



**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS),
Sivakasi**

(Affiliated to Madurai Kamaraj University, Reaccredited with "A" Grade by NAAC,
College with Potential for Excellence by UGC & Mentor Institution under UGC PARAMARSH)

NAAC SSR Cycle IV (2015-2020)

**1.1. CURRICULUM DESIGN AND
DEVELOPMENT**

**1.1.1. CURRICULUM DEVELOPMENT AND
IMPLEMENTATION**

SYLLABUS

THE STANDARD FIREWORKS RAJARATNAM

COLLEGE FOR WOMEN (AUTONOMOUS)

(Reaccredited with 'A' Grade by NAAC and
College with Potential for Excellence by UGC)

SIVAKASI - 626 123.

Affiliated to Madurai Kamaraj University, Madurai.



Programme Scheme, Scheme of Examination and Syllabi
(With effect from June 2016)

DEPARTMENT OF COMPUTER APPLICATIONS

UG PROGRAMME - BCA

Curriculum Design & Development Cell

M. S. Dhoke
CHAIRMAN OF
THE BOARD

K. Senthil
A. Jayalakshmi
CDDC

T. Palaniswami
ACADEMIC
AFFAIRS

E. Ponnambal
COE

22/7/16.

**DEPARTMENT OF COMPUTER APPLICATIONS
BACHELOR DEGREE IN COMPUTER APPLICATIONS**

RULES AND REGULATIONS, PROGRAMME SCHEME AND SCHEME OF EXAMINATION
GOVERNING THE BACHELOR DEGREE PROGRAMME IN COMPUTER APPLICATIONS
(For those admitted in June 2016 and later)

I. Programme Objectives:

1. To provide students with a strong foundation in the area of Computer Applications.
2. To step forward from elementary Programming skills to marketable expertise.
3. To endow with detailed study about Interdisciplinary subjects those form the basis for developing application software.
4. Fabricate an opening for Higher education and better Profession.
5. To develop student skills in enduring development in the Computer Industry.
6. To make acquainted them with development and maintenance of software component.

II. Eligibility condition for admission:

Candidate should have passed the Higher Secondary Examination with 10+2 pattern conducted by the Board of Higher Secondary Education, Govt. of Tamil Nadu or any other examinations accepted by the Syndicate as equivalent thereto and the candidate should have studied +2 level Mathematics with Physics / Commerce/ Economics as subject of study in the 10+2 pattern.

III. Duration of the Programme:

The duration of the programme is three academic years. Each academic year consists of two semesters. The duration of a semester is 90 working days.

IV. Attendance:

The Rules regarding the attendance for regular classes for the candidates to appear for the End Semester examination are framed as given below

- a) Each student must put in a minimum attendance of 68 days (75% of 90 days per semester) so as to become eligible to appear for the End Semester examination.

Shortage of attendance:

- b) Those students with an attendance of 67 days and less but 59 days and above (65%) can be permitted to appear for the End Semester examinations provided they get the Condonation Certificate from the Principal stating the proper reasons for their absence on payment penalty as per MKU to the College Office within 5 days after the last working day.

- c) In case of attendance with 58 days and less but 45 days and above (50%), the students cannot appear for the End Semester examinations of that semester but can appear for those courses in the next semester examinations by obtaining special permission from the Principal providing necessary documents supporting the reasons for absence on payment of penalty as per MKU.
- d) Students with an attendance of 44 days and less should repeat the whole semester.

Attendance for Part V

A Student of the first or second year undergraduate class should put in a minimum attendance of 75% for each semester (Total No. of hours as fixed by the concerned Officers / Staff in-charge) in anyone of the Co-Curricular activities namely N.C.C./ N.S.S./ Physical Education/ Youth Red Cross to be eligible to get the degree.

In case of shortage of attendance the student has to complete the required attendance before the completion of the U.G Programme. If she fails to do so the student can appear for the End Semester examination; but she is ineligible to get the degree.

V. Evaluation Procedure:

Evaluation of each theory course will be 25% Continuous Internal Assessment (CIA) and 75% End Semester examination. Evaluation of each Practical Course will be 40% Continuous Internal Assessment and 60% End Semester Examination. Project will be 100% End Semester Examination Evaluation. A mark statement will be issued to every student at the end of every semester.

VI. Passing Minimum:

For a pass in each course, a student should secure a minimum of 35% marks in the End Semester examination and a minimum of 40% marks in aggregate (i.e., CIA and End Semester examination marks put together). The same rule is applicable for Dissertation/Project report and Viva-Voce.

VII. Eligibility condition for getting the Degree:

A candidate undergoing the B.C.A degree programme in Computer Applications will be eligible for the award of B.C.A degree in Computer Applications; if she completes the entire programme and passes all the examination prescribed for the programme.

VIII. Classification of Successful Candidates:

The successful candidates will be classified as per the details given in the table below:

CGPA	Grade	Classification of Final Result
9.500 – 10.000	O+	First Class
9.000 – 9.499	O	
8.500 – 8.999	D++	
8.000 – 8.499	D+	
7.500 – 7.999	D	
7.000 – 7.499	A++	
6.500 – 6.999	A+	
6.000 – 6.499	A	
5.500 – 5.999	B+	Second Class
5.000 – 5.499	B	
4.500 – 4.999	C	Third Class
4.000 – 4.499		
0.000 – 3.999	U	Re-appear

IX. Awards of Ranks :

Candidates who qualify themselves for the respective degree programme passing all the examinations in the first attempt and secured first class are eligible for ranking.

For Each Major:-

$$\text{Cumulative Grade Point Average [CGPA]} = \frac{\sum_i C_i G_i}{\sum_i C_i}$$

CGPA = $\frac{\text{Sum of the multiplication of grade points by the respective credits of the course cleared in the entire programme}}{\text{Sum of the credits of all the courses cleared in the programme}}$

where C_i = Credits earned for course i in any semester

G_i = Grade point obtained for course i in any semester

\sum_i = Summation of all courses cleared in a semester in the case of GPA
and all courses cleared in all semesters in the case of CGPA.

X. Other Provisions:

1. Those who are absent for the exam should be mentioned AA in the Mark sheet.
2. If there is a change of Malpractice on a student she should be quit out from the Examination hall and given chance during the next semester only.
3. The courses she has already appeared during that semester will not be considered.
4. A student can appear for any number of arrear courses.

5. Repeat Examinations will be conducted for the final semester paper within a month after the publication of final semester result.
6. Revaluation is permitted.

XI. Transitory Provisions:

Students from other institutions shall be considered if they have already written and passed all the courses covered till the previous semester. If any of the courses have not been cleared, they have to appear for those subjects along with the current semester subjects also. Equivalence of Completed Courses and Course to be completed should be decided by the Chairman of the Board of Studies.

Those students who have discontinued in the middle of the programme may be admitted in the respective semester if they want to rejoin and complete programme; provided they had not got their transfer certificate.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI

B.C.A – Allotment of Hours and Credits

*(for those who join in **June 2016** and later)*

Courses			Semester						Total No. of Credits	
			I	II	III	IV	V	VI		
Language Courses										
Part I- Tamil/Hindi/French/ Alternate Course			6(3)	6(3)	6(3)	6(3)	-	-	24	
Part II - English Language Course			6(3)	6(3)	6(3)	6(3)	-	-		
Part III - Core and Allied Courses										
Major	Theory	Course I	5(5)	4(4)	4(4)	3(3)	4(4)	4(4)		
		Course II	5(4)	4(4)	3(3)	-	5(5)	5(4)		
		Course III	-	-	-	-	5(5)	5(5)		
	Practical	Lab I	-	-	4(3)	3(2)	6(4)	5(3)		
		Lab II	-	-	-	3(2)	5(3)	-		
		Project	-	-	-	-	-	6(4)		
Allied	Theory	Course I	-	-	-	5(5)	-	-		
	Practical	Lab 1	6(5)	6(5)	5(5)	-	-	-		
Total			14	13	15	12	21	20	95	
Part IV – Non – Major Courses/ Value Added Courses										
Peace Education			2(2)	-	-	-	-	-		
Environmental Studies			-	2(2)	-	-	-	-		
i) NME-I			-	-	2(2)	-	-	-		
ii) NME – II			-	-	-	2(2)	-	-		
1) Computer Literacy			-	2(2)	-	-	-	-		
2) Soft Skill Enhancement			-	-	-	2(2)	-	-		
3) Career Guidance and Subject Viva			-	-	-	-	2(2)	-		
4) Women Studies			-	-	-	-	2(2)	-		
5) Self Employment / Job Oriented Courses – Theory			-	-	-	-	-	2(2)		
6) Self Employment / Job Oriented Courses – Practical / Field work / Project			-	-	-	-	-	2(2)		
Library and Information Science			-	-	-	-	1(*)	1(*)		
Total			2	4	2	4	4	4		20
Part V- Extension Activities–Physical Education & Social Awareness Programme										
NSS/NCC/Physical Education/Extension Activities/Youth Red Cross/Social Service League/ Red Ribbon Club			* (*)	*(1)	-	-	-	-	1	
Total Credits									140	

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI
DEPARTMENT OF COMPUTER APPLICATIONS (UG PROGRAMME- BCA)
(for those who join in June 2016 and later)

Sem	Course Code.	Course Title	Teaching Hours per Week	Credits	Duration of Exam (Hrs.)	Marks Allotted		
						Internal	External	Total
Core Courses								
Major and Allied								
I	16UCA11	Programming with C	5	5	3	25	75	100
	16UCA12	Digital Circuits	5	4	3	25	75	100
	16UCA1AL	C and Office Automation Lab	6	5	3	40	60	100
II	16UCA21	Object Oriented Programming	4	4	3	25	75	100
	16UCA22	Data Structures and Algorithms	4	4	3	25	75	100
	16UCA2AL	C++ and Data Structures Lab	6	5	3	40	60	100
III	16UCA31	Operating Systems	4	4	3	25	75	100
	16UCA32	Programming in Java	3	3	3	25	75	100
	16UCA3L	Java Programming Lab	4	3	3	40	60	100
	16UCA3AL	Visual Programming Lab	5	5	3	40	60	100
IV	16UCA41	Database Management Systems	3	3	3	25	75	100
	16UCA4A	Discrete Mathematics	5	5	3	25	75	100
	16UCA4L1	DBMS Lab	3	2	3	40	60	100
	16UCA4L2	DTP Lab	3	2	3	40	60	100
V	16UCA51	Software Engineering	4	4	3	25	75	100
	16UCA5EA	Core ELECTIVE -1	5	5	3	25	75	100
	16UCA5EB	Core ELECTIVE -2	5	5	3	25	75	100
	16UCA5L1	Web Technology Lab	6	4	3	40	60	100
	16UCA5L2	Animation Technology Lab	5	3	3	40	60	100
VI	16UCA61	Computer Networks	4	4	3	25	75	100
	16UCA62	.NET Programming	5	4	3	25	75	100
	16UCA6EC	Core ELECTIVE - 3	5	5	3	25	75	100
	16UCA6L	.NET Programming Lab	5	3	3	40	60	100
	16UCA6P	Project Work	6	4	3	-	100	100

Sem	Course Code.	Course Title	Teaching Hours per Week	Credits	Duration of Exam (Hrs.)	Marks Allotted		
						Internal	External	Total
Elective Courses								
V	16UCA5E1	Web Technology	5	5	3	25	75	100
	16UCA5E2	Computer Security	5	5	3	25	75	100
	16UCA5E3	Operations Research	5	5	3	25	75	100
	16UCA5E4	Numerical Methods	5	5	3	25	75	100
VI	16UCA6E1	Cloud Computing	5	5	3	25	75	100
	16UCA6E2	Microprocessors and Interfacing	5	5	3	25	75	100
	16UCA6E3	Graphics and Multimedia	5	5	3	25	75	100
Non Major Electives								
III	16UCA3N	Animation Software	2	2	3	25	75	100
IV	16UCA4N	Web Designing	2	2	3	25	75	100
Self Employment / Job Oriented Courses								
VI	16UJO62	Android Application Development	2	2	3	25	75	100
	16UJO62L	Android Application Development Lab	2	2	3	40	60	100
Add on Courses								
1.	16UCAEC1	Office Automation	2	2	3	25	75	100
2.	16UCAEC2	Photoshop & 3D Studiomax	2	2	3	25	75	100

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
B. C.A
SEMESTER I
PART III - MAJOR COURSE
16UCA11 - PROGRAMMING WITH C
(For those admitted in June 2016 and later)

Contact hours per week : 05
Total number of hours per semester : 75
Number of Credits : 05

Objectives:

1. To give strong foundation in C Programming.
2. To inculcate programming skills.
3. To develop user defined functions
4. To train on pointer, structure and union concepts
5. To learn the purpose of file concept

Unit - I

(15 hrs)

Overview of C: History of C - Importance of C - Basic Structure of C Programs- Programming Style-Executing a C Program. **Constants, Variables and Data Types:** Introduction-Character Set- C Tokens- Keywords and Identifiers- Constants-Variables-Data Types- Declaration of Variables- Declaration of Storage Class - Assigning Values to Variables- Defining Symbolic Constants. **Operator and Expression:** Introduction-Arithmetic Operators- Relational Operator- Logical Operators- Assignment Operators- Increment and Decrement operator- Conditional Operator- Bitwise Operator- Special Operator- Arithmetic Expression- Evaluation of Expression- Precedence of Arithmetic operators- Some computational problems- Type Conversions in Expressions.

Unit - II

(15 hrs)

Managing Input and output operations: Introduction – Reading a character – Writing a character – Formatted input – Formatted output. **Decision Making and Branching:** Introduction- Decision Making with IF Statement Simple IF statement – The IF... ELSE statement – Nesting of IF...ELSE statement –The ELSE IF Ladder– The SWITCH statement– The ? : Operator - The GOTO statement.

Unit - III

(15 hrs)

Decision Making and Looping: Introduction – The WHILE statement – The DO statement – The FOR statement- Jumps in Loops. **Arrays:** Introduction –One Dimensional Arrays- Declaration of One Dimensional Array – Initialization of One Dimensional Arrays- Two Dimensional Arrays- Initializing Two Dimensional Arrays- Multi Dimensional Arrays- Dynamic Arrays. **Character Arrays and Strings:** Introduction – Declaring and initializing

string variables – Reading Strings from terminal - Writing Strings to Screen- Arithmetic Operations on Characters- Putting Strings Together-Comparison of Two Strings- String Handling Functions - Table of Strings.

Unit - IV

(15 hrs)

User-defined Functions: Introduction – Need for User-Defined Functions- A Multi-Function Program-Elements of User-defined Functions- Definition of Functions- Return values and their types- Function Calls- Function Declaration- Categories of Functions - No arguments no return Values – Arguments but no return Values – Arguments with return Values- No Arguments but return a Values – Functions that return multiple values - Nesting of Functions- Recursion - Passing Array To Functions - Passing Strings To Functions.

Structures and Unions: Introduction – Defining a Structure –Declaring a Structure Variables- Accessing Structure Members- Structure Initialization –Copying and Comparing Structure Variables- Operations on individual members - Arrays of Structures- Arrays with in Structures – Structures within Structures- Structure and Function- Unions-Size of Structures-Bit Fields..

Unit - V

(15 hrs)

Pointers: Introduction - Understanding Pointers – Accessing the address of a variable- Declaring of Pointer variables- Initializing of Pointer variables – Accessing a variable through its pointer – Chain of Pointers-Pointer Expression- Pointer Increments and Scale Factors- Pointers and Arrays- Pointers and Character Strings- Array of Pointers- Pointer as Function Arguments-Functions returning pointers - Pointers and Structures. **File Management in C-** Introduction-Defining and Opening a file – Closing file- Input / Output operations on Files- Error Handling during I/O Operations- Random Access to Files- Command Line Arguments

Text Book:

Balagurusamy E. (2012), *Programming in ANSI C*, Tata McGraw-Hill Education Private Limited, 6th edition, Second reprint.

Chapters:

Unit I : 1.1 – 1.2 (Pg: 1 – 3), 1.8 - 1.10 (Pg: 12-14), 2.1 - 2.11 (Pg: 22-44),
3.1 - 3.14 (Pg: 52-70)

Unit II : 4.1 - 4.5 (Pg: 83 - 103), 5.1 - 5.9 (Pg: 112 -137)

Unit III : 6.1 - 6.5 (Pg: 151-175), 7.1 – 7.8 (Pg: 192 - 215), 8.1 - 8.9 (Pg: 237-260)

Unit IV : 9.1 - 9.18 (Pg: 270-301), 10.1 – 10.14 (Pg: 324 – 347)

Unit V : 11.1 - 11.14 (Pg: 357 - 378), 11.16 (Pg: 382 – 384), 12.1–1.7 (Pg:395– 416)

Reference Books:

1. Byron S. Gottfried (2001), *Theory and Problems of Programming with C*, Tata McGraw-Hill Publishing Company Limited, II Edition
2. Yashavant P Kanetkar (2002), *Pointers in C*, BPB Publications, New Delhi

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
B. C.A.
SEMESTER I
PART III - MAJOR COURSE
16UCA12 - DIGITAL CIRCUITS
(For those admitted in June 2016 and later)

Contact hours per week : 05
Total number of hours per semester : 75
Number of Credits : 04

Objectives:

1. To craft a basic knowledge of digital electronics
2. To enable the students to implement simple logical operations using combinational logic circuits
3. To enable the students to understand the logical operation of simple arithmetic circuits
4. To make the students to know about the basic Computer Architecture

Unit - I (15 hrs)

Number System and Codes: Introduction – Number system – Floating Point Representation of Numbers – Arithmetic Operation – 1's & 2's complements - 9's complement - 10's complement – Binary Coded Decimal – Codes.

Unit - II (15 hrs)

Boolean algebra and Minimization Techniques: Basic laws of Boolean Algebra – Demorgan's Theorems – Sum of Products and Product of Sums – Karnaugh Map, **Logic Gates:** Introduction – Positive and Negative Logic Designation – Logic Gates.

Unit - III (15 hrs)

Arithmetic Circuits: Introduction – Procedure for the Design of Combinational Circuits – Half Adder – Full Adder – K-Map simplification– Half Subtractor – Full Subtractor, **Combinational Circuits: Multiplexers** – Four Input Multiplexer – 8 to 1 Multiplexer – 16 to 1 Multiplexer – De-multiplexer – Decoders(Basic Binary Decoder, 3 to 8 Decoder, 4 to 16 Decoder, IC 74139-Dual 2 to 4 Decoder, IC 74154 – 4 to 16 Decoder, BCD to Decimal Decoder, IC7445- BCD to Decimal Decoder) – Encoders(Octal to Binary Encoder, Decimal to BCD Encoder).

Unit - IV (15 hrs)

Flip-Flops: Latches – S-R Flip-Flop – D Flip-Flop – JK Flip-Flop – T Flip-Flop – Master-Slave Flip-Flop - **Counters:** Asynchronous counters – Synchronous – Design of Mod-3, Mod-6 and BCD Counter- **Registers:** Shift Registers(Serial - in Serial out Shift Registers, Serial - in Parallel out Shift Registers, Parallel - in Serial out Shift Registers, Parallel - in Parallel out Shift Registers).

Unit – V

(15 hrs)

Computer Operations: Basic Components of a Digital Computer - Programming Overview, **The Memory Element:** Random Access Memories - Static Random Access Memories - Dynamic Random Access Memories, Read Only Memories – Magnetic Disk Memories – Flexible Disk Storage System (Floppy Disk) – Storage Hierarchies – Cache Memory, **The Control Unit:** Construction of an Instruction Word, Instruction Cycle and Execution Cycle Organization Of Control Registers, **Computer Architecture:** Pipelined Computers.

Text Book:

1. Salivahanan S, Arivazhagan S(2009), *Digital Circuits and Design*, Vikas Publishing House Pvt. Ltd., New Delhi, Third Edition.

Chapters:

- Unit I : **1.1 - 1.9** (Pg: 1-34)
Unit II : **2.4 - 2.7** (Pg: 41-64), **3.1-3.3** (Pg: 77-90)
Unit III : **5.1 - 5.7** (Pg: 161-168), **6.2 - 6.2.3** (Pg: 187-193),
6.4 - 6.5.7 (Pg: 199-212), **6.7 - 6.7.2** (Pg: 220-223)
Unit IV : **7.1 - 7.7** (Pg: 253-270), **7.10**(275-277) , **8.2** (Pg: 293-295), **8.9** (Pg: 306-307),
8.15.1 - 8.15.3 (Pg: 312-320), **9.2** (Pg: 346-358)

2. Thomas C.Bartee (2010), *Computer Architecture and Logic Design*, Tata McGraw-Hill, New Delhi.

Chapters:

- Unit V : **(1.4-1.5)** (Pg: 6 – 12), **(6.1)** (Pg: 245 – 247), **(6.6 – 6.10)** (Pg: 275 – 281),
6.16 (Pg: 290 – 293), **6.18** (Pg: 304 – 309), **9.1-9.2** (Pg : 417-424),
10.13 (Pg : 476-479)

Reference Books:

1. Malvino, Saha and Leach(2008), *Digital Principles and Applications*, TMH Publications, Sixth Edition, Ninth reprint.
2. Carl Hamacher, Zvonko Vranesic, Safwat Zaky (2011), *Computer Organization*, Tata McGraw – Hill, New Delhi, 5th Edition.
3. Morris Mano (2010), *Computer System Architecture*, Prentice Hall India, 3rd Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
B. C.A.
SEMESTER I
PART III - ALLIED COURSE
16UCA1AL - C AND OFFICE AUTOMATION LAB
(For those admitted in June 2016 and later)

Contact hours per week : 06
Total number of hours per semester : 90
Number of Credits : 05

Objectives:

1. To know about Windows Applications
2. To improve the C programming skills
3. To have a good idea about structured programming
4. To provide training to write file programs for applications

C exercises:

1. Simple Exercise Using I/O Functions
2. Simple Exercise Using Operators
3. Exercises Using *if..else* and *nested if*
4. Exercise Using Switch Statement
5. Exercise Using Break And Continue Statements
6. Exercises Using For Loop
7. Exercises Using While, Do..While
8. Exercises Using 1-D, 2-D And Multi Dimensional Arrays
9. Exercise Using String Functions
10. Exercise Using Functions
11. Simple Exercises Using Structure And Union
12. Simple Exercises Using Pointers
13. Simple Exercises Using File Concept

Office Automation exercises:

1. Documentations Using MS-Word
2. Exercises Using MS - PowerPoint
3. Exercises Using EXCEL.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.

DEPARTMENT OF COMPUTER APPLICATIONS

B. C.A.

SEMESTER II

PART III - MAJOR COURSE

16UCA21- OBJECT ORIENTED PROGRAMMING

(For those admitted in June 2016 and later)

Contact hours per week : 04

Total number of hours per semester : 60

Number of Credits : 04

Objectives

1. To highlight the features of Object oriented programming concepts
2. To stress the importance of inheritance and polymorphism in object oriented design
3. To familiarize with Streams
4. To promote application development using OOPs techniques

Unit – I

(12 hrs)

Principles of Object-Oriented Programming: Object Oriented Programming Paradigm - Basic Concepts of Object Oriented Programming - Benefits of OOP - Object Oriented Languages – Applications of OOP - **Beginning with C++:** What is C++ - Applications of C++ - A Simple C++ Program- More C++ statements-An Example with Class- Structure of C++ program - Creating the source file - Compiling and Linking – **Tokens, Expressions and Control Structures:** Tokens - Keywords – Identifiers and constants-Basic Data Types - User Defined data Types – Storage Classes - Derived Data types- Symbolic Constants - Type Compatibility - Declaration of Variables - Dynamic Initialization of variables - Reference Variables - Operators in C++ - Scope resolution operator – Member dereferencing operator – Memory management operators – Manipulators-Type Cast Operator - Expressions and Their Types – Special Assignment Expression – Implicit Conversions - Operator Overloading –Operator Precedence- Control Structures.

Unit – II

(12 hrs)

Functions in C++: The Main Function - Function Prototyping - Call and return by reference - Inline Functions – Default and Const arguments - Recursion -Function overloading- **Classes and Objects:** Specifying a class - Defining Member Functions – A C++ program with class - Making an outside function Inline - Nesting of Member Functions- Private Member Functions - Arrays within a class - Memory Allocation for Objects - Static Data members -Static member functions - Arrays of objects - objects as function arguments - friendly functions-returning objects - const member functions - pointers to members.

Unit – III

(12 hrs)

Constructors and Destructors: Constructors - Parameterized Constructors- Multiple Constructors in a Class - Constructors with Default Arguments - Dynamic Initialization of Objects - Copy Constructor – Destructors- **Operator Overloading and Type Conversions:** Introduction - Defining Operator Overloading – Overloading Unary Operators - Overloading Binary Operators - Overloading Binary Operators using Friends - Manipulation of Strings using Operators - Rules for Overloading Operators - Type Conversions.

Unit – IV

(12 hrs)

Inheritance: Extending Classes: Introduction - Defining Derived Classes - Single Inheritance - Making a Private Member Inheritable - Multilevel Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance - Virtual Base Classes- Abstract classes - Constructors in Derived Classes - Member Classes: Nesting of Classes.

Unit – V

(12 hrs)

Managing Console I/O Operations: C++ Streams – C++ Stream Classes – Unformatted and Formatted Console I/O Operations - Managing Output with Manipulators.

Templates: Class Templates - Class Templates with Multiple parameters - Function Templates - Function Templates with Multiple Parameters - Overloading of Template Functions - Member Function Templates - Non Type Member Function Templates.

Text Book:

Balagurusamy E. (2013), *Object Oriented Programming With C++*, McGraw Hill Education(India)Private Limited, New Delhi, 6th Edition.

Chapters:

Unit I : 1.4 - 1.8 (Pg: 5-13), 2.1 - 2.8 (Pg: 16-26), 3.2 - 3.25 (Pg: 29-62)

Unit II : 4.2 - 4.10 (Pg: 70-81), 5.3 - 5.18 (Pg: 90-122)

Unit III : 6.2 - 6.7 (Pg: 130-140), 6.11 (Pg: 144-147),
7.1 – 7.6(Pg: 152-164), 7.8 - 7.9 (Pg: 166-174)

Unit IV : 8.1 - 8.12 (Pg: 179-214)

Unit V : 10.2 - 10.6 (Pg: 257 – 281), 12.2 - 12.8(Pg: 319 - 335)

Reference Books:

1. Herbert Schildt (2009), *The Complete Reference C++*, Tata McGraw Hill, 4th Edition.
2. Ira Pohl (2009), *Object Oriented Programming Using C++*, Pearson Education, 2nd Edition

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
B. C.A.
SEMESTER II
PART III - MAJOR COURSE
16UCA22 - DATA STRUCTURES AND ALGORITHMS
(For those admitted in June 2016 and later)

Contact hours per week : 04
Total number of hours per semester : 60
Number of Credits : 04

Objectives:

1. To learn various data structures.
2. To master the concepts of sorting.
3. To emphasize the art of algorithm.
4. To expose the students with good program structure.

Unit – I (12 hrs)

Stacks And Queues: Stacks – Queues –Evaluation Of Expressions(Expressions, Evaluating Postfix Expressions, Infix to Postfix) – **Linked Lists:** Singly Linked Lists And Chains – Representing Chains In C - Linked Stacks And Queues.

Unit - II (12 hrs)

Trees: Introduction(Terminology) – Binary Trees – Binary Tree Traversals(Inorder Traversal, Preorder Traversal, Postorder Traversal) – **Graphs:** The Graph Abstract Data Type - **Sorting:** Insertion Sort – Quick Sort - Merge Sort(Iterative Merge Sort).

Unit – III (12 hrs)

Introduction: What is an Algorithm? – Algorithm Specification – Performance Analysis (Space Complexity, Time Complexity) - **Divide and Conquer:** General Method – Binary Search – **Greedy Method:** The General Method – Knapsack Problem.

Unit – IV (12 hrs)

Greedy Method : Minimum Cost Spanning Trees(Definition, Prim’s Algorithm, Kruskal’s Algorithm) - Single Source Shortest Paths - **Dynamic Programming :** The General Method – Multistage Graphs – All Pairs Shortest Paths– The Traveling Salesperson Problem.

Unit - V (12 hrs)

Basic Traversal and Search Techniques: Techniques for Binary Trees - Techniques for Graphs - **Backtracking:** The General Method – The 8-Queens Problem – Sum Of Subsets– Graph Coloring.

Text Books:

1. Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed (2009), *Fundamentals of Data Structures in C*, Universities Press, Second Edition.

Chapters :

Unit I : **3.1**(Pg: 107–111, **3.3**(Pg: 114–119, **3.6** (Pg: 127–137),

4.1 - 4.3 (Pg: 145-160)

Unit II : **5.1, 5.3** (Pg: 191-194, 197-209), **6.1** (Pg: 265-277),

7.2 - 7.3. 7.5 (Pg: 337-343, 346 - 349)

2. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran(2012), *Fundamentals of Computer Algorithms*, Galgotia Publications (P)Ltd., New Delhi, Second Edition.

Chapters :

Unit III : **1.1 - 1.3** (Pg: 1-26), **3.1, 3.3** (Pg: 136–138, 145-152), **4.1, 4.3**, (Pg: 210–213, 218-221)

Unit IV : **4.6, 4.9**, (Pg: 236-244, 260-267), **5.1 - 5.3, 5.9** (Pg: 272–287, 318-320)

Unit V : **6.1, 6.2** (Pg: 333 – 344), **7.1 - 7.5** (Pg: 359 – 379)

(Excluding Theorems and Analysis)

Reference Books:

1. Alfred Aho, John E.Hopcroft, and Jeffrey D.Ullman (2001), *Data Structures and Algorithms*, Pearson Education.
2. G.A.V.Pai (2009), *Data Structures and Algorithms*, The McGraw Hill Companies.

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B. C.A.
SEMESTER II
PART III - ALLIED COURSE
16UCA2AL – C++ AND DATA STRUCTURES LAB
(For those admitted in June 2016 and later)

Contact hours per week : 06
Total number of hours per semester : 90
Number of Credits : 05

Objectives:

1. To improve programming skills using OOP's concept.
2. To implement various algorithms.
3. To improve the knowledge in the concept of abstract data types.
4. To know the implementation of various data structures.

Areas of Program:

1. Programs using classes, objects & access modifiers
2. Programs using Function Overloading and Inline Functions
3. Programs on overloading different operators
4. Programs on Constructors
5. Programs on various levels of Inheritance
6. Searching, Sorting Program.
7. Program using String class
8. Linked List Implementation of ADT list
9. Stack Implementation using array
10. Stack Implementation using ADT list
11. Queue Implementation using array
12. Queue Implementation using ADT list
13. Binary Tree Traversal
14. Program to implement graph.

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SEMESTER III

PART III - MAJOR COURSE

16UCA31 - OPERATING SYSTEMS

(For those admitted in June 2016 and later)

Contact hours per week : 04
Total number of hours per semester : 60
Number of Credits : 04

Objectives:

1. To gain knowledge about the concepts of an operating system
2. To learn how to deal with processes
3. To inculcate knowledge about how deadlock can be handled
4. To compare page replacement algorithms

Unit – I

(12 hrs)

Introduction - What Operating Systems do – Operating System Structure - Operating System Operations - Process Management - Memory Management - Storage Management - Distributed System - Special purpose systems - Operating System Services - System Calls – Types of System Calls.

Unit - II

(12 hrs)

Process Management: Process Concept - Process Scheduling – Operations on Processes (Process Creation, Process Termination) – Interprocess Communication (Shared-Memory Systems, Message-Passing Systems). **Process Scheduling:** Basic Concepts - Scheduling Criteria – Scheduling Algorithms - Multiple Processor Scheduling.

Unit – III

(12 hrs)

Process Synchronization -Background - The Critical Section Problem – Peterson’s Solution - Semaphores - Classical Problems of Synchronization. **Deadlocks:** Characterization– Methods for handling Deadlocks - Deadlock Prevention – Deadlock Avoidance – Deadlock Detection - Recovery from Deadlock.

Unit – IV

(12 hrs)

Memory Management - Main Memory: Background - Swapping – Contiguous Memory Allocation – Paging – Segmentation. **Virtual Memory:** Background - Demand Paging – Page Replacement (Basic Page replacement, FIFO, Optimal, LRU, LRU-

Approximation Page Replacement, Counting Based Page Replacement, Page buffering algorithms, Applications and page replacement).

Unit - V

(12 hrs)

Storage Management - File System: File Concept – Access Methods – Directory and Disk Structure - Protection **Implementing File Systems:** File System Structure – Allocation Methods **Secondary Storage Structure:** Overview of Mass Storage Structure – Disk Scheduling.

Text book:

Abraham Silberschatz, Peter Baer Galvin, Greg Gagne (2009), *Operating System Concepts*, Reprint by Wiley India(P).Ltd., 8th Edition.

Chapters

Unit I	: 1.1 (Pg: 3-6), 1.4 - 1.8 (Pg: 18-29), 1.10, 1.11 (Pg: 30-34), 2.1 (Pg: 49-52), 2.3, 2.4 (Pg: 55-66)
Unit II	: 3.1 - 3.4 (Pg: 101-123), 5.1 - 5.3 (Pg: 183-199), 5.5 (Pg: 200-206)
Unit III	: 6.1 - 6.3 (Pg: 225-231), 6.5, 6.6 (Pg: 234-244), 7.2 - 7.7 (Pg: 285-306)
Unit IV	: 8.1 - 8.4 (Pg: 315-337), 8.6 (Pg: 342-345), 9.1, 9.2 (Pg: 357-367), 9.4 (Pg: 369-381)
Unit V	: 10.1 - 10.3 (Pg: 421-444), 10.6 (Pg: 451-456), 11.1 (Pg: 461-463), 11.4 (Pg: 471-479), 12.1, 12.4 (Pg: 505-508, 510-516)

Reference books:

1. Milan Milankovic(2009), *Operating System Concepts and Design*, Tata McGraw Hill.
2. William Stallings(2009), *Operating Systems Internals and Design Principles*, Sixth Edition, Pearson Education.

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DEPARTMENT OF COMPUTER APPLICATIONS

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SEMESTER III

PART III - MAJOR COURSE

16UCA32 - PROGRAMMING IN JAVA

(For those admitted in June 2016 and later)

Contact hours per week : 03
Total number of hours per semester : 45
Number of Credits : 03

Objectives:

1. To be familiar with Java Environment.
2. To achieve ideas of multitasking, packaging and exception handling.
3. To acquire the knowledge of Windowing Applications.
4. To inculcate the idea about AWT controls and Swing.

Unit – I

(9 hrs)

Java Evolution: Java History – Java features – How Java differs from C and C++ -
Overview of Java Language: Introduction – Simple Java Program – More of Java – An Application with Two Classes – Java Program Structure – Java Tokens – Java Statements – Implementing a Java Program – Java Virtual Machine – Command Line Arguments -
Constants, Variables, and Data types: Datatypes – Declaration of Variables – Giving Values to Variables – Scope of Variables – **Operators and Expressions:** Introduction - Arithmetic operators - Relational operators - Logical operators - The Assignment operators – Increment and Decrement Operators – Conditional Operators – Bitwise Operators – Special Operators..

Unit – II

(9 hrs)

Decision Making and Looping: Introduction – The While statement – The Do Statement – The For Statement – Jumps in Loops – Labelled Loops – **Classes, Objects and Methods:** Introduction – Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Inheritance - Overriding Methods – Final Variables and Methods – Final Classes–Abstract Methods and Classes – Methods with Varargs – Visibility control.

Unit – III

(9 hrs)

Arrays, Strings and Vectors: Introduction – One-dimensional Arrays – Creating an Array – Two-dimensional Arrays – Strings - **Interfaces: Multiple Inheritance-**Introduction – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables – **Packages: Putting Classes Together:** Naming Conventions– Creating Packages– Accessing a Package – Using a Package - Adding a Class to a Package – Hiding Classes – Static Import – **Multithreaded Programming:** Introduction – Creating Threads – Extending

the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Implementing the Runnable Interfaces.

Unit – IV

(9 hrs)

Managing Errors and Exceptions: Exceptions – Syntax of Exception Handling Code– Multiple catch statements – Using finally Statement - **Managing I/O files in Java:** Stream classes – Byte Stream classes – Character Stream classes– Other useful I/O classes – Using the File class – I/O Exceptions – Creation of files – Reading / Writing characters– Reading / Writing bytes – **Applet Programming:** Introduction – How applets differ from applications – Preparing to write Applets – building applet code – applet life cycle– creating an executable applet – Applet tag – adding Applet to HTML file – running the applet – **Graphics Programming:** Introduction – The Graphics class – Lines and Rectangles- Circles and Ellipses – Drawing Arcs – Drawing Polygons.

Unit – V

(9 hrs)

Event Handling: The Delegation Event Model – Introducing the AWT - Window Fundamentals - **Using AWT Controls:** Control fundamentals – Labels - Using Buttons - Applying Check boxes – Checkboxgroup – **A Tour of Swing:** JApplet – Icons and Labels – Text Fields – Buttons – Check Boxes.

Text Books:

1. E.Balagurusamy(2010), *Programming with Java A Primer*, Tata McGraw Hill Education Pvt Ltd, 4th Edition

Chapters :

Unit I : **2** (Pg:10-15), **3** (Pg: 23-43), **4** (Pg: 48-52), **5** (Pg: 60-67)

Unit II : **7** (Pg: 103-119), **8** (Pg: 123 - 144)

Unit III: **9** (Pg: 148-159), **10** (Pg:174-180),**11** (Pg: 187-195),**12** (Pg:198-208,212-213)

Unit IV: **13** (Pg: 222-228), **16** (Pg:281 – 295), **14** (Pg:234–240, 242 –243),**15** (Pg : 260 – 270)

2. Herbert Schildt (2012), *Java 2 Complete References*, Tata McGraw Hill, 5th Edition, 51st Reprint.

Chapters :

Unit V : **20** (Pg.654 -656), **21** (Pg.691 – 693), **22** (Pg: 736 – 747), 26(Pg. 922 – 933)

Reference Books:

1. Kogent Learning Solutions Inc. (2010), *Java 6 and J2EE 1.5 Black Book*, Dream Tech Press.
2. C.Xavier (2009), *Programming with Java 2*, SCITECH Publications Pvt Ltd, Eighth Reprint.

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SEMESTER III

PART III - MAJOR COURSE

16UCA3L - JAVA PROGRAMMING LAB

(For those admitted in June 2016 and later)

Contact hours per week : 04
Total number of hours per semester : 60
Number of Credits : 03

Objectives:

1. To enrich the knowledge of Object Oriented Programming.
2. To learn about Interface and Packages.
3. To know about Exception and Multithreaded Concept.
4. To acquire basic knowledge in Applet, Graphics and Swing.

Areas of Program:

1. Programs using String.
2. Program using Array.
3. Programs using Inheritance.
4. Program using Polymorphism.
5. Program using Interfaces.
6. Programs using Packages
7. Programs using Multithreading.
8. Programs Using Predefined & User defined Exceptions.
9. Programs using Input and Output Files
10. Simple Programs Using Applet and Graphics.
11. Simple Programs using Swing.

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SEMESTER III
PART III - ALLIED COURSE
16UCA3AL – VISUAL PROGRAMMING LAB
(For those admitted in June 2016 and later)

Contact hours per week : 05

Total number of hours per semester : 75

Number of Credits : 05

Objectives:

1. To train the students to build stand-alone windows applications
2. To create sophisticated event-driven programs
3. To design programs with new file system objects
4. Creating and deploying Database applications

Areas of Program:

1. Simple programs using text box, label and Command Button
2. Implementation of String functions
3. Programs using Input box, Message box.
4. Design of a Simple Calculator.
5. Designing Font Dialog Box.
6. Creation of Paint Brush
7. Design of Text Editor
8. Animation using Timer control
9. Screen Saver Program
10. Create Picture Puzzle
11. Dynamic loading of files using System Controls
12. Programs Using Data control.

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B. C. A.

SEMESTER IV

PART III - MAJOR COURSE

16UCA41 – DATABASE MANAGEMENT SYSTEMS

(For those admitted in June 2016 and later)

Contact hours per week : 03
Total number of hours per semester : 45
Number of Credits : 03

Objectives:

1. To describe the basic concepts of Database Management Systems.
2. To know about Database Architecture, Design and Data Model.
3. To provide the concepts of Normalization.
4. To concentrate on SQL.

Unit – I

(9 hrs)

Introduction to Database Management Systems: Introduction, Why a Database, Characteristics of Data in a Database, Database Management System, Types of DBMS – **Introduction to RDBMS:** Relational Data Integrity - **Database Architecture and Data Modeling :** Introduction – Conceptual, Physical and Logical Database models – Database Design – Design Constraints.

Unit – II

(9 hrs)

E-R Modeling: Introduction, E-R Model, Components of an E-R Model – **Data Normalization:** Introduction, First Normal Form, Second Normal Form, Third Normal Form, Boyce-Codd Normal Form, Fourth Normal Form, Fifth Normal Form, Domain-Key Normal Form, Denormalization.

Unit – III

(9 hrs)

Introduction to Structured Query Language (SQL): Introduction – History of SQL– Characteristics of SQL – Advantages of SQL – SQL in Action – SQL Data Types and Literals – Types of SQL Commands – SQL Operators – Arithmetic Operators – Comparison Operators – Logical Operators – Set Operators – Operator Precedence - **Tables, Views and Indexes:** Tables Creating a Table – Modifying a Table – Deleting a Table – Views – Creating a View – Data Query and Manipulation Operators with Views – The Check Option – Views involving Multiple Tables – Updateable and Non-Updateable Views – Advantages of Views – Using Views – Dropping a View.

Unit – IV

(9hrs)

Insert, Update and Delete operations: Introduction, Insert Statement, Bulk Inserts of Data, UPDATE Statement, DELETE Statement - **Queries and Subqueries:** Queries, Subqueries - **Aggregate functions:** Introduction, General rules, COUNT() and COUNT(*), SUM(), AVG(), MAX() and MIN().

Unit – V

(9hrs)

Joins and Unions : Joins and Unions – **Cursors :** Introduction, Cursor operations, cursor positions – **Triggers:** Introduction, What is a trigger, Types of triggers, Trigger syntax, Combining trigger types, Setting inserted values, Disabling and enabling triggers, Replacing triggers, Dropping triggers, Advantages and limitations of triggers.

Text book:

Alexis Leon, Mathews Leon (1999), *Database Management Systems*, Leon Press, Chennai and Vikas Publishing House Pvt. Ltd., New Delhi.

Chapters :

Unit I	: 5 (Pg: 99-117), 7 (Pg: 159-165), 8 (Pg: 177-186)
Unit II	: 9 (Pg: 195-211), 11 (Pg: 241-256)
Unit III	: 14 (Pg: 291-312), 15 (Pg: 319-330)
Unit IV	: 19 (Pg: 395-399), 17 (Pg: 355-378), 18 (Pg: 385-392)
Unit V	: 21 (Pg: 413-427), 20 (Pg: 401-407), 25 (Pg: 485-491)

Reference Books:

1. Abraham Silberschatz, Henry F.Korth, S.Sudarshan(2006), *Database System Concepts*, McGraw-Hill, 5th Edition.
2. Date C.J., *Introduction to Database Systems*(2009), Pearson Education, 8th Edition.
3. Ivan Bayross, *SQL, PL/SQL The Programming Language of Oracle*(2006), BPB Publication, 3rd Revised Edition.

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SEMESTER IV
PART III - ALLIED COURSE
16UCA4A - DISCRETE MATHEMATICS
(For those admitted in June 2016 and later)

Contact hours per week : 05
Total number of hours per semester : 75
Number of Credits : 05

Objectives:

1. To understand the basic concepts in Set Theory.
2. To inculcate fundamental knowledge in Relations and Functions.
3. To have basic knowledge in Matrix Algebra.
4. To know the fundamental concepts in mathematical logic.

Unit - I (15 hrs)

Set Theory : Introduction- Sets - Notation and Description of sets – Subsets – Venn-Euler diagram – Operations on sets – Properties of Set operations – Verification of the Basic Laws of Algebra by Venn Diagrams – The Principle of duality.

Unit - II (15 hrs)

Relations : Cartesian Product of two Sets – Relations -Representation of a relation- Operations on relations -Equivalence Relation - **Functions:** Function and Operators -One to One, Onto functions - Special types of functions - Invertible functions-Composition of functions.

Unit - III (15 hrs)

Mathematical Induction : Techniques of Proof – Mathematical Induction
Recurrence relations : Recurrence- an introduction-Polynomials and their Evaluations - Recurrence Relations -Solution of Finite Order Homogeneous (linear) Relations - Solution of Non - homogeneous Relations .

Unit - IV (15 hrs)

Matrix Algebra: Introduction - Matrix Operations - Inverse of a Square Matrix- Elementary Operations and Rank of a Matrix - Simultaneous Equations - Eigen Values and Eigen Vectors.

Unit - V (15 hrs)

Mathematical Logic : Introduction – TF Statements – Connectives – Atomic and Compound Statements – Well-formed Formulae – Truth table of a Formula – Tautology – Tautological Implications and Equivalence of Formulae.

Text book:

Venkataraman M.K., Sridharan N. and N. Chandrasekaran (2009), *Discrete Mathematics*, National Publishing Company.

Chapters:

- Unit I : **1.1 – 1.9** (Pg 1.1– 1.34)
Unit II : **2.1 – 2.5** (Pg 2.1–2.28), **3** (Pg 3.1–3.20).
Unit III : **4.1, 4.2** (Pg 4.1–4.8), **5.1 – 5.5** (Pg 5.1–5.19)
Unit IV : **6.1 - 6.5**, (Pg 6.1–6.31), **6.7** (Pg 6.37–6.40) (Problems only)
Unit V : **9.1 – 9.8** (Pg 9.1–9.34)

Reference Books :

1. Seymour Lipschutz, Marc Lans Lipson (1999), *Schaum's Outline of Theory and Problems of Discrete Mathematics*, Tata McGraw Hill Publication and Co..
2. V.Sundaresan, K.S.Ganapathy Subramanian, K.Ganesan (2004), *Discrete Mathematics* A.R.Publications.

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SEMESTER IV

PART III - MAJOR COURSE

16UCA4L1 - DBMS LAB

(For those admitted in June 2016 and later)

Contact hours per week : 03
Total number of hours per semester : 45
Number of Credits : 02

Objectives:

1. To have a practical knowledge of the DBMS concepts.
2. To learn the SQL queries
3. To implement DML operations using PL/SQL
4. To implement the advanced concepts of PL/SQL programming

Areas of Program:

SQL queries:

1. Simple, Nested, Join, Self Join, Order by & Date queries.
2. Enforcing Entity, Referential & Integrity constraints for any table.

PL/SQL Programs:

3. Programs using Type & Row type.
4. Programs using built-in commands and functions.
5. PL/SQL programs using if, loops statements.
6. Programs using cursors.
7. Programs to perform exception handling.
8. Programs using Triggers.

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SEMESTER IV

PART III - MAJOR COURSE

16UCA4L2 - DTP LAB

(For those admitted in June 2016 and later)

Contact hours per week : 03
Total number of hours per semester : 45
Number of Credits : 02

Objectives:

1. To train the students to implement various tools in Photoshop
2. To work with various objects in CorelDraw and Pagemaker.
3. To make the student understand the concept of animation.
4. To allow the students to create presentations using Photoshop.

Areas of Program:

1. Manipulating images in Adobe Photoshop using Filters.
2. Using Layer and Vector masks in Adobe PhotoShop.
3. Animating images using Adobe Photoshop.
4. Creating a Label Design using Photoshop
5. Creating snapshot using Photoshop
6. Converting Grayscale to color image using Photoshop
7. Creating Quick Slide mount using Photoshop
8. Creating Pop out effect using Photoshop
9. Creating natural scenery using Photoshop
10. Formatting Text in Adobe PageMaker using the Text Wrap, Column Guides and Autoflow options.
11. Designing Newspaper articles using the Autoflow and DropCaps option using Adobe PageMaker.
12. Manipulating images in Adobe Photoshop using Filters.
13. Manipulating objects and figures in Corel Draw.
14. Using the Corel Draw Effects Flyout options, Lens, PowerClips etc.

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DEPARTMENT OF COMPUTER APPLICATIONS

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SEMESTER V

PART III - MAJOR COURSE

16UCA51- SOFTWARE ENGINEERING

(for those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 04

Objectives:

1. To acquaint students with the basic concepts of software engineering.
2. To provide focal point for the course and various techniques in the different phases of the project.
3. To provide a strong foundation for software design.
4. To persuade students with the major issues that may occur in the software maintenance.

Unit – I

(12 hrs)

Introduction To Software Engineering: Definitions - Size Factors – Quality And Productivity Factors. **Planning A Software Project:** Defining The Problem – Developing A Solution Strategy – Planning The Development Process (Phased life cycle model, Milestones, Documents and Reviews, The Cost model, The Prototype life cycle model, Successive versions).

Unit – II

(12 hrs)

Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques (Expert Judgment, Delphi Cost Estimation, Work Breakdown Structures, Algorithmic Cost Models). **Software Requirement Definition:** The Software Requirements Specification – Formal Specification Techniques (Relational Notations, State Oriented Notations).

Unit – III

(12 hrs)

Software Design: Fundamental Design Concepts – Modules And Modularization Criteria(Coupling and cohesion, Other Modularization Criteria) – Design Notations - Design Techniques(Stepwise Refinement, Levels of Abstraction, Structured Design, Integrated Top Down Development, Jackson Structured Programming, summary).

Unit – IV

(12 hrs)

Modern Programming Language Features: Type Checking – Separate Compilation - User Defined Data Types – Data Abstraction(Data Encapsulation, Abstract Data Types, Generic Facility) – Scoping Rules - Exception Handling (PL/I and Ada) – Concurrency mechanisms(Shared Variables, Asynchronous Message Passing, Synchronous Message Passing).

Unit –V**(12 hrs)**

Verification And Validation Techniques: Quality Assurance – Walkthroughs and Inspections – System Testing(Integration Testing, Acceptance Testing). **Software Maintenance:** Enhancing Maintainability During Development – Managerial Aspects Of Software Maintenance - Configuration Management –Source Code Metrics – Other Maintenance Tools And Techniques.

Text Book:

Richard E. Fairley (2013), *Software Engineering Concepts*, McGraw–Hill Education (India) Private Limited, 39th reprint.

Chapters:

Unit I	: 1.1, 1.2, 1.3 (Pg: 1-22), 2.1, 2.2, 2.3 (Pg: 30-53)
Unit II	: 3.1, 3.2 (Pg: 64-79), 4.1, 4.2 (Pg: 88-114)
Unit III	: 5.1, 5.2, 5.3, 5.4 (Pg: 137-181)
Unit IV	: 7 (Pg: 228-263)
Unit V	: 8.1, 8.2, 8.6 (Pg: 267-275, 293-297), 9 (Pg: 311-327)

Reference Book:

1. Rohit Khurana (2007), *Software Engineering Principles and Practices*, Vikas Publishing House Pvt Ltd.
2. Roger S. Pressman (2010), *Software Engineering – A Practitioner’s Approach*, McGraw Hill International Books Company, Seventh Edition.

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SEMESTER V

PART III - CORE ELECTIVE COURSE

16UCASE1 - WEB TECHNOLOGY

(For those admitted in June 2016 and later)

Contact hours per week : 05

Total number of hours per semester : 75

Number of Credits : 05

Objectives:

1. To make the students learn about the basics of Internet
2. To enable the students to be familiar with the HTML tags.
3. To be acquainted with using Dynamic HTML effects.
4. To implant the students about the concepts of Client side and Server side Scripting.

Unit – I

(15 hrs)

Internet Basics: Basic Concepts – Communicating on the internet – Internet Domains– Internet server identities - Establishing connectivity on the internet – Client IP address – How IP addressing came into Existence – A Brief Overview of TCP/IP and its services - Transmission control Protocol - **Introduction to HTML:** Information Files Creation – Web Server – Web Client/Browser – HTML – Commonly Used HTML Commands – Titles and Footers – Text Formatting – Emphasizing Material in a Web page – Text Styles – Other Text Effects - **Lists:** Types of Lists - **Adding Graphics to HTML Documents:** Using the Border Attribute – Using the Width and Height Attribute - Using the Align Attribute – Using the ALT Attribute.

Unit – II

(15 hrs)

Tables: Introduction – Using the width and Border attributes - Using the Cellpadding Attribute - Using the Cellspacing Attribute - Using the BGCOLOR attribute - Using the Colspan and Rowspan Attributes - **Linking Documents:** Links – Images as hyperlinks - **Frames:** Introduction to frames – **Dynamic HTML:** Cascading Style Sheets – Class – Using the ... tag – External Style Sheets – Working with Javascript Style Sheets – Using the <DIV>...</DIV> Tag.

Unit – III

(15 hrs)

Java Script :Introduction to Java Script : Javascript in web pages – Javascript – Writing Javascript into HTML – Basic Programming Techniques – Operators and Expressions in Javascript – Javascript Programming Constructs – Conditional checking – Super Controlled Endless Loops – Functions in Javascript – User defined functions – Placing text in a browser–

Dialog boxes - **The Javascript Document Object Model:** Introduction – JSSS DOM – Understanding Objects in HTML – Browser Objects – The web page HTML object Hierarchy- Handling events using javascript - **Forms used by a Website:** The Form object – The Form objects method – Other Built-in objects in javascript – User defined objects. **Cookies:** What are cookies – Setting a cookie.

Unit – IV

(15 hrs)

What is PHP – **Learning PHP Syntax and Variables:** Comments – Variables – Types in PHP – The Simple Types – Output – **Learning PHP Control Structures and Functions:** Boolean Expressions – Branching – Looping – Alternate Control Syntaxes – Terminating Execution- Using Functions – Function Documentation – Defining your own functions – Functions and Variable scope – Function Scope.

Unit – V

(15 hrs)

Passing information with PHP: HTTP is Stateless – GET Arguments – A better use for GET-Style URLs – POST Arguments – Formatting Form Variables – PHP Superglobal Arrays – **Learning PHP String Handling:** String functions - **Learning Arrays:** The Uses of Arrays – What are PHP Arrays – Creating Arrays – Retrieving Values – Multidimensional Arrays – Inspecting Arrays – Deleting from Arrays – **Integrating PHP and MySQL:** Connecting to MySQL – Making MySQL Queries – Fetching Data Sets – Getting Data about Data – Multiple Connections – Building in Error Checking – Creating MySQL Databases with PHP – MySQL Functions – **Performing Database Queries:** HTML Tables and Database Tables – Complex Mappings – Creating the Sample Tables.

Text Books:

1. Ivan Bayross (2011), *Web enabled Commercial Application Development Using HTML, DHTML, JavaScript and PHP*, BPB Publications, 4th Revised Edition.

Chapters:

Unit I	: 1 (Pg: 1-11), 2 (Pg: 12-31), 3 (Pg: 33-37), 4 (Pg: 38-45),
Unit II	: 5 (Pg: 47-56), 6 (Pg: 58-71), 7 (Pg: 74 - 84), 12 (Pg: 213 - 225)
Unit III	: 8 (Pg: 124 – 148), 9 (Pg: 150 – 158), 10 (Pg: 160 – 189), 11 (Pg: 191 – 194)

2. Steve Suehring, Tim Converse, Joyce Park (2009), *PHP6 and MySQL*, Wiley Publishing.

Chapters:

Unit IV : **1** (Pg:3), **4** (Pg:39 – 57), **5** (Pg:59 – 98)

Unit V : **6** (Pg:99-110), **7** (Pg: 117-130), **8** (Pg:131 – 140), **15** (Pg:219-234),
16 (Pg:237 – 252)

Reference Books:

1. Larry Ullman (2011), *PHP and MySQL for Dynamic Websites*, Peachpit Press, Fourth Edition.
2. D.P. Nagpal (2009), *Web Design Technology (Theory and Technique on the cutting Edge)*, S. Chand Publishing

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SEMESTER V

PART III – CORE ELECTIVE COURSE

16UCA5E2– COMPUTER SECURITY

(For those admitted in June 2016 and later)

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of Credits	: 05

Objectives:

1. To discuss about conventional encryption algorithms and design principles
2. To provide the examination of public key encryption algorithms and design principles
3. To Cover important network security tools and applications
4. To find System level security issues

Unit – I

(15 hrs)

Introduction: Security Trends – The OSI Security Architecture – Security attacks- Security Services – Security Mechanisms - A Model for Network Security – **Classical encryption techniques:** Symmetric Cipher Model – Substitution Techniques – Transposition Techniques –Rotor Machines– Steganography. **Block Ciphers and the Data Encryption Standard:** Block Cipher Principles – The Data Encryption Standard – The Strength of DES– Differential and Linear Cryptanalysis.

Unit – II

(15 hrs)

Advanced Encryption Standard: Evaluation Criteria for AES – The AES Cipher **More on Symmetric Ciphers:** Multiple Encryption and Triple DES – Block Ciphers Modes of Operations- Stream Ciphers and RC4. **Public Key Cryptography and RSA:** Principles of Public-key Cryptosystems – The RSA Algorithm.

Unit – III

(15 hrs)

Key Management, Other Public-Key Cryptosystems: Key Management – Diffie-Hellman Key Exchange – Elliptic Curve Arithmetic – Elliptic Curve Cryptography – **Message Authentication and Hash Function:** Authentication Requirements – Authentication Functions-Message Authentication codes -Hash functions. **Hash and MAC Algorithms:** Secure Hash Algorithm. **Digital Signatures and Authentication Protocols:** Digital Signatures – Authentication Protocols - Digital Signatures Standard.

Unit – IV

(15 hrs)

Electronic-Mail Security: Pretty Good Privacy – S/MIME – **IP Security:** IP Security Overview – IP Security Architecture - **Web Security :** Web security Consideration- Secure Socket Layer and Transport layer security – Secure Electronic Transaction.

Unit – V

(15 hrs)

Intruders: Intruders – Intrusion Detection – Password Management –
Malicious Software: Viruses and Related Threats – Virus Countermeasures – Distributed Denial of service Attacks – **Firewalls:** Firewall Design Principles - Trusted systems.

Textbook:

William Stallings (2006), *Cryptography and Network Security – Principles and Practices*, Pearson Education, Fourth Edition.

Chapters:

- Unit I : **1.1 - 1.6** (Pg: 9-24), **2.1- 2.5** (Pg: 30-55). **3.1 – 3.4** (Pg: 64-86).
Unit II : **5.1- 5.2** (Pg: 135-160), **6.1-6.3** (Pg: 175-194), **9.1- 9.2** (Pg: 259-280).
Unit III : **10.1 - 10.4** (Pg: 290-313), **11.1 -11.4** (Pg: 319-340), **12.1** (Pg: 353-358),
13.1- 13.3 (Pg: 378-393).
Unit IV : **15.1-15.2** (Pg: 438-473), **16.1- 16.2** (Pg: 485-493),
17.1-17.3 (Pg: 527-549).
Unit V : **18.1-18.3** (Pg: 565-591), **19.1 -19.3** (Pg: 599-619),
20.1 - 20.2 (Pg: 622-640).

Reference books:

1. Charles. P. Pfleeger, Shari Lawrence Pfleeger, Deven N.Shah (2007), *Security in Computing*, 4th Edition, Prentice Hall.
2. Paul Campbel, Ben Calvert, Steven Bosweel (2004), *Security + In Depth*, Vijay Niwle Imprints Pvt Ltd.

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SEMESTER V

PART III – CORE ELECTIVE COURSE

16UCA5E3 - OPERATIONS RESEARCH

(For those admitted in June 2016 and later)

Contact hours per week : 05

Total number of hours per semester : 75

Number of Credits : 05

Objectives:

1. To contribute a bridge connecting various branches of Computer Science and Mathematics.
2. To know what is a LPP and the methods to solve it.
3. To have knowledge in Transportation Problem and Assignment problem and the methods to solve them.
4. To understand various concepts in Game Theory

Unit – I

(15 hrs)

Linear Programming Problem : Introduction – Linear Programming Problem
Mathematical Formulation of the Problem - Graphical solution of LPP – Some Exceptional
Cases – General Linear Programming Problem – Canonical form and Standard Forms of
L.P.P.

Unit – II

(15 hrs)

Simplex method : Introduction - Computational procedure- Use of Artificial
Variables –Degeneracy in Linear Programming - **Duality in Linear programming** :
Introduction – General Primal – Dual Pair – Formulating a Dual Problem – Duality in
Simplex Method.

Unit – III

(15 hrs)

Assignment Problem : Introduction - Mathematical formulation of the Problem-
Solution Methods of Assignment problem – Special Cases in Assignment Problems.

Unit – IV

(15 hrs)

Transportation problem : Introduction - LP Formulation of the Transportation
Problem –Existence of Solution in LP – The Transportation Table – Loops in Transportation
Tables – Solution of Transportation Problem - Finding an Initial Basic Feasible Solution –
Test for Optimality – Degeneracy in Transportation problem – Transportation
Algorithm(MODI Method).

Unit V

(15 hrs)

Games and Strategies : Introduction – Two-Person Zero-Sum Games – Some Basic
Terms – The Maximin-Minimax Principle - Games Without Saddle Points – Mixed
Strategies- Graphical Method For $2 \times n$ and $m \times 2$ Games.

Text Book:

Kanti Swarup, P.K. Gupta, Man Mohan (2008), *Operations Research*, Sultan Chand and Sons, Thirteenth Edition .

Chapters:

Unit I : 2.1 – 2.4 (Pg: 39 – 64), 3.1 – 3.5 (Pg: 65 – 84)

Unit II : 4.1, 4.3 - 4.5 (Pg: 87 – 89, 99 – 116),
5.1 – 5.3, 5.7 (Pg: 129- 130, Pg: 138 -143)

Unit III : 11.1 -11.4 (Pg: 295 – 315)

Unit IV : 10.1 – 10.3 (Pg: 247 – 248) , 10.5, 10.6 (Pg: 250),
10.8 -10.10 (Pg: 252-259), 10.12, 10.13, 10.15 (Pg: 261 – 266,273-282).

Unit V : 17.1 – 17.6 (Pg: 443 – 457)

Reference Books :

1. Sharma S.D. (2006), *Operations Research*, Kedar Nath Ram Nath and Co., 15th Edition.
2. Hamdy A.Taha (2002), *Operations Research – An Introduction*, Prentice Hall of India Private Ltd, New Delhi, Sixth Edition.

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SEMESTER V

PART III – CORE ELECTIVE COURSE

16UCA5E4 – NUMERICAL METHODS

(For those admitted in June 2016 and later)

Contact hours per week : 05

Total number of hours per semester : 75

Number of Credits : 05

Objectives:

1. To acquire knowledge in solving algebraic equations.
2. To know the various methods used in Interpolation.
3. To develop skills in solving problems in numerical differentiation and integration.
4. To apply the various formulae in other appliances.

Unit I: (15 hrs)

Numerical solution of algebraic equations: Introduction – The Bisection Method – Method of Successive Approximations – The Method of False position – Newton Raphson Method – Horner’s Method (Problems only).

Unit II: (15 hrs)

Simultaneous Linear algebraic equations : Introduction – Gauss Elimination Method – Method of Triangularisation – **Iterative Methods:** Jacobi Method of Iteration – Gauss - Seidal Method of Iteration – Finite Differences – First Differences – Higher Differences - Difference Tables – Backward Differences (Problems only).

Unit III: (15 hrs)

Interpolation: Introduction – Linear Interpolation – Gregory-Newton Forward Interpolation Formula – Gregory–Newton Backward Interpolation Formula – Divided Differences – Newton’s Interpolation Formula for Unequal Intervals – Lagrange’s Interpolation Formula – Inverse Interpolation (Problems only).

Unit IV: (15 hrs)

Numerical differentiation and Integration: Introduction - Newton’s Forward Difference Formula to compute the Derivatives – Newton’s Backward Difference Formula to compute the Derivatives – Numerical Integration – The Trapezoidal Rule – Simpson’s Rule (Problems only).

Unit V: (15 hrs)

Numerical solution of ordinary differential equations: Solution by Taylor’s series– Euler’s method – Improved Euler’s method - Modified Euler’s method - Runge-Kutta Methods – Second order Runge-Kutta Method – Higher Order Runge-Kutta Methods – Predictor – Corrector Methods - Milne’s predictor Corrector Formulae (Problems only).

Text Book:

Dr. M. K.Venkataraman (2006), *Numerical Methods in Science and Engineering*.

Chapters:

- Unit I : 3.1 – 3.5, 3.8 (Pg: 81–98, 102–112)
- Unit II : 4.1, 4.2, 4.4, 4.6, 4.7 (Pg: 113 – 120, 126 – 131, 140 -146)
5.1 – 5.7 (Pg: 153 – 159)
- Unit III : 6.1 -6.4 (Pg: 193 – 205) , 8.1, 8.3, 8.4, 8.5(Pg: 244 – 246, 249 -264)
- Unit IV : 9.1 – 9.3, 9.7, 9.8, 9.10 (Pg: 265 – 269, 272 – 274, 279 – 283, 285 – 295)
- Unit V : 11.6, 11.10 – 11.15, 11.19, 11.20 (Pg: 336 -340, 350 -363, 370 -379)

Reference Book:

1. S.Arumugam, A.Thangapandi Issac, A.Soma Sundaram (2007), *Numerical Methods*, Scitech Publications PVT Ltd., Chennai.
2. P.Kandasamy (2013). *Numerical Methods*, Sultan Chand & Co. PVT Ltd., Ramnagar, New Delhi.

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SEMESTER V

PART III - MAJOR COURSE

16UCA5L1 - WEB TECHNOLOGY LAB

(For those admitted in June 2016 and later)

Contact hours per week	: 06
Total number of hours per semester	: 90
Number of Credits	: 04

Objectives:-

1. To enable the students to implement realistic and creative knowledge in order to build lively web pages.
2. To make the students to learn the usage of multimedia effects in web page.
3. To acquaint the students with the concept of scripting.
4. To make the students get hold of the idea about server side scripting using PHP.

HTML

1. Design a webpage which consist of ordered and unordered list of information.
2. Design a webpage with a table.
3. Design a website to link more than one page using hyper link.
4. Design a webpage to link pages using image mapping.
5. Design a website for advertisement using frames.
6. Design a webpage to design an application form.

DHTML

7. Design a webpage to design a page using <STYLE> tag.
8. Design a webpage using <DIV> tag to change the color of the hyperlink.

Java Script

9. Design a webpage to validate the registration form
10. Design a webpage to display digital clock
11. Design a webpage to change background color and image
12. Design a webpage to perform Password Validation
13. Design a webpage for Matrix Manipulations

PHP

14. Design a website using Get and Post arguments
15. Design a webpage using string functions
16. Design a webpage using arrays.
17. Design a webpage to display EB details from database

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SEMESTER V

PART III - MAJOR COURSE

16UCA5L2 - ANIMATION TECHNOLOGY LAB

(For those admitted in June 2016 and later)

Contact hours per week : 05

Total number of hours per semester : 75

Number of Credits : 03

Objectives:

1. To inculcate the knowledge about animation techniques.
2. To learn the basics and to take advantage of the latest animation softwares.
3. To enhance the student's artistic and creative work
4. To develop skills to design animation for window based and internet.

Programs :

1. Motion Tweening and Shape Tweening using Flash
2. Motion Guide Layer using Flash
3. Text Masking and Image Masking using Flash
4. Onion Skin animation using Flash
5. Programs Using Simple Scripts using Flash
6. Title scrawling and rolling effect using Premier Pro
7. Applying video transitions and Video Effects in Premier Pro
8. Scenes Using Standard, Extended Primitives And Architectural Objects in 3d max
9. Drawing And Editing Splines And Shapes in 3d max
10. Scenes Using Modifiers Like Hair And Fur, Melt, Spherify, Taper, Etc. in 3d max
11. Biped Animations in 3d max
12. Scene Using Crowd Systems in 3d max
13. Apply Light And Shadows To Scene in 3d max
14. Creating Cameras in 3d max
15. Scenes Using Particle Systems And Space Wraps in 3d max

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SEMESTER VI

PART III - MAJOR COURSE

16UCA61 – COMPUTER NETWORKS

(For those admitted in June 2016 and later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of Credits	: 04

Objectives:

1. To familiarize the concepts behind types and applications of various networks.
2. To focus the services provided by the various layers of the network reference models and their applications.
3. To have a thorough knowledge in various networking protocols.
4. To understand the concepts of network security

Unit – I

(12 hrs)

Introduction: Uses of Computer Networks (Business Applications, Home Applications, And Mobile Users) – Network Hardware – Network Software – Reference Models (The OSI Reference Model, The TCP/IP Reference Model, A Comparison of the OSI and TCP/IP Reference Models) – Example Networks (The Internet, Wireless LANs: 802.11).

Unit – II

(12 hrs)

The Physical Layer: Guided Transmission Media – Wireless Transmission Media – Communication Satellites – The Public Switched Telephone Network (Structure of the Telephone System, The Local Loop: Modems, ADSL, and Wireless, Trunks and Multiplexing – Switching).

Unit – III

(12 hrs)

The Data Link Layer: Data Link Layer Design Issues – Error Detection and Correction – Elementary Data Link Protocols – Sliding Window Protocols – Ethernet (Ethernet Cabling, Manchester Encoding, The Ethernet MAC Sublayer Protocol) – Bluetooth – Data Link Layer Switching (Repeaters, Hubs, Bridges, Switches, Routers, and Gateways).

Unit – IV

(12 hrs)

The Network Layer: Network Layer Design Issues – Routing Algorithms (The Optimality Principle, Shortest Path Routing, Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcast Routing, Multicast Routing) – Congestion Control Algorithms – **The Transport Layer:** Elements of Transport Protocols – The Internet Transport Protocols: UDP (Introduction to UDP, Remote Procedure Call) – **The Internet Transport Protocols:** TCP (Introduction to TCP, The TCP Service Model, The TCP Protocol, The TCP Segment Header, TCP Connection Establishment, TCP Connection Release, Wireless TCP and UDP).

Unit – V**(12 hrs)**

The Application Layer: DNS-The Domain Name System – Electronic Mail – **Network Security:** Cryptography (Introduction to Cryptography, Substitution Ciphers, Transposition Ciphers)– Symmetric Key Algorithms (DES-The Data Encryption Standard, Cipher Modes) – Public Key Algorithms (RSA) – Digital Signatures (Symmetric Key Signatures, Public Key Signatures).

Text Book:

Andrew S. Tanenbaum(2011), *Computer Networks*, Prentice Hall of India, Fourth Edition,

Chapters:

- Unit I : **1.1** (Pg: 3-12), 1.2-1.4 (Pg: 14-46), 1.5 (Pg:49-59, 68-71)
- Unit II : **2.2 – 2.5** (Pg: 90-122, 124-152)
- Unit III : **3.1- 3.4** (Pg: 184–229), **4.3** (Pg: 271–278),
4.6, 4.7 (Pg: 310-318, 326-329)
- Unit IV : **5.1 - 5.3** (Pg: 343-372, 384-397), **6.2** (Pg: 492-513), **6.4** (Pg: 524-529),
6.5 (Pg: 532-541, 553-555),
- Unit V : **7.1, 7.2** (Pg: 579-611), **8.1** (Pg: 724-730),
8.2 (Pg: 737-741, 745-750), **8.3** (Pg: 752-755), **8.4** (Pg: 755-759)

Reference Books:

1. Larry L. Peterson & Bruce S. Davie (2008), *Computer Networks - A systems Approach*, 4th Edition, Morgan Kaufmann Publishers.
2. Behrouz A. Forouzan (2007), *Data Communications and Networking*, Tata McGraw Hill, 3rd edition, Twentieth reprint.

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SEMESTER VI

PART III – MAJOR COURSE

16UCA62 – .NET PROGRAMMING

(For those admitted in June 2016 and later)

Contact hours per week : 05
Total number of hours per semester : 75
Number of Credits : 04

Objectives:

1. To acquaint the students about the concept of .NET framework.
2. To enable the students to build windows forms applications with various controls.
3. To inculcate the students the knowledge of drag and drop techniques.
4. To insist the students the necessity of web based design.

Unit – I

(15 hrs)

Getting started with .NET framework 3.5: Introducing .NET framework – Architecture of .NET framework 3.5 – Components of .NET framework 3.5 – **Introducing Visual Basic 2008:**– Keywords – Visual Basic Statements – Option and Imports Statements – Namespace – Data Types – Variables and Constants – Operators – Arrays – Enumerations – Strings – Val and Str Functions.

Unit – II

(15 hrs)

Windows Forms Controls - I: The Control Class – The Button Control – The Label Control – The TextBox Control – The RichTextBox Control – The MaskedTextBox Control - The List box control – The Checked List box control - The Combo box control – **Windows Forms Controls - II:** The Radio button control – The CheckBox control – The ListView control – The TreeView control – The Panel control – The GroupBox control – The Tab control.

Unit – III

(15 hrs)

Windows Forms Controls - III: The ImageList Control - The Picture box control – The MonthCalendar control – The DateTimePicker control – The Timer control – The ProgressBar Control - **Windows Forms Controls - IV:** The ToolStrip control – The MenuStrip control – The StatusStrip control – **Developing windows mobile applications:** Introduction – New features – Creating a Simple Smart Device Application - Developing a Database driven Smart Device Application.

Unit – IV

(15 hrs)

ASP.NET: Application structure and state: Structure of an application - The global.asa – Using States – HTTP handlers – **Web Forms: Standard controls:** The control class – The WebControl Class - using CSS in web applications – The Label control – The Button control - The Textbox control – The Literal control - The Placeholder control – The Hiddenfield control - The Fileupload control – The Image control - The ImageMap control – The Listbox control - The Dropdown control – The BulletedList control - The Hyperlink control – The LinkButton control - The CheckBox control – The RadioButton control - The Table control.

Unit - V

(15 hrs)

Navigation controls: The Tree view control – The Menu control – Creating Static Menus – Creating Dynamic Menus - **Validation controls:** The Base Validator class – The Required Field Validator Control – The Range Validator Control – The Regular Expression Validator Control - The Compare Validator Control - The Custom Validator Control - The Validation Summary Control - **Working with Database controls:** The Grid view control – The Data list Control – The Details view control – The Form view control – The List view control – The Repeater control – The Data pager control – The SqlDataSource control.

Text Book:

.NET 3.5 programming Black Book (2011), Kogent Learning Solutions Inc., Dreamtech Press.

Chapters:

- Unit I : **1** (Pg: 1- 16) , **3** (Pg: 74 – 99).
Unit II : **5** (Pg: 142 – 199), **6** (Pg: 201 – 234).
Unit III : **7** (Pg: 238 – 262), **8** (Pg: 265- 299), **9** (Pg: 323 – 337).
Unit IV : **28** (Pg: 987 – 998), **29** (Pg: 1003 – 1056)
Unit V : **30** (Pg: 1069 – 1096), **31** (Pg: 1105 – 1119), **33** (Pg: 1165 – 1202)

Reference Books:

1. Jeffrey R.Shapiro (2006), *The Complete reference Visual Basic .Net*, Tata Mc Graw- Hill edition, Ninth reprint.
2. Stephen Walther (2006), *ASP .Net 2.0*, Pearson Education.

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SEMESTER VI

PART III – CORE ELECTIVE COURSE

16UCA6E1 - CLOUD COMPUTING

(For those admitted in June 2016 and later)

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of Credits	: 05

Objectives:

1. To understand Cloud architecture.
2. To explore real applications.
3. To inculcate the knowledge of Cloud Security.
4. To insist the Cloud storage and communication.

Unit – I

(15hrs)

Cloud Seeding – So What’s New? – Key Industry Players – It’s Getting Clouded in Here – Of Moisture and Ions – Seeding Your Own Cloud – **Process and Operating Model:** The First steps – Illustrative example of VDDM – The next steps – Automation – **Cloud Maturity Model:** Frame work methodology – Defining Cloud maturity strategy – Using the maturity model

Unit – II

(15hrs)

Infrastructure: – Hardware – Core – The Hypervisor – Cloud Security – Skews and Pods – Backend infrastructure – Storage – **Monitoring:** Ingredients of Monitoring – The Evolution of Monitoring – Making it happen – Built the Stack – Pulling it Together

Unit – III

(15hrs)

Automation: Incident Management – Configuration Management – Release Management – Delivery of service – Strategy to change – Automation the existing enterprise – Automation of Business results – **Implementation example:** Minute/ Micro/Small and Medium Business – Medium / Large Business – Summing it up

Unit – IV

(15hrs)

Premier on some of the leading Cloud Providers: Heavy Duty and Batch Processing – Amazon Cloud Services – Google Cloud Platform – IBM Smart Cloud services – Microfoft Windows Azure – What is Hadoop? – Four Application of a Cloud Application – **As the Cloud Go** – E-mail.

Unit – V

(15hrs)

Cloud Solutions and Services: Cloud solutions for consumers– Email – On-line calendars integrated with E-mail – Online photo sharing and services – Social Networking – Mobile Social Networking and Social media – Storage and Backup – Instant Messaging – Smartness behind the Smart Devices – On-line gaming and Network Gaming – Cloud services in the Enterprise –Content Availability and synchronization – Collaboration and conferencing.

Text Book:

Aravind Doss and Rajeev Nanda (2013), '*Cloud Computing – A Practitioner's Guide*, McGraw Hill Education (P).Ltd.

Chapters:

Unit I	: 1 (Pg: 2-11), 3 (Pg: 36-55), 4 (Pg: 56-67)
Unit II	: 5 (Pg: 68-94), 6 (Pg: 98-112),
Unit III	: 7 (Pg: 115-125), 8(126-141)
Unit IV	: 9 (Pg: 142-160), 10 (Pg: 174-206),
Unit V	: 11 (Pg: 214-260)

Reference Books:

1. Antony T Velte(2011), *Cloud Computing : A Practical Approach*, Tata McGraw Hill.
2. Judith Hurwitz, Robin Bloor, Marcia Kaufman, Fern Halper(2010), *Cloud Computing for Dummies*, Wiley India.
3. Barrie Sosinsky (2011), *Cloud Computing Bible*, Reprint by Wiley India (P).Ltd.

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SEMESTER VI

PART III - CORE ELECTIVE COURSE

16UCA6E2- MICROPROCESSORS AND INTERFACING

(For those admitted in June 2016 and later)

Contact hours per week : 05

Total number of hours per semester : 75

Number of Credits : 05

Objectives:

1. To present integrated approach to hardware and software in the context of 8085 microprocessor
2. To learn the complete instruction set of 8085,8086 and 80386
3. To give greater emphasis to the interfacing aspects of memory and I/O devices
4. To give a number of practical real-life application examples

Unit – I

(15 hrs)

Introduction To The Microprocessor And Computer: Historical Background – Number Systems - Computer Data Formats. **The Microprocessor And its Architecture:** Internal Microprocessor Architecture – Real Mode Memory Addressing – Introduction to Protected Mode Memory Addressing-Memory Paging.

Unit – II

(15 hrs)

Addressing Modes: Data Addressing Modes – Program Memory Addressing Modes– Stack Memory Addressing Modes. **Arithmetic and Logic Instructions:** Addition, Subtraction and Comparison – Multiplication and division – BCD and ASCII Arithmetic – Basic Logic Instructions.

Unit – III

(15 hrs)

Program Control Instruction : The Jump Group – Procedures – Introduction to Interrupts – Machine Control and Miscellaneous Instructions. **8086/8088 Hardware Specifications:** Pin-Outs and the Pin Functions – Clock generator – Bus Buffering and Latching – Bus Timing – READY and the Wait State.

Unit – IV

(15 hrs)

Memory Interface: Memory Devices – Address Decoding – 8088 and 80188 (8-bit) Memory Interface. **Interrupts:** Basic Interrupt Processing – Hardware Interrupts.

Unit – V

(15 hrs)

Bus Interface: The ISA Bus – The Extended ISA and VESA Local Bus Architectures– The Parallel Printer Interface – The Universal Serial Bus. **The 80186, 80188 And 80286 Microprocessors:** 80186/80188 Architecture.

Text Book

Barry B. Brey & C.R.Sarma– (2005). *The Intel Microprocessors - Architecture, Programming, and Interfacing* First Reprint.

Chapters:

Unit I	: 1 (Pg: 1 to 25), 2 (Pg: 32 to 51)
Unit II	: 3 (Pg: 56 to 81), 5 (Pg: 123 to 144)
Unit III	: 6 (Pg: 153 to 172), 8 (Pg: 226 to 246)
Unit IV	: 9 (Pg: 258 to 276), 11 (Pg: 357 to 373)
Unit V	: 13 (Pg: 404 to 421), 14 (Pg: 423 to 430)

Reference Books:

1. Ramesh Gaonkar (2009), *Microprocessor Architecture, Programming and Applications with the 8085*, Fifth Edition, Penram International Publishing (India) Private Limited.
2. A.K.Ray, Bhurchadi (2008), “Advanced Microprocessor and peripherals”, Tata Mcgraw hill, Second edition.

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SEMESTER IV

PART III – CORE ELECTIVE COURSE

16UCA6E3 - GRAPHICS AND MULTIMEDIA

(For those admitted in June 2016 and later)

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of Credits	: 05

Objectives:

1. To have an overview on 2D concepts.
2. To learn how to draw circle, ellipse generating algorithms.
3. To introduce the concept of Computer Animation.
4. To provide an exposure on new technologies in Multimedia

Unit – I (15 hrs)

A Survey of Computer graphics: Computer Aided Design – Presentation Graphics- Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces –**Overview of graphics systems:** Video display Devices – Raster Scan systems – Random Scan systems - Input devices – Graphics Software.

Unit - II (15 hrs)

Output Primitives: Points and lines –Line drawing algorithm (DDA algorithm, Bresenham Algorithm, Parallel line algorithms) – Circle generating algorithms (Properties of Circle, midpoint Circle algorithm) – Ellipse-generating algorithms (Properties of Ellipse, midpoint Ellipse algorithm) – Filled area primitives – **Attributes of output primitives:** Line attributes – Curve Attributes - Color and Grayscale levels - Character Attributes.

Unit – III (15 hrs)

Two dimensional Geometric Transformations: Basic Transformations: Translation- Rotation – Scaling – Other Transformations – **Two Dimensional Viewing:** The Viewing Pipeline - Clipping Operations -Point Clipping - Line Clipping -- Polygon Clipping.

Unit – IV (15 hrs)

Text: Objectives- Elements of Text – Text Data Files – Using Text in Multimedia Applications – Hypertext - **Graphics:** Objectives- Elements of Graphics - Images and Color- Graphics File and Application Formats- Obtaining Images for Multimedia Use – Using Graphics in Multimedia Applications.

Unit – V (15 hrs)

Digital Audio: Objectives- Characteristics of Sound and Digital Audio –Digital Audio Systems – MIDI - Audio File Formats- Using Audio in Multimedia Applications-**Digital**

Video and Animation: Objectives - Background on Video - Characteristics of Digital Video - Digital Video Data Sizing - Video Capture and Playback Systems - Computer Animation – Using Digital Video in Multimedia Applications.

Text Books:

Donald D Hearn & M. Pauline Baker (2011), *Computer Graphics*, C Version, Pearson Education, Second Edition.

Chapters:

Unit I : **1** (Pg:22-54), **2** (Pg:55-99)
Unit II : **3.1 – 3.2**(Pg: 104-114), **3.5 – 3.6**(Pg: 117-130), **3.11**(Pg: 137-150)
4.1 -- 4.3(Pg: 164-177), **4.5** (Pg: 183 - 188)
Unit III : **5.1** (Pg: 204-208), **5.4** (Pg: 221-225)
6.1(Pg: 237-239), **6-5 to 6-7** (Pg: 244-263)
11.1 – 11.2 (Pg: 428-433) **11.3** (Pg: 440-442)

David Hillman (2010) - *Multimedia Technology & Applications* – Galgotia publications Pvt Ltd.

Chapters:

Unit IV : **4** (Pg: 67-81), **5** (Pg: 83-103)
Unit V : **6** (Pg: 105-121), **7** (Pg: 123-147)

Reference Books:

1. Steven Harrington, *Computer Graphics- A Programming Approach* ,Tata McGraw Hill Pub.
2. Ranjan Parekh (2013), *Principles of Multimedia 2e*, The Tata McGraw Hill Publications, Second Edition.

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DEPARTMENT OF COMPUTER APPLICATIONS**

B. C.A.

SEMESTER VI

PART III – MAJOR COURSE

16UCA6L - .NET PROGRAMMING LAB

(for those admitted in June 2016 and later)

Contact hours per week : 05

Total number of hours per semester : 75

Number of Credits : 03

Objectives:

1. To acquaint the students the concept of .NET framework.
2. To enable the students to design websites with the help of web controls.
3. To inculcate the knowledge of web designing to the students.
4. To emphasize the concept of database programming to the students.

Areas of Program:

VB.NET

1. List box and combo box operations.
2. Design simple calculator.
3. Simple animation programs using Timer control.
4. Programs using file system control.
5. Programs using Tree view control.
6. Programs using advanced controls.
7. Programs using Menu control.

ASP .NET

8. Programs using standard controls.
9. Programs using navigation controls.
10. Programs using validation controls.
11. Design simple webpage for any organisation.
12. Programs using database controls

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DEPARTMENT OF COMPUTER APPLICATIONS**

B. C.A.

SEMESTER VI

PART III – MAJOR COURSE

16UCA6P - PROJECT WORK

(For those admitted in June 2016 and later)

Contact hours per week : 06
Total number of hours per semester : 90
Number of Credits : 04

Rules:

1. During the sixth semester, the students have to undertake a group project by selecting a problem of their choice pertaining to the course. Each group shall contain a maximum of 2 students.
2. Each group should submit two copies of their project report on or before the specified date to their respective project guides.
3. The total mark for Project work is 100. The project report, viva voce and presentation will be evaluated by both Internal and External Examiners for 100 marks.
4. For a pass in the project, each student should secure a minimum of 40% of marks.
5. If a student fails to get a minimum pass mark, she may be permitted to resubmit her project report once again within the period of six months after the publication of results.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
SEMESTER III
PART IV – NON – MAJOR ELECTIVE COURSE I
16UCA3N – ANIMATION SOFTWARE
(For those admitted in June 2016 and later)

Contact hours per week : 02
Total number of hours per semester : 30
Number of Credits : 02

Objectives:

1. To enable the students to know about animation
2. To learn the basics and to take advantage of the latest technology in Flash.
3. To enhance the creativity of the students
4. To create animations not only for window based programs but for internet too.

Unit - I

(6 hrs)

Introduction to Flash CS5: Introduction – starting Flash CS5 – **Tools of Flash CS5:**

Introduction – selection tool – the free transform tool – the lasso tool – the pen tool – the line tool – the pencil tool – the deco tool – the bone tool – the eye dropper tool – the hand tool – the black and white tool – the snap to objects tool – the subselection tool – the 3d rotational tool – the text tool – the rectangle tool – the brush tool – the paint bucket tool – the eraser tool – the magnifier tool – the fill tool

Unit- II

(6 hrs)

Drawing and Editing objects in Flash CS5: Introduction – drawing lines –

formatting the line – drawing a custom line – drawing curves with the pen tool – drawing oval shape – drawing rectangle shape – drawing rectangle with rounded corners – drawing with brush tool – filling shapes with paint bucket tool – filling shapes with gradient fill – editing objects – selecting objects – selecting by dragging – selecting irregular objects – selecting part of an object – moving the object – copying the object – changing the line segment length – changing the line shape – editing fills – editing the fill colour – resizing objects – adding strokes to shapes – rotating an object – flipping an object – using the eraser tool – creating gradient effect – creating new gradient – adjusting colour intensity – editing colour set – copying line attributes – grouping objects – locking group items – unlocking group items – stacking items – aligning items

Unit – III

(6 hrs)

Creating and editing artworks in Flash CS5 : Introduction to drawing – drawing

modes and graphic objects – reshape lines and shapes – selecting objects – snapping art into position - moving and copying objects – delete objects – colour palettes – create or edit a solid

colour – create or edit a gradient fill – adjust stroke and fill colour – duplicate, delete and clear colours

Unit – IV

(6 hrs)

Working with text in Flash CS5 : Introduction – Creating text with text tool – Formatting the text. **Working with layers in Flash CS5 :** Introduction – Adding a layer – Deleting a layer – Setting Layer properties – Working with Layers in Flash CS5. **Working with animations in Flash CS5 :** Introduction – Setting speed and Dimensions of the document – Adding Frames – Creating Animation Frame by Frame – Selecting Frames. **Working with sounds in Flash CS5 :** Introduction – Importing Sound – Adding sound layer– Assigning sound to the layer – Assigning sound to the buttons – Creating sound events

Unit - V

(6 hrs)

Creating buttons in Flash CS5: Introduction – Creating a button symbol – Creating Shape Changing Buttons – Adding an Animation – Assigning a Button Action . **Using tweens and actions in Flash CS5 - Distributing Flash movies :** Introduction – Playing Flash movie in Flash - Playing Flash movie in Browser – Publishing a movie

Text Book:

Roshan Lodha (2010), “Flash CS5”, Lawpoint Publications, First Edition

Chapters:

Unit I	: 1 (Pg: 1 - 5), 2 (Pg: 35 - 52)
Unit II	: 4 (Pg: 59 - 82)
Unit III	: 5 (Pg: 83 – 90, 93 – 96, 102 – 104, 106 – 109, 112 - 119)
Unit IV	: 3 (Pg: 53 – 58), 6(Pg: 133 – 138), 7(Pg: 139 – 146) , 8(Pg: 147 – 154)
Unit V	: 9(Pg: 155 – 162), 10(Pg: 163-175), 11(Pg: 177 – 182)

Reference Books:

1. Bonnie Blake, Doug Sahlin (2004), “Macromedia Flash MX 2004, A Beginner’s guide”, Dreamtech Press.
2. Perkins (2010), “Adobe Flash Professional CS5 Bible”, Wiley publishing

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DEPARTMENT OF COMPUTER APPLICATIONS

B.C.A

SEMESTER IV

PART IV – NON – MAJOR ELECTIVE COURSE II

16UCA4N – WEB DESIGNING

(For those admitted in June 2016 and later)

Contact hours per week : 02

Total number of hours per semester : 30

Number of Credits : 02

Objectives:

1. To insist the students about the necessity of web design.
2. To enable the students to know about the use of markup tags.
3. To make the students to gain the knowledge of formatting text and linking.
4. To inculcate the knowledge of Web Page Development to the students.

Unit I

(6 hrs)

Introduction : HTML (Structure, Content, Style)– DHTML - **Document tags**: Tag structure – Attributes – Minimal XHTML Document - **Markup tags** : Head – Lists – Comments – Preformatted text – quotations – Addresses – Aligning text – Horizontal rules – Forced Line breaks.

Unit II

(6 hrs)

Character Formatting : Logical Versus Physical style – Physical Styles – Logical styles – Creating bold text with - Creating Italic text with <i> - Creating Underline text - Creating strikethrough text – changing font size – superscripting and subscripting – Emphasizing – Abbreviations and Acronyms – Defining Phrases – Creating Editing Mark Adding Citations and Quotations – Displaying Code - Variables.

Unit III

(6 hrs)

Linking : Absolute Links – Relative Links - In-text links – Establishing a base - Linking with Tab keys – Linking to Another Web Site – Linking to Non-Web Internet Services – **Background, Colouring text**: Background – Colouring text – Colouring links.

Unit IV

(6 hrs)

Images: Choosing an image – Image alignment – Image sizing – Link images – External images, sounds and animations - **Tables**: Defining a simple table – Fine tuning a table - Width of a table – Column groups – Header, Footer and body of table.

Unit V

(6 hrs)

Frames : Introduction - Creating frames – Special frame effects – Creating links to other frames – Browsers do not see Frames – Inserting inline frames – **Cascading Style Sheets**: Introduction – Mechanics of style sheets – creating style sheet – Creative Links.

Text Book:

D.P. Nagpal (2009), *Web Design Technology (Theory and Technique on the cutting Edge)*.

Chapters:

Unit I : 1 (Pg: 2-5, 8), 2 (Pg: 10 - 19), 3 (Pg: 25 - 57)

Unit II : 4 (Pg: 58 - 81)

Unit III : 5 (Pg: 82 - 97), 6 (Pg: 98 - 106)

Unit IV : 6 (Pg: 106 - 114), 7 (Pg: 115 - 143)

Unit V : 8 (Pg: 144 - 158), 9(Pg: 159-180)

Reference Books:

1. Achyut S Godbole, Atul Kahate (2006), *Web Technologies – TCP/IP to Internet Application Architectures*, Fifth Reprint.
2. Chris Bates (2003), *Web Programming – Building Internet Applications*, Wiley-dreamtech India Pvt. Ltd., Second Edition.
3. Ivan Bayross (2007), *Web enabled Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI*, BPB publications, 3rd Revised Edition.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
PART IV – NON – MAJOR COURSE (OPEN OPTION)
JOB ORIENTED COURSE
16UJO62 – ANDROID APPLICATION DEVELOPMENT
(For those admitted in June 2016 and later)

Contact hours per week : 02
Total number of hours per semester : 30
Number of Credits : 02

Objectives:

To enable the students

1. To learn the Importance Of Android Application
2. To build Android Application
3. To know the difference between Android and other mobile Application Environments
4. To know the importance of android in network services.

Unit I **(6 hrs)**

Introduction To Android: Overview of Android-Open Handset Alliance(OHA)– Dalvik Virtual Machine & .APK file extension-Android Versions and Features-Architecture of Android-Android Devices-Obtaining the Required Tools-Eclipse-Android SDK-Android Development Tools(ADT) –Creating Android Virtual Devices –Creating your First Android Application-Application Life Cycle-Application Components-Manifest File-R File-XML based Layout-Eclipse Visual Layout Editor.

Unit II **(6 hrs)**

Android Activities and UI Design: Understanding Intent, Activity, Activity LifeCycle and Manifest-Creating Application and new Activities-Expressions and Flow control,Android Manifest-Simple UI-Layouts and Layout Properties-Fundamental Android UI Design-Menus-Introduction to Layouts-create new layouts-Drawable Resources- XML Introduction to GUI objects.

Unit III **(6 hrs)**

Files and Database: Using File System-Introduction to SQLite on Android-Database Connectivity-Adding Contacts-Retrieving all the Contact-Updating a contact-Deleting a Contact-Upgrading the database-Cursors and Content Values-Using Content Provider to Share Data-understanding the security model.

Unit IV **(6 hrs)**

Working In Background: Introduction to Service and its life cycle-creating and starting a service-Types of services-Working Multi-Threading and Async Task-Broadcast Receivers-Triggering receivers with intents-Responding to system events using Broadcast receivers-Adapters and Widgets - Notifications- Custom Components.

Unit V**(6 hrs)**

Advanced Concept of Android: Using Location based Services –Telephony and SMS Services-Bluetooth, Network and WiFi Services, Multi Media and Camera-Accessing Internet and web Services from Android Application-Live Folders-Using sdcards-XML Parsing-JSON Parsing-Network connectivity Services-Sensors.

Text Book:

Study material will be provided

Reference Book:

R. Meier (2010), *Professional Android 2 Application Development*, Wiley.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
PART IV – NON – MAJOR COURSE (OPEN OPTION)
JOB ORIENTED COURSE
16UJO62L – ANDROID APPLICATION DEVELOPMENT LAB
(For those admitted in June 2016 and later)

Contact hours per week : 02
Total number of hours per semester : 30
Number of Credits : 02

Objectives:

1. To Understand the requirements for developing Android Applications
2. To design the interface and architecture
3. To know the best practices regarding application design and development
4. To prepare the applications for Publishing

Lab list :

1. Sample Program to display the “Hello World”
2. Sample Program for Concatenation of two Strings Using Edit Text
3. Sample Program for Addition of two numbers
4. Sample Program to Display the Values in Toast Using Check Box
5. Sample Program to Select the Items Using List View Control
6. Sample Program to Display the Values in Spinner
7. Sample Program for Connect two forms
8. Sample Program to Check the Login Page Using Intent
9. Sample Program to Pass Value from one form to another
10. Sample Program to Connect the SQLite Database
11. Sample Program to Insert, Delete ,Update and Select the Database
12. Sample Program to Create the Options Menu
13. Sample Program to Display the Web Page Using Web View Control
14. Sample Program for Student Details

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
ADD ON COURSE
16UCAEC1– OFFICE AUTOMATION
(For those admitted in June 2016 and later)

Contact hours per week : 02
Total number of hours per semester : 30
Number of Credits : 02

Objectives:

1. To provide the basic concepts of MS-PowerPoint.
2. To gain knowledge about adding Image and Music on a slide.
3. To provide the concept of MS-Excel.
4. To make the students to know about MS-Access.

Unit – I

(6 hrs)

MS-Powerpoint : Features of Powerpoint – Starting Powerpoint – The Powerpoint window – Powerpoint views – Placeholder, Text Areas, Mouse pointer and Scroll bars – Status bar, Menu bar, Standard Toolbar, Formatting Toolbar and Drawing Toolbar – Using Auto content Wizard – Choosing a Design Template – Creating a blank presentation with design Template – Creating the title slide – Adding a New Slide to a Presentation by slide layout - Using outline lab – Creating a Presentation using Outline Tab – Adding a slide on the Outline Tab – Adding a Slide on the Outline Tab – Saving a Presentation – Closing a Presentation – Opening a Saved Presentation – Selecting Text – Deleting Text – Undoing changes.

Unit – II

(6 hrs)

MS-Powerpoint : Changing the font of Text – Changing the Size of Text - Changing the Style of Text - Changing the Alignment of Text - Changing the Color of Text – Changing the Color Scheme of Slides – Changing the Background Color – Changing Slide Layouts – Adding a Picture – Adding a Clipart Image – Inserting Sound or Music on a Slide – Animation – Applying Animation Schemes – Animating Clip Art – Adding Slide Transition – Adding Sound using Slide Transition – Creating Notes – Adding Header and Footer - Using Slide Sorter view – Reordering Slides in slide Sorter View – Deleting Slides in Slide Sorter View – Viewing and Running a Slide Show.

Unit – III

(6 hrs)

MS-Excel : Start Excel – Customizing Excel – The Excel Window – The Excel Worksheet – Menu bar – Standard and Formatting Toolbar – Formula bar – Status bar – Speech Recognition – Change the Active cell – Entering Data – Autocomplete Text – Selecting cells – Complete a Series – Switching between a Worksheet – Saving a Workbook–

Closing a Workbook – Opening a Workbook – Creating a New Workbook – Edit and Delete Data in Workbook – Undoing changes – Copying and Moving Data – Changing Column width – Changing Row Height – Inserting a Row – Inserting a Column – Inserting Cells – Deleting cells – Naming the Cells.

Unit – IV

(6hrs)

MS-Excel : Formulas and Functions – Entering a Formulae – Entering a function – Common calculation – Displaying a Formula – Errors in Formula – Using Average, Max and Min Function – Formatting Workbook – Changing the Font of Data - Changing the Size of Data – Changing the Font for all New Workbooks – Bold, Italic and Underline Data – Changing the Alignment of Data – Changing the Appearance of Data – Changing the Color of Data – Changing the Color of Cell – Center Data across Columns – Adding Border to Cells – Applying Conditional Formatting – Auto format – Creating a Chart –Resizing the Chart – Changing the Type of Chart – E-mailing the Worksheet – Printing the Worksheet.

Unit – V

(6 hrs)

MS-Access: Starting Access – Creating Database using a Wizard – Creating a New Database – Creating a Table – Saving and Closing the Table – Adding Records to a Table – Selecting Data in a Table – Renaming a Field – Rearrange the Fields of Tables – Add a Field in the Table – Deleting a Field in the Table – Changing the Width of Column – Move through Data – Editing Data in Table – Closing a Table and Database – Creating a Form using Wizard– Editing Data in a form – Adding Records to a Form – Deleting Records from a Form– Sorting Records – Filtering Data by Selection – Creating a Report.

Text book:

Davinder Singh Minhas (2010), *Dynamic Memory Computer Course*, Fusion Books, New Delhi.

Chapters:

Unit I & Unit II : **10** (Pg: 295-335)

Unit III & Unit IV : **9** (Pg: 240-294)

Unit V : **11** (Pg: 337-362)

Reference Books:

1. Stephen Copestake (2004), *Excel 2002 in easy Steps*, DreamTech Press, New Delhi.
2. Stephen Copestake (2004), *Access 2002 in easy Steps*, DreamTech Press, New Delhi.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN, SIVAKASI.
DEPARTMENT OF COMPUTER APPLICATIONS
EXTRA CREDIT COURSE
16UCAEC2 – PHOTOSHOP & 3D STUDIOMAX
(For those admitted in June 2016 and later)

Contact hours per week : 02
Total number of hours per semester : 30
Number of Credits : 02

Objectives:

1. To train the students to implement various tools in Photoshop
2. To allow the students to create presentations using Photoshop.
3. To inculcate the knowledge about animation techniques.
4. To learn the basics and to take advantage of 3d studio max.

Unit – I

(6 hrs)

Photoshop: The working Environment: The Photoshop screen environment – Using the tool box-History Palette- Deleting Clearing and Purging States – Taking Snapshots - **Getting started with Images:** Rotating an image – Resizing- Resampling Up – Sampling Down - cropping an image – Adding a border – Image mode - **Defining colors** : Foreground and background colors- The eyedropper & color sample tools – the color palette – the swatches palette

Unit – II

(6 hrs)

The Painting tools: the Brush pop-up palette – the pencil tool – the gradient tool – the paint bucket tool- **The Editing tools:** The Clone Stamp tool – The Dodge, Burn and Sponge – The Eraser tool – Healing brush tool- Patch tool- Color Replacement - **Making selections:** the Marquee selection tool – the Lasso & Magic wand tools – Grow similar tool- Defringe tool- Copying & pasting selections – Transforming selections.

Unit – III

(6 hrs)

Layers: Working with layers – Merging & Flattening layers – Moving layers between images – Linking layers- Locking Layers – Layer set- Transform new layer- **Color Correction Techniques:** Brightness/ Contrast and Color Balance- Auto levels and Auto color– Levels & Curves Dialog box – **Filters:** Filter Controls – Unsharp Mask and Sharpen Filters- Blur Filters- Noise Filters – The Extract Command-Fine Tuning Extractions – The Liquify Dialog Box – Liquify Distortion Tools – Pattern Maker – Filter Gallery.

Unit – IV

(6 hrs)

Introduction to 3ds Max 2010: Opening 3ds Max 2010.**Fundamentals of 3ds Max 2010:** Understanding the project workflow – Understanding Geometry primitives –

Architectural objects – Shapes – Compound objects – Dynamic objects – Systems – Working with objects in 3ds Max 2010. **Modifiers, Splines and reactor:** Working with modifiers - Working with splines.

Unit – V

(6 hrs)

Modifiers, Splines and reactor: Creating and simulating a water object – Creating a wind object. **Lights, Shadows and cameras:** Understanding lights – Creating lights – Creating Sunlight and Daylight Systems – Working with Shadows – Working with Cameras. **Character studio :** Understanding character studio – Working with Biped. **Particle Systems and Space Wraps :** Working with Particle Systems – Working with Space Wraps : Creating and Binding a Space Wrap to an object.

Text Books :

1. Robert Shufflebotham (2010), *Photoshop 7 in easy steps*, Dreamtech publications, Newdelhi, Edition.

Unit I : 2 (Pg : 18-21 , 32-34), 4 (Pg : 51-62), 5 (Pg : 63- 70)

Unit II : 6 (Pg : 71-86), 7 (Pg : 87-98),8 (Pg: 100-114),

Unit III : 9 (Pg: 115-132), 13(Pg: 163-173) 14(Pg: 176-189)

2. Kogent Learning Solutions Inc., *3ds Max 2010 in Simple Steps*, Dreamtech Press, New Delhi.

Unit IV : 1 (Pg: 9 – 11), 2 (Pg: 38 – 66), 3 (Pg: 76 – 98)

Unit V : 3 (Pg: 120 – 132), 5 (Pg: 156 – 180), 7 (Pg: 198 – 211),

8(Pg:230 –242)

Reference Books:

1. Steve RomaniEllo (2003), *Photoshop 7*, BPB Publications, New Delhi.

2. Kelly L. Murdock (2007), *3ds Max 9*, Wiley Publishing, Inc

B.C.A Programme End Semester Examinations

QUESTION PAPER PATTERN

Sections	Nature of Choice	No. of Questions		Marks	Total
Section – A	No choice	Total Questions: 10		10 x 1	10
		Choose the best: 5 (One from each Unit)	True or False: 5 (One from each Unit)		
Section – B	Internal Choice	5 Questions (One set [2 questions] from each Unit)		5 x 7	35
Section – C	Open choice	3 out of 5 questions (One from each Unit)		3 x 10	30
Total					75

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