initializationand workingwith Array. Introduction to MultidimensionalArrays.	10

Learning Outcomes:-

On the completion of the course students will be able to:

1. To create their own logic and implement using C Programming.
2. To understand how to use programming in day to day application

TEXT BOOK/S:

1. Introduction to C Programming



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Publication : Oxford
By Reema Thareja

REFERENCE BOOKS:

1. Computer Fundamentals & Programming in C

Publication :Oxford

By Pradip Dey, Manas Ghosh

2. Programming in ANSIC (Fifth Edition 2011)

Publication :McGraw Hill

By Balagurusamy

WEB RESOURCES:

1. <https://www.tutorialspoint.com/cprogramming/>
2. <http://www.javatpoint.com/c-programming-language-tutorial>
3. <https://www.programiz.com/c-programming>
4. <http://www.cprogramming.com/tutorial/c-tutorial.html>
5. <http://www.programmingsim>

Practical List:-

Sr. No.	Practical's
1	Write a program to print "HELLO".
2	Write a program to display multiplication table.
3	Write a program to print $+1/2+1/3+1/4+\dots+1/N$ series.
4	Write a program to find sum of all integers greater than 100 & less than 200 and are divisible by 5.
5	Write a program to convert days into months and days
6	Write a program to print following patterns.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Internet Web Designing I

Semester 1

CODE: 13030103


Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Theory	Tutorial	Pr	Total		Internal		External		Total
					Theory	Practical	Theory	Practical	
3	0	4	7		30	50	70		150

Objectives: -To develop the skill about the basic and important terminology of Internet.To

make the students able for web site design fundamentals using HTML scripting.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	<p>Introduction to Internet:</p> <p>Introduction to Internet</p> <ul style="list-style-type: none"> • How does Internet works? • Internet addressing • Internet Vs Intranet • Switching:  • Circuit switching • Packet switching • Message switching 	



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	<ul style="list-style-type: none"> • Different types of connections <ul style="list-style-type: none"> o Dial-UP connections o ISDN o ADSL o Leased Line Connections o Satellite Connections • Internet service provider • Computer Networks <ul style="list-style-type: none"> o Use of computer Networks o Network Devices o Network Types o Network Topologies o E-Mail o Introduction o E-mail System o E-mail Protocols o About E-mail addresses o Structure of E-mail Message o E-mail clients and server • Mailing list o E-mail security • World Wide Web <ul style="list-style-type: none"> o Introduction o Basic Elements • Search engines • Introduction • Criteria • Search Agent • About Popular search engines 	
2	<p>Getting Started With HTML 5:</p> <ul style="list-style-type: none"> o New Structure o New Form Elements and Attributes 	

	<ul style="list-style-type: none"> o Browser support o Defining HTML Markup o Basic structure of HTML Document o The <DOCTYPE html> Element o The Element o The <head> Element o The <title> Element o The <body> Element o Modifying the background of an HTML webpage o Adding Background color o Adding Background Image o Specifying Metadata about an HTML webpage o Introduction to new elements in HTML 5 o The Markup Elements o The Media Elements o The Canvas Elements o The form elements o The Input type attribute values 	
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3	<p>Working with Text,List,Tables and Frames:</p> <ul style="list-style-type: none"> • Adding a plain text to an HTML webpage • Adding text in new line • Creating Headings on webpage • Creating a paragraph • Creating a Horizontal Rule • Creating a Subscript and Superscript • Aligning the Text • Formatting the Text • Grouping the Text • Indenting Quotations • Working with character entities 	
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	<ul style="list-style-type: none"> • Commenting the Text • Working with Lists <ul style="list-style-type: none"> o Creating an Unordered List o Creating an Ordered List o Creating an Definition List o Nested Lists • Working with Tables <ul style="list-style-type: none"> • Creating a Table • Specifying a caption to a Table • Adding a Table Headings • Setting the Table Borders • Aligning a Table and Cell content • Changing the background color of a Table • Setting a Cell Padding and Cell Spacing • Nesting Tables • Working with Frames <ul style="list-style-type: none"> • Creating a Frames • Defining new element specific attributes • Specifying width and height of the Frame • Applying Hyperlink Target to a frame 	
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4	<p>Working with Hyperlinks, Images, Multimedia, Forms and Controls:</p> <ul style="list-style-type: none"> • Working with Hyperlinks • Creating Hyperlinks • Setting hyperlink color • Linking Different sections of page • Working with Images • Inserting an Image on webpage • Display alternate text for an Image 	
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- o Adding Border to an Image
- o Align an Image o Using Image as a Links
- o Creating Image Maps
- o Working with Multimedia o Embedding multimedia on web page
- o Handling Browser that do not support embedding o Creating a link to a multimedia file
- o Using <Object> tag insert objects
- o Creating an HTML Form
- o Specifying the Action URL and The method to send form
- o Adding Controls to an HTML Form
- o Using the<input> tag
- o Adding Text Area<textarea>
- o Adding Selection Control
- o Understanding new form elements
- o The <datalist> element
- o The <keygen>Element
- o Grouping the controls of HTML Form
- o Specifying Label for a control

Learning Outcomes: -

On the completion of the course students will:

1. Understand the meaning and syntax of different tags of HTML5
2. Learn the basic differences between HTML and HTML5



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3. Understand the basic internet terminology and technology
4. To design web pages using simple and advanced tags of HTML5.
5. To understand the fundamental concept of Google AdSense and Analytics.

Books Recommended:

1. World wide web Design with HTML(First Edition-2010)
Tata McGraw Hill
By C Xavier
2. Web Enabled commercial application development using HTML, Javascript, DHTML and php
BPB Publication.By Ivan Bayross
3. The Complete Reference HTML and CSS (Fifth Edition)
McGraw Hill Education
Thomas A Powell

E-Resources:

1. HTML5 Introduction(https://www.w3schools.com/html/htm15_intro.asp)
2. <http://www.tutorialspoint.com/ht...>
3. <https://www.udemy.com/learn-html...>
4. HTML 5 Cheat Sheet (PDF) - Smashing Magazine
5. <http://htm15please.com/>
6. <http://diveintohtm15.info/>



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SWARNIM STARTUP & INNOVATION UNIVERSITY

SCHOOL OF COMPUTER APPLICATION

Discrete mathematics (New Syllabus 2021)

Code: 13030104

B.C.A.: 1st SEMESTER

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		p	Total		Internal		External		Total
					.Th			Viva	
3		2	5	5	30	30	70	20	150

Objectives:-The BASIC MATHS program at SSIU provides Mathematics majors with a quality undergraduate education in liberal studies, mathematics, science, to prepare them

➤ To, within a few years of graduation, have attained positions as professionals in industry, government, or academia;

z To have become responsible, accountable, current professionals who work effectively in multidisciplinary teams, readily adapt to broad technical challenges, and demonstrate leadership.

Prerequisites:- Students will be able to understand Sets and functions, Limit of a Function and derivative of a functions. In Co-ordinate geometry they will learn about Quadrants and area of triangles. In integration they will learn simple basic formula of integration. Matrices, Types of Matrices, Algebraic Operations on Matrices, Transpose of a Matrix, Symmetric and Skew Symmetric Matrices, Elementary Operation (Transformation) of a Matrix, Minors and Cofactors of matrices, Adjoint and Inverse of a Matrix.

Sr. No.	Course Contents	Number of Hours
1	Set TheoryBasic Definitions of Set theory m Set Operations (Union, Intersection, Complement of a set, Cartesian product of a set) Properties of set operations De-Morgan's Law	03



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2	<p>Groups and Graph Theory:</p> <p>Definition and examples</p> <p>Permutation groups, subgroups , cyclic group</p> <p>Finites and infinite graphs, paths and circuits</p> <p>Isomorphism, connected Graphs, Euler and Hamiltonian graphs , Sub graphs</p> <p>Trees z Distance and center of tree</p> <p>z Binary and spanning tree.</p>	08
3	<p>Limit And Differentiation</p> <p>Concept of Limit</p> <p>Some Standard Limits</p> <p>Continuity of a functions</p> <p>Definition of Derivative</p> <p>Rules for differentiation, Chain rule , logarithmic differentiation , higher order derivative</p> <p>Differentiation of function of a function</p>	06
4	<p>Integration</p> <p>Introduction to indefinite integral and Definite Integrals r</p> <p>Substitution and Integration by parts of Definite and indefinite integrals,</p>	05
5	<p>MATRIX</p> <p>Definition of Matrix</p> <p>Types of Matrix</p> <p>Invertible Matrix r</p> <p>Rank of Matrix</p> <p>Solution of Simultaneous equations</p>	06
6	<p>Lattices And Boolean Algebra</p> <p>Introduction to Lattice</p> <p>Lattice as Partially Ordered Sets</p> <p>Properties of Lattices</p> <p>Sub-Lattice</p> <p>Types of lattices</p> <p>Definition and Properties of Boolean Algebra</p> <p>Boolean Sub-Algebra</p> <p>Isomorphic Boolean Algebra</p> <p>Boolean Expressions and their E uivalence</p>	12

Learning Outcomes:-

1. Properties of set operations, application of De-Morgan's Law,
2. Represent domain, codomain and type of a function.
3. Decide limit, continuity and discontinuity of a function.
4. Apply the knowledge to solve some practical problems, such as constrained optimization problems and other problems involving Partial differentiation.
5. Able to evaluate distance, quadrant and area of a triangle.
6. Evaluate integration using standard formulas.
7. Evaluate determinants and inverse of a matrix., solution of linear system of equations

Teaching & Learning Methodology:-

- Use teaching formats such as discussion groups that encourage the participation of all students and help identify areas where students are having difficulties'.
 - Provide learning materials in different formats (written, online, audio, video podcast etc) to support key concepts/knowledge. Particularly at the start of a programme/module or for key areas, providing online or hard copy notes before classes can aid comprehension and accessibility.
 - Include inquiry based learning exercises in international or intercultural contexts.● Include group work, with groups representing diverse cultures and nationalities.

Books Recommended:-

1. Business mathematics by V.K.Kapoor ,S.chand &sons Publication.
- 2. Thomas' Calculus, Maurice D. Weir, Joel Hass, Frank R. Giordano, Pearson Education
- 3. Introduction to Linear Algebra with Application, Jim DeFranza, Daniel Gagliardi, Tata McGraw-Hill
4. Advanced Engineering Mathematics, Erwin Kreysig, Wiley Publication.



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5. Elementary Linear Algebra, Ron Larson, Cengage Learning
6. Engineering mathematics by Anthony Craft, Robert Davison & Martin Hargreaves, Pearson Education

E-Resources:-

The above mentioned contents can be referred through:
[http://www.gujaratuniversity.org.in/web/NWD/Downloads/Syllabus/List%20of%20Syllabus/20%20-%20UG-CBCS%20Syllabus%20\(wef%20Jun-2011\)/BCA/Syllabus_BCA_Sem-1.pdf](http://www.gujaratuniversity.org.in/web/NWD/Downloads/Syllabus/List%20of%20Syllabus/20%20-%20UG-CBCS%20Syllabus%20(wef%20Jun-2011)/BCA/Syllabus_BCA_Sem-1.pdf)
<http://www.gujaratuniversity.org.in/web>



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Communication Skills

Semester 1

CODE: 13030105

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
2			2		30		70		100

Objectives: -

- To enhance students' communicative and linguistic approach in English
- To provide icebreaking approach through LSRW skills and soft skills
- • To learn ways to enhance overall communication skills

Prerequisites:-

- Being able to communicate effectively is the most important of all life skills; hence, students are expected to have good spirit for learning English as second language.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction to Communication Skills : LSRW 1. Need for Effective communication 2. Importance of English as second language 3. Importance of Communication 4. Know What You Want To Say	6
2	Grammar Subject Verb agreement, Auxiliary and Modal auxiliary verb, parts and types of sentences, active and passive voice, Tenses.	4
3	Basics of Communication 1. Definition & types of Communication, 2. Cycle of communication 3. Forms of communication	8



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	4. Components of Verbal & Non-verbal communication 5. Kinesics 6. Paralinguistic/ paralanguage 7. Chronemics 8. Proxemics	
4	Listening Skill 1. Definition & Types of Listening 2. Barriers to effective listening 3. Techniques to be good listener 4. Listening audio clips (practical exercise)	4
5	Reading Skill 1. Reading techniques 2. Reading Strategies 3. Comprehensive reading 4. Book review	6
6	Speaking Skill & Phonetics transcription	6
7	Writing Skill 1. Answering comprehension practical 2. Business Letters 3. Email writing	5
8	Short Stories <ul style="list-style-type: none"> The Selfish Giant by Oscar Wilde How Much Land Does a Man Need? By Leo Tolstoy 	3
	Total hours:	42

Learning Outcomes: -

- Students will be able to communicate effectively.
- They feel confident in speaking and writing English language.
- Students will be able to improve the language skills i.e. Listening Skill, Speaking Skill, Reading Skill, and Writing Skill (LSRW).
- To make them learn about life skills and soft skills.

Teaching & Learning Methodology:-

•Power point presentation

- Provide learning materials in different formats (written, online, audio, video podcast etc) to support key concepts/knowledge. Particularly at the start of a program/module or for key areas, providing online or hard copy notes before classes can aid comprehension and accessibility.
- It includes audio video clips that can provide ample number of exercise to the students
- Face- to face oral communication to provide a platform where they can perform and practice well.



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Books Recommended:

1. Lesikar R V, Flatley M E ,Rentz K and Pandey Business Communication: Making Connections in a Digital World 2009: New Delhi, Tata Mcgrow Hill
2. Raman Minakshi, Communication Skills, 201 1 : New Delhi, Oxford University Press.
3. Leech, Geoffrey and Jan Svntvik. A Communicative Grammar of English. New Delhi: Pearson, 2009.
4. Wren & Martin, I-ligh school English Grammar, S. Chand and Co. Ltd

E-Resources:

1. <http://www.free-english-study.com/>
2. <http://www.english-online.org.uWcourse.htm>
3. <http://www.english-online.org.uW>



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SWARNIM STARTUP & INNOVATION UNIVERSITY

SCHOOL OF COMPUTER APPLICATION

Statistical Method and Operation Research .

CODE : 13030201

BCA : 2nd Semester

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Th	Tu	P	Total		Internal		External		Total
					Th	Pr	Th	Pr	
3	2	-	5	5	30	50	70	-	150

Objectives: Operation research and statistical method program at SSIU provides Mathematics majors with a quality undergraduate education in liberal studies, mathematics, science, and to prepare them

➤ To, within a few years of graduation, have attained positions as professionals in industry, government, or academia;

➤ To have become responsible, accountable, current professionals who work effectively in multidisciplinary teams, readily adapt to broad technical challenges, and demonstrate leadership.

Prerequisite(s):- Student should be able to understand Measures of Central Tendency and Dispersion. Students entering in Probability should have a firm grasp of mathematics. Permutation and combinations of functions, Factorial Representation of. Permutation and Combinations and Linear Programming Problem, Transportation and Assignment and Game theory from operation research.



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Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Measures of Central Tendency and Dispersion: Arithmetic mean, Median, Mode, Harmonic	05
	Medn, Geonnelric tnean for grouped and ungrouped data. h Concept of dispersion, Absolute and relative measure of dispersion, range variance, Standard deviation, Coefficient of variation	
2	Permutation and Cotnbinations The Fundamental principle of counting Factorial Representation of Permutation Permutation Problems Combinations Factorial Representation of Combinations Combination Problems	03
3	Satnple space, Events and Probability r Experiments and random experilnents, Ideas of deterministic and nondeterministic experiments; r Definition of sample space, discrete sainple space, events; Types of events, Union and intersections of two or more events, Inutually exclusive events, Cotnplelnentary event, Exhaustive event; Silnple e,xmnple.s*. Classical delinilion ol' probability, Addition theorem ol' probability without Proof (up to three events are expected). Definition of conditional probability Definition of independence of two events, simple nunlerical roblems	08
4	Linear Pro ° ra nuning Prohienv. Introduction, Requirement of LP, Basic Assulnptions, Forinulation of LP, General Statement of LP, Solution techniques ol' LP: Graphical Methods. Analytical Methods: Simplex, Big M and l'wo Phase. Sensitivity Analysis, Prilnal and Dual Problelns, Economic Interpretation	12
5	Transportation and Assign tment: r Transportatlon Problelns delinition, Linear forni, r Solution Inethods: North west corner Inethod,	08



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	least cost method, Vogel approximation method. Transportation Problems, Assignment Problems and Traveling sales man Problem	
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Learning Outcomes Course Outcome:

After learning the course the students should be able to:

1. Students will be able to describe characteristics and scope of OR.
2. Students will be able to define and formulate mathematical problems.
3. Students will be able to select optimal problems solving techniques for a given problem using LP.
4. Students will be able to formulate and solve transportation, traveling sales man and transportation problems.
5. Students will be able to formulate and solve optimization problems related to job/work assignments.
6. Students will be able to demonstrate and solve simple models of Game theory.
7. Students will be able to evaluate optimum solution using dynamic programming for different applications.
8. Student also learn basic concept of statistics and probability.

Teaching & Learning Methodology:-

- Use teaching formats such as discussion groups that encourage the participation of all students and help identify areas where students are having difficulties.
 - Provide learning materials in different formats (written, online, audio, video podcast etc) to Support key concepts/knowledge. Particularly at the start of a programme/module or for key areas, providing online or hard copy notes before classes can aid comprehension and accessibility.
 - Include inquiry based learning exercises in international or intercultural contexts.
 - Include group work, with groups' representing diverse cultures and nationalities.

Books Recommended:-

1. Advanced Engineering Mathematics, Erwin Kreysig, Wiley Publication.
2. Gupta and Kapoor : Fundamentals of Statistics, Sultan Chand and Sons.
3. Operation Research by J.K. Sharma



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Logic Development and Programming I I

Semester 2

CODE: 13030202

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
			Total		Internal		External		Total
3	0	2	5	4	30	50	70		150

Objectives:-The course fully covers the basics of programming in the 'C' programming language and demonstrates fundamental programming techniques, customs.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Structures & Unions: Structures <ul style="list-style-type: none">Defining a structureAccessing a structure variableOperations on structure membersCopying and comparing variablesArrays of structureArrays within Structures Unions <ul style="list-style-type: none">Defining Unions	11
2	Pointer: <ul style="list-style-type: none">Definition and ConceptAdvantage of using pointerPointer Arithmetic	11

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	Array of Pointers Pointers and Functions Pointers with UDFs	
3	Dynamic Memory Allocation & Link List: Dynamic Memory Allocation Memory Allocation Function malloc() calloc() realloc() • free() Linked List Concepts Advantages Overview of types of Linked list Operations on Singly Linked List(create, display, insert at first, insert at last, delete at first, delete at last) Application of Link list	8
4	C Language Operators and Decision Making: File Files • Concepts of File Management Files functions fopen(), fclose(), fprintf(), fscanf(), fseek(), ftell(), rewind(), putc(), getc(), putw(), getw() • Error handling functions • Preprocessors • Types of Preprocessors • Macro substitution directives • File inclusion directives • Compiler control directives	8

Learning Outcomes:-

On the completion of the course students will:

1. To obtain in depth knowledge of C language.
2. To understand advanced features of C Programming Language.

TEXT BOOK/S:

1. Introduction to C Programming

Publication : Oxford

By Reema Thareja



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REFERENCE BOOKS:

1. Computer Fundamentals & Programming in C

Publication :Oxford

By Pradip Dey, Manas Ghosh

2. Programming in ANSIC (Fifth Edition 2011)

Publication :McGraw Hill

By Balagurusamy

WEB RESOURCES:

1. <https://www.tutorialspoint.com/cprogramming/>
2. <http://www.javatpoint.com/c-programming-language-tutorial>
3. <https://www.programiz.com/c-programming>
4. <http://www.cprogramming.com/tutorial/c-tutorial.html>
5. <http://www.programmingsim>



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Database Management System

Semester 2

CODE:13030203

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
						pr			
3		4	7	5	30	50	70		150

Objectives: -This course introduces students to information of data, working of related data to gain knowledge. Students also will design the real life application

Prerequisites:-(1) Elementary knowledge about computers including some experience

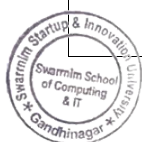
Using UNIX or Windows.

(2) Computer Programming & Utilization

(3) Knowledge about data structures and algorithms, corresponding to the basic course on Data Structures and Algorithms.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction: <ul style="list-style-type: none">• Data Vs. Information• Introduction of the Database and the DBMS• Role, Advantage and Disadvantages of DBMS Types of Database	4



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2	Distributed Database Management Systems: Evolution of DDBMS • Distributed Processing and Distributed Data ase	2
	• DDBMS Advantages and Disadvantages Characteristics of DDBMS • Components of DDBMS	
3	Database Systems: • The Database System Environment • DBMS Functions • The Relational Model • The E-R Model	4
4	The Relational Database Model: • A logical view of Data Keys Integrity Rules • Concept of Functional Dependency • Relational Set Operators • The Data Dictionary and The System Catalog • Relationship within the Relational Database	10
5	The Entity Relationship Model: • Entities Attributes Relationships Connectivity and Cardinality Existence Dependence Relationship Strength Weak Entities Relationship Participation Relationship Degree Recursive Relationship Composite Entities Developing an ER diagram (Using Crow's-foot Model)	10
6	Normalization of Database Tables: • The need of Normalization • The Normalization process	10

Learning Outcomes:-

Install, configure, and interact with a relational database management system; Describe, define and apply the major components of the relational database model to database design; Learn and apply the Structured Query Language (SQL) for database definition and manipulation; Utilize a database modeling technique for a single entity class, a one-to-one (1:1) relationship between entity classes, a one-to-many (1:M) relationship between entity classes, a many-to-many (M:M) relationship between entity classes, and recursive relationships; Define, develop and process single entity, 1:1, 1:M, and M:M database tables; Learn and implement the principles and concepts of information integrity, security and confidentiality; Apply ethical computing concepts and practices to database design and implementation



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Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.

Books Recommended:-

1. An introduction to Database Systems, CJ Date, Addison-Wesley.
- 2, C Programming: Test Your Skills, I/e by Ashok Kamthane
- 3, Database System Concepts, Abraham Silberschatz, Henry F. Korth & S. Sudarshan, McGraw-Hill.
- 4, Understanding SQL by Martin Gruber, BPB
- 5, SQL-PL/SQL by Ivan Bayross

E-Resources:-

- 1, https://en.wikipedia.org/wiki/Database_management_system
- 2, https://searchdatamanagement.techtarget.com/resources/Database_3,
<https://searchsqlserver.techtarget.com/.../database-management-system>

Sr. No.	Practical
1	<p>To study DDL-create and DML-insert commands.</p> <p>(i) Create tables according to the following definition.</p> <pre>CREATE TABLE DEPOSIT (ACTNO VARCHAR2(5), CNAME VARCHAR2(18), BNAME VARCHAR2(18), AMOUNT NUMBER(8,2), ADATE DATE);</pre> <pre>CREATE TABLE BRANCH(BNAME VARCHAR2(18), CITY VARCHAR2(18)); CREATE TABLE CUSTOMERS(CNAME VARCHAR2(19), CITY VARCHAR2(18));</pre> <pre>CREATE TABLE BORROW(LOANNO VARCHAR2(5), CNAME VARCHAR2(18), BNAME VARCHAR2(18), AMOUNT NUMBER(8,2));</pre> <p>(ii) Insert the data in above tables</p> <p>(iii) From the above given tables perform the following queries:</p> <p>(1) Describe deposit, branch.</p> <p>(2) Describe borrow, customers.</p> <p>(3) List all data from table DEPOSIT.</p> <p>(4) List all data from table BORROW.</p> <p>(5) List all data from table CUSTOMERS.</p> <p>(6) List all data from</p>



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Internet Web Designing — II

Semester 2

CODE: 13030204

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
Theory	Tutorial	Pr	Total		Internal		External		Total
					Theory	Practical	Theory	Practical	
3		2	5	4	30	50	70		150

Objectives: -To develop the skill about the basic and important terminology of

Internet.To make the students able for web site design fundamentals using HTML scripting,CSS & XML, javascript.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction to HTML 5 Introduction <ul style="list-style-type: none">Basic Elements of HTML 5Markup Element <article> <aside><command><detail> <summery> <figure>	



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	<ul style="list-style-type: none"> o <footer> o <header> o <hgroup> o <mark> o <meter> o <nav> o <progress> o <ruby> o <rt> o <rp> o <section> o <time> • Media Element o <audio> o <video> o <source> o <embed> • Canvas Element • Form Elements o <datalist> o <keygen> o <output> o The Input type attribute values o tel, search, url, email, datetime, date, month, week, time, datetime-local, number, range, color 	
2	<p>Style sheets :</p> <ul style="list-style-type: none"> o Need for CSS o introduction to CSS o basic syntax and structure using CSS o background images o colors and properties 	

3	<p>Introduction to JavaScript</p> <ul style="list-style-type: none"> JavaScript <ul style="list-style-type: none"> Introduction Understanding JavaScript About Dynamic HTML Selecting an development environment for JavaScript HTML and JavaScript Advanced <ul style="list-style-type: none"> JavaScript Element of JavaScript Variables Operators Flow control statement Arrays Functions <ul style="list-style-type: none"> Event handling Browser and JavaScript <ul style="list-style-type: none"> Web page and JavaScript Frames and JavaScript Frames and Validation in JavaScript <ul style="list-style-type: none"> Frames and JavaScript Validating User forms 	
4	<p>Introduction to XML and XML Document Type Definition</p> <p>XML</p> <ul style="list-style-type: none"> Introduction XML versus HTML XML terminologies XML standards (XML, XML namespace, 	

	<p>DTD,CSS,XSL,XML schema, Xquery, Xlink,Xpointer,Xpath) o XHTML</p> <ul style="list-style-type: none"> • XML Documentation o Introduction to DTD o Document type declaration o Element type declaration o Attribute declaration o Conditional sections, limitations of DTD 	
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Learning Outcomes: -

On the completion of the course students will:

- 1.Understand the meaning and syntax of different tags of HTML
- 2.Learn the basic differences between HTML and HTML5
- 3.Understand the basic internet terminology and technology
- 4.To design web pages using simple and advanced tags of HTML.

Books Recommended:

1. HTML 5 in Simple Steps
Publisher: DreamTech PressByKongent solution
(Chapter-2 for unit 1)
2. Javascript 2nd Edition Step by step
Author: Steve suehring
(Chapter-22 for unit 3)
3. XML and Related Technologies (First Edition 2009) Pearson Education E-Resources:

1. HTML5 Introduction(https://www.w3schools.com/html/htm15_intro.asp)
2. <http://www.tutorialspoint.com/ht...>
3. <https://www.udemy.com/learn-html...>
4. HTML 5 Cheat Sheet (PDF) - Smashing Magazine
5. <http://htm15please.com/>
6. <http://diveintohtm15.info/>



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Digital Electronics

Semester 2

CODE: 13030205

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
						pr			
3		2	5	4	30	50	70		150

Learning Outcomes:

- Learn various number systems and their conversion used in digital components
- Introduce significant evolution in digital electronics
- Understand basic digital components for circuit design.
- Design basic electronics circuit for various applications and their analysis

Course outline:-

Sr.No.	Course Contents	Lectures (Hours)
1	Introduction to Computer Organization Digital computers, Basic components of digital computer, instructions, programming systems, assembly languages, high-level languages summary	3
2	Number systems Binary, Octal, Decimal, Hexadecimal numbers, addition, subtraction, multiplication, division, negative numbers, use of complements to represent negative numbers, complements in other numbering system, BCD numbers.	7
3	Boolean algebra and Mapping Methods	8



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	Fundamental concepts of Boolean algebra, AND, OR, NOT, NAND, NOR gates, logical expressions, basic laws of Boolean algebra, simplification of expression, De Morgan's Theorem, sum of product, product of sum, Kmaps to simplify expression (two-variable, three-variable, fourvariable), logical circuits using logical gates.	
4	Digital integrated circuits Introduction, Latch, Flip-Flop, register, multiplexer, De-multiplexer, Decoder, Encoder.	6
5	Modern Computer Organization Introduction, user and computer, computer organization, main memory, CPU operation, Interrupt concept, bus concept, booting sequence.	5
6	CPU Architecture and instruction set Introduction, CISC and RISC, Instruction set design, addressing modes, data representation, and binary data.	6

Reference Books:

1. Digital Computer Fundamentals (Sixth Edition) Thomas Bartee, McGraw-Hill
2. Computer Architecture and organization by B Govindrajalu (TMH)
3. Advanced microprocessor and interfacing by Badri Ram
4. Digital logic and computer design by M Moris Mano



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Data and File Structure

Semester 3

CODE: 13030301

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
3		2	5	4	30	50	70		150

Objectives: -The course improves the Data structure logical ability. To introduce various techniques for representation of the data in the real world. To teach concept of protection and management of data.

Prerequisites:-computer Programming & utilization

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction: Data management concept, Data types, Performance analysis, Time & Space Complexity, Asymptotic notations Types of Data Structure-Linear and non Linear	5
2	Linear Data Structure: Array: Representation of arrays, Applications of arrays, sparse matrix and its representation Stack: Stack Definitions & Concepts, Operations On Stacks, Applications of Stacks, Polish Expression, Reverse Polish Expression, Queue: Representation Of Queue, Operations On Queue, Circular Queue, Priority Queue, Array representation of Priority Queue, Double Ended Queue, Applications of Queue Linked List: Singly Linked List, Doubly Linked list, Circular linked list, Linked implementation of Stack, Linked implementation of	10



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	Queue, Applications of linked list	
3	NONLINEAR DATA STRUCTURE : Tree-Definitions and Concepts, Representation of binary tree, Binary tree traversal (Inorder, postorder, preorder), Threaded binary tree, Binary search trees, Applications Of Trees Some balanced tree mechanism, eg. AVL trees, Graph-Matrix Representation Of Graphs, Elementary Graph operations, (Breadth First Search, Depth First Search, Spanning Trees, Shortest path	11
4	HASHING : Hashing: The symbol table, Hashing Functions, Collision Resolution Techniques	7
5	Sorting & Searching: Sorting — Bubble Sort, Selection Sort, Quick Sort, Merge Sort Searching — Sequential Search and binary search	5

Learning Outcomes:-

*After learning the course the students should be able:

1. Differentiate primitive and non-primitive structures
2. Design and apply appropriate data structures for solving computing problems.
3. Apply sorting and searching algorithms to the small application

Teaching & Learning Methodology:-

■ The challenge that teaching and learning data structure presents, has encouraged the design and implementation of various new and innovative data structure teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.

■ Books Recommended:-

1. An Introduction to Data Structures with Applications.. by Jean-Paul Tremblay & Paul G. Sorenson Publisher-Tata McGraw Hill.
2. Data Structures using C & C++ -By Ten Baum Publisher — Prentice-Hall International.
3. Fundamentals of Computer Algorithms by Horowitz, Sahni, Galgotia Pub. 2001 ed.
4. Fundamentals of Data Structures in C++-By Sartaj Sahani.

E-Resources:-

- 1, https://www.tutorialspoint.com/data_structures_algorithms/index.htm
- 2, <https://www.studytonight.com/data-structures/>



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Practical List:-

Sr. No.	Practical
1	Introduction to structures & pointers in C.
2	Stack operations Write a program to perform PUSH, POP, PEEK & CHANGE operations on Stack.
3	Queue Operations Write a program to implement insertion & deletion in a queue
4	Circular Queue Operations Write a program to implement insertion & deletion in a circular queue
5	Write a program for linked list insertion, deletion & copy
6	Write a program to perform Selection sort
7	Write a program to perform Selection sort
8	Write a program to sort the given number using bubble sort
9	Write a program to perform Merge sort
10	Write a program to perform Quick sort
11	Write a program to perform Sequential and binary search



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Relational Database Management System

Semester 3

CODE: 13030302

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
			Total		Internal		External		Total
					Th				
3		2	5	4	30	50	70		150

Objectives: - This course introduces students to information of data, working of related data to gain knowledge. Students also will design the real life application

Prerequisites:- (1) Elementary knowledge about computers including some experience using UNIX or Windows.

(2) Computer Programming & Utilization

(3) Knowledge about data structures and algorithms, corresponding to the basic course on Data Structures and Algorithms.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction: <ul style="list-style-type: none">Data Vs. InformationIntroduction of the Database and the DBMSRole, Advantage and Disadvantages of DBMS Types of Database	04
2	Distributed Database Management Systems: <ul style="list-style-type: none">Evolution of DDBMSDistributed Processing and Distributed DatabaseDDBMS Advantages and DisadvantagesCharacteristics of DDBMS	02
3	Database Systems: <ul style="list-style-type: none">The Database System EnvironmentDBMS FunctionsThe Relational ModelThe E-R Model	04



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4	The Relational Database Model: A logical view of Data Keys Integrity Rules Concept of Functional Dependency Relational Set Operators The Data Dictionary and The System Catalog Relationship within the Relational Database	10
5	The Entity Relationship Model: Entities Attributes Relationships Connectivity and Cardinality Existence Dependence Relationship Strength Weak Entities Relationship Participation Relationship Degree Recursive Relationship Composite Entities	08
6	Normalization of Database Tables: <ul style="list-style-type: none"> • The need of Normalization • The Normalization process 	10

Learning Outcomes:-

After learning the course the students should be able:

1. Evaluate business information problem and find the requirements of a problem in terms of data.
2. Understand the uses the database schema and need for normalization.
3. Design the database schema with the use of appropriate data types for storage of data in database.
4. Use different types of physical implementation of database
5. Use database for concurrent use.
5. Backup data from database.

Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.

Books Recommended:-

1. An introduction to Database Systems, CJ Date, Addison-Wesley.
2. C Programming: Test Your Skills, I/e by Ashok Kamthane
- Database System Concepts, Abraham Silberschatz, Henry F. Korth & S. Sudarshan, McGraw-Hill.
- Understanding SQL by Martin Gruber, BPB



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E-Resources:-

- 1, https://en.wikipedia.org/wiki/Database_management_system
- 2, https://searchdatamanagement.techtarget.com/resources/Database_3,
<https://searchsqlserver.techtarget.com/.../database-management-system>

Practical List:-

1. Overview of DBMS.
2. To study commands of DDL, DML, DTL and DCL.
3. To study different operations, date — function and conversion functions.
4. To study different types of string functions.
5. To study different types of function & operators like group by clause, having clause, etc.
6. To design Entity Relation Model.
7. To study sub-queries.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Operating System

3rd Semester

CODE: 13030303

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
3		2	5	4	30	50	70		150

Objectives:- As a core subject of Computer Engineering/Information Technology, this course enables to understand importance of Operating System, its functionalities to manage resources of Computer and Peripherals, program development and its execution. Student will be made aware of Process Management, Memory Management, File Management and I/O Management in detail, which will be useful to them for Large Application Development in engineering field with emphasis given to Linux type of Open Source Operating System.

Prerequisites: - Data structures(stack, queue, linked list, tree, graph), hashing, File structures, Any structured Programming Language (like C)

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Introduction: Introduction: Basics of Operating Systems: Definition — Generations of Operating systems — Types of Operating Systems, OS Service, System Calls, OS structure: Layered, Monolithic, Microkernel Operating Systems — Concept of Virtual Machine.	7
2	Process Management Processes: Definition Process Relationship , Process states , Process State transitions Process Control Block ,Context switching — Threads — Concept of multithreads , Benefits of threads — Types of threads Process Scheduling: Definition , Scheduling objectives ,Types of Schedulers ,Scheduling criteria CPU utilization,	8



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	Throughput, Turnaround Time, Waiting Time, Response Time (Definition only) , Scheduling algorithms : Pre emptive and Non , pre emptive FCFS - SJF - RR , Multiprocessor scheduling Types Perfornance evaluation of the scheduling.	
3	Inter process Communication- Race Conditions, Critical Section, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson's Solution, The Producer Consumer Problem, Semaphores, Event Counters, Monitors, Message Passing, Classical IPC Problems: Reader's & Writer Problem, Dinning Philosopher Problem Scheduling, Scheduling Algorithms.	8
4	Deadlocks: Definition, Deadlock characteristics , Deadlock Prevention Deadlock Avoidance :banker's algorithm, Deadlock detection and Recovery	5
5	Memory Management: Basic Memory Management, Definition, Logical and Physical address map, Memory allocation: Contiguous Memory allocation — Fixed and variable partition — Internal and External fragmentation and Compaction, Paging : Principle of operation — Page allocation — Hardware support for paging —Protection and sharing — Disadvantages of paging. Virtual Memory: Basics of Virtual Memory — Hardware and control structures — Locality of reference, Page fault Working Set , Dirty page/Dirty bit — Demand paging (Concepts only) — Page Replacement policies : Optimal (OPT) , First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used (LRU)	8
6	Unix/Linux Operating System Development Of Unix/Linux, Role & Function Of Kernel, System Calls, Elementary Linux command & Shell Programming, Directory Structure, System Administration Case study: Linux, Windows Operating System	3

Learning Outcomes:-

After learning the course the students should be able to:

- ✓ Understand various generations of Operating System and functions of Operating System.
- ✓ Understand the concept of program, process and thread and Analyze various CPU Scheduling Algorithms and compare their performance.
- ✓ Solve Inter Process Communication problems using Mathematical Equations by various methods. Compare various Memory Management Schemes especially Paging and Segmentation in Operating System. Also apply various Page Replacement Techniques. Understand File Systems in Operating System like UNIX/Linux and Windows.
- ✓ Understand Input Output Management and use of Device Driver and Secondary Storage (Disk) Mechanism.
- ✓ Write shell scripts in Linux/UNIX environment.

Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the programming challenges outside the assignments' boundaries.



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Books Recommended:-

1. Operating System Concepts (8th Edition) by Silberschatz, Peter B. Galvin and Greg Gagne, WileyIndian Edition (2010).
2. Modern Operating Systems (Third Edition) by Andrew S Tanenbaum, Prentice Hall India (2008).
3. Principles of Operating Systems by Naresh chauhan, Oxford Press (2014).
4. Operating Systems by D.M. Dhamdhare, Tata McGraw Hill 2nd edition.
5. Operating Systems (5th Ed) — Internals and Design Principles by William Stallings, Prentice Hall India, 2000
6. UNIX Concepts and Applications(4th Edition)— by Sumitabha Das, Tata McGraw Hill.
7. Unix Shell Programming — by Yashwant Kanetkar, BPB publications.

List of Open Source Software/learning website:

www.nptel.ac.in

Practical List:- Practical
1. Study of Basic commands of Linux/UNIX.
2. Study of Advance commands and filters of Linux/UNIX.
3. Write a shell script to generate marksheet of a student. Take 3 subjects, calculate and display total marks, percentage and Class obtained by the student.
4. Write a shell script to find factorial of given number n.
5. Write a shell script which will accept a number b and display first n prime numbers as output.
6. Write a shell script which will generate first n fibonnacci numbers like: 1, 1, 2, 3, 5, 13
7. Write a menu driven shell script which will print the following menu and execute the given task.
8. MENU
9. Display calendar of current month
10. Display today's date and time
11. Display usernames those are currently logged in the system
12. Display your name at given x, y position
13. Display your terminal number Exit
14. Write a shell script to read n numbers as command arguments and sort them in descending order.
15. Write a shell script to display all executable files, directories and zero sized files from current directory.
16. Write a shell script to check entered string is palindrome or not.
17. Shell programming using filters (including grep, egrep, fgrep)
18. Study of Unix Shell and Environment Variables.
19. Write a shell script to validate the entered date. (eg. Date format is : dd-mm-yyyy).
20. Write an awk program using function, which convert each word in a given text into capital.



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Object Oriented Programming — I

Semester 3

CODE: 13030304

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
			Total		Internal		External		Total
						pr			
3		4	7	5	30	50	70		150

Objectives: - This course provides in-depth coverage of object-oriented programming principles and techniques using C++. Topics include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level language features. The course briefly covers the mapping of UML design to C++ implementation and object-oriented considerations for software design and reuse. Perform object oriented programming to develop solutions to problems demonstrating

Prerequisites: - To familiarize the trainee with basic concepts of computer programming and developer tools. To present the syntax and semantics of the "C++" language as well as data types offered by the language. To allow the trainee to write their own programs using standard language infrastructure regardless of the hardware or software platform.

Major Equipment:

- Latest Desktop PCs with any C++ compiler
- Open source software dev C++



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Course outline:-

Sr.	Course Contents	Number of Hours
1	Concepts of OOPC:	4
	Introduction OOP, Procedural Vs. Object Oriented Programming, Principles of OOP, Benefits and applications of OOP.	
2	C++ Basics: Overview, Program structure, namespace, identifiers, variables, constants, enum, operators, typecasting, control structures.	6
3	C++ Function: Simple functions, Call and Return by reference, Inline functions, Macro Vs. Inline functions, Overloading of functions, default arguments, friend functions, virtual functions.	6
4	Object and Classes: Basics of object and class in C++, Private and public members, static data and function members, constructors and their types, destructors, operator overloading, type conversion.	7
5	Inheritance: Concept of Inheritance, types of inheritance: single, multiple, multilevel, hierarchical, hybrid, protected members, overriding, virtual base class.	7
6	Polymorphism: Pointers in C++, Pointers and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism.	6

Learning Outcomes:-

- *On successful completion of the course, the student will:
- *Describe the important concept of OOPC like object and class
- *Describe the important concept of OOPC like Encapsulation, inheritance, & polymorphism
- * Write the simple C++ programs using the variables, operators, control structures, function
- * Write the simple object oriented programs in C++ using objects and classes.
- *Use advance features like exception to make programs supporting reusability * Use standard template library for faster development.
- *Develop the applications using object oriented programming with C++. * Design, develop, execute, debug and validate programs in OOP environment.

Teaching & Learning Methodology:-

The challenge that teaching and learning computer programming presents, has encouraged the design and implementation of various new and innovative computer programming teaching methods. The presented methods aim to improve the students' success rates by increasing their motivation and encouraging the greater self-engagement, not only in assignments provided within a course, but also in further exploration of the C++ programming challenges outside the assignments' boundaries.



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Books Recommended:-

- 1) Object Oriented Design by Rumbaugh (Pearson publication)
- 2) Object-oriented programming in Turbo C++ By Robert Lafore, Galgotia Publication.
- 3) Object-oriented programming with C++ by E.Balagurusamy, 2nd Edition, TMH.
- 4) C++ Programming, Black Book, Steven Holzner, dreamtech
- 5) Object Oriented Programming with ANSI and Turbo C++, Ashok Kamthane, Pearson

E-Resources:-

- 1) C++ Fundamentals: <http://www.oupinheonline.com>
- 2) C++ Tutorials: http://www.tutorialspoint.com/cplusplus/cpp_overview.htm
- 3) Video tutorials of C++: <http://nptel.iitm.ac.in/syllabus/syllabus.php?subjectId=106101006>
- 4) Learn C++ Programming: <http://www.learncpp.com>
- 5) Complete C++: <http://www.cplusplus.com>

Practical List:-

Sr. No.	Practical
1	<ol style="list-style-type: none">1. Write C++ program to accept two numbers and display its product.2. Write a program to accept the length and breadth of rectangle from the user. Calculate and display the area and perimeter.3. Write a program to accept one int type data and one float type data. Multiply the two numbers and display the result.4. Develop minimum 5 programs using control structures (for, while, do... While,)5. Write a program to print Fibonacci series of N numbers.
2	<ol style="list-style-type: none">1. Write a program to display a user entered number in words using Switch...Case.2. Write a program to add two numbers using function.3. Develop minimum 2 programs using arrays<ol style="list-style-type: none">I. Write a program to accept 'n' integers from users into an array and display them one in each line.II. Write a program to accept and display string
3	<ol style="list-style-type: none">1. Develop programs using reference variable, scope resolution operator, simple manipulators, and number data type.2. Write a program to swap two numbers using function. Pass the values to be swapped to this function using call by- value method.3. Write a program using function with argument to swap the value of a pair of integers using call by reference.4. Write a program to store and display the name, age, height, weight, and wickets taken of a cricket player using structure.

4	<ol style="list-style-type: none"> 1. Write a program to find area of circle using object oriented programming such that the class circle must have three members functions namely: <ul style="list-style-type: none"> Read () to accept the radius from the user. Compute () for calculating the area. Display() for displaying the result 2. Write a program to find area of circle using object oriented programming such that the class circle must have three inline functions namely: <ol style="list-style-type: none"> I. Read () to accept the radius from the user, Compute () for calculating the area. Display() for displaying the result 3. Write a program that uses a class where the member functions are defined inside a class. 4. Write a program that uses a class where the member functions are defined outside a class 5. Write a program to demonstrate the use of zero argument and parameterized constructors. 6. Write a program to demonstrate the use of dynamic constructor. 7. Develop programs using various types of constructors and destructor.
5	<ol style="list-style-type: none"> I. Develop programs using : <ol style="list-style-type: none"> I. Single inheritance II. Multilevel inheritance III. multiple inheritance 2. Define minimum 5 different classes such as student, distance, shape, employee, feet, time, data etc. with data member & member functions. Also develop programs to test those classes functionality.
6	<ol style="list-style-type: none"> 1. Develop Programs using array of objects and static member functions. 2. Write a program to demonstrate the use of static data members. 3. Write a program to demonstrate the use of const data members.
7	<ol style="list-style-type: none"> 1. Write a program to demonstrate the overloading of increment and decrement operators. 2. Write a program to demonstrate the overloading of binary arithmetic operators. 3. Write a program to demonstrate the overloading of memory management operators.
8	<ol style="list-style-type: none"> 1. Write a program to add two complex numbers using operator overloaded by a friend function. 2. Write a program to demonstrate function overriding. 3. Write a program to demonstrate dynamic binding using virtual function. 4. Write a program to demonstrate pure virtual function. 5. Write a program to demonstrate the use of "this" pointer.
9	<ol style="list-style-type: none"> 1. Write a program to write and read a string from/to file.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Software Engineering

Semester 3

CODE : 13030305

Teaching & Evaluation Scheme:-


Teaching Scheme				Credits	Evaluation Scheme				
		Pr	Total		Internal		External		Total
						pr			
3		2	5	4	30	50	70		150

Objectives:

It Deliver an opportunity to students where they can deal with real life problems and learn an individual as well as teamwork approach for software development,

Prerequisites:-None

Course outline:-

Sr.No.	Course Contents	Number of Hours
1	Software process Models and lifecycle: Software Product, Product, Software Processes, Evolving Role of Software, Software Engineering: A Study of different Software Process Models, The Linear Sequential Model, The Prototyping Model, The RAD Model, Evolutionary Process Models, Process, Product and Process, Object Oriented Software Engineering	4
2	Project Management Concepts & Project Metrics: The Management Spectrum, People, Product, Process, Project, The W5HH Principle, Metrics in the Process and Project Domains (FP & LOC), Software Measurement, Metrics for Project and Software Quality 	5



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3	Software Project Planning, Scheduling and Tracking: Project Planning Objectives, Software Project Estimation using COCOMO Model, Software Scope and Resources, Empirical Estimation Models, Basic Concepts and Relationship Between People and Effort, Defining a Task Set for the Software Project, Selecting Software Engineering Tasks, Defining a Task Network and Scheduling, Earned Value Analysis	4
4	Software Requirements Specification: Requirement Gathering and Analysis, Software Requirement Specification(SRS), Formal requirements specification and verification - axiomatic and algebraic specifications	3
5	Analysis Modeling, Software Design Concepts and Principles: The Elements of the Analysis Model, Data Modeling, Functional Modeling and Information Flow, Behavioral Modeling and Structured Analysis, Software Design and Software Engineering, The Design Process, Design Principles, Design Concepts, Modular Design, Design Heuristics for Effective Modularity, The Design Model, Design Documentation, Object Modeling using UML, Software Architecture and Data Design, Architectural Styles	4
6	User Interface Design, Component Level Design: User Interface Design, Task Analysis and Modeling, Interface Design Activities and Implementation Tools, Design Evaluation, Structured Programming and Comparison of Design Notation	5
7	Risk Analysis & Management: Reactive versus Proactive Risk Strategies, Software Risks (Risk Identification, Risk Projection, Risk Refinement, Risk Mitigation)	3
8	Coding, Software Testing Techniques & Software Testing Strategies: Software Testing Fundamentals and Test Case Design, White-Box Testing and Black-Box Testing, ISO/IEC/IEEE Software Testing standards, Testing for Specialized Environments, Unit Testing, Integration and Validation Testing, Software Documentation and Debugging Techniques	3
9	Software Quality Assurance and Configuration Management Quality Concepts and Software Quality Assurance, Quality Planning and Control, Software Reviews (Formal Technical Reviews), Software Reliability and Fault Tolerance, The SCM Process Identification of Objects in the Software Configuration, Six Sigma, Version Control and Change Control	4
10	Emerging and advanced topics in Software Engineering: Security Engineering, Agile Methods, Client Server Software Engineering, Aspect Oriented Software Development, Software Engineering Aspects of Programming Languages, Re-engineering, Web Engineering	3

Learning Outcomes:-

After completion of the course students will be able to

Prepare SRS (Software Requirement Specification) document and SPMP (Software Project Management Plan) document.

Apply the concept of Functional Oriented and Object Oriented Approach for Software Design.



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3. Recognize how to ensure the quality of software product, different quality standards and software review techniques.
4. Apply various testing techniques and also upgrade it using advanced Software Engineering

Teaching & Learning Methodology:-

For teaching this subject power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work

Books Recommended:-

1. Roger S. Pressman, Software Engineering: A practitioner's approach, McGraw Hill.
2. Rajib Mall, Fundamentals of Software Engineering, Prentice Hall India.
3. Pankaj Jalote, An integrated approach to Software Engineering by Springer.
4. Ian Sommerville, Software Engineering, Addison and Wesley.

E-Resources:-

- 1) Software:-Rational Rose, Microsoft Visio, Enterprise resource planning
- 2) Project Management Tools
- 3) SCM Tools
- 4) SQA Tools
- 5) Analysis and Design Tools
- 6) User Interface Development Tools
- 7) Testing Tools
- 8) Client/Server Tools
- 9) Reengineering Tool!

List of Experiments:

Prepare following document form below mentioned projects:

1.	DFD (Data Flow Diagrams)
2.	E-R Diagram
3.	Use-Case Diagram
4.	Activity Diagram
5.	Class Diagram
6.	Sequence Diagram
	State Diagram
8.	Implementation
9.	Test case design
10.	Program Testing



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Case Study:-
1) Student college management System
2) Library Information System
3) Railway/Flight Reservation system
4) Online Banking System
5) Hospital Management System
6) ATM(Automatic Teller machine)



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Object Oriented Programming - II

Semester 4

CODE: 13030401

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
						pr			
4		4	8	6	30	50	70		150

Objectives. • - To understand the concept of object oriented programming. This course Provide fundamental knowledge of the various aspects of java programming and enables students to appreciate recent development in the area of programming.

Prerequisites: - Object oriented concepts

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Basics of JAVA: Features of Java, Byte Code and Java Virtual Machine, JDK, Data types, Operator, Control Statements — if , else, nested if, if-else ladders, Switch, while, do-while, for, for-each, break, continue.,	03
2	Array and String: Single and Multidimensional Array, String class, String Buffer class, Operations on string, Command line argument, Use of Wrapper Class.	04
3	Classes, Objects and Methods: Class, Object, Object reference, Constructor, Constructor Overloading, Method Overloading, Recursion, Passing and Returning object form Method, new operator, this and static keyword, finalize() method, Access control, modifiers, Nested class, Inner class, Anonymous inner class , Abstract class.	06



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4	Inheritance and Interfaces: Use of Inheritance, Inheriting Data members and Methods, constructor in inheritance ,method overriding, super keyword ,Final keyword, Creation and Illipletnentatlon of an interface , instanceof operator, Interface inheritance, Dynamic method dispatch ,Cotnparison between Abstract Class and interface	06
5	Package: Use of Package, CLASSPATH, Import statement, Static innport, Access control	04
6	Exception Handling: Exception and Error, Use of try, catch, throw, throws and finally, Built in Exception, Custom exception, Throwable Class	05
7	Multithreaded Programming: Use of Multithread programming, Thread class and Runnable interface Thread priority, Thread s nchronization , Thread communication, Deadlock	05
8	10 Programming: Introduction to Stream, Byte Stream, Character stream, Readers and Writers, File Class, File InputStream, File OutputStream, InputStreamReader, OutputStreamWriter, FileReader, FileWriter,Buffer Reader	05
9	Collection Classes : List, Abstract List, Array List, Linked List, Enumeration, Vector, Pro erties, Introduction to Java.util acka e.	05
10	Networking with iava.net: InetAddress class ,Socket class, Datagram Socket class, Data ram Packet class	05

Learning Outcomes:-

After successful completion of the course students should be able to:

1. Understand object oriented programming concepts and implement in java.
2. Compare building blocks of OOPs language, inheritance, package and interfaces.
3. Identify exception handling methods.
4. Implement multithreading in object oriented programs.

Teaching & Learning Methodology:-

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures
- Experiments shall be performed in the laboratory related to course contents



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Books Recommended:-

1. Java Fundamentals A comprehensive Introduction by Herbert Schildt, Dale Skrien, McGraw Hill Education.
2. Programming with Java A Primer – E. Balagurusamy, McGraw Hill Education.
3. The Complete Reference, Java 2 (Fourth Edition), Herbert Schildt, - TMH.
4. Programming with Java, M. P. Dhavale S.A. Patekar, Pearson.
5. Introduction to Java Programming 7th ed., Y. Daniel Liang, Pearson.

E-Resources:-

1. Java Development Kit:
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>
2. <http://docs.oracle.com/javase/specs/jls/se7/html/index.html>
3. <http://docs.oracle.com/javase/tutorial/java/index.html>
4. <http://www.javatpoint.com/>
5. <http://www.tutorialspoint.com/java/>
6. <http://www.learnjavaonline.org/>
7. <http://www.c4learn.com/javaprogramming/>
8. <http://www.learn-java-tutorial.com/>

Practical List:-

Sr. No.	Practical
1.	Display greatest number from three numbers.
2.	To check given number is prime or not.
3.	To reverse the given number.
4.	Display Fibonacci series.
5.	To print given pattern on screen. 12343 2 1 1 23 3 2 1 1 22 1 1 1 1
6.	To search an element from an array.
7.	Sort the array in ascending order.



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8.	Multiplication of 3X3 matrices.
9.	Create a class Calculator with arithmetic functions such as addition, subtraction, multiplication, and division.
10.	Create a class Tillie with hours, minutes, and seconds as member variables and calculate sum of two Time objects.
11.	Create a class which can perform following tasks using method overloading <ul style="list-style-type: none"> a) Addition of two float values b) Addition of two arrays. c) Addition of two Strings
12.	Write an OOP to demonstrate use of following functions of String class <ul style="list-style-type: none"> 1) getChars() 2) equals() 3) equalsIgnoreCase() 4) startsWith() 5) endsWith() 6) substring()
13.	Write an OOP to demonstrate use of following functions of StringBuffer class <ul style="list-style-type: none"> 1) deleteCharAt() 2) insert()
14.	Write an OOP to sort list of strings in alphabetical order.
15.	To catch Arithmetic Exception such as division by zero
16.	To catch multiple exceptions such as ArrayIndexOutOfBoundsException , NumberFormatException, NullPointerException.
17.	Write an OOP To throw your own exception
18.	Write an OOP for copying character from one file to another.
19.	Write an OOP for writing bytes to file
20.	Write an OOP for reading bytes from a file
21.	Write an OOP for copying bytes from one file to another.
22.	Write an OOP for reading and writing primitive datatype.
23.	Write an OOP for reading and writing using a random access file.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

OPEN SOURCE TECHNOLOGY

Semester 4

CODE : 13030402

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		P	Total		Internal		External		Total
						pr		pr	
3		2	5	4	30	50	70		150

Objectives:

This course covers the basic introduction about HTML, CSS, JAVASCRIPT and brief of LAMP (Linux, Apache, MySQL, PHP) to design static as well as Dynamic web pages. We can use Windows Operating system instead of Linux.

Prerequisites: LAMP is an Open Source Web Development platform that uses Linux as an operating system, Apache as web server, MySQL as a Relational Database Management System and PHP as a Object Oriented Scripting Language. This subject covers the wide range of web technologies both client side and server side to provide the exposure to the students to develop Rich Internet Applications using them.

Course outline:-

Sr.No.	Course Contents	Number of Hours
1	INTRODUCTION :Concept Of Internet, Introduction of HTML, XHTML, CSS and JavaScript.	6
2	XML:Introduction to XML, uses of XML, simple XML, XML key components, DTD and Schemas, Well formed, using XML with application.XML, XSL and XSLT. Introduction to XSL, XML transformed simple example, XSL elements, transforming with XSLT	6
3	INTRODUCTION OF PHP : History of PHP, Apache web Server, MySQL and Open Source,Relationship between Apache, MySQL and PHP (AMP Module),PHP configuration in IIS, Apache Web server	6
4	BASICS OF PHP : PHP structure and Syntax, Creating the PHP pages, rules of PHP syntax, Integrating HTML with PHP, Constants, Variables : static and global variable, Conditional Structure & Looping, PHP Operators, Arrays, foreach constructs, User defined function (argument function, Variable function, Return Function, default argument, variable length argument).	7



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5	INTRODUCTION TO MYSQL : MySQL structure and syntax, Types of MySQL tables and storages engines, MySQL commands, Integration of PHP with MySQL, Connection to the MySQL server, Working with PHP and arrays of data, Referencing two tables , Joining two tables	7
6	WORKING WITH DATABASE : Basic command with PI-IP examples, Connection to server, creating database, selecting a database, listing database, listing table ,names creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP myadmin and database bugs.	7

Learning Outcomes:-

After successful completion of this course, student will be able to

- Understand the basic structure of web designing technology
- > Apply the concepts of web technology in designing static and dynamic web pages
- > Design interactive web pages incorporating validation techniques
- We can save the data into database and get data when necessary.

Teaching & Learning Methodology:-

For teaching this subject we use notepad or notepad++ or dream viewer or net beans software, Apache Server to store, process and deliver Web pages to clients.

Books Recommended:-

1. Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India
2. Web Technologies, Black Book, dreamtech Press
3. HTML 5, Black Book, dreamtech Press
4. Web Design, Joel Sklar, Cengage Learning
5. Internet and World Wide Web How to program, P.J. Deitel & H.M. Deitel, Pearson

E-Resources:-

Browsers like IE, Mozilla,

FireFox etc - Server software

XAMPP/WAMP/LAMP www.apachefriends.org

www.w3.org www.w3schools.com



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Practical List:-

Sr. No.	Practical's
	Creating the PHP page.
2	Programs using arrays and control and loop structures
3	Testing different PHP functions and user define function
4	Creating forms using buttons, textboxes and other form elements. Use (\$ POST and \$ GET to retrieve data.)
5	Passing hidden information to the form processing script via hidden form controls and a URL user string
6	Creating forms with sessions and cookies
7	Allowing the user to upload their own images
8	View the data contained in the MySQL database.
9	Connect to the database from your website.
10	Revision of all practicals.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Object Oriented Web Technology

Semester 4

CODE: 13030403

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
						pr			
3		2	5	4	30	50	70		150

Objectives: -

The course builds upon the procedural and object-oriented programming logic tools from earlier courses. This course covers C# development using Visual Studio .NET and focuses on C# syntax, logic constructs, application development using windows forms, and the object-oriented nature of the language. Through the experience of creating these programs and methods the student will learn the fundamentals of C# programming to solve problems in various domains.

Prerequisites: -

1. Readings in the course text .
2. Exams on all covered chapters in the course text .
3. Lab projects .
4. Regular and prompt attendance
5. Class Participation and daily work

Course outline:-

Sr.	Course Contents	Number of Hours
1	Introduction : What is .NET? What is the CLR? The FCL Primitive Types Namespaces Statements and Expressions Operators	06



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2	Classes and Objects: Constructors Reference Types Object Oriented Programming Access Modifiers Debugging and Error Handling	04
3	ADO.NET Benefits of ADO.NET ADO.NET compared to classic ADO Datasets Managed Providers Data Binding: Introducing Data Source Controls Reading and Write Data Using the Sql Data Source Control	04
4	Windows Forms and Controls in details: The Windows Forms Model <ul style="list-style-type: none"> • Creating Windows Forms Windows Forms Properties and Events • Windows Form Controls, • Menus -Dialogs -ToolTips 	04
5	Visual Inheritance in C#.NET: <ul style="list-style-type: none"> • Apply Inheritance techniques to Forms • Creating Base Forms • Programming Derived Forms 	04
6	Mastering Windows Forms: <ul style="list-style-type: none"> • Printing - Handling Multiple Events e GDI+ • Creating Windows Forms Controls 	04
7	Themes and Master Pages: Creating a Consistent Web Site, Themes - Master Pages Displaying Data with the GridView Control Introducing the GridView Control Filter Data in the GridView Control Allow Users to Select from a DropDownList .in the Grid Add a Hyperlink to the Grid Deleting a Row and Handling Errors	06
8	Managing State: Preserving State in Web Applications and Page-Level State Using Cookies to Preserve State ASP.NET Session State Storing Objects in Session State Configuring Session State Setting Up an Out-of-Process State Server	06

	Storing Session State in SQL Server Using Cookieless Session IDs Application State Using the DataList and Repeater Controls Overview of List-Data Controls Creating a Repeater Control and DataList Control	
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Learning Outcomes:-

Knowledge Outcomes:

1. Articulate the basic syntax and features of the programming language
 2. Define constructs which implement the three basic control structures
 3. Define arithmetic, relational, and logical operators
 4. Describe object-oriented (OO) concepts related to classes and objects
 5. Describe the concepts behind sound user interface design
 6. Describe the concepts behind variables, constants, and calculations
- Skill Outcomes:
1. Demonstrate the ability to create Object-Oriented (OO) application programs
 2. Demonstrate the ability to create appropriate classes and objects
 3. Demonstrate the ability to create windows-based applications
 4. Demonstrate the ability to create user interfaces including but not limited to various boxes, buttons, menus, dialog boxes

Teaching & Learning Methodology:-

Lectures, analysis of business practice examples, discussions, presentations of students' papers and case studies, exercises - students' individual and group work

Books Recommended:-

1. Christian Nagel, Professional C# .Net, Wrox Publication
2. Matthew Macdonald and Robert Standefer, ASP.NET Complete Reference, TMH
3. Vijay Mukhi, C# The Basics, BPB Publications

E-Resources:-

1. <http://www.tarleton.edu/cis/studentresources.html>
2. http://online.tarleton.edu/fac dev/applications/student_blackboard/index.htm

Practical List:-

Sr. No.	Practical
1	Write a program to check whether empty query string is entered in Asp .net
2	Write a program to change color of Label text control programmatically in Asp .Net
3	Write a program to Enable-Disable Textbox and change width of TextBox programmatically in Asp .Net
4	Write a program to increase and decrease font size programmatically.



Diksha

5	Write code to display the asterisk pattern as shown below:
6	Write Ctl code to prompt a user to input his/her name and country name and then the output will be shown as an example below: Hello Ram from count India
7	Write C# code to do the following - Convert binary to decimal - Convert decimal to hexadecimal - Convert decimal to binary Convert decimal to octa
8	Write C# code to convert infix notation to postfix notation.
9	Write a C# code to convert digits to words
10	Write a C# code to Convert following currency conversion. Rupees to dollar, frank, euro.
11	Write a C# code to Perform Celsius to Fahrenheit Conversion and Fahrenheit to Celsius conversion.
12	Write ASP.Net program to Store Objects in Session State and Storing Session State in SQL Server.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Data Communication and Network

Semester 4

CODE: 13030404

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
3		2	5	4	30	50	70		150

Objectives:

The aims of this module are:

- To introduce the basics of data communications and computer networks.
- To examine and understand network protocols and architectures. To educate the student in modern networking technologies.

Course outline:-

Sr.No.	Course Contents	Number of Hours
1	INTRODUCTION TO DATA COMMUNICATION AND NETWORKING: Uses of Computer Networks, Network Hardware, Network Software Internet Reference Models (OSI and TCP/IP)	05

1

1



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2	PHYSICAL LAYER: Basis for Data Communication, Guided Transmission Media , Wireless Transmission Medium, Circuit Switching and Telephone Network, High Speed Digital Access	08
3	DATA LINK LAYER: Data Link Layer Design Issues, Error Detection and Correction, Data Link Control and Protocols, Example Data Link Protocol	
4	MEDIUM ACCESS LAYER: Channel Allocation Problem, Multiple Access, CSMA, CSMA/CD, CSMA/CA	06
5	LOCAL AREA NETWORK: Ethernet, Fast Ethernet, Gigabit Ethernet, Wireless LAN, Bluetooth, Connecting Devices(Bridge, Hub, Switch, Router, Gateway)	06
6	NETWORK LAYER: Network layer design issues, Routing Algorithms (Optimality Principle, Static routing Algorithms, Shortest Path, Flooding, Dynamic routing algorithms, Dynamic Routing algorithms, Distance Vector, Link State Routing).	06

Learning Outcomes:-

Learning outcomes are a required element of the syllabus. They are statements about what students will know and be able to do with what they know upon successful completion of the course. These statements are further defined as observable and measurable - meaning that 0 student progress on learning outcomes can and is assessed in the course.

Learning outcomes benefit faculty because they form a solid foundation for course organization and planning. Well constructed learning outcomes make the selection and design of assignments and assessments more focused. They also assist with keeping focus on the things faculty most value in the course.

Learning outcomes benefit students by providing specific learning targets to pursue. They can also help students better understand faculty actions and choices in the course.

Teaching & Learning Methodology:-

The challenge that teaching and learning computer networking presents, has encouraged impletnentation of various new and computer network connections. Aim to improve the students' success rates by increasing their motivation and encouraging the greater selfengagennt, not only in assignments provided within a course, but also in further exploration of the networking challenges outside the assignments' boundaries.

Books Recommended:-

1. Data Communication & Networking, Forouzen, Tata McGraw Hill
2. Andrew S. Tanenbaum (Fifth Edition)

E-Resources:-

- 1) [https://en.wikipedia.org/wiki/List_of_network_protocols_\(OSI_model\)](https://en.wikipedia.org/wiki/List_of_network_protocols_(OSI_model))
- 2) https://wuw.webopedia.com/TERM/C/CSMA_CD.html
- 3) <https://www.studytonight.com/computer-networks/osi-model-datalink-layer>
- 4) <https://turbofuture.com/misc/Data-Communication>

Practical List:-

Sr. No.	Practical's
1	Study practical of OSI reference model.
2	Study practical of TCP/IP model.
3	Preparing LAN Cable using RJ45.
4	Preparing of Network cables.
5	Establishment of LAN Connection.
6	Troubleshooting of network.
7	Study practical of switch, Hub, Router, Gateway, Bridge.
8	Study of Wireshark packet tracer.
9	Prepare a demo Network using concept of Subnetting.

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Data Center Management

Semester 4

CODE: 13030405

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
						pr		pr	
3		2	5	4	30	50	70		150

Objectives. • - Data Centre Management is well organized and thoughtfully prepared. The Subject is demanding and requires high level of self-discipline and persistence. In return, it offers deep insights in leadership, and inspires students to develop their leadership capabilities. It has been designed for the data centre industry and is great value for emerging leaders and their organizations.

Prerequisites: - Operating System and Computer Network

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	Basic Introduction of Data center Architecture, Requirement, Required Physical Area for Equipment and Unoccupied Space	06
2	Required power to run all the devices, Required cooling and HVAC Required weight, Network Bandwidth	05
3	Budget Constraints, Selecting a Geographic Location Safety from Natural hazards and manmade disaster	05
4	Data Center design and planning and cabling	04
5	Data Center Maintenance monitoring, Physical and logical security	05
6	Data center Consolidation, Reasons for data center Consolidation, Consolidation opportunity, consolidation, Storage Consolidation, Network Consolidation, Service Consolidation, Process Consolidation, Staff	04
	Consolidation, Data Consolidation phases	



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Learning Outcomes:-

After successful completion of the course students should be able to:

- i. Manage Server Systems and Data Centers Infrastructure Management.
2. Utilize the Storage, Bandwidth, Efficiency of systems and other resources for Data centre.
3. Monitoring the Networks and Resources.
4. Create ability to manage and maintain Server.

Teaching & Learning Methodology:-

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures
- Experiments shall be performed in the laboratory related to course contents

Books Recommended:-

1. Administering Data Centers: Servers, Storage and Voice over IP, Kailash Jayaswal
2. Data center fundamentals, Mauricio Arregoces, Maurizio Portol
3. Enterprise Data Center: Design and Methodology by Rob Snevely

E-Resources:-

1. Software: VMware
2. Nagios, Ganglia, Untangle,
3. <https://www.techopedia.com/definition/29712/data-center-design>

Practical List:-

Sr. No.	Practical
1	Installation of any server.
2	Manage workgroup and Create domain using Active Directory
3	Create user, Groups and Organization Unit
4	Create and apply policy on different group and OU
5	Concept of structure Cabling in network based environment
6	Setup VMware workstation and manage resources
7	Manage and maintain ESXI server
8	Monitoring the cluster using Open source (Nagios/Ganglia) tools.
9	Resource allocation to clients from server
10	Case study to design a datacenter as per requirement



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SWARRNIM STARTUP AND INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA) Object

Oriented Programming — III

Semester : 5th

CODE: 13030501

Teaching and Examination Scheme:

Teaching Scheme				Credits	Evaluation Scheme				
Theory	Tutorial		Total		Internal		External		Total
					Theory	Practical	Theory	Practical	
3		2	5	4	30		70	50	150

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	Introduction to Python: The Python programming language, What is a program?, What is debugging?, The first program. Variables, expressions and statements Values and types, Variables, Variable names and keywords, Statements, Operators and operands, Expressions, Order of operations, Comments, Debugging.		5
2	Operators: Modulus operator, Boolean expressions, Logical operators, Conditional execution, Alternative execution, Chained conditionals, Nested conditionals	10%	5



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3	<p>User Defined Function and Introduction to Packages:</p> <p>Functions:</p> <p>Function calls, Type conversion functions, Math functions, Composition, Adding new functions, Definitions and uses, Parameters and arguments, Variables and parameters are local, Fruitful functions and void functions, Why functions?. Recursion Function</p> <p>Introduction to Packages:</p> <p>Usage of Packages, Installation of Packages, brief introduction to NUMPY Package</p>		9
4	<p>Python Data Structure — I:</p> <p>Strings</p> <p>A string is a sequence, Len, Traversal with a for loop, String slices, Strings are immutable, Searching, Looping and counting, String methods, The in operator, String comparison, Debugging.</p> <p>List</p> <p>ListA list as a sequence, Lists are mutable, Traversing a list, List operations, List slices, List methods, Map, Filter and reduce, Deleting elements, Lists and strings, Objects and values, Aliasing, List arguments.</p>	25%	12
5	<p>Python Data Structure — II:</p> <p>Tuples, Set, Dictionary</p> <p>Tuples: Python Tuples, Accessing values in Tuples, update and delete tuples Basic tuples operation, Built in Tuples Function, List Vs Tuples.</p> <p>Set: Defining set, create and accessing values in a set, set Methods, Frozenset</p> <p>Dictionary: What is python Dictionary, Creating a Dictionary, Adding elements to a Dictionary, Accessing and removing an elements from Dictionary, Dictionary Methods</p>	25%	12
6	<p>File Operations:</p> <p>Need of a file. Opening, closing and read/write operations in file.</p>		5

*Continuous Evaluation:

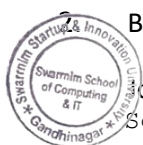
It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Think Python, How to Think Like a Computer Scientist (TextBook) Allen Downey; Green Tea Press Needham, Massachusetts.

Beginning programming with Python for Dummies John Paul Mueller;

John Wiley & Sons



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SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)
Object Oriented Analysis and Design

Semester 5
CODE: 13030502

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
						pr			
4		2	6	5	30		70	50	150

Course outline:-

Learning Outcome:ne:		
<p>After learning the course the students should be able to:</p> <ul style="list-style-type: none"> • After successful completion of this course, student will be able to demonstrate the importance of modelling in the software development life cycle. • Become familiar with the Unified modelling Language. • Understand the object-oriented approach to analysing and designing systems and software solutions. Employ the Unified modelling Language notations to create effective and efficient system designs. • Understand the difference between writing programs for the software and doing analysis and design. • Problem formulation and decomposition (analysis) and solution building (design) will be covered. 		
Theorys IJabus		
Unit	Content	
1	Introduction to OOAD and UML: Overview of Software Development Life Cycle (Waterfall Model), Introduction to Object Oriented analysis and design, overview of model with types and UML, UML structure:building blocks and architecture, Overview of static and dynamic UML diagrams Forward & Reverse Engineering: Introduction to Forward & Reverse Engineering using UML	
2	Use case Model: Introduction to use case diagram, Elements of use case diagram with notations: association/uses, include, extend, eneralization	



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3	Class & Object Model: Basics of object oriented concepts, Introduction to class and object diagram, identify the elements based on noun phrase method, Elements of class diagram with notations: object, class, link, association, multiplicity, link attributes, association end names, association classes, qualified association, association ends N-ra association a re ation and com osition eneralization abstract class	
4	Sequence & Collaboration Model : Introduction to Sequence & Collaboration diagram, Elements, Elements of sequence diagram Collaboration diagram with notations: object, messages, activation, lifeline, destroyingobjects, guard condition	
5	State Model: Introduction to State Diagram, Event ,Change Event, Signal Event, Call Event, Time Event , States, Transition & Conditions, Transition, Guard Condition, Action, State Diagrams, One shot 08 State Diagram, Creating State Diagram ,State Diagram Behaviour, Activity, Do-activity, Entry Activity, Exit Activity, Nested State Dia ram, Nested States, Si nal Generalization, Concurr enc	
6	Activity and Swim lane Model: Introduction to Activity and Swim lane diagram, Elements, Elements of Activityand Swim lane diagram with notations: initial state or start point, activity or action state, action flow, decisionsand branching, guard condition, Synchronization (fork and join), time event, merge event, swim lanes, final state or end oint	
7	Component and Deployment Model: Introduction to Component and deployment Diagram, Elements ofComponent and deployment Diagram	

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Android Programming

Semester 5

CODE: 13030504

Type of Course: BCA

Prerequisite: Basic Knowledge of Core Java and Object Oriented Concepts,

Rationale: Introduce with mobile market and mobile application development.

	TOPIC	Weightage	Teaching Hrs.
1	Introduction to mobile computing & Mobile Development: Introduction to MC, Applications, Limitations and architecture. Cellular overview, Cellular networks, Mobile IF), History of mobile software development. The open handset alliance, The android platform, android SDK, Building a simple application.	15%	7
2	Android Application Design Essentials: Anatomy of an android applications, Android terminologies, Application context, Activities, services, Intents, Receiving and broadcasting intents, Android manifest file and its common settings using intent filter, Permissions, Managing application resources in a hierarchy, Working with different types of resources.		10
3	Android User Interface Design Essentials: User interface screen elements, Designing user interfaces with layouts, drawing and working with Using android networking APIs, Using android web APIs.		10



A handwritten signature in blue ink, appearing to read 'Aikasa'.

Teaching and Examination Scheme:

Teaching Scheme				Credits	Evaluation Scheme				
Theory	Tutorial		Total		Internal		External		Total
					Theory	Practical	Theory	Practical	
3		2	5	4	30		70	50	150

Contents:

4	Database Connectivity Using SQLite: Using android data and storage APIs, Managing data using SQLite, Sharing data between applications with content providers.	25%	12
5	Working with Conunon API. Using Android Networking APIs Using Android Web APIs Using Android Telephony APIs, Notification.	18%	8
6	Publishing your Application:	2%	1

•Continuous Evaluation:

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Android Wireless Application Development (TextBook)
Lauren Darcey and Shane Conder; Pearson Education; First Edition
Professional Android 2 Application Development Reto Meier; Wiley India PvtLtd,2011
2. Beginning Android
Mark L Murphy,;; Wiley India Pvt Ltd.(2009)
3. Pro Android
Sayed Y Hashimi and Satya Komatineni; Wiley India Pvt Ltd.(2009)



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SWARRNIM STARTUP & INNOVATION UNIVERSITY Swarnnim

School of Business

Department of Bachelor of Computer Application (BCA)

Cloud Computing

Semester 6

CODE: 13030602

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
3		2	5	4	30		70	50	150

Learning Outcomes:

- After learning the course the students should be able to
- Understand the computing paradigm and cloud computing
- Understand the architecture of cloud computing
- Understand and use the service models and deployments
- Work on any real cloud service
- Understand the service management and security of cloud

Course outline:-

Sr.No.	Course Contents	Lectures (Hours)
1	Introduction Overview of computing paradigms, Recent trends in computing, evolution of cloud computing, Overview of cloud computing, Cloud computing-Concepts, properties, characteristics, Role of open standards.	5
2	CLOUD COMPUTING ARCHITECTURE Cloud computing architecture, Cloud service delivery models	8
3	INFRASTRUCTURE AS A SERVICE Introduction, Hypervisors, Resource virtualization, Examples, How to implement IAAS, IAAS implementation using OpenStack	5



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4	PLATFORM AS A SERVICE Introduction, Cloud Platform and Management, Examples, Containers, Application Staging, How to implement PAAS.	6
5	SOFTWARE AS A SERVICE Introduction, Web services, Web 2.0, Web OS, Examples, How to implement SAAS.	6
6	CLOUD SECURITY Infrastructure security, Data Security, Storage Identity and Access Management, Access Control, Trust and Reputation, Authentication in Cloud computing.	6
7	SERVICE MANAGEMENT IN CLOUD Service Orchestration -Cloud computing and Service Management, licensing of software, Service Level Agreements (SLAs), Billing & Accounting, Comparing scaling hardware, economics of scaling, managing data. Cloud performance, Existing project experience	5

Practical Content

- Understanding single core and multi core Architecture
- Understanding Computer Network fundamentals and Designing LANs
- Implementation of Infrastructure as a service(IaaS) using Hypervisors
- Implementation of private cloud platform using openstack cloud
- Working with IaaS of Public cloud platforms
- Implementation of Platform as a service(PaaS) in private cloud environment ■
Implementation Platform as a service(PaaS) in public cloud environment
- Implementation Software as a service(SaaS) in private cloud environment
- Implementing Software as a service(SaaS) in public cloud environment ■
Implementation of Storage as a service(StaaS)

Reference Books:

1. Barrie Sosinsky: "Cloud Computing Bible", Wiley-India, 2010
2. Rajkumar Buyya, James Broberg, Andrzej M. Goscinski: "Cloud Computing: Principles and Paradigms", Wiley, 2011
3. Nikos Antonopoulos, Lee Gillam: "Cloud Computing: Principles, Systems and Applications", Springer, 2012.
4. Ronald L. Krutz, Russell Dean Vines: "Cloud Security: A Comprehensive Guide to Secure Cloud Computing", Wiley-India, 2010.



Nikasa

SWARRNIM STARTUP & INNOVATION UNIVERSITY

Swarnnim School of Business

Department of Bachelor of Computer Application (BCA)

Data Warehousing and Data Mining

Semester 6

CODE: 13030605

Teaching & Evaluation Scheme:-

Teaching Scheme				Credits	Evaluation Scheme				
		pr	Total		Internal		External		Total
						pr		Pr	
3		2	5	4	30		70	50	150

LEARNING OBJECTIVES:

The educational Objectives of this Course are:

- To Introduce various Data Mining Applications in real world scenario
- To be learning more about various mining tools for analysis and decision making
- Applying efficient mining methods to solve engineering problems .
- Learning concepts of Business Intelligence in solutions, organizational changes, products, technologies and methods to organize key data to improve performance and profit.

Course outline:-

Sr. No	Topic	Lecture Hours	Weight. age
1	Data Warehousing fundamentals Introduction A Multi-Dimensional Data Model Data Warehouse Architecture Data Warehouse Implementation From Data Warehouse to Data Mining to Business Intelligence	8	13
2	Data Pre-processing Data Cleaning <ul style="list-style-type: none">• Data Integration and Transformation• Data Reduction	7	10



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	<ul style="list-style-type: none"> Data Discretization and Concept Hierarchy Generation 		
3	Data Extraction, Transformation and Loading (ETL) Extracting the Data Transforming the Data Loading the Data into a DW System ETL Using Export Import Challenges for ETL ETL Tools Difference between ETL and BI Tools	8	13
4	Introduction to Business Intelligence Introduction A Data Framework For BI Structured Vs. Semi-Structured Data Framework Architecture For Structured Data Architecture For Semi-Structured Data BI as a Product, Process, Solution and Tools Factor driving Business Intelligence Role of Data, Information and Knowledge in Data Warehouse , Data Mining and Decision Support System Difference between BI and other related technologies. Utilization and benefits of BI in Organization. <ul style="list-style-type: none"> Obstacles to BI Business Intelligence User Tools Research issues in BI	10	15
5	Mining Frequent Patterns, Associations, and Correlations Basic Concepts and a Road Map Efficient and Scalable Frequent Item set Mining Methods Mining Various Kinds of Association Rules Constraint based Association Mining	7	10

6	Classification and Prediction The fundamentals of classification systems Issues regarding Classification and prediction Differences between classification, recommendation, and clustering Applications of classification Classification methods: Decision tree, Bayesian Classification, Rule based, CART Neural Network CBR Rough set Approach Fuzzy Logic Genetic Algorithms Prediction methods: The fundamentals of Prediction Linear and nonlinear regression Accuracy and Error Measures Accuracy of Classifier	8	13
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Practical Content

Reference Books:

1. Data Mining concepts and Techniques by Jiawei Han, Micheline Kamber— Elsevier.
2. M. Kantardzic, "Data mining: Concepts, models, methods and algorithms, John Wiley & Sons Inc.
3. Business Intelligence by Rajiv Sabherwal, Irma Becerra-Fernandez, Wiley Publications, John Wiley & Sons, Inc.

LIST OF EXPERIMENTS:

Sr. No.	Practical Aim
1	Data Preprocessing Techniques in Standard Tool like Excel Miner/Mat Lab
2	Perform ETL on any standard dataset (Export — Import, Data Pump etc.)
3	Generating different types of graphs on different types of data.
4	Implement and simulate different classification algorithm on standard dataset
5	Implement and simulate different clustering algorithm on standard dataset
6	Future prediction on Data mining Tool
7	Computing association rule with TANAGRA and WEKA
8	Building decision tree with TANAGRA and WEKA. Error rate estimation using a Cross validation.
9	Generate intelligent report for enterprise data using BI tools
10	A Survey paper on latest research in Data Mining and Business Intelligence



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Swarinim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Fundamentals of Computers

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA23010 1	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

- Understand the basic concepts of computer hardware and software.
- Demonstrate problem solving skills.
- Understand the structure of operating system, its applications and commands.
- To be familiar with network tools, concepts of protocols and network interfaces.
- Understands the concept of Computer's Input/output devices.



Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> • Computer Fundamentals: Block Structure of a Computer, Characteristics of Computers, Generation of Computers and Classification of Computers. • Programming Languages: Classification, Machine Code, Assembly Language, Higher Level Language and Fourth Generation Languages. • Number System: Bit, Byte, Binary, Decimal, Hexadecimal and Octal Systems, Conversion from One System to the Other; Binary Arithmetic Addition, • Subtraction and Multiplication. 	15	30%
2	<ul style="list-style-type: none"> • Information Concepts & Processing System: Evolution of Information Processing, Data, Information, Knowledge & Wisdom. • Elements of a Computer Processing System: Hardware - Input-Output Devices, VDU, CPU Storage Devices and Media. • Software Concepts: Type of Software, Translator, Compiler, Interpreter, Assembler, Loader. • Application Software: Office Automation. 	15	35%
3	<ul style="list-style-type: none"> • Operating System: Concepts as Resource Manager, Batch Processing, 	7	15%
	Multiprogramming, Multiprocessing, Time Sharing and Real Time System.		



	<ul style="list-style-type: none"> • DOS: Command Interpreter, Booting Internal & External Commands, Batch Files, exe, com, System Files, bin, txt, bmp Files. 		
4	<ul style="list-style-type: none"> • Computer Network and Communication: Network Types, Network Topologies; Data Communication – Mode, Channel, and Media; OSI Reference Model, TCP/IP, Data Communication Equipment/Devices. • Internet and its Applications: E-Mail, TELNET, FTP, World Wide Web, Internet and Applications. 	8	20%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	P.K. Sinha	Computer fundamentals	BPB Publication	8th edition, 2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Anita Goel	Computer Fundamentals	Pearson Education	Latest



2	Peter Norton	Inside PC	TMH	Latest
3	Alexis Leon, Methews Leon	Fundamentals of Information Technology”	Vikas Publishing	Latest

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- "Computer" - This is the flagship magazine of the IEEE Computer Society, covering a wide range of topics related to computer science and technology. It features articles, research papers, and reviews on computer fundamentals.
- "Communications of the ACM" - This monthly publication by the Association for Computing Machinery (ACM) covers various aspects of computing, including computer fundamentals. It includes articles, research papers, and industry insights.
- "ACM Computing Surveys" - This journal focuses on surveys and tutorials that provide an overview of the fundamental concepts and developments in the field of computer science. It covers a broad range of topics and serves as a valuable resource for understanding computer fundamentals.
- "Computer Science Review" - This journal publishes review articles and surveys on various topics in computer science, including computer fundamentals. It offers in-depth coverage of foundational concepts and emerging trends.
- "IEEE Computer Architecture Letters" - This journal focuses specifically on computer architecture, which is a fundamental aspect of computer systems. It features short papers and letters that present novel ideas, designs, and analysis in computer architecture.
- "International Journal of Computer Science and Information Technologies" - This journal covers various aspects of computer science and information technology, including computer fundamentals. It features research papers, articles, and case studies.

- "IEEE Transactions on Computers" - This journal publishes research papers, articles, and surveys on computer-related topics, including computer fundamentals. It covers a wide range of areas, including computer architecture, algorithms, and software systems.
- "Computerworld" - This popular magazine focuses on technology news, trends, and insights. While it covers a wide range of topics, it often includes articles and features related to computer fundamentals and emerging technologies.

WEB RESOURCES:

- **GeeksforGeeks (www.geeksforgeeks.org)** - GeeksforGeeks is a popular platform that offers a wide range of articles, tutorials, and coding practice exercises for C programming. It covers various topics, ranging from basic concepts to advanced algorithms and data structures.
- **Tutorialspoint (www.tutorialspoint.com)** - Tutorialspoint provides a comprehensive C programming tutorial that covers topics like basic syntax, control structures, functions, arrays, pointers, and file handling. It also offers an online compiler to practice coding.
- **Programiz (www.programiz.com)** - Programiz provides interactive C programming tutorials, examples, and exercises. It covers the fundamentals of C programming and also delves into advanced topics like data structures and algorithms.
- **Codecademy (www.codecademy.com)** - Codecademy offers an interactive online learning platform that includes a C programming course. It provides hands-on coding exercises and projects to help you practice and reinforce your understanding of C.
- **Cprogramming.com (www.cprogramming.com)** - Cprogramming.com offers tutorials, examples, and a forum community for C programming enthusiasts. It covers topics such as basic syntax, data types, control structures, and pointers.
- **[tack Overflow (stackoverflow.com)** - Stack Overflow is a popular question-and-answer platform where programmers can ask and answer questions related to C programming. It can be a valuable resource for troubleshooting and gaining insights from experienced programmers.
- **The GNU C Library Reference Manual (www.gnu.org/software/libc/manual)** - The GNU C Library (glibc) reference manual is an authoritative resource that provides detailed



documentation on the C standard library functions. It can be helpful for understanding the usage and behavior of various library functions.

- The C Programming Language (C89/C90) Standard - The official ANSI C standard document (also known as C89 or C90) specifies the syntax and semantics of the C programming language. It is a valuable reference for understanding the language specifications.





Swarinim School of Computing & IT

BCA (Honours) Programme Semester I

Course Title: PROGRAMMING IN C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230102	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

- Analyze a given problem and develop an algorithm to solve the problem.
- Design, develop and test programs written in 'C'.
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.



Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">Introduction: History, Facilities, Concepts, Uses; Basic Program Structure, Header Files, Comments; A Simple C program, Identifiers, Basic Data Types and Sizes, Constants, Variables, Arithmetic, Relational and Logical Operators, Increment and Decrement Operators, Conditional Operator, Bit-wise Operators, Assignment Operators, Expressions, Type Conversions, Conditional Expressions, Precedence and Order of Evaluation.Input-Output Functions: Data Input and Output getchar(), putchar(), scanf(), printf(), functions.	15	30%
2	<ul style="list-style-type: none">Control Flow: If-Else, While, Do-while, Goto, For Statements, Nested Control Structures, Switch, Break, Continue Statements, Comma Operator.	7	15%
3	<ul style="list-style-type: none">Arrays & Functions: Arrays Defining, Processing Array, Introduction to Multidimensional Arrays; gets(), puts() functions, Functions Types, Parameters, Prototypes, Passing Arrays to Functions,	8	20%
	Recursion, Passing Arguments to a Function by Value;		

	<ul style="list-style-type: none"> • Storage Classes: Automatic, External, Static, Register Variables in Single File Environment. 		
4	<ul style="list-style-type: none"> • Pointer: Usage of Pointers, Addresses and Types, Pointer and Address Arithmetic, Pointer Operations and Declarations, Using Pointers as Function Arguments (Call By Reference, Call By Value), Pointer Array Duality Strings, Arrays of Pointers, Pointers to Functions, Concept of Dynamic Allocation of Memory, Pre-Processor Directives. • Other Data Types: Structures, Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions, Enumerations and Bit Fields, Typedef. • File Handling: Introduction of File Handling, Modes of File Handling Uses of fopen(), fclose(), putc(), getc(), putw(), getw(), fscanf(), fprintf(), ferror() Functions. 	15	35%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Yashavant P. Kanetkar	Let Us C	BPB Publication	19th edition, 2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Peter Vander Linden, Schaum's	Outline of theory and problems of programming with C	TMH	Latest
2	Peter Vander Linden	Expert C programming	PHI	Latest
3	Balagurusamy E.	Computing Fundamentals and C Programming	TMH	Latest

✠ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- "C/C++ Users Journal" - This magazine focuses on C and C++ programming languages, offering tutorials, articles, and code examples.
- "The C/C++ Users Group Newsletter" - This publication provides news, articles, and resources for C and C++ programmers.
- "Journal of C Language Translation" - This journal focuses on the theory and practice of C language translation, including compiler technology and optimization.
- "ACM Transactions on Programming Languages and Systems" - A prestigious journal



that covers a broad range of programming languages, including C, and publishes research papers and articles.

- "IEEE Transactions on Software Engineering" - This journal covers various aspects of software engineering, including programming languages like C, and features research papers and articles.
- "Software: Practice and Experience" - This journal publishes research papers, case studies, and reviews related to software development and programming languages, including C.
- "Embedded Systems Design" - This magazine covers topics related to embedded systems development, including C programming for microcontrollers and other embedded platforms.
- "C Programming Expert" - An online magazine dedicated to C programming, offering tutorials, tips, and tricks for beginners and advanced programmers alike.

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)





Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Web Development Using HTML, CSS & XML

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BCA230103	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

Certainly, here are concise one-liner course outcomes for the mentioned syllabus:

- Understand web concepts, protocols, and client-server computing principles.
- Create structured web content using HTML, CSS, and apply formatting and styling techniques.
- Apply CSS for designing layouts, navigation, forms, and enhance user experience.
- Implement dynamic elements using JavaScript, VBScript, and enhance interactivity.
- Gain an introduction to XML, its manipulation, and basic server-side technologies for web applications.



Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> World Wide Web, Web page, Home page, Web site, Static, Dynamic and Active web page, Overview of Protocols, Simple Mail Transfer Protocol, Gopher, Telnet, Emails, TFTP, Hyper Text Transfer Protocol, Client server computing concepts. Web Client and Web Server Web Browser, Browsers: Internet Explorer, Mozilla Firefox Client, Side Scripting Languages, VB Script and Java Script, Active X control and Plug-ins, Web Server Architecture, Image maps, CGI, API web database connectivity, DBC, ODBC 	7	15%
2	<ul style="list-style-type: none"> Dynamic HTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute. Introduction to HTML: Element, Attribute, Headings, Paragraphs, Styles, Formatting, Comments, CSS, Links, Images, Tables, Lists, Blocks, Classes, ID, frames, File Paths, Head, Entities, Symbols, Color and Background of Web Pages, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Creating Table, Frame, Form and Style Sheet. 	15	35%

3	<ul style="list-style-type: none"> CSS: Syntax, Colors, Backgrounds, Borders, Margins, Padding, Height/ Width, Box Model, Outline, Text, Fonts, Icons, Links, Lists, Position, Overflow, Float, Inline, Block, Align, Navigation Bar, Dropdowns, Image Gallery, Image Sprites, Attr Selectors, Forms, Counters, Website Layout, Units, Specificity. 	15	35%
4	<ul style="list-style-type: none"> XML: Elements, Attributes, Namespaces, Display, HTTP request, Parser, DOM, XPath, XSLT, XQuery, XLink, Validator, DTD, Schema, Server 	8	15%

Evaluation

1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Shelley Powers	Dynamic Web Publishing 2	Sams.net	2 nd Edition, 1998

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Thomas A. Powell	Html & CSS: The Complete Reference	Osborne/McGraw-Hill	5th Edition
2	Heather Williamson	XML: The Complete Reference	Osborne/McGraw-Hill	6th Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- World Wide Web Journal
- Web Development Quarterly
- HTML & CSS Research Review
- XML Technologies Review
- Interactive Web Design Journal



- Web Designer Magazine
- HTML/CSS Today
- XML Insight Magazine
- Tech Web Designers' Digest
- Coding & Markup Monthly
- WebTech Times
- Digital Web Daily
- Code Chronicle
- Tech Web Tribune
- Design & Markup News

WEB RESOURCES:

- [Khan Academy \(www.khanacademy.org\)](http://www.khanacademy.org)
- [Computer Hope \(www.computerhope.com\)](http://www.computerhope.com)
- [TechTerms \(www.techterms.com\)](http://www.techterms.com)
- [HowStuffWorks \(www.howstuffworks.com\)](http://www.howstuffworks.com)
- [W3Schools \(www.w3schools.com\)](http://www.w3schools.com)
- [Computer Science for Fun \(www.cs4fn.org\)](http://www.cs4fn.org)
- [Neso Academy \(www.nesoacademy.org\)](http://www.nesoacademy.org)
- [Studytonight \(www.studytonight.com\)](http://www.studytonight.com)
- [Computer Science Unplugged \(csunplugged.org\)](http://csunplugged.org)
- [Exploring Computer Science \(www.exploringcs.org\)](http://www.exploringcs.org)





Swarnnim School of Computing & IT

BCA (Honours) Programme Semester I

Course Title: Mathematical Foundation

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230102	4	60					
				20%	30%	-	50%	-

Course Out comes (COs):

After completing this course satisfactorily, a student will be able to:

- Understand sets and perform operations and algebra on sets.
- Identify functions and determine their properties.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Identify functions and determine their properties.
- To develop the knowledge about derivatives and know various applications of differentiation.



Syllabus:

Module	Contents	No. of Sessions	Weight age
1	Set theory: <ul style="list-style-type: none"> Basic definition of Set Theory Methods of representation of Set (Property method, Listing method) Set operations (Union, Intersection, Complement of a set, Difference of sets, Symmetric difference, Cartesian product of sets) Properties of set operations (Commutative, Associative, Distributive, De-Morgan's laws) Power set and Cardinality of sets Venn diagram Applications 	12	20%
2	Relations and Functions: <ul style="list-style-type: none"> Relations Equivalence relation Examples Introduction of Functions Domain, Co-domain and Range of a function Algebra of functions Types of functions (Linear, Quadratic, Polynomial, Implicit and Explicit functions and examples related with it) Exponential and Logarithmic with their properties and related examples Applications 	17	25%

3	Matrices and Determinants: <ul style="list-style-type: none"> • Definition of Matrix • Types of Matrix (Square, Row, Column, Zero, Diagonal, Scalar, Identity, Transpose, Symmetric, Skew-symmetric) • Arithmetic operations of Matrices (Addition, Scalar Multiplication, Matrix Multiplication) • Introduction to Determinants with Basic properties • Invertible matrix • Computation of Inverse using Definition • Simultaneous Solution of set of Linear equations using Cramer's Rule • Matrix inversion method • Rank of Matrix • Applications 	18	30%
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4	Limit, Differentiation: <ul style="list-style-type: none"> Limit <ul style="list-style-type: none"> ○ Concept of Limit ○ Some standard Limits (without proof) ○ Continuity of a function and related examples Differentiation: <ul style="list-style-type: none"> ○ Definition of Derivative ○ Rules for Differentiation (without proof) ○ Differentiation of composite functions ○ Higher order derivatives till order 2 Applications 	13	25%
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Basic Text Books:				
Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	D.C. Sancheti & V.K Kapoor	Business Mathematics	D.C. Sancheti & V.K Kapoor	Latest

Reference Books:				
Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	B.S. Vatsa	Discrete Mathematics	New Age International Limited Publishers	Latest
2	S. C. Gupta	Matrices	S. Chand	Latest
3		Differential Calculus	S. Chand	Latest



Swarnnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Communication Skills

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
AEC	AEC230101	2	30	20%	30%	-	50%	

Course Outcomes(COs)

- Inculcation of different skills will be added in a student's career.
- Students' employability skills will be enhanced.
- 3.Ability to speak in English will be improved through practice.
- Self Analysis tool will help the students to identify their strengths and weaknesses to work upon.
- Hesitation of speaking in public and in English will be reduced.



Syllabus:

Module	Contents*	No of Sessions	Weightage
1	People Skills	8	26%
	Essential Skills For Success Trainer will introduce himself/herself and briefly talk about soft skills. Talk about what soft skills are and their importance.		
	SWOT Analysis Trainer will help students understand their strengths, weaknesses, opportunities and threats.		
2	Fundamentals Of Communication Trainer will talk about the importance of communication, how communication works.	4	14%
3	First Impressions	6	20%
	Self Presentation Trainer will talk about how students can present themselves to others in various settings. Selfpresentation plays a crucial role in creating initial impressions. A positive and confident selfpresentation can set the tone for successful interactions and relationships.		
	4 A'S Of Dressing Trainer will discuss the 4 A's of appearance which are: Appropriate Dressing, Authentic Dressing, Approachable Dressing and Affordable Dressing.		
	The Art of Attitude Trainer will emphasize on the importance of attitude management and provide a basic		

	understanding of how attitudes impact personal and professional growth. They will focus on cultivating positive mindsets and the transformative power of attitude.		
4	Professional Ethics	12	40%
	Polite Protocol Trainer will explain the importance of greeting etiquettes and talk about formal greetings and informal greetings.		
	Concept Of Happiness & Appreciation Trainer will explain the importance of happiness and how to identify your own happiness.		
	Professional Interaction Trainer will introduce the concept of professionalism and what are professional ethics. An interactive activity will be conducted and there will be three scenarios presented in the activity, followed by a discussion about professional ethics.		
	Types of Ethics Trainer will talk about the different ethics that a student has to keep in mind in their professional lives and understand its importance.		

*Note:

1. Activities and content topics may vary according to the feasibility of technical, environmental and physical conditions.



Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Reference Textbooks:

Sr No:	Text Book	Author Name	Publisher	Edition
1.	Corporate Soft Skills	Sarvesh Gulati	Rupa Publications	2006
2.	Successful Communication	Ken Lawson	Axis Publishing Limited	2006
3.	Soft Skills For Dummies	John Wiley & Sons	John Wiley & Sons, Inc.,	2023



Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Nitin Bhattnagar, Mamta Bhatnagar	Effective Communication And Soft Skills	Pearson Pub.	2012
2	©AICTE Approved	Communications Skills WorkBook	NA	NA
3	Roshan Lal Raina	Professional Communication	Himalaya Publishing House	2012
4	Christie Marlowe	Presenting Yourself: Business Manners, Personality, Etiquettes	Mason Crest	2014
5	Jeff Keller	Attitude is everything	Harper Collins	2017

List of Websites/ videos for reference:

- [Basics Of Communication Skills](#)
- [Essential Skills For Success](#)
- [Self Presentation](#)
- [Fundamentals Of Communication](#)
- [Appreciation And Gratitude](#)





Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Core Course Title: Foundation of Entrepreneurship

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	230101	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- To know various theories of entrepreneurship and trends.
- To identify various issues and challenges in starting a new venture.
- To understand innovation and its implications
- To create entrepreneurial mindset through understanding entrepreneurial personality



Syllabus:

Module	Contents	No of Sessions	Weightage
1	Introduction to Entrepreneurship: <ul style="list-style-type: none">• Meaning, Role of Entrepreneur,• Entrepreneurial Process and different approaches,• Motivation for becoming an entrepreneur: Maslow's theory ,' Herj burg's theory, MC Gregor's theory, McClelland 's Need -achievementtheory• Importance of Entrepreneurship, Functions of an Entrepreneur, Types of Entrepreneurs, Issues & Problems in Entrepreneurial Practices, entrepreneurial education and entrepreneurial mind,• Value creation- economic value and social Value,• Intrapreneurship (Corporate Entrepreneurship, Entrepreneurship and Startup	14	50%

2	Characteristics or traits of successful entrepreneurs and myths related to entrepreneurship: <ul style="list-style-type: none"> • Characteristics or traits of successful entrepreneurs, need for studying success characteristics / traits of entrepreneurs, • How to develop successful characteristics/traits of entrepreneur 	8	25%
	<ul style="list-style-type: none"> • Myths related to entrepreneurship. 		
3	Cognitive foundations of entrepreneurship <ul style="list-style-type: none"> • Human cognition: its basic nature- and important limitations, • Creativity and innovation • ideas to reality 	8	25%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.S. Khanka, Gupta. C.B.	Entrepreneurship & Small Business Management	Sultan Chand and Sons	Latest Edition
2	Sami Uddin	Entrepreneurship Development in India	Mittal Publications	Latest Edition



Reference Books:

Sr. No.	Author/s	Name of theBook	Publisher	Edition
1	Dr. Bhatia.R.C	Entrepreneurship: Business and Management	Sultan Chand and Sons	Latest
2	Bruce R. Barringer	Entrepreneurship: Successfully Launching New Ventures	Pearson Education	Latest
3	<u>Janakiram. B., Rizwana. M.</u>	Entrepreneurship development	Excel Books	Latest
4	Khanna. S.S.	Entrepreneurial Development	Excel Books	Latest

List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Entrepreneurship
- Journal of Small Business Management
- Journal of Entrepreneurship & Management
- AMC Indian Journal of Entrepreneurship





Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Indian Science & Technology

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	IKS230101	2	30					
				20%	30%	-	50%	

Course Outcomes(COs)

- Gain an in-depth appreciation of India's technological heritage, including its contributions to metallurgy, textiles, ceramics, and more.
- Understand the historical evolution of water management systems and transportation methods in India, and their impact on society.
- Explore the intersection of mathematics and astronomy in India, from ancient mathematical texts to significant astronomical discoveries.
- Examine India's ecological wisdom and environmental practices, including their applications in agriculture, architecture, and sustainable land management.
- Recognize India's role in shaping global technology and knowledge dissemination through its historical connections and contributions to various fields.



Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Fundamentals: An overview of Indian contributions to technology, Technological Innovations, Metallurgy, Textile Chemistry & Pyro Technology: Copper/Bronze/Zinc: Important Mines (Zawar, Khetri mines), Iron and Wootz Steel Technology, Textile and Dyeing- Indian Specialities (Kutchi Embroidery, Cotton Textile etc.), Ceramic Technology, Stone (Lapidary), Shell, Ivory, Faience & Glass Technology 	09	30%
2	<ul style="list-style-type: none"> Water Management & Transportation: Harappan and Traditional Water Management System of Gujarat, Historical Sites- Sringeverpur, South Indian Water Management System, Western Ghats, Cave- Kanheri, etc., Communities Involved in Water Management, Modes of Transportations and Reforms, Grand Trunk Road (Uttarapath & Dakshinapath), Development of Trading Techniques, Boat & Ship Building 	06	20%
3	<ul style="list-style-type: none"> Mathematics & Astronomy: Mathematics contained in the Sulbasutra, Weaving Mathematics into Beautiful Poetry- Bhaskaracarya, The Evolution of Sine Function in India, The Discovery of Calculus 	06	20%



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	by Kerala Astronomers, Vedanga Jyotish & Measuring Time & Calendar.		
4	<ul style="list-style-type: none"> Ecology and Environment: Nakshatrara Gyaan and Agriculture, Vernacular Architecture, Forest Management and Urban Planning, Agroforestry, Tank, Lakes, and Stepwells India's Contribution to the World 	09	30%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	R.M. Pujari, Pradeep Kolhe, N. R. Kuma	'Pride of India: A Glimpse into India's Scientific Heritage'	Sanskrita Bharati Publication	2006



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Vijnana Bharati	‘Indian Contribution to science’	TMH	Latest
2	Kapil Kapoor, Michel	Knowledge	CBSE	Latest
	Danino	traditions and practices of India		



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Swarnnim School of Computing & IT

BCA (Honours) Programme Semester

II

Course Title: Data Structure Using C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230201	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs):

Here are concise course outcomes for the syllabus:

- Apply arrays for varied applications, understand data structure classifications and operations.
- Implement stacks and queues, perform infix-postfix conversion, and grasp recursion concepts.
- Master linked lists, including insertion, deletion, sorting, and node counting.
- Gain expertise in binary trees, traversals, and tree expression manipulation.
- Proficiently use sorting (bubble, insertion, quick) and searching (sequential, binary) techniques.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">Classification of Data Structure, Operations on Data Structure, Address Calculation, Application of arrays, Application of Arrays	7	15%
2	<ul style="list-style-type: none">Continuous Implementation (Stack): Array Representation, Operations on Stacks: Push & Pop, Applications of stack, Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stackRecursion: Recursive Definition and Processes Recursion Vs. Iteration Continuous. Implementation (Queue): Array representation and implementation of Queues.	15	35%
3	<ul style="list-style-type: none">Non-Continuous Implementation: Link Lists: Linear List concept, Linked List Terminology, Representation of Linked List in Memory, Types of Linked List, Single Linked List, Doubly Linked List, Operations on Link List: Create List Insert node (empty list, beginning, middle, end), Delete node (first, general case), Print list, Count Nodes, Sort Lists.	8	15%
4	<ul style="list-style-type: none">Trees: Introduction to Tree & its	15	35%

	Terminology, Binary trees, Types of Binary trees, Representation of Binary Tree, Traversals (Inorder, Preorder, Postorder), Tree Expression. <ul style="list-style-type: none"> Sorting & Searching Techniques: Bubble Sort, Insertion Sort, Quick Sort, Sequential Search, Binary Search. 		
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Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S. Lipschutz	Data structures	Mc’Graw, Hill	2nd Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Aaron M. Tenenbaum	Data Structures Using C	Oxford University Press	5th Edition



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2	Y. Langsam, M. Augenstein And A. M. Tenenbaum	Data Structures Using C And C++	Prentice - Hall Of India Pvt. Ltd.	2 nd Edition
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† List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- ACM Transactions on Computing Systems
- Journal of Computer Science and Technology
- Journal of the ACMIEEE Software
- CODE Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Design & Markup News

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



Akash



Swarnnim School of Computing & IT

BCA (Honours) Programme Semester II

Course Title: Object Oriented Concepts using C++

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230202	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

Here are concise course outcomes for the syllabus:

- Understand the fundamental concepts of Object-Oriented Programming (OOP) and grasp C++ basics, including operators, data types, and identifiers.
- Master control flow structures like if-else, loops, and learn about classes, objects, encapsulation, constructors, and memory allocation.
- Acquire proficiency in working with arrays, strings, functions (overloading, inline), and operator overloading.
- Develop a solid understanding of pointers, inheritance, class hierarchy, and abstract classes.



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- Gain knowledge of file handling, exception handling, namespaces, and stream operations.

Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> • Introduction- Introducing Object – Oriented Approach, Relating to other paradigms {Functional, Data decomposition}. • Basic terms and ideas- Abstraction, Encapsulation, Inheritance, Polymorphism, Review of C, Difference between C and C++ - cin, cout, new, delete, operators. 	8	15%
2	<ul style="list-style-type: none"> • Classes and Objects: Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class declaration, State identity and behaviour of an object, Constructors and destructors, instantiation of objects, Default parameter value, object types, C++ garbage collection, dynamic memory allocation, Metaclass / abstract classes. 	15	35%

3	<ul style="list-style-type: none"> Inheritance and Polymorphism- Inheritance, Class hierarchy, derivation – public, private & protected, Aggregation, composition vs classification hierarchies, Polymorphism, Categorization of polymorphism techniques, Method polymorphism, Polymorphism by parameter, Operator overloading, Parametric Polymorphism Generic function- Template function, function name overloading, Overriding inheritance methods, Run time polymorphism, Multiple Inheritance. 	15	35%
4	<ul style="list-style-type: none"> Files and Exception Handling- Streams and files, Namespaces, Exception handling, Generic Classes 	7	15%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	A. R. Venugopal, Rajkumar, T. Ravishanker	Mastering C++	TMH	3 rd Edition



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S. B. Lippman & J. Lajoie	C++ Primer	Addison Wesley	3rd Edition
2	R. Lafore	Object Oriented Programming using C++	Galgotia Publications	6th Edition
3	D. Parsons	Object Oriented Programming using C++	BPB Publication	2 nd Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- A Journal of Object Technology
- Journal of Computer Science and Technology
- ACM Transactions on Programming Languages and Systems
- C++ Users Journal (Now defunct, but archives might be useful)
- C/C++ Users Journal (Also defunct, but archives might contain valuable content)
- Journal of Computing Sciences in Colleges
- Computer Science Education

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarnnim School of Computing & IT

BCA (Honours) Programme

Semester II

Course Title: Core Java

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BCA230203	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs):

- Proficiently apply Java programming concepts including data types, control structures, arrays, strings, inheritance, packages, and exception handling.
- Proficiently apply Java programming concepts of classes and multithreading
- Design interactive Java applets using AWT controls, layout managers, and event listeners while mastering string handling.
- Gain expertise in networking with datagram and TCP/IP server sockets, and learn to establish JDBC connections and utilize connection pooling.



Diksha

Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">• Java Programming: Data types, control structures, arrays, strings, and vector, operators	10	22%
2	<ul style="list-style-type: none">• classes (inheritance, package, exception handling), abstraction, multithreaded programming	10	22%
3	<ul style="list-style-type: none">• Java applets, AWT controls (Button, Labels, Combo box, list and other Listeners, menu bar) layout manager, string handling (only main functions)	15	34%
4	<ul style="list-style-type: none">• Networking (datagram socket and TCP/IP based server socket) event handling, JDBC: Introduction, Drivers, Establishing Connection, Connection Pooling.	10	22%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Patrick Naughton and Herbertz Schildt	Java-2 The Complete Reference	TMH	3 rd Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Herbertz Schildt	Java: A Beginner's Guide	McGraw-Hill Education	9th edition (4 April 2022)
2	Joshua Bloch	Effective Java		6th Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Computer Science and Technology
- ACM Transactions on Computing Education
- Java Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Journal of Computing Sciences in Colleges



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WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



Diksha



Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester II

Course Title: Foundation in Statistical Methods

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
MDC	BCA230204	3+1	60	20%	30%	-	50%	2

Course Outcomes(COs):

- Develop proficiency in organizing data through tabulation, frequency distribution, and graphical representation.
- Understand and compute measures like mean, median, mode, range, quartile deviation, mean deviation, and standard deviation for assessing data patterns.
- The concept of skewness and apply Karl Pearson's Coefficients of Skewness in practical scenarios.
- Gain insight into correlation types and methods, including Karl Pearson's correlation coefficient, to assess relationships between variables in datasets.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">• Classification of data, Tabulation of data, Preparation of frequency distribution, Presentation of data through histogram, frequency polygon, frequency curve	12	26%
2	<ul style="list-style-type: none">• Measures of Central Tendency: Computation of Arithmetic mean, median and mode for ungrouped data and grouped data.	10	22%
3	<ul style="list-style-type: none">• Measures of dispersion: Computation of Range, Quartile deviation, mean deviation and Standard deviation• Concept of Skewness, Karl Pearson's Coefficients of Skewness(Numerical Applications Only)	15	34%
4	<ul style="list-style-type: none">• Meaning of Correlation, types of correlation, correlation coefficient, Karl Pearson correlation coefficient. (Numerical Applications Only)	08	18%



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Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. S.P. Gupta	“Statistical Methods“	Sultan Chand & Sons	46th edition (1 January 2021)

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.C. Gupta & V.K. Kapoor	Fundamental of Mathematical Statistics	Sultan Chand	11th edition
2	Mode .E.B.	”Elements of Statistics“	PrenticeHall	6th Edition



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✠ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Statistical Education
- The American Statistician
- Journal of Applied Statistics
- Journal of Statistics Education
- International Journal for Innovation Education and Research
- Mathematics Teacher: Learning and Teaching PK-12

WEB RESOURCES:

- www.statistics.com
- stats.stackexchange.com
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org) • Studytonight (www.studytonight.com)



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Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester II

Core Course Title: Identifying Entrepreneurial Opportunities

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Exploration of opportunities from the market
- Check technical, market, financial and other types of Feasibility of a business idea.
- Develop business model to describe the rationale of how an organization creates, delivers, and captures value
- Identification of various Business Opportunities from the market



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Opportunities: Their nature, discovery, and Creation: <ul style="list-style-type: none">• Opportunities: Their basic nature, opportunities: Discovered, created, or both, Opportunities: The role of information, experience and social network- The role of information in opportunity recognition, The role of experience and social networks in opportunity recognition,• How entrepreneurs can become skilled at recognizing opportunities...Entrepreneurship, Entrepreneurship and Startup	14	50%
2	Business Idea Creation & IPR <ul style="list-style-type: none">• Meaning, sources of business ideas, techniques for idea generation like brain storming,• Focus group, six thinking hats as idea generation,• Characteristics of brilliant business ideas Introduction:	8	25%

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.S. Khanka, Gupta. C.B.	Entrepreneurship & Small Business Management	Sultan Chand and Sons	Lates Edition
2	Sami Uddin	Entrepreneurship Development in India	Mittal Publications	Latest Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. Bhatia.R.C	Entrepreneurship: Business and Management	Sultan Chand and Sons	Latest
2	Bruce R. Barringer	Entrepreneurship: Successfully Launching New Ventures	Pearson Education	Latest
3	<u>Janakiram. B.</u> , <u>Rizwana. M.</u>	Entrepreneurship development	Excel Books	Latest
4	Khanna. S.S.	Entrepreneurial Development	Excel Books	Latest



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The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Entrepreneurship
- Journal of Small Business Management
- Journal of Entrepreneurship & Management
- AMC Indian Journal of Entrepreneurship



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Swarnnim School of Computing & IT
BCA (Honours) Programme
Semester II
Course Title: Logical and Critical Thinking

Category Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
ACE	AEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Students are able to understand the basic concept of Logical and Critical Thinking and are able to solve problems
- Student analytical ability increased.
- Student can be placed in service based company, government sector, PSU and it will also help in higher study.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<p>Simplification and Approximation (BODMAS Rule, Approximation, Short trick, Digit Sum, Square Roots and Cube roots based Question)</p> <p>Coding Decoding (Coding means Encryption and Decoding means Decryption among letters, alphabets and Special Symbols)</p>	8	26%
2	<p>Crypt arithmetic (Crypt arithmetic is a type of mathematical game consisting of Mathematical Equation)</p> <p>Analogy & Odd one out (An Analogy is a comparison between two objects or system of objects in which they are thought to be similar.)</p>	4	14%



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3	Direction & Distance (Description of Directions and Determination of Distance wrt. Directions, Sunrise and Sunset with Shadow Concept.)	6	20%
	Blood Relations (In such questions, one person describes his /her relation with another person. Pointer- narrator relations Symbols relation as well as group relation)		
4	Number System Classifications of Number System [Rational/Irrational No's, Integers, fraction, Evenodd, Prime - Composite no's] Perfect number & Square , Face value-Place value Frequency of Digit Occurrence Concept of Divisibility Rule - finding the division of a number Cyclicity rule - Unit digit Concept, Trailing Zeroes Binomial Theorem - for remainder Factorizations - Prime - Composite factors, Total factors , Even-Odd factors	12	40%

Evaluation		
1	Assignments/ Quizzes/ClassParticipation / Role Play/Projectetc.	30%(Internal Assessment)
2	InternalExamination	20%(InternalAssessment)
3	ExternalExamination(UniversityExam)	50%(External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	R.S.AGRWAL	Reasoning for Competitive Examinations	S CHAND	2022
2	R.S. AGRWAL	Quantitative Aptitude for Competitive Examinations	S CHAND	2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	ARUN SHARMA	How To Prepare For Quantitative Aptitude	McGraw Hill Education	10 TH 2022
2	R. PRAVEEN	Quantitative Aptitude and Reasoning	PHI Learning Pvt Ltd	3 RD 2016

Relevant Websites

- ARIHANT REASONING E-BOOK PDF
<https://parikshatop.com/arihant-reasoning-book-pdf-download-free/>
- E BOOK FOR REASONING – ARUN SHARMA
<https://z-lib.is/book/how-to-prepare-for-logical-reasoning-for-the-cat>
- E BOOK FOR APTITUDE– ARUN SHARMA
<https://z-lib.is/book/how-to-prepare-for-quantitative-aptitude-for-the-cat>





Swarnnim School of Computing & IT

BCA (Honours) Programme

Semester II

Course Title: Environmental Studies

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
VAC	VAC230201	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	-

Course Outcomes (COs)

- Enabling students to understand and realize the multi- disciplinary nature of the environment, its components, and inter-relationship between man and environment.
- Understanding the relevance and importance of natural resources in the sustenance of life on earth and living standard. the importance of ecosystem, biodiversity, and nature.
- Correlating the human population growth and its trend to the environmental degradation and developing the awareness about his/her role towards environmental protection. Identifying different types of environmental pollution and control measures.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<p>Introduction to Environment and Environmental Studies, Natural Resources:</p> <ul style="list-style-type: none"> • Definition and Components of Environment, Relationship between the different components of Environment, Man and Environment relationship, Impact of technology on Environment, Environmental Degradation, its scope. • Water resources: Sources of water - Surface and Ground water sources, Indian and Global scenario. 	9	30%
	<ul style="list-style-type: none"> • Land resources: Land pollution, land use, land degradation & its causes. • Forest resources: Definition and Types of Forests importance and benefits of forest, Deforestation causes and effects. 		

2	Ecology and Ecosystems: <ul style="list-style-type: none"> Ecology: Introduction, Objectives and Classification, Concept of an ecosystem structure of ecosystem or Components of ecosystem- Producers, Consumers, Decomposers Ecosystems: Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem, Estuarine Ecosystem Human Population and Environment: Population Growth, World and Indian scenario, Population and Environmental Degradation, Malthusian theory, Optimum theory, Urbanization: Urban population growth and Environmental problems 	12	40%
3	Environmental pollutions: <ul style="list-style-type: none"> Water Pollution: Introduction – Water Quality standards, sources of water pollution Classification of water pollutants. Eutrophication Air Pollution: Composition of air, Structure of 	9	30%

	atmosphere, Ambient Air Quality Standards, Classification of air pollutants, <ul style="list-style-type: none"> Land Pollution: Land uses, Land degradation: causes, effects and control, soil erosion Noise Pollution: Introduction, Sound and Noise, Causes and Effects Global Environmental Issues: Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer 		
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Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Snehal Popli & B.R. Shah	Basics of Environmental studies	Mahajan Publishing House	Latest



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Reference Books:

. No.	Author/s	Name of the Book	Publisher	Edition
1	Prof Dr N S Varandani	Basics of Environmental Studies	LAP -Lambert Academic Publishing Germany	Latest
2	R. Rajagopalan	Environmental Studies	Oxford University Press	Latest
3	U K Khare	Basics of Environmental Studies	Tata McGraw Hill	Latest
4	Daniel B Botkin & Edward A Keller	Environmental Sciences	John Wiley & Sons.	Latest

† List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Environmental Standard
- Indian Journal of Environmental Research and Studies
- Journal of Environmental Science and Technology.



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B.SC.- IT SYLLABUS

Swarnnim School of Computing & IT B. Sc.- IT (Honours) Programme Semester I

Course Title: Fundamentals of Computers

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230101	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

- Understand the basic concepts of computer hardware and software.
- Demonstrate problem solving skills.
- Understand the structure of operating system, its applications and commands.
- To be familiar with network tools, concepts of protocols and network interfaces.
- Understands the concept of Computer's Input/output devices.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> • Computer Fundamentals: Block Structure of a Computer, Characteristics of Computers, Generation of Computers and • Classification of Computers. • Programming Languages: Classification, Machine Code, Assembly Language, Higher Level • Language and Fourth Generation Languages. • Number System: Bit, Byte, Binary, Decimal, Hexadecimal and Octal • Systems, Conversion from One System to the Other; Binary Arithmetic Addition, Subtraction and Multiplication. 	15	30%
2	<ul style="list-style-type: none"> • Information Concepts & Processing System: Evolution of Information Processing, Data, Information, • Knowledge & Wisdom. • Elements of a Computer Processing System: Hardware - Input-Output • Devices, VDU, CPU Storage Devices and Media. • Software Concepts: Type of • Software, Translator, Compiler, Interpreter, Assembler, Loader. • Application Software: Office Automation. 	15	35%
3	<ul style="list-style-type: none"> • Operating System: Concepts as Resource Manager, Batch Processing, Multiprogramming, Multiprocessing, • Time Sharing and Real Time System. • DOS: Command Interpreter, Booting Internal & External Commands, Batch 	7	15%



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	Files, exe, com, System Files, bin, txt, bmp Files.		
4	<ul style="list-style-type: none"> Computer Network and Communication: Network Types, Network Topologies; Data Communication – Mode, Channel, and Media; OSI Reference Model, TCP/IP, Data Communication Equipment/Devices. 	8	20%
	<ul style="list-style-type: none"> Internet and its Applications: E-Mail, TELNET, FTP, World Wide Web, Internet and Applications. 		

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	P.K. Sinha	Computer fundamentals	BPB Publication	8th edition, 2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Anita Goel	Computer Fundamentals	Pearson Education	Latest
2	Peter Norton	Inside PC	TMH	Latest



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3	Alexis Leon, Methews Leon	Fundamentals of Information Technology”	Vikas Publishing	Latest
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✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- "Computer" - This is the flagship magazine of the IEEE Computer Society, covering a wide range of topics related to computer science and technology. It features articles, research papers, and reviews on computer fundamentals.
- "Communications of the ACM" - This monthly publication by the Association for Computing Machinery (ACM) covers various aspects of computing, including computer fundamentals. It includes articles, research papers, and industry insights.
- "ACM Computing Surveys" - This journal focuses on surveys and tutorials that provide an overview of the fundamental concepts and developments in the field of computer science. It covers a broad range of topics and serves as a valuable resource for understanding computer fundamentals.
- "Computer Science Review" - This journal publishes review articles and surveys on various topics in computer science, including computer fundamentals. It offers in-depth coverage of foundational concepts and emerging trends.
- "IEEE Computer Architecture Letters" - This journal focuses specifically on computer architecture, which is a fundamental aspect of computer systems. It features short papers and letters that present novel ideas, designs, and analysis in computer architecture.
- "International Journal of Computer Science and Information Technologies" - This journal covers various aspects of computer science and information technology, including computer fundamentals. It features research papers, articles, and case studies.
- "IEEE Transactions on Computers" - This journal publishes research papers, articles, and surveys on computer-related topics, including computer fundamentals. It covers a wide range of areas, including computer architecture, algorithms, and software systems.
- "Computerworld" - This popular magazine focuses on technology news, trends, and insights. While it covers a wide range of topics, it often includes articles and features related to computer fundamentals and emerging technologies.

WEB RESOURCES:

6. GeeksforGeeks (www.geeksforgeeks.org) - GeeksforGeeks is a popular platform that offers a wide range of articles, tutorials, and coding practice exercises for C programming. It covers various topics, ranging from basic concepts to advanced algorithms and data structures.
7. Tutorialspoint (www.tutorialspoint.com) - Tutorialspoint provides a comprehensive C programming tutorial that covers topics like basic syntax, control



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structures, functions, arrays, pointers, and file handling. It also offers an online compiler to practice coding.

8. Programiz (www.programiz.com) - Programiz provides interactive C programming tutorials, examples, and exercises. It covers the fundamentals of C programming and also delves into advanced topics like data structures and algorithms. 9. Codecademy (www.codecademy.com) - Codecademy offers an interactive online learning platform that includes a C programming course. It provides hands-on coding exercises and projects to help you practice and reinforce your understanding of C. 10.

Cprogramming.com (www.cprogramming.com) - Cprogramming.com offers tutorials, examples, and a forum community for C programming enthusiasts. It covers topics such as basic syntax, data types, control structures, and pointers.

11. Stack Overflow (stackoverflow.com) - Stack Overflow is a popular question-and-answer platform where programmers can ask and answer questions related to C programming. It can be a valuable resource for troubleshooting and gaining insights from experienced programmers.

12. The GNU C Library Reference Manual (www.gnu.org/software/libc/manual) - The GNU C Library (glibc) reference manual is an authoritative resource that provides detailed documentation on the C standard library functions. It can be helpful for understanding the usage and behavior of various library functions.

13. The C Programming Language (C89/C90) Standard - The official ANSI C standard document (also known as C89 or C90) specifies the syntax and semantics of the C programming language. It is a valuable reference for understanding the language specifications.



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Swarrnim School of Computing & IT B.Sc.- IT (Honours) Programme Semester I

Course Title: PROGRAMMING IN C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT23010 2	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

- Analyze a given problem and develop an algorithm to solve the problem.
- Design, develop and test programs written in 'C'.
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">• Introduction: History, Facilities, Concepts, Uses; Basic Program Structure, Header Files, Comments; A Simple C program, Identifiers, Basic Data Types and Sizes, Constants, Variables, Arithmetic, Relational and Logical Operators, Increment and Decrement Operators, Conditional Operator, Bit-wise Operators, Assignment Operators, Expressions, Type Conversions, Conditional Expressions, Precedence and Order of Evaluation.• Input-Output Functions: Data Input and Output getchar(), putchar(), scanf(), printf(), functions.	15	30%
2	<ul style="list-style-type: none">• Control Flow: If-Else, While, Do-while, Goto, For Statements, Nested Control Structures, Switch, Break, Continue Statements, Comma Operator.	7	15%
3	<ul style="list-style-type: none">• Arrays & Functions: Arrays Defining, Processing Array, Introduction to Multidimensional Arrays; gets(), puts() functions, Functions Types, Parameters, Prototypes, Passing Arrays to Functions, Recursion, Passing Arguments to a Function by Value;• Storage Classes: Automatic, External, Static, Register Variables in Single File Environment.	8	20%
4	<ul style="list-style-type: none">• Pointer: Usage of Pointers, Addresses and Types, Pointer and Address Arithmetic, Pointer Operations and Declarations, Using Pointers as Function Arguments (Call By Reference, Call By Value), Pointer Array Duality Strings, Arrays of Pointers, Pointers to Functions, Concept of Dynamic Allocation of Memory, Pre-Processor Directives.	15	35%

	<ul style="list-style-type: none"> • Other Data Types: Structures, Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions, Enumerations and Bit Fields, Typedef. • File Handling: Introduction of File Handling, Modes of File Handling Uses of fopen(), fclose(), putc(), getc(), putw(), getw(), fscanf(), fprintf(), ferror() Functions. 		
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Evaluation

1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Yashavant P. Kanetkar	Let Us C	BPB Publication	19th edition, 2022

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Peter Vander Linden, Schaum's	Outline of theory and problems of programming with C	TMH	Latest
2	Peter Vander Linden	Expert C programming	PHI	Latest
3	Balagurusamy E.	Computing Fundamentals and C Programming	TMH	Latest



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‡ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- "C/C++ Users Journal" - This magazine focuses on C and C++ programming languages, offering tutorials, articles, and code examples."The C/C++ Users Group Newsletter" - This publication provides news, articles, and resources for C and C++ programmers.
- "Journal of C Language Translation" - This journal focuses on the theory and practice of C language translation, including compiler technology and optimization.
- "ACM Transactions on Programming Languages and Systems" - A prestigious journal that covers a broad range of programming languages, including C, and publishes research papers and articles.
- "IEEE Transactions on Software Engineering" - This journal covers various aspects of software engineering, including programming languages like C, and features research papers and articles.
- "Software: Practice and Experience" - This journal publishes research papers, case studies, and reviews related to software development and programming languages, including C.
- "Embedded Systems Design" - This magazine covers topics related to embedded systems development, including C programming for microcontrollers and other embedded platforms.
- "C Programming Expert" - An online magazine dedicated to C programming, offering tutorials, tips, and tricks for beginners and advanced programmers alike.

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarnnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester I

Course Title: Web Development Using HTML, CSS & XML

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BSCIT2301 03	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

Certainly, here are concise one-liner course outcomes for the mentioned syllabus:

- Understand web concepts, protocols, and client-server computing principles.
- Create structured web content using HTML, CSS, and apply formatting and styling techniques.
- Apply CSS for designing layouts, navigation, forms, and enhance user experience.
- Implement dynamic elements using JavaScript, VBScript, and enhance interactivity.
- Gain an introduction to XML, its manipulation, and basic server-side technologies for web applications.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> • World Wide Web: Web page, Home page, Web site, Static, Dynamic and Active web page, Overview of Protocols, Simple Mail Transfer Protocol, Gopher, Telnet, Emails, TFTP, Hyper Text Transfer Protocol, Client server computing concepts. Web Client and Web Server Web Browser, • Browsers: Internet Explorer, Mozilla Firefox • Client, Side Scripting Languages: VB Script and Java Script, Active X control and Plugins, Web Server Architecture, Image maps, CGI, API web database connectivity, DBC, ODBC 	7	15%
2	<ul style="list-style-type: none"> • Dynamic HTML, CSSP (Cascading Style Sheet Positioning) and JSSS (JavaScript assisted Style Sheet), Layers of Netscape, The ID Attribute. • Introduction to HTML: Element, Attribute, Headings, Paragraphs, Styles, Formatting, Comments, CSS, Links, Images, Tables, Lists, Blocks, Classes, ID, frames, File Paths, Head, Entities, Symbols, Color and Background of Web Pages, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Creating Table, Frame, Form and Style Sheet. 	15	35%
3	<ul style="list-style-type: none"> • CSS: Syntax, Colors, Backgrounds, Borders, Margins, Padding, Height/ Width, Box Model, Outline, Text, Fonts, Icons, Links, Lists, Position, Overflow, Float, Inline, Block, Align, Navigation Bar, Dropdowns, Image Gallery, Image Sprites, Attr Selectors, Forms, Counters, Website Layout, Units, Specificity. 	15	35%
4	<ul style="list-style-type: none"> • XML: Elements, Attributes, Namespaces, Display, HTTP request, Parser, DOM, XPath, XSLT, XQuery, XLink, Validator, DTD, Schema, Server 	8	15%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Shelley Powers	Dynamic Web Publishing 2	Sams.net	2 nd Edition, 1998

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Thomas A. Powell	Html & CSS: The Complete Reference	Osborne/McGraw-Hill	5th Edition
2	Heather Williamson	XML: The Complete Reference	Osborne/McGraw-Hill	6th Edition

† List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- World Wide Web Journal
- Web Development Quarterly
- HTML & CSS Research Review
- XML Technologies Review
- Interactive Web Design Journal
- Web Designer Magazine
- HTML/CSS Today
- XML Insight Magazine
- Tech Web Designers' Digest
- Coding & Markup Monthly
- WebTech Times
- Digital Web Daily
- Code Chronicle
- Tech Web Tribune



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- Design & Markup News

WEB RESOURCES:

- **Khan Academy** (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- **W3Schools** (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarannim School of Computing & IT

B.Sc.- IT(Honours) Programme

Semester I

Course Title: Mathematical Foundation

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT23010 2	4	60					
				20%	30%	-	50%	-

Course Out comes (COs):

After completing this course satisfactorily, a student will be able to:

- Understand sets and perform operations and algebra on sets.
- Identify functions and determine their properties.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Identify functions and determine their properties.
- To develop the knowledge about derivatives and know various applications of differentiation.



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Syllabus:

Module	Contents	No. of Sessions	Weight age
	Set theory: <ul style="list-style-type: none"> Basic definition of Set Theory Methods of representation of Set (Property method, Listing method) Set operations (Union, Intersection, Complement of a set, Difference of sets, Symmetric difference, Cartesian product of sets) Properties of set operations (Commutative, Associative, Distributive, De-Morgan's laws) Power set and Cardinality of sets Venn diagram Applications 	12	20%
2	Relations and Functions: <ul style="list-style-type: none"> Relations Equivalence relation Examples Introduction of Functions Domain, Co-domain and Range of a function Algebra of functions Types of functions (Linear, Quadratic, Polynomial, Implicit and Explicit functions and examples related with it) Exponential and Logarithmic with their properties and related examples Applications 	17	25%

3	Matrices and Determinants: <ul style="list-style-type: none"> • Definition of Matrix • Types of Matrix (Square, Row, Column, Zero, Diagonal, Scalar, Identity, Transpose, Symmetric, Skew-symmetric) • Arithmetic operations of Matrices (Addition, Scalar Multiplication, Matrix Multiplication) • Introduction to Determinants with Basic properties • Invertible matrix • Computation of Inverse using Definition • Simultaneous Solution of set of Linear equations using Cramer's Rule • Matrix inversion method • Rank of Matrix • Applications 	18	30%
4	Limit, Differentiation: <ul style="list-style-type: none"> • Limit <ul style="list-style-type: none"> ○ Concept of Limit ○ Some standard Limits (without proof) ○ Continuity of a function and related examples • Differentiation: <ul style="list-style-type: none"> ○ Definition of Derivative ○ Rules for Differentiation (without proof) ○ Differentiation of composite functions ○ Higher order derivatives till order 2 <ul style="list-style-type: none"> • Applications 	13	25%

Basic Text Books:				
Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	D.C. Sancheti & V.K Kapoor	Business Mathematics	D.C. Sancheti & V.K Kapoor	Latest

Reference Books:				
Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	B.S. Vatsa	Discrete Mathematics	New Age International Limited Publishers	Latest
2	S. C. Gupta	Matrices	S. Chand	Latest
3	R.S. Agarwal	Differential Calculus	S. Chand	Latest



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Swarannim School of Computing & IT B. Sc.- IT (Honours) Programme Semester I

Course Title: Communication Skills

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
AEC	AEC230101	2	30	20%	30%	-	50%	

Course Outcomes(COs)

- Incultation of different skills will be added in a student's career.
- Students' employability skills will be enhanced.
- 3.Ability to speak in English will be improved through practice.
- Self Analysis tool will help the students to identify their strengths and weaknesses to work upon.
- Hesitation of speaking in public and in English will be reduced.



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Syllabus:

Module	Contents*	No of Sessions	Weightage
1	People Skills	8	26%
	Essential Skills For Success Trainer will introduce himself/herself and briefly talk about soft skills. Talk about what soft skills are and their importance.		
	SWOT Analysis Trainer will help students understand their strengths, weaknesses, opportunities and threats.		
2	Fundamentals Of Communication Trainer will talk about the importance of communication, how communication works.	4	14%
3	First Impressions	6	20%
	Self Presentation Trainer will talk about how students can present themselves to others in various settings. Selfpresentation plays a crucial role in creating initial impressions. A positive and confident selfpresentation can set the tone for successful interactions and relationships.		
	4 A'S Of Dressing Trainer will discuss the 4 A's of appearance which are: Appropriate Dressing, Authentic Dressing, Approachable Dressing and Affordable Dressing.		
	The Art of Attitude Trainer will emphasize on the importance of attitude management and provide a basic understanding of how attitudes impact personal and professional growth. They will focus on cultivating positive mindsets and the transformative power of attitude.		
4	Professional Ethics	12	40%
	Polite Protocol Trainer will explain the importance of greeting etiquettes and talk about formal greetings and informal greetings.		

	Concept Of Happiness & Appreciation Trainer will explain the importance of happiness and how to identify your own happiness.		
	Professional Interaction Trainer will introduce the concept of professionalism and what are professional ethics. An interactive activity will be conducted and there will be three scenarios presented in the activity, followed by a discussion about professional ethics.		
	Types of Ethics Trainer will talk about the different ethics that a student has to keep in mind in their professional lives and understand its importance.		

*Note:

- Activities and content topics may vary according to the feasibility of technical, environmental and physical conditions.

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Reference Textbooks:

Sr No:	Text Book	Author Name	Publisher	Edition
1.	Corporate Soft Skills	Sarvesh Gulati	Rupa Publications	2006
2.	Successful Communication	Ken Lawson	Axis Publishing Limited	2006
3.	Soft Skills For Dummies	John Wiley & Sons	John Wiley & Sons, Inc.,	2023



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Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Nitin Bhatnagar, Mamta Bhatnagar	Effective Communication And Soft Skills	Pearson Pub.	2012
2	©AICTE Approved	Communications Skills WorkBook	NA	NA
3	Roshan Lal Raina	Professional Communication	Himalaya Publishing House	2012
4	Christie Marlowe	Presenting Yourself: Business Manners, Personality, Etiquettes	Mason Crest	2014
5	Jeff Keller	Attitude is everything	Harper Collins	2017

List of Websites/ videos for reference:

- [Basics Of Communication Skills](#)
- [Essential Skills For Success](#)
- [Self Presentation](#)
- [Fundamentals Of Communication](#)
- [Appreciation And Gratitude](#)



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Swarnnim School of Computing & IT B.Sc.- IT (Honours) Programme Semester I

Core Course Title: Foundation of Entrepreneurship

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	230101	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- To know various theories of entrepreneurship and trends.
- To identify various issues and challenges in starting a new venture.
- To understand innovation and its implications
- To create entrepreneurial mindset through understanding entrepreneurial personality



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Introduction to Entrepreneurship: <ul style="list-style-type: none">• Meaning, Role of Entrepreneur,• Entrepreneurial Process and different approaches,• Motivation for becoming an entrepreneur: Maslow's theory , ' Herj burg's theory, MC Gregor's theory, McClelland 's Need -achievement theory• Importance of Entrepreneurship, Functions of an Entrepreneur, Types of Entrepreneurs, Issues & Problems in Entrepreneurial Practices, entrepreneurial education and entrepreneurial mind,• Value creation- economic value and social Value,• Intrapreneurship (Corporate Entrepreneurship, Entrepreneurship and Startup	14	50%
2	Characteristics or traits of successful entrepreneurs and myths related to entrepreneurship: <ul style="list-style-type: none">• Characteristics or traits of successful entrepreneurs, need for studying success characteristics / traits of entrepreneurs,• How to develop successful characteristics/traits of entrepreneur• Myths related to entrepreneurship.	8	25%
3	Cognitive foundations of entrepreneurship <ul style="list-style-type: none">• Human cognition: its basic nature- and important limitations,• Creativity and innovation• ideas to reality	8	25%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.S. Khanka, Gupta. C.B.	Entrepreneurship & Small Business Management	Sultan Chand and Sons	Latest Edition
2	Sami Uddin	Entrepreneurship Development in India	Mittal Publications	Latest Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. Bhatia.R.C	Entrepreneurship: Business and Management	Sultan Chand and Sons	Latest
2	Bruce R. Barringer	Entrepreneurship: Successfully Launching New Ventures	Pearson Education	Latest
3	<u>Janakiram. B.</u> , <u>Rizwana. M.</u>	Entrepreneurship development	Excel Books	Latest
4	Khanna. S.S.	Entrepreneurial Development	Excel Books	Latest

List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Entrepreneurship
- Journal of Small Business Management
- Journal of Entrepreneurship & Management
- AMC Indian Journal of Entrepreneurship



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Swarnnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester I

Course Title: Indian Science & Technology

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	IKS230101	2	30	20%	30%	-	50%	

Course Outcomes(COs)

- Gain an in-depth appreciation of India's technological heritage, including its contributions to metallurgy, textiles, ceramics, and more.
- Understand the historical evolution of water management systems and transportation methods in India, and their impact on society.
- Explore the intersection of mathematics and astronomy in India, from ancient mathematical texts to significant astronomical discoveries.
- Examine India's ecological wisdom and environmental practices, including their applications in agriculture, architecture, and sustainable land management.
- Recognize India's role in shaping global technology and knowledge dissemination through its historical connections and contributions to various fields.



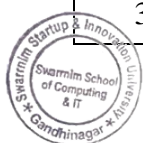
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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Fundamentals: An overview of Indian contributions to technology, Technological Innovations, Metallurgy, Textile Chemistry & Pyro Technology: Copper/Bronze/Zinc: Important Mines (Zawar, Khetri mines), Iron and Wootz Steel Technology, Textile and Dyeing- Indian Specialities (Kutchi Embroidery, Cotton Textile etc.), Ceramic Technology, Stone (Lapidary), Shell, Ivory, Faience & Glass Technology 	09	30%
2	<ul style="list-style-type: none"> Water Management & Transportation: Harappan and Traditional Water Management System of Gujarat, Historical Sites- Sringeverpur, South Indian Water Management System, Western Ghats, Cave- Kanheri, etc., Communities Involved in Water Management, Modes of Transportations and Reforms, Grand Trunk Road (Uttarapath & Dakshinapath), Development of Trading Techniques, Boat & Ship Building 	06	20%
3	<ul style="list-style-type: none"> Mathematics & Astronomy: Mathematics contained in the Sulbasutra, Weaving Mathematics into Beautiful Poetry- Bhaskaracarya, The Evolution of Sine Function in India, The Discovery of Calculus by Kerala Astronomers, Vedanga Jyotish & Measuring Time & Calendar. 	06	20%
4	<ul style="list-style-type: none"> Ecology and Environment: Nakshatrara Gyaan and Agriculture, Vernacular Architecture, Forest Management and Urban Planning, Agroforestry, Tank, Lakes, and Stepwells India's Contribution to the World 	09	30%

Evaluation

1	Assignments / Quizzes / Class Participation / Role Play/ Project etc	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	R.M. Pujari, Pradeep Kolhe, N. R. Kuma	‘Pride of India: A Glimpse into India's Scientific Heritage’	Sanskrita Bharati Publication	2006

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Vijnana Bharati	‘Indian Contribution to science’	TMH	Latest
2	Kapil Kapoor, Michel Danino	Knowledge traditions and practices of India	CBSE	Latest



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Swarnnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester II

Course Title: Data Structure Using C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT23020 1	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

Here are concise course outcomes for the syllabus:

- Apply arrays for varied applications, understand data structure classifications and operations.
- Implement stacks and queues, perform infix-postfix conversion, and grasp recursion concepts.
- Master linked lists, including insertion, deletion, sorting, and node counting.
- Gain expertise in binary trees, traversals, and tree expression manipulation.
- Proficiently use sorting (bubble, insertion, quick) and searching (sequential, binary) techniques.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Classification of Data Structure, Operations on Data Structure, Address Calculation, Application of arrays, Application of Arrays 	7	15%
2	<ul style="list-style-type: none"> Continuous Implementation (Stack): Array Representation, Operations on Stacks: Push & Pop, Applications of stack, Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack Recursion: Recursive Definition and Processes Recursion Vs. Iteration Continuous. Implementation (Queue): Array representation and implementation of Queues. 	15	35%
3	<ul style="list-style-type: none"> Non-Continuous Implementation: Link Lists: Linear List concept, Linked List Terminology, Representation of Linked List in Memory, Types of Linked List, Single Linked List, Doubly Linked List, Operations on Link List: Create List Insert node (empty list, beginning, middle, end), Delete node (first, general case), Print list, Count Nodes, Sort Lists. 	8	15%
4	<ul style="list-style-type: none"> Trees: Introduction to Tree & its Terminology, Binary trees, Types of Binary trees, Representation of Binary Tree, Traversals (Inorder, Preorder, Postorder), Tree Expression. Sorting & Searching Techniques: Bubble Sort, Insertion Sort, Quick Sort, Sequential Search, Binary Search. 	15	35%

Evaluation

1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S. Lipschutz	Data structures	Mc’Graw, Hill	2nd Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Aaron M. Tenenbaum	Data Structures Using C	Oxford University Press	5th Edition
2	Y. Langsam, M. Augenstein And A. M. Tenenbaum	Data Structures Using C And C++	Prentice - Hall Of India Pvt. Ltd.	2 nd Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- ACM Transactions on Computing Systems
- Journal of Computer Science and Technology
- Journal of the ACMIEEE Software
- CODE Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Design & Markup News
-

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarrnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester II

Course Title: Database Management System

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230202	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

Here are concise course outcomes for the syllabus:

- Analyze data models and explain DBMS architecture for effective data management.
- Design and represent complex data using E-R and object modeling techniques.
- Implement file organization methods including indexing and hashing.
- Apply relational concepts and SQL for querying and programming databases.
- Convert EER and ER models into relational schemas.
- Normalize data and ensure data security through recovery and authorization techniques.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none"> Introduction: Characteristics of database approach, data models, DBMS architecture and data independence. E-R Modeling: Entity types, Entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and object modeling, Sub classes; Super classes, inheritance, specialization and generalization. 	15	35%
2	<ul style="list-style-type: none"> File Organization: Indexed sequential access files; implementation using B & B++ trees, hashing, hashing functions, collision resolution, extendible hashing, dynamic hashing approach implementation and performance 	7	15%
3	<ul style="list-style-type: none"> Relational Data Model: Relational model concepts, relational constraints, relational algebra SQL: SQL queries, programming using SQL. 	8	15%
4	<ul style="list-style-type: none"> EER and ER to relational mapping: Data base design using EER to relational language. Data Normalization: Functional Dependencies, Normal form up to 3rd normal form. Concurrency Control: Transaction processing, locking techniques and associated, database recovery, security and authorization. Recovery Techniques, Database Security 	15	35%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)



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Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Abraham Silberschatz, Henry Korth, S.Sudarshan	Database Systems Concepts	McGraw Hill	4th Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Jim Melton, Alan Simon	Understanding the new SQL: A complete Guide	Morgan Kaufmann Publishers	5th Edition
2	A.K. Majumdar, P. Bhattacharya	Database Management Systems	TMH	2 nd Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- ACM Transactions on Computing Systems
- Journal of Computer Science and Technology
- Journal of the ACM/IEEE Software
- CODE Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Design & Markup News

WEB RESOURCES:

- Khan Academy (www.khanacademy.org)
- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarrnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester II

Course Title: Mobile Application Development

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BSCIT230203	4	60					
				20%	30%	-	30%	20%

Course Outcomes(COs)

Here are concise course outcomes for the syllabus:

- Design user-friendly mobile interfaces and layouts.
- Develop functional mobile applications using relevant programming languages.
- Employ effective testing and debugging techniques for app quality assurance.
- Deploy mobile apps in compliance with security and distribution guidelines.
- Stay informed about emerging trends and technologies in the mobile development landscape.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">Introduction to Mobile App Development: Understand the various mobile application development platforms and ecosystems. Describe the mobile app development lifecycle and its stages. Differentiate between native, web, and hybrid app development approaches. User Interface Design for Mobile Apps: Apply principles of mobile user interface (UI) and user experience (UX) design. Design responsive and user-friendly layouts for mobile screens. Utilize UI components effectively and implement intuitive navigation patterns.	15	35%
2	<ul style="list-style-type: none">Programming for Mobile Apps: Demonstrate proficiency in programming languages (e.g., Java, Kotlin, Swift) used in mobile app development. Implement basic mobile app logic, data storage, and integration with external services.	7	15%
3	<ul style="list-style-type: none">Testing and Debugging Mobile Apps: Apply testing techniques for mobile applications on emulators and real devices. Diagnose and resolve common errors and issues in mobile app development. Perform user acceptance testing and ensure usability standards.App Deployment and Distribution: Prepare mobile apps for deployment, adhering to platform-specific guidelines. Navigate the app store submission process and understand distribution strategies. Deploy mobile apps to target users and devices effectively.	8	15%



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4	<ul style="list-style-type: none"> Security Considerations in Mobile App Development: Identify potential security risks in mobile app development. Apply secure coding practices to protect data and enhance app security. Implement basic authentication and authorization mechanisms in mobile apps. Emerging Trends in Mobile App Development: Recognize and discuss current trends in mobile app development. Evaluate the potential of integrating emerging technologies (e.g., AR/VR) in mobile apps. Explore cross-platform development frameworks as a means of extending app reach. 	15	35%
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Evaluation

1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Bill Phillips and Chris Stewart	Android Programming: The Big Nerd Ranch Guide	Big Nerd Ranch Guides	4th Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Christian Keur, Aaron Hillegass	iOS Programming: The Big Nerd Ranch Guide	Big Nerd Ranch Guides	5th Edition
2	Jason González	Mobile First Design with HTML5 and CSS3	Packt Publishing	2 nd Edition



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‡ List of Journals / Periodicals / Magazines / Newspapers:

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- Journal of Computer Science and Technology
- Journal of the ACMIEEE Software
- CODE Magazine
- Journal of Computing Sciences in Colleges
- Computer Science Education
- Design & Markup News

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- Computer Hope (www.computerhope.com)
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)
- Computer Science Unplugged (csunplugged.org)
- Exploring Computer Science (www.exploringcs.org)



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Swarrnim School of Computing & IT

B. Sc.- IT (Honours) Programme

Semester II

Course Title: Foundation in Statistical Methods

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
MDC	BSCIT230204	3+1	60					
				20%	30%	-	50%	-

Course Outcomes(COs):

- Develop proficiency in organizing data through tabulation, frequency distribution, and graphical representation.
- Understand and compute measures like mean, median, mode, range, quartile deviation, mean deviation, and standard deviation for assessing data patterns.
- The concept of skewness and apply Karl Pearson's Coefficients of Skewness in practical scenarios.
- Gain insight into correlation types and methods, including Karl Pearson's correlation coefficient, to assess relationships between variables in datasets.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<ul style="list-style-type: none">Classification of data: Tabulation of data, Preparation of frequency distribution, Presentation of data through histogram, frequency polygon, frequency curve	12	26%
2	<ul style="list-style-type: none">Measures of Central Tendency: Computation of Arithmetic mean, median and mode for ungrouped data and grouped data.	10	22%
3	<ul style="list-style-type: none">Measures of dispersion: Computation of Range, Quartile deviation, mean deviation and Standard deviationConcept of Skewness, Karl Pearson's Coefficients of Skewness(Numerical Applications Only)	15	34%
4	<ul style="list-style-type: none">Meaning of Correlation, types of correlation, correlation coefficient, Karl Pearson correlation coefficient. (Numerical Applications Only)	08	18%

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. S.P. Gupta	“Statistical Methods“	Sultan Chand & Sons	46th edition (1 January 2021)

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
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1	S.C. Gupta & V.K. Kapoor	Fundamental of Mathematical Statistics	Sultan Chand	11th edition
2	Mode .E.B.	”Elements of Statistics“	PrenticeHall	6th Edition

✚ List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Journal of Statistical Education
- The American Statistician
- Journal of Applied Statistics
- Journal of Statistics Education
- International Journal for Innovation Education and Research
- Mathematics Teacher: Learning and Teaching PK-12

WEB RESOURCES:

- www.statistics.com
- stats.stackexchange.com
- TechTerms (www.techterms.com)
- HowStuffWorks (www.howstuffworks.com)
- W3Schools (www.w3schools.com)
- Computer Science for Fun (www.cs4fn.org)
- Neso Academy (www.nesoacademy.org)
- Studytonight (www.studytonight.com)



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Swarnnim School of Computing & IT
B. Sc.- IT (Honours) Programme
Semester II
Course Title: Logical and Critical Thinking

Category Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
ACE	AEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Students are able to understand the basic concept of Logical and Critical Thinking and are able to solve problems
- Student analytical ability increased.
- Student can be placed in service based company, government sector, PSU and it will also help in higher study.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Simplification and Approximation (BODMAS Rule, Approximation, Short trick, Digit Sum, Square Roots and Cube roots based Question) Coding Decoding (Coding means Encryption and Decoding means Decryption among letters, alphabets and Special Symbols)	8	26%
2	Crypt arithmetic (Crypt arithmetic is a type of mathematical game consisting of Mathematical Equation) Analogy & Odd one out (An Analogy is a comparison between two objects or system of objects in which they are thought to be similar.)	4	14%
3	Direction & Distance (Description of Directions and Determination of Distance wrt. Directions, Sunrise and Sunset with Shadow Concept.) Blood Relations (In such questions, one person describes his /her relation with another person. Pointer- narrator relations Symbols relation as well as group relation)	6	20%



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4	Number System Classifications of Number System [Rational/Irrational No's, Integers, fraction, Evenodd, Prime - Composite no's] Perfect number & Square , Face value-Place value Frequency of Digit Occurrence Concept of Divisibility Rule - finding the division of a number Cyclicity rule - Unit digit Concept, Trailing Zeroes Binomial Theorem - for remainder Factorizations - Prime - Composite factors, Total factors , Even-Odd factors	12	40%
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Evaluation		
1	Assignments/ Quizzes/ClassParticipation / Role Play/Projectetc.	30%(Internal Assessment)
2	InternalExamination	20%(InternalAssessment)
3	ExternalExamination(UniversityExam)	50%(External Assessment)

BasicTextBooks:

Sr. No.	Author/s	Nameof the Book	Publisher	Edition
1	R.S.AGRWAL	Reasoning for Competitive Examinations	S CHAND	2022
2	R.S. AGRWAL	Quantitative Aptitude for Competitive Examinations	S CHAND	2022

ReferenceBooks:

Sr. No.	Author/s	Name of theBook	Publisher	Edition
1	ARUN SHARMA	How To Prepare For Quantitative Aptitude	McGraw Hill Education	10 TH 2022
2	R. PRAVEEN	Quantitative Aptitude and Reasoning	PHI Learning Pvt Ltd	3 RD 2016



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Relevant Websites

ARIHANT REASONING E-BOOK PDF

<https://parikshatop.com/arihant-reasoning-book-pdf-download-free/>

E BOOK FOR REASONING – ARUN SHARMA

<https://z-lib.is/book/how-to-prepare-for-logical-reasoning-for-the-cat>

E BOOK FOR APTITUDE– ARUN SHARMA

<https://z-lib.is/book/how-to-prepare-for-quantitative-aptitude-for-the-cat>

LINK FOR MULTIPLE QUANT E BOOK

[https://www.google.com/search?q=aptitude+book+for+placement+pdf&oq=APTITUDE+BOOK&aqs=chrome.69j70l58j69l70l71l72l73l74l75l76l77l78l79l80l81l82l83l84l85l86l87l88l89l90l91l92l93l94l95l96l97l98l99](https://www.google.com/search?q=aptitude+book+for+placement+pdf&oq=APTITUDE+BOOK&aqs=chrome.69j70l58j69l67j71j72j73j74j75j76j77j78j79j80j81j82j83j84j85j86j87j88j89j90j91j92j93j94j95j96j97j98j99l57l68l69l70l71l72l73l74l75l76l77l78l79l80l81l82l83l84l85l86l87l88l89l90l91l92l93l94l95l96l97l98l99)



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School of Computing & IT

Programme B. Sc.- IT

Semester II

Core Course Title: Identifying Entrepreneurial Opportunities

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Exploration of opportunities from the market
- Check technical, market, financial and other types of Feasibility of a business idea.
- Develop business model to describe the rationale of how an organization creates, delivers, and captures value
- Identification of various Business Opportunities from the market



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	Opportunities: Their nature, discovery, and Creation: <ul style="list-style-type: none"> Opportunities: Their basic nature, opportunities: Discovered, created, or both, Opportunities: The role of information, experience and social network- The role of information in opportunity recognition, The role of experience and social networks in opportunity recognition, How entrepreneurs can become skilled at recognizing opportunities...Entrepreneurship, Entrepreneurship and Startup 	14	50%
2	Business Idea Creation & IPR <ul style="list-style-type: none"> Meaning, sources of business ideas, techniques for idea generation like brain storming, Focus group, six thinking hats as idea generation, Characteristics of brilliant business ideas Introduction: Knowledge creation, Innovation and Intellectual Property Rights, Concept of Intellectual Property, Types of IPR – Patents – Copyright – Trademark – Industrial Designs – Trade Secrets – Geographical 	8	25%
3	Business Model: <ul style="list-style-type: none"> Introduction to business model, Types of business model, 	8	25%
	<ul style="list-style-type: none"> Developing and testing a business model, Business modelling process, Business model canvas, Business Models and value proposition, Business Model Failure: Reasons and Remedies Reinventing business model 		

Evaluation		
1	Assignments / Quizzes / Class Participation e Play/ / Ro Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	S.S. Khanka, Gupta. C.B.	Entrepreneurship & Small Business Management	Sultan Chand and Sons	Latest Edition
2	Sami Uddin	Entrepreneurship Development in India	Mittal Publications	Latest Edition

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Dr. Bhatia.R.C	Entrepreneurship: Business and Management	Sultan Chand and Sons	Latest
2	Bruce R. Barringer	Entrepreneurship: Successfully Launching New Ventures	Pearson Education	Latest
3	<u>Janakiram. B., Rizwana. M.</u>	Entrepreneurship development	Excel Books	Latest
4	Khanna. S.S.	Entrepreneurial Development	Excel Books	Latest

List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

1. Journal of Entrepreneurship
2. Journal of Small Business Management
3. Journal of Entrepreneurship & Management
4. AMC Indian Journal of Entrepreneurship



Chikasa



School of Computing & IT
Programme B. Sc.- IT
Semester II
Course Title: Environmental Studies

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
VAC	VAC230201	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Enabling students to understand and realize the multi- disciplinary nature of the environment, its components, and inter-relationship between man and environment.
- Understanding the relevance and importance of natural resources in the sustenance of life on earth and living standard. the importance of ecosystem, biodiversity, and nature.
- Correlating the human population growth and its trend to the environmental degradation and developing the awareness about his/her role towards environmental protection. Identifying different types of environmental pollution and control measures.



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Syllabus:

Module	Contents	No of Sessions	Weightage
1	<p>Introduction to Environment and Environmental Studies, Natural Resources:</p> <ul style="list-style-type: none"> • Definition and Components of Environment, Relationship between the different components of Environment, Man and Environment relationship, Impact of technology on Environment, Environmental Degradation, its scope. • Water resources: Sources of water - Surface and Ground water sources, Indian and Global scenario. • Land resources: Land pollution, land use, land degradation & its causes. • Forest resources: Definition and Types of Forests importance and benefits of forest, Deforestation causes and effects. 	9	30%
2	<p>Ecology and Ecosystems:</p> <ul style="list-style-type: none"> • Ecology: Introduction, Objectives and Classification, Concept of an ecosystem structure of ecosystem or Components of ecosystem- Producers, Consumers, Decomposers • Ecosystems: Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem, Aquatic Ecosystem, Estuarine Ecosystem • Human Population and Environment: Population Growth, World and Indian scenario, Population and Environmental Degradation, Malthusian theory, Optimum theory, • Urbanization: Urban population growth and Environmental problems 	12	40%

3	Environmental pollutions: <ul style="list-style-type: none"> Water Pollution: Introduction – Water Quality standards, sources of water 	9	30%
	pollution Classification of water pollutants. Eutrophication <ul style="list-style-type: none"> Air Pollution: Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Land Pollution: Land uses, Land degradation: causes, effects and control, soil erosion Noise Pollution: Introduction, Sound and Noise, Causes and Effects Global Environmental Issues: Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer 		

Evaluation		
1	Assignments / Quizzes / Class Participation / Role Play/ Project etc.	30% (Internal Assessment)
2	Internal Examination	20% (Internal Assessment)
3	External Examination (University Exam)	50% (External Assessment)

Basic Text Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Snehal Popli & B.R. Shah	Basics of Environmental studies	Mahajan Publishing House	Latest

Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition
1	Prof Dr N S Varandani	Basics of Environmental Studies	LAP -Lambert Academic Publishing Germany	Latest



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2	R. Rajagopalan	Environmental Studies	Oxford University Press	Latest
3	U K Khare	Basics of Environmental Studies	Tata McGraw Hill	Latest
4	Daniel B Botkin & Edward A Keller	Environmental Sciences	John Wiley & Sons.	Latest

† List of Journals / Periodicals / Magazines / Newspapers:

The students will have to refer to past issues of the following journals in order to get relevant topic/information pertaining to the subject.

- Environmental Standard
- Indian Journal of Environmental Research and Studies
- Journal of Environmental Science and Technology.



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