PSGR KRISHNAMMAL COLLEGE FOR WOMEN

College of Excellence

(An Autonomous Institution, Affiliated to Bharathiar University)

(Reaccredited with 'A' Grade by NAAC, An ISO 9001:2008 Certified Institution)

Peelamedu, Coimbatore-641004

DEPARTMENT OF COMPUTER SCIENCE

CHOICE BASED CREDIT SYSTEM &

OUTCOME BASED EDUCATION SYLLABUS

BACHELOR OF COMPUTER SCIENCE (B. Sc COMPUTER SCIENCE)

2016-2019

PROGRAMME OUTCOMES

After completion of the programme, the student will be able to

PO1: Provides a solid foundation in the discipline of Computer Science and enable students to formulate computational solutions to real life problems.

PO2: To possess knowledge to identify, analyze, design for an optimized solution using appropriate algorithms of varying complexity using cutting edge technologies.

PO3: To develop skills in software and hardware maintenance so as to enable the students to establish a productive career in industry, research and academia.

PO4: Equip the students to meet the industrial needs by utilizing tools and technologies with the skills to communicate effectively among peers.

PO5: Foundation graduate programme which induces continuous improvement of knowledge and act as a platform for higher studies and engage in research.

PROGRAMME SPECIFIC OUTCOME

The students at the time of graduation will

PO1: Graduates will apply domain knowledge and problem solving skills to solve real time problems

PO2: Empowers graduates with good employability skills and ensures exceptional career opportunities in IT/ITeS/it is companies

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DEPARTMENT OFCOMPUTER SCIENCE

CHOICE BASED CREDIT SYSTEM & OUTCOME BASED EDUCATION

SYLLABUS & SCHEME OF EXAMINATION

2016- 2019

Semester	Part	Subject Code	Title of paper	Instruction Hours / Week	Contact Hours	Tutorial hour	Duration of Examination	Examination Marks			Credits
								CA	ESE	Total	
I	I	TAM1601/ HIN1601/ FRE1601	Language I	6	86	4	3	40	60	100	3
I	II	ENG1601/ ENG16F1	English Paper I / Functional English Paper I	6	86	4	3	40	60	100	3
I	III	CS16C01	**Core 1:** PC software and C Programming	6	86	4	3	40	60	100	4
I	III	CS16CPI	**Programming Lab 1 :** PC software and C Programming	4	60	-	3	40	60	50*	3
I	III	TH16A03B TH16A03A	**Allied A1 :** Paper I : Mathematics and statistics - Level I Paper II : Mathematics and statistics - Level II	6	86	4	3	40	60	100	5
I	IV	NME12WS/ NME12AS/ NME12GS	Women Studies/ Ambedkar Studies/ Gandhian Studies	2	26	4	-	100	-	100	2
		NME16 A1/ NME16 B1	Advance Tamil/ Basic Tamil	2	28	2	2	50	50	100	
II	I	TAM1602/ HIN1602/ FRE1602	Language II	6	86	4	3	40	60	100	3
II	II	ENG1602/ ENG16F2	English Paper II/ Functional English Paper II	6	86	4	3	40	60	100	3
II	III	CS16C02	**Core 2 :** Computer Architecture	3	41	4	3	40	60	100	4
II	III	CS16C03	**Core 3:** COBOL Programming	4	56	4	3	40	60	100	4
II	III	CS16CPII	**Programming Lab 2 :** COBOL Programming and Bioinformatics	3	45	-	3	40	60	50*	2
II	III	TH16A06B TH16A06A	**Allied A2:** Paper I : Discrete Mathematics - I Paper II :Discrete Mathematics –II	6	86	4	3	40	60	100	5
II	IV		**Open Course:** (Self-study- Online Course)	-	-	-	-	-	-	-	Grade
		NME16A2/	**Advance Tamil/ Basic	-	-	-	-	-	-	-	Grade

Semester	Part	Subject Code	Title of paper	Instruction Hours / Week	Contact Hours	Tutorial hour	Duration of Examination	Examination Marks			Credits
								CA	ESE	Total	
		NME16B2	Tamil								
II	IV	REG16EE	Effective English Communication	2	-	-	2	50	50	100	2
II	VI	NM12GAW	General Awareness	Self-Study	-	-	On-line Test	100	-	100	Grade
III	III	CS16C04	**Core 4:** Modern Operating System	4	56	4	3	40	60	100	4
III	III	CS16C05	**Core 5:** Data Structures	6	86	4	3	40	60	100	4
III	III	PRD1603	**Core 6:** Relational Database Management System	5	71	4	3	40	60	100	4
III	III	CS16CPIII	**Programming Lab 3:** RDBMS Lab	4	60	-	3	40	60	50*	2
III	III	TH16A13 B TH16A13A	**Allied A3 :** Paper I : Optimization Techniques - I Paper II : Optimization Techniques - II	6	86	4	3	40	60	100	5
III	IV	NM14VHR	**Foundation Course:** Value Education and Human Rights	2	26	4	-	100	-	100	2
III & IV	VI	JOB1626	**Job Oriented Course** Cloud infrastructure and services	-	-	-	3	-	-	-	Grade
III &I V	IV	SB12BA01 SB11MD01 SB11WD01 SB16AD01 SB13BP01	**Skill Based Subject** 1.BusinessAutomation-Level I 2.Multimediaand DTP Software – Level I 3.Basics of web design – Level I 4. Object Oriented Analysis and Design – Level I. 5.Business Application Software- Level I	3	43	2	2	25	75	100	4
IV	III	CS16C07	**Core 7 :** Data Mining	5	71	4	3	40	60	100	4
IV	III	CS16C08	**Core 8:** Computer Networks	5	71	4	3	40	60	100	4
IV	III	CS16C09	**Core 9:**Object-oriented Programming with C++	5	71	4	3	40	60	100	4
IV	III	CS16CPIV	**Programming Lab 4:** C++ Programming and Bio – Informatics Lab	4	60	-	3	40	60	50*	3
IV	III	BP16A05 BP16A06 PM16A01	**Allied A4:** Paper I – Business Accounting Paper II – Principles of Marketing Paper III– Management Information Systems	6	86	4	3	40	60	100	5

Semester	Part	Subject Code	Title of paper	Instruction Hours / Week	Contact Hours	Tutorial hour	Duration of Examination	Examination Marks			Credits
								CA	ESE	Total	
III & IV	IV	SB11BAP1 SB11MDP1 SB11WDP1 SB16ADP1 SB13BPP1	**Skill Based Subject** 1.Office package – Practical 2Multimedia and DTP Software – Practical I 3.Basics of Web Design-Practical I 4.Object Oriented Analysis and Design – Practical I 5.Business Application Software- Practical I	3	45	-	2	40	60	100	2
IV	IV	NM10EVS	**Foundation Course:** Environmental Studies	2	26	4	-	100	-	100	2
IV	V		NSS/NCC/YRC/Sports & Games	-	-	-	-	-	-	100	1
IV			Community Oriented Service	-	-	-	-	-	-	-	Grade
V	III	PJA1610	**Core 10 :** Java Programming	5	71	4	3	40	60	100	4
V	III	PCG1611	**Core 11** : Computer Graphics	5	71	4	3	40	60	100	4
V	III	CS16C12	**Core 12** : Software Engineering	5	71	4	3	40	60	100	4
V	III	CS16E01 CS16E02 CS16E03 CS16E04	**Elective 1**: Parallel Computing. **Elective 2** : Big Data Analytics **Elective 3** : Artificial Intelligence **Elective 4**:PC Hardware and Trouble shooting	5	71	4	3	40	60	100	5
V	III	CS16CP5	**Programming Lab 5 :** Java Programming and Bioinformatics Lab	5	75	-	3	40	60	50*	3
V	III	NM13IS2	Information Security - Level II	2	26	4	-	100	-	-	Grade
V	III	SB11MD02 SB16ST02	**Skill Based Subject** 1. Multimedia and DTP Software –Level II 2.Software Testing tools - Level II	3	43	2	2	25	50	100	4
V	III	CS14AC1 CS16AC2	**Advanced Level Course 1** **Paper1:** Wireless Communications **Paper 2:** Cloud Computing	-	-	-	3	25	75	*100	* 5
V	III		Comprehensive Exam	-	-	-	1	-	-	-	Grade
V	III	INST1	Internship Training	-	-	-	-	-	-	100	2
V			Personality Development	-	-	-	-	-	-	-	-
VI	III	CS16C13	**Core 13** : .Net	5	71	4	3	40	60	100	4

Semester	Part	Subject Code	Title of paper	Instruction Hours / Week	Contact Hours	Tutorial hour	Duration of Examination	Examination Marks			Credits
								CA	ESE	Total	
			Programming								
VI	III	CS16C14	**Core 14**: Software Testing	5	71	4	3	40	60	100	4
VI	III	PWT1615	**Core 15** : Web Technology	5	71	4	3	40	60	100	4
VI	III	CS16CP6	**Programming Lab 6 :**Web Technology and Bio-Informatics Lab	5	75	-	3	40	60	50*	2
VI	III	PROJ	Project Viva – Voce	7	-	-	3	20	80	100	5
VI	III	CS14AC3 CS11AC4	**Advanced Level Course 2** Paper 1: Image Processing Paper 2: Mobile Computing	-	-	-	3	25	75	*100	5*
V & VI	IV	SB11MDP2 SB16STP2	**Skill Based Subject** 1.Multimedia and DTP Software -Practical II 2.Software Testing Tools-Practical II	3	45	-	2	40	60	100	2
TOTAL										3800	140

*100 Marks converted into 50 Marks.

** Outside regular class hours.

*The credits are applicable to candidates who take up the advanced level course exam.

QUESTION PAPER PATTERN

CORE & ALLIED PAPERS

Continuous Internal Assessment: 50 Marks

Section		Marks	Total
A	5 X 2 Marks	10	50
B	4 X 5 Marks	20	
C	2/3 X 10 Marks	20	

End Semester Examination: 100 Marks

Section	Word Limit	Marks	Total
A -12/15 X 2 Marks **(Open Choice)**	One or two sentences	24	100
B – 6/8 X 6 Marks **(Open Choice)**	300 words	36	
C – 4/6 X 10 Marks **(Open Choice)**	600 - 800 words	40	

SKILL BASED SUBJECT

Continuous Internal Assessment: 25 Marks

Section		Marks	Total
A	4 / 6 X 4 Marks	16	25
B	1 / 2 X 9 Marks	9	

End Semester Examination: 50 Marks

Section		Marks	Total
A	4 / 6 X 5 Marks	20	50
B	2 / 3 X 15 Marks	30	

ADVANCED LEARNERS COURSE (ALC)

Continuous Internal Assessment: 25 Marks

Section		Marks	Total
A	4 / 6 X 4 Marks	16	25
B	1 / 2 X 9 Marks	9	

End Semester Examination: 75 Marks

Section		Marks	Total
A	5 / 8 X 5 Marks	25	75
B	5/8 X 10 Marks	50	

VALUE EDUCATION AND HUMAN RIGHTS / WOMEN STUDIES / AMBEDKAR STUDIES / GANDHIAN STUDIES / ENTREPRENEURSHIP / ENVIRONMENTAL STUDIES

Continuous Internal Assessment: 50 Marks

Section		Marks	Total
A	4 / 6 X 5 Marks	20	50
B	2 /3 X 15 Marks	30	

Value Education and Human Rights & Environmental Studies two internal tests will be conducted for 50 marks each and the total marks secured will be equated to a maximum of 75 marks and 25 marks is allotted for project / group discussion / presentation of a report.

INFORMATION SECURITY

Continuous Internal Assessment: 40 Marks

Section		Marks	Total
A	5 / 8 X 2 Marks	10	40
B	6 / 8 X 5 Marks	30	

FIELD TRAINING

The students have the option to carry out their field training work at any organizations such as Government / private organizations of different domains (Manufacturing, Textiles, Retails, Insurance & Banking, etc.,) and R&D institutes. Students will start the training work after getting approval from the respective faculty guide and HoD. The students will undergo training for a period of two weeks (15days) at the end of semester IV during vacation. The students must maintain a work diary and prepare report of the training undergone and submit the report. The field training will be assessed based on the components attendance, work diary, report and viva-voce with internal examiners at the beginning of the semester V.

Mode of Evaluation	Marks	Total
Attendance	10	100
Work Diary	15	
Report	50	
Viva-voce	25	

PROJECT

Individual Project and Viva Voce

Each student will be allotted with a faculty for project guidance. The topic/area of the project work and the organization will be finalized at the end of V semester and approved by the respective guide and HoD. The work will be carried out in the computer science lab as well as in the organization. Internal review will be conducted periodically to assess the progress of the project work. After completion of the work, a detailed project report will be prepared and submitted at the end of the semester VI. External examiner appointed by the Controller of Examination) will conduct the viva voce examination along with respective guide.

Area of Work

Mobile app development, website development, IoT, Dataset preparation, Biological sequence analysis etc.,

Methodology

- Each project should contain the following details
- Brief introduction on the topic
- System Analysis
- System Design
- Testing and Implementation
- Conclusion
- Scope for Future Enhancement
- Bibliography

The above contents should not exceed 50 pages

Internal Assessment: 20 Marks

Review	Mode of Evaluation	Marks	Total
I	Synopsis, Organization profile, System Specification, Existing system, Proposed system	5	20
II	DFD,ERD, Table Design	10	
III	Input forms, Output forms and Preparation of rough draft	5	

External Assessment: 80 Marks

Mode of Evaluation	Marks	Total
Project Report		
Relevance of the topic	10	60
Technology	10	
Designing and development	20	
Report	20	
Viva Voce		
Presentation	10	20
Performance	10	

WEIGHTAGE ASSIGNED TO VARIOUS COMPONENTS OF CONTINUOUS INTERNAL ASSESSMENT

Theory

	CIA I	CIA II	Model Exam	Assignment/ Class Notes	Seminar	Quiz	Class Participation	Library Usage	Attendance	Max. Marks
Core / Allied	5	5	6	4	5	4	5	3	3	40
SBS	5	5	15	-	-	-	-	-	-	25
ALC		10	15	-	-	-	-	-	-	25
Information Security	40	40		10		10				100

Practical

	Model Exam	Lab Performance	Regularity in Record Submission	Attendance	Maximum Marks
Core / Allied / SBS	12	20	5	3	40

RUBRICS

ASSIGNMENT/ SEMINAR

Maximum - 20 Marks (converted to 4 marks)

Criteria	4 Marks	3 Marks	2 Marks	1 Mark
Focus Purpose	Clear	Shows awareness	Shows little awareness	No awareness
Main idea	Clearly presents a main idea.	Main idea supported throughout	Vague sense	No main idea
Organization: Overall	Well planned	Good overall organization	There is a sense of organization	No sense of organization
Content	Exceptionally well presented	Well presented	Content is sound	Not good
Style: Details and Examples	Large amounts of specific examples and detailed description	Some use of examples and detailed descriptions	Little use of specific examples and details	No use of examples

CLASS PARTICIPATION

Maximum - 20 Marks (converted to 5 marks)

Criteria	5 Marks	4 Marks	3 Marks	2 Marks	1 Mark
Level of Engagement in Class	Student proactively contributes to class by offering ideas and asks questions more than once per class.	Student proactively contributes to class by offering ideas and asks questions once per class	Student contributes to class and asks questions occasionally	Student rarely contributes to class by offering ideas and asking no questions	Student never contributes to class by offering ideas

Listening Skills	Student listens when others talk, both in groups and in class. Student incorporates or builds off of the ideas of others.	Student listens when others talk, both in groups and in class.	Student listens when others talk in groups and in class occasionally	Student does not listen when others talk, both in groups and in class.	Student does not listen when others talk, both in groups and in class. Student often interrupts when others speak.
Behavior	Student almost never displays disruptive behavior during class	Student rarely displays disruptive behavior during class	Student occasionally displays disruptive behavior during class	Student often displays disruptive behavior during class	Student almost always displays disruptive behavior during class
Preparation	Student is almost always prepared for class with required class materials	Student is usually prepared for class with required class materials	Student is occasionally prepared for class with required class materials	Student is rarely prepared for class with required class materials	Student is almost never prepared for class.

MAPPING OF POs WITH COs

COURSE	**PROGRAMME OUTCOMES**				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
COURSE 1 - CS16C01					
CO1	S	M	S	M	M
CO2	S	M	S	S	M
CO3	M	M	S	M	M
CO4	S	S	S	S	S
CO5	S	S	S	S	S
COURSE2- CS16CPI					
CO1	S	S	S	M	S
CO2	S	S	S	S	M
CO3	S	M	S	M	S

CO4	S	S	M	S	S
CO5	S	M	S	S	S
COURSE 3 - CS16C02					
CO1	S	S	M	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S
COURSE 4 - CS16C03					
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	M	S
CO4	M	S	M	S	S
CO5	M	S	S	M	S
COURSE 5 - CS16CPII					
CO1	S	S	S	M	S
CO2	S	S	S	S	M
CO3	S	M	S	M	S
CO4	S	S	M	S	S
CO5	S	M	S	S	S
COURSE 6 - CS16C04					
CO1	S	S	M	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S
COURSE 7 - CS16C05					
CO1	M	S	S	S	S
CO2	S	S	S	M	S
CO3	M	S	S	M	S

CO4	S	M	S	M	M
CO5	M	M	S	S	S
COURSE 8 - PRD1603					
CO1	M	S	M	S	M
CO2	S	M	S	S	M
CO3	M	S	S	M	S
CO4	S	M	M	S	M
CO5	M	S	S	M	S
COURSE 9 - CS16CPIII					
CO1	M	M	S	S	S
CO2	S	M	S	M	S
CO3	S	M	M	S	S
CO4	M	M	S	S	M
CO5	S	M	S	S	S
COURSE 10 - CS16C07					
CO1	S	M	M	M	S
CO2	S	S	M	M	S
CO3	S	S	S	S	M
CO4	S	S	S	S	M
CO5	S	S	M	S	M
COURSE 11 - CS16C08					
CO1	S	M	M	M	M
CO2	S	S	M	M	S
CO3	S	S	M	M	S
CO4	S	S	M	M	S
CO5	S	S	S	S	S
COURSE 12 - CS16C09					
CO1	S	S	M	S	S
CO2	M	S	S	M	S
CO3	S	M	S	M	S

CO4	S	S	M	S	S
CO5	M	S	S	M	M
COURSE 13 - CS16CP4					
CO1	S	S	M	M	M
CO2	S	M	S	M	M
CO3	S	M	M	S	S
CO4	M	S	M	S	S
CO5	S	S	S	S	S
COURSE 14 - PM16A01					
CO1	M	S	S	S	M
CO2	M	S	S	S	S
CO3	S	S	S	M	S
CO4	M	S	M	S	S
CO5	S	M	S	S	S
COURSE 15 - PJA1610					
CO1	S	M	S	S	S
CO2	S	S	S	M	S
CO3	M	M	S	M	S
CO4	S	S	S	M	S
CO5	S	S	S	S	M
COURSE 16 - PCG1611					
CO1	S	S	M	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S
COURSE 17 - CS16C12					
CO1	S	S	S	S	S
CO2	S	S	M	S	S

CO3	S	S	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S
COURSE 18 - CS16E01					
CO1	S	M	S	S	M
CO2	S	M	S	S	M
CO3	M	M	S	M	M
CO4	S	S	M	S	S
CO5	S	S	S	S	S
COURSE 19 - CS16E02					
CO1	S	M	S	S	S
CO2	S	S	S	M	S
CO3	M	M	S	M	M
CO4	S	S	S	M	M
CO5	S	S	S	M	M

COURSE 20 - CS16E03					
CO1	S	S	M	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	M
COURSE 21 - CS16E04					
CO1	S	M	S	S	S
CO2	S	S	S	M	S
CO3	S	S	M	M	S
CO4	S	M	S	M	S
CO5	S	S	M	S	S
COURSE 22 - CS16CP5					

CO1	S	M	S	S	S
CO2	S	S	S	M	S
CO3	M	M	S	M	S
CO4	S	S	S	M	S
CO5	S	S	S	S	M
COURSE 23 - CS16C13					
CO1	M	S	M	M	M
CO2	S	M	S	S	S
CO3	S	S	S	S	M
CO4	S	M	S	M	S
CO5	M	M	M	S	S
COURSE 24 - CS16C14					
CO1	S	S	S	S	S
CO2	M	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	M	S	S
CO5	M	S	S	S	S
COURSE 25 - PWT1615					
CO1	S	S	S	M	S
CO2	S	S	M	S	M
CO3	M	S	M	M	S
CO4	S	M	S	M	S
CO5	M	M	S	S	M
COURSE 26 - CS16CP6					
CO1	M	M	S	M	M
CO2	M	S	M	S	S
CO3	S	M	S	M	S
CO4	S	M	S	M	M
CO5	S	M	M	S	S

H- High; M-Medium; L-Low

Course Number	Course Name	Category	L	T	P	Credit
CS16C01	PC SOFTWARE and C PROGRAMMING	Core	86	4	-	4

Preamble

To provide in depth knowledge about the concepts, data types, structures of the C language and to enable the students to write programs using C.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Demonstrate to create document, formatting and processing tools	K3
CO2	Apply knowledge to store and retrieve numerical data and convey visual information to groups or individuals	K3
CO3	Describe the program structure of C, data types and control statements for solving a given problem	K1
CO4	Classify the representation of arrays and usage of string operations	K2
CO5	Explain the implementation of structures, unions and pointers	K2

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	M	M
CO2	S	M	S	S	M
CO3	M	M	S	M	M
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S- Strong; M-Medium; L-Low

PC SOFTWARE and C PROGRAMMING - CS16C01 **(86 Hrs)**

Syllabus

UNIT I **(17 Hrs)**

Working in office 2000: Working with files, Editing in office 2000, selecting, moving and copying. Mastering the Basics of word: Creating word documents, Editing Document text, applying text enhancements, aligning and formatting, replacing and checking text, formatting pages, working with columns, constructing high-quality tables.

UNIT II **(18 Hrs)**

Creating Excel Worksheets: Entering and editing cell entries, working with numbers, printing in excel functions and reference, creating charts.Creating power point presentations: Creating a Basic presentation, Building presentations, modifying presentations, Modifying visual elements, formatting and checking text, adding objects.

UNIT III **(17 Hrs)**

Overview of C: History of C – Importance of C - Basic Structure of C Programs – Programming Style – Constants – Variables and Data types – Operators and Expressions. Managing Input and Output Operations - Decision Making and Branching – Decision Making and Looping.

UNIT IV **(17 Hrs)**

Arrays: One-dimensional arrays – Two- dimensional arrays – Multi-dimensional arrays – Character arrays and strings – String handling functions. User-defined functions: Definition of function – Categories of functions.

UNIT V **(17 Hrs)**

Structures and Unions - Pointers: Address operator – Arrays and Pointers – Pointer Arithmetic - File management in C.

Text Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Ginicourter, Annette Marquis	Office 2004	PBP publications	2005
2	E. Balagurusamy	Programming in ANSI C	Tata McGraw Hill	5th Edition, 2011

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Byron Gottfried	Programming with C	Tata McGraw Hill	3 rd Edition,2011
2	Stephen G. Kochan	Programming in C	Pearson Education	4th Edition, 2014
3	YeswanthKanetkar	Let us C	BPB Publications	2013

Pedagogy

- Chalk and talk , PPT, Discussion , Assignment, Demonstration, Quiz, Case study

Course Designers

- Mrs. N.A. Sheelaselvakumari
- Mrs. C. Arunpriya

Course Number	Course Name	Category	L	T	P	Credit
CS16CPI	PC SOFTWARE AND C PROGRAMMING LAB	Core	-	-	60	3

Preamble

The goal of this course is to provide the working knowledge of the various facets, practices and principals of the extreme programming approach in MS Office. To provide depth knowledge of the C language and to enable the students to write programs.

Course Outcomes

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Show the use of different font types formatting, filter options and mail merge in MS Word	K1
CO2	Discuss the working knowledge of using formulas and graph using MS Excel	K2
CO3	Apply organization chart and design presentation in MS PowerPoint	K3
CO4	Use functions, control structures and arrays in C programs	K3
CO5	Demonstrate string manipulation, structures and file concepts to write C programs	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	S	M
CO3	S	M	S	M	S
CO4	S	S	M	S	S
CO5	S	M	S	S	S

S- Strong; M-Medium; L-Low

PC SOFTWARE AND C PROGRAMMING LAB - CS16CPI (60 Hrs)

Syllabus

MS Word

- Apply different font types.
- Implementing Mail Merge and Filter Options.
- Different formatting options.

MS Excel

- Using formulas.
- Using Graph.

MS Power point

- Organization chart.
- Design presentation.
- Use of audio in presentation.

C Programming

- Using function.
- Using different control structures.
- Using Arrays.
- Using recursion function.
- Implementing string manipulation.
- Using structures.
- Implementing file operations.

Pedagogy

- System, White board, Demonstration through PPT

Course Designers

- Dr. J. Viji Gripsy
- Mrs. N.A. SheelaSelvakumari

Course Number	Course Name	Category	L	T	P	Credit
CS16C02	COMPUTER ARCHITECTURE	Core	41	4	-	4

Preamble

To provide introduction to the principles and practices of digital electronics and computer system, programming aspects of microprocessor covering both hardware and software based on the 8085 microprocessor family.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the functions to simplify the Boolean equations using logic gates	K1
CO2	Discuss the system architecture based on microprocessor	K2
CO3	To understand the functions of the registers and different types of micro operations	K2
CO4	Illustrate the classification of pipelining and Vector process	K3
CO5	Show the operation of ALU along with the algorithm and implementation of integer and floating point arithmetic operators	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S- Strong; M-Medium; L-Low

COMPUTER ARCHITECTURE - CS16C02 (41 Hrs)

Syllabus

UNIT I (9 Hrs)

Logic Circuits: Gates –AND, OR, NOT, NAND, NOR Gates & Truth Tables-Boolean Algebra-Karnaugh maps, Product of Sums method, Sum of Product method, Don't Care condition – Multiplexers, DE multiplexers-Flip Flops: RS, JK, D, T-Decoders.

UNIT II **(8 Hrs)**

Microprocessor: Microprocessor Instruction set and Computer languages –From large computer to single-chip micro controllers-microprocessor architecture & its operations-memory-Input Output (I/O) devices.

UNIT III **(8 Hrs)**

Register transfer and micro operations: Register Transfer language - Register Transfer-Bus and memory transfers - Arithmetic micro operations - Logic micro operations - Shift micro operations-Arithmetic logic shift unit - Central Processing Unit - General Register Organization - Stack organization - Instruction set computer.

UNIT IV **(8 Hrs)**

Pipeline & Vector Processing: Parallel Processing – Pipelining - Arithmetic Pipeline - Instruction Pipeline - RISC Pipeline - Vector Processing - Array Processors.

UNIT V **(8 Hrs)**

Computer Arithmetic: Addition and Subtraction - Multiplication algorithm - Division algorithm - Floating point arithmetic operations.

Text Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Morris Mano	Computer System Architecture	Pearson	3rd Edition, 2007 (UNIT I,III,IV&V)
2	Ramesh Gaonkar	Microprocessor Architecture Programming and applications with the 8085	Penram International	5thEdition, 2008 (UNIT II)

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	John .L.Hennessy	Computer Architecture-A Quantitive Approach	Elsevier	2nd Edition, 2011
2	A.P.Godse	Microprocessor &Microcontroller	Technical Publication	2010
3	William Stallings	Computer Organization and Architecture: Designing for Performance	Pearson Prentice Hall	6th Edition, 2010

Pedagogy

- Chalk and talk , PPT, Discussion , Assignment, Demonstration, Quiz, Case study

Course Designers

- Mrs. N. Deepa
- Dr. J. VijiGripsy

Course Number	Course Name	Category	L	T	P	Credit
CS16C03	COBOL PROGRAMMING	Core	56	4	-	4

Preamble

This subject aims in providing a strong foundation in programming logic. It benefits the students in meeting the demand of trained programmers in commercial data processing.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the syntax and semantics of the COBOL language	K1
CO2	To understand the structure and divisions for program designing and development	K2
CO3	Apply the strategies and techniques for developing file programs	K3
CO4	Discuss the concept of using sort and merge verbs in programs	K2
CO5	Choosing the appropriate testing procedures and documentation for programs	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	M	S
CO4	M	S	M	S	S
CO5	M	S	S	M	S

S- Strong; M-Medium; L-Low

COBOL PROGRAMMING - CS16C03 (56 Hrs)

Syllabus

UNIT I (12 Hrs)

INTRODUCTION TO COBOL: History of COBOL – Coding format for COBOL programs - Structure of a COBOL program – Character set – COBOL words - Data names

and identifiers – Literals - Figurative constants - Continuation of Lines. IDENTIFICATION and ENVIRONMENT DIVISION - DATA DIVISION - Introduction – level structure - Data description entries - PICTURE Clause - VALUE clause - FILE SECTION – WORKING STORAGE SECTION – Editing - PROCEDURE DIVISION and BASIC VERBS - Structure of the PROCEDURE DIVISION - Data movement verb: MOVE – Arithmetic verbs - Sequence control verbs - Input output verbs - conditional verb.

UNIT II **(11 Hrs)**

MORE ABOUT DATA DIVISION: USAGE clause - SYNCHRONIZED Clause - JUSTIFIED Clause - REDEFINES Clause - RENAMES Clause - Qualification of Data names - SIGN Clause - more about DATA MOVEMENT VERB and ARITHMETIC VERBS - Elementary and Group moves - CORRESPONDING option - ROUNDED option - ON SIZE ERROR option - COMPUTE verb - CONDITIONAL and SEQUENCE CONTROL VERBS - condition-IF statement - GO TO with DEPENDING phrases - ALTER statement - PERFORM statement - EXIT statement.

UNIT III **(11 Hrs)**

TABLE HANDLING: OCCURS clause and subscripting - assigning values to table elements - multi-dimensional tables - PERFORM verb and table handling - Index tables and indexing - SET verb - OCCURS DEPENDING clause - sorting a table - Index data item - use of indexes and index data item - structured programming - program design - current trends in data processing - objectives and methodologies of structured programming - structured programming in COBOL - sequential files - File characteristics - File control entries for sequential files - File description: fixed length records - statements for sequential files - sequential files with variable length records.

UNIT IV **(11Hrs)**

Sorting and merging of files: more about structured programming - direct access files - Relative files - Indexed sequential files.

UNIT V **(11 Hrs)**

Character handling: EXAMINE verb - INSPECT verb - STRING and UNSTRING verbs - Report writer - COBOL subroutines - Segmentation and library facility.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	MK Roy, G. Dastidar	Cobol Programming	Tata Mc-Graw Hill	2nd Edition,2011

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Michael Coughlan	Beginning COBOL for Programmers	Apress Publications	2014
2	Nancy B.Stern, Robert A. Stern	COBOL Programming	John Wiley & Sons	8th Edition, 2009
3	Tyler Welburn, Wilson Price	Structured COBOL	Tata McGraw Hill	4th Edition, 2001

Pedagogy

- Chalk and talk , PPT, Discussion , Assignment, Demonstration, Quiz, Case study

Course Designers

- Mrs. A.S. Kavitha
- Mrs. C. Arunpriya

Course Number	Course Name	Category	L	T	P	Credit
CS16CPII	COBOL PROGRAMMING AND BIOINFORMATICS LAB	Core	-	-	45	2

Preamble

The goal of this course is to provide practice in the use of proper strategies and techniques for business program design and development. To gain the background knowledge for further study of software design and computer programming in a business environment.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To define the syntactic elements , structure and format of the Cobol program	K1
CO2	Apply the concepts to design, code, compile and run a COBOL program using the following: control structures, arithmetic, logical, or relational operators, subroutines, creation and use of tables, files	K3
CO3	Discuss the appropriate size for the variables intend to use in report writing and functions	K2
CO4	To explain the concepts of Procedures and file handling in application programs	K2
CO5	Demonstrate in NCBI web site and find the official gene symbol	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	S	M
CO3	S	M	S	M	S
CO4	S	S	M	S	S
CO5	S	M	S	S	S

S- Strong; M-Medium; L-Low

COBOL PROGRAMMING AND BIOINFORMATICS LAB - CS16CPII (45 Hrs)

Syllabus

Using ACCEPT, DISPLAY and some arithmetic verbs.

- Selection and Iteration
- Sequential files
- Sorting File

- Merging File
- Direct Access file
- String Handling
- Report Writer
- Table Handling
- Explore the sitemap of NCBI and PUBMED. Study the resources available on NCBI and PUBMED
- Retrieve the Genbank entry with Specific accession number
- Analyze and Retrieve and save only the coding sequence of the entry AF375082 in FASTA format
- Analyse the NCBI web site and find the official gene symbol, its alias name, chromosome number, and its ID

Pedagogy

- System, White board, Demonstration through PPT

Course Designers

- Mrs. R. Kavitha
- Mrs. A.S. Kavitha

Course Number	Course Name	Category	L	T	P	Credit
CS16C04	MODERN OPERATING SYSTEM	Core	56	4	-	4

Preamble

To provide the students a basic idea on how operating system controls the computing resource and provides service to the user. This course provides insights on issues related to multimedia operating system.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Describe how operating systems have evolved over time from primitive batch systems to sophisticated multi-user systems	K2
CO2	Apply the concept of a process, thread and scheduling algorithms	K3
CO3	To Understand the concepts of process synchronization and deadlocks	K2
CO4	To learn about the file management system and security concepts in remote file system	K1
CO5	Discussions on different types of virtualization in multiple processor system	K2

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S- Strong; M-Medium; L-Low

MODERN OPERATING SYSTEM - CS16C04 **(56 Hrs)**

Syllabus

UNIT I **(11 Hrs)**

Operating system strategies: Multiprogramming system- Batch system – Time sharing system- Personal computers and work stations- Process control and Real – time system – Networks – The Genesis of Modern operating systems – Using the operating system: The Abstract Model of Computing – Resources(Windows NT files and POSIX files) – Other Resources – Creating Processes in Unix and Windows NT –Threads (C Threads and windows NT Threads).

UNIT II **(12 Hrs)**

Operating System Organization: Factors in OS design – Basic functions – Basic Implementation Considerations – Device Management: I/O System and strategies – Buffering – Process Management: Resource managers – Generalizing process management policies scheduling: Scheduling mechanisms – strategy selection – Non preemptive strategies – Preemptive strategies.

UNIT III **(11 Hrs)**

Semaphores: Synchronization in shared memory multiprocessors. Deadlock: Preamble – System deadlock model – Prevention – Avoidance – Detection and Recovery. Memory Management: Memory Allocation – Dynamic address Relocation – Virtual Memory – Paging – Segmentation.

UNIT IV **(11 Hrs)**

File management: Files – Memory – Mapped files – Directories OS protection and security Authentication – Remote files -Sharing Information across the N/W – Remote file system. Trends in OS design: Large Address spaces OS – Networking – Parallel Distributed Systems – Multimedia – Powered Computers – Embedded System.

UNIT V **(11 Hrs)**

Multiple Processor Systems: Virtualization- Requirements – Para virtualization- Memory virtualization- I/O virtualization – Virtual appliances- Virtual machines on multi core CPUs – Licensing issues.

Text Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Gary Nutt	Operating Systems	Pearson Education	3rd Edition, 2008

2	Andrew S. Tanenbaum	Modern Operating Systems	Pearson Education	2nd Edition, 2008

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	AviSilberSchatz, Peter Baer Galvin, Greg Gagne	Operating System Concepts	John Wiley&Sons Publishers	9th Edition, 2012
2	Thomas Anderson, MichealDahlin	Operating System Principles and Practices	Wiley Publishers	2012
3	Jose M.Garrido Richard	Principles of Modern operating System	Laxmi Publications	2012

Pedagogy

- Chalk and Talk, PPT, Discussion, Assignment, Demonstration, Quiz, Case Study

Course Designers

- Mrs. N. Deepa
- Mrs. J. Shalini

Course Number	Course Name	Category	L	T	P	Credit
CS16C05	DATA STRUCTURES	Core	86	4	-	4

Preamble

Introduces abstract concepts shows how those concepts are useful in problem solving and then shows how the abstractions can be made concrete by using a programming language.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recognize the problem where stacks, queues and deqeues are appropriate data structures	K1
CO2	Explain and implement Insertion Sort, Selection sort, Radix sort, Merge sort, Quick sort, Binary Search and Linear Search	K2
CO3	Describe the abstract data type list as a linked list using node and reference pattern	K2
CO4	Illustrate the performance of basic linear data structures	K3
CO5	Interpret the concept of files, queries and sequential organization	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	S
CO2	S	S	S	M	S
CO3	M	S	S	M	S
CO4	S	M	S	M	M
CO5	M	M	S	S	S

S- Strong; M-Medium; L-Low

DATA STRUCTURES - CS16C05 **(86 Hrs)**

Syllabus

UNIT I **(18 Hrs)**

Introduction and Overview: Introduction - Basic Terminology; Elementary Data Organization - Data structures - Data structure operations - Algorithms: Complexity, Time-Space Tradeoff. Preliminaries: Algorithmic Notation - Control Structures-Variables, Data

Types. Arrays, Records and Pointers: Introduction - Linear Arrays - Representation of Linear Arrays in Memory - Traversing Linear array - Inserting and Deleting - Multidimensional Array.

UNIT II **(17 Hrs)**

Stack, Queues, Recursion: Introduction – Stacks - Array Representation of Stacks - Linked Representation of Stacks - Arithmetic Expressions - Polish Notation - Recursion-Towers of Hanoi - Implementation of Recursive Procedures by Stacks – Queues - Linked Representation of Queues – Dequeues - Priority Queues.

UNIT III **(17 Hrs)**

Linked Lists: Introduction - Linked Lists - Representation of Linked Lists in Memory-Traversing a Linked List - Memory Allocation-Garbage Collection - Deletion from a Linked List - Header Linked Lists. Trees: Introduction - Binary Trees - Representing Binary Trees in Memory.

UNIT IV **(17 Hrs)**

Sorting and Searching: Introduction – Sorting - Insertion Sort - Selection Sort - Merging -Merge Sort - Radix Sort - Searching and Data Modification - Hashing. Bubble Sort - Searching; Linear Search - Binary Search - Quick sort, an Application of Stacks.

UNIT V **(17 Hrs)**

Files - Queries and Sequential Organizations - Index Techniques - File Organizations - Sequential, Random, Linked Organizations.

Text Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Seymour Lipschutz	Data Structures	Tata McGraw Hill Company	5th Edition 2009, Reprinted2014
2	Ellis Horowitz &SartajSahni	Fundamentals of Data Structures	Galgotia Book Source	2003, Reprinted 2014

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Harry Hariom Choudhary	Data Structures and Algorithms: Made Easy	Create Space Independent Publishing Platform	2014
2	A.K. Sharma	Data Structures using C	Pearson education	2014

3	RajdewTiwari and Nagesh Sharma	Design and Analysis of Algorithms	Pearson education	2014

Pedagogy

- Chalk and Talk, PPT, Discussion, Assignment, Demonstration, Quiz, Case study

Course Designers

- Mrs. A. S. Kavitha
- Mrs. R. Kavitha

Course Number	Course Name	Category	L	T	P	Credit
PRD1603	RELATIONAL DATABASE MANAGEMENT SYSTEM	Core	71	4	-	4

Preamble

To study the basic concepts of database systems, relational database and queries, object modeling and database design. To understand the main solutions related to the strategies for storing objects, transaction management, and security. To inculcate knowledge on RDBMS concepts.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To define the fundamental elements of database management system	K1
CO2	An understanding of normalization theory and extends such knowledge to the normalization of a database	K2
CO3	To explain the basic concepts of relational data model, entity relationship model, relational database design, relational algebra and query a database using SQL DML/DDL commands	K2
CO4	Declare and enforce integrity constraints on a database using a state-of the-art RDBMS	K3
CO5	To demonstrate programming PL/SQL including procedures, stored functions, cursors, packages	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	S	M
CO2	S	M	S	S	M
CO3	M	S	S	M	S
CO4	S	M	M	S	M
CO5	M	S	S	M	S

S- Strong; M-Medium; L-Low

RELATIONAL DATABASE MANAGEMENT SYSTEM - PRD1603 (71 Hrs)

Syllabus

UNIT I (14 Hrs)

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams –Denormalization.

UNIT II (15 Hrs)

Oracle9i: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction– SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors &Help –Alternate Text Editors - SQL *Plus Worksheet - iSQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information –Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

UNIT III (14 Hrs)

Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table –Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

UNIT IV (14 Hrs)

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements.PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

UNIT V (14 Hrs)

PL/SQL Composite Data Types: Records – Tables – V arrays. Named Blocks: Procedures – Functions – Packages –Triggers – Data Dictionary Views.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1.	Nilesh Shah	Database Systems Using Oracle	PHI	2nd Edition, 2012

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Rajesh Narang	Database Management Systems	Prentice Hall of India	2nd Edition 2011
2	RakeshSaini, M.M.S.Rauthan , AbhaySaxena, Bindu Sharma	Database Management System	Vayu Education of India	2010
3	SatishAsnani	Oracle Database 11g	PHI	2010

Pedagogy

- Chalk and Talk, PPT, Discussion, Assignment, Demonstration, Quiz, Case Study

Course Designers

- Mrs. N. A. SheelaSelvakumari
- Mrs. A.S. Kavitha

Course Number	Course Name	Category	L	T	P	Credit
CS16CPIII	RDBMS LAB	Core	-	-	60	2

Preamble

The major objective of this lab is to provide a strong formal foundation in database concepts, technology and practice to the participants to groom them into well-informed database application developers.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Describe and effectively explain the underlying concepts of database technologies	K1
CO2	Discuss PL/SQL including stored procedures, stored functions, cursors, packages	K2
CO3	Apply and enforce integrity constraints on a database using RDBMS	K3
CO4	Illustrate the need, role, importance and uses of databases in applications development	K3
CO5	Demonstrate the concept of Triggers and Subroutines	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	S
CO2	S	M	S	M	S
CO3	S	M	M	S	S
CO4	M	M	S	S	M
CO5	S	M	S	S	S

S- Strong; M-Medium; L-Low

RDBMS LAB - CS16CPIII **(60 Hrs)**

Syllabus

- Different operators
- Control Structures
- Built-in functions
- Update and Alter table

- Implementing PL/SQL Block
- Splitting the table
- Joining the table
- Functions
- PL/SQL Cursors
- Triggers
- Packages

Pedagogy

- System, White Board, Demonstration through PPT

Course Designers

- Mrs. A.S. Kavitha
- Mrs. R. Kavitha

Semester : **III & IV**
Title : **Multimedia and DTP Software-Level I**
Sub code : **SB11MD01**
Credits : **4** **Lecture Hours: 43**

Objective:

To provide a conceptual understanding of the basics of Adobe PageMaker and in-depth coverage of drawing and editing tools.

UNIT I **(9 Hrs)**

About the Work Area-Using the toolbox- Creating and opening publications- Creating a publication from scratch-Opening an existing publication - Opening publications created in previous PageMaker versions-About templates - Opening templates. Working with pages: Adding and deleting pages-Viewing pages - Applying masters to new pages as you create them-Naming and saving a publication. Working with Palettes - Adding text and graphics to templates - Building your own template.

UNIT II **(9 Hrs)**

Specifying a save option preference: -Saving publication with a new or in a different location-Saving linked and associated files with publication-Saving a file to open in an earlier version of PageMaker-closing a publication-Setting up pages-Changing document setup options. About Master Pages: -Creating master pages-Applying master pages-Applying Grids. Text Formatting and word processing: selecting text or text objects-Importing text-Editing text-Threading text blocks-Threading text frames.

UNIT III **(9 Hrs)**

Balancing columns-controlling page and column breaks-Adding jump lines. Setting text preferences: -About formatting text-Formatting characters-Formatting paragraphs-Setting indents and tabs-Adding rules above or below paragraphs-Using paragraph styles-Understanding how text is composed-Tracking type-Setting word and letter spacing-Customizing hyphenation for specific words- Customizing hyphenation for paragraphs-Leading: Adjusting the space between lines of text.

UNIT IV **(8 Hrs)**

Manipulating an object using the control palette- Grouping and ungrouping objects-Locking objects- Masking objects-Aligning and distributing objects: Rotating, skewing, and reflecting objects.

Drawing and editing lines and shapes-Using frames-Changing the stacking order of objects - Deleting an object-Manipulating an object using the control palette. Cropping a Graphic Wrapping text around graphics - Attaching a graphic to text.

UNIT V **(8Hrs)**

Using Image Control on a Bitmap - Using Photoshop effects- Compressing and decompressing a TIFF image- Viewing images on-screen at different resolutions - Key lining - Viewing clip-art images-Using layers. About hypertext links-About Adobe PDF-Preparing a PageMaker publication for Adobe PDF - Exporting a document to Adobe PDF - Changing distiller options in PageMaker - Preparing a PageMaker publication for HTML.

Text Book: Course materials will be provided

Reference Books

S. No	Author	Title of Book	Publisher	Year of Publication
1	David Flanagan	The Definitive Guide: Activate Your Web Pages Definitive Guide Series	O'Reilly Media, Inc	2011
2	Pakhira. K , Malar	Multimedia Animations	Prentice Hall of India	2010
3	Proot	Adobe page maker	Cengage Learning	2009

Note

*During Semester III, Unit I, Unit II till Changing Document Set up Options

** During Semester IV, Unit II from About Master Pages, Unit III, Unit IV and Unit V

Semester : **III & IV**

Title : **Object Oriented Analysis and Design-Level I**

Sub code : **SB16AD01**

Credits : **4** **Lecture Hours : 43**

Objective:

To explore the basic building blocks of UML and to design various modelling diagrams using UML.

UNIT I **(9 Hrs)**

Introduction to UML: Overview of the UML- Importance of modeling- principles of modeling- object oriented modeling- conceptual model of the UML- Architecture- Software Development Life Cycle.

UNIT II **(9 Hrs)**

Structural Modeling Basic Structural Modeling: Classes- Relationships- common Mechanisms- and diagrams. Advanced Structural Modeling: Advanced classes- advanced relationships- Interfaces- Types and Roles- Packages.

UNIT III **(9 Hrs)**

Class & Object Diagrams: Terms and concepts- construction of a class diagram- common modeling techniques for Class & Object Diagrams-Interactions- Interaction diagrams.

UNIT IV **(8 Hrs)**

Behavioral Modelling: Use cases- Use case Diagrams- Activity Diagrams. Advanced Behavioral Modeling- state machines- processes and Threads- Time and space- state chart diagrams.

UNIT V **(8 Hrs)**

Architectural Modeling: Components- Modeling Techniques – Modeling a physical database- Model an adaptable system- Deployment - Component diagrams and Deployment diagrams.

Text Book: Course materials will be provided

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Martina Seidl, Marion Scholz, Christian Huemer, GertiKappel	UML @ Classroom: An Introduction to Object-Oriented Modeling	Springer	2015
2	Martina Seidl, Marion Scholz, Christian Huemer, GertiKappel	An Introduction to ObjectOriented Modeling	Easy Reader	2011
3	Gandharba Swain	Object-Oriented Analysis and Design through Unified Modeling Language	Laxmi Publications	2010

Note

*During Semester III, Unit I, Unit II till Advanced Classes

** During Semester IV, Unit II from Advanced Relationships, Unit III, Unit IV and Unit V

Semester : III & IV

Title : Basics of Web Design I

Sub Code : SB11WD01

Credits : 4 **Lecture Hours: 43**

Objective:

To provide a conceptual understanding of the methods & techniques of developing a simple to moderately complex website.

UNIT I **(9 Hrs)**

Computers-computer development, hardware components, operating systems, text processors, presentation software, photo editing software –digital imaging software tools: word, PowerPoint, Photoshop,.etc., MSPAINT, Photoshop, Corel Draw

UNIT II **(9 Hrs)**

Development of internet - History &development of the internet. Access to internet ,browsers.,etc., websites with improved usability and accessibility .Internet service :protocols,emails,newsgroups,net meeting,charting,.,etc.,.Advantages & disadvantages of popular search engines & how they perform collecting &indexing of websites .Hazards on the internet(Virus,spam,worms,hoaxes,&scans),&tips for safer computing .Practical Assignment: Creating of simple websites.

UNIT III **(9Hrs)**

Introduction to web design - Basic concepts of web design. Usability &usability errors in planning: Websites purpose, specification, creating user profiles, creating website prototypes, quality testing. etc., user oriented web design. Classification of users &needs of specified user groups.user opinion analysis & basic user characteristics affecting web design (sight, memory, patience. etc.,).accessible design, w3c accessibility guidelines &use of automatic accessibility checking software. Website classification. Different website structures &web design approaches website publishing & updating .Methods of website popularization. web server performances. Security issues: Attacks by hackers & viruses, security policies& information backup. Secure pages, client certificate, fire walls, security events tracking,etc,.,System recovery after a virus attack.

UNIT IV **(8 Hrs)**

Internet languages &tools-Hypertext markup languages (HTML) Syntax. Document type definition, creating WebPages adding pictures textual & graphic hyperlinks through

HTML & DHTML.background pictures. use of special characters ,list & table .Table formatting &manipulating .Cascading Style sheet,(CSS) for text formatting &other manipulations. Java script for creating interacting navigation commands & animations.cookies& their placement on the visitors hard disk. Simple HTML forms .Hidden fields. Java script manipulation such as submitted data verification & securing from accidental erasing of form elements by the visitor.

UNIT V **(8 Hrs)**

DHTML & Database Systems-Database concept & History.Logical & physical organization of data, database models & data independence .Relational database concepts .some familiar databases.Embedding database languages in general programming languages. APPLIED DATABASES Database for the web my SQL for database creating & updating connecting websites to MY SQL driven databases. Web application data errors &error reports. Sessions & their manipulation. Client identification &database security.

Text Book: Course materials will be provided

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Jon Ducklet	Web Design with HTML CSS, JAVA SCRIPT	Wiley	2014
2	Aaron Gustafson	Adaptive Web Design	Easy Reader	2011
3	Rachhpal Singh	HTML and DHTML	S.K. Kataria& Sons	2010

Note

* During Semester III, Unit I, Unit II till Charting etc.

** During Semester IV, Unit II from Advantages & Disadvantages of Popular Search Engines, Unit III, Unit IV and Unit V

JOB ORIENTED COURSE

Title : Cloud Infrastructure and Services

Subject Code : JOB1626

Objective:

This course focuses on various basic concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing.

UNITI (12 Hrs)

Journey to the cloud-classic data center: Application, DBMS, Compute and storage-storage networking technologies 1 –Storage networking technologies 2-Object based and unified storage technologies-Business continuity overview and Backup- Replication technologies-CDC management.

UNIT II (12 Hrs)

Virtualized data center-compute virtualization overview-Computer virtualization techniques virtual machine-Resource management-Physical to virtual conversion. Storage: Storage virtualization overview-virtual machine storage-Block level and file level virtualization-virtual provisioning and automated storage tiering.

UNIT III (12 Hrs)

Virtualized data center-Networking overview-VLAN and VSAN technologies-Network traffic management-Desktop application-Application virtualization.

UNIT IV (12 Hrs)

Fault tolerance mechanism in VDC- Backup in VDC- Replication and migration in VDC. Cloud computing primer: Overview of cloud computing- Cloud services and Deployment models. Cloud infrastructure and management: Cloud infrastructure and service creation-cloud service management

UNIT V (12 Hrs)

Cloud security: Security basics- Security Concerns and threats- Security Mechanisms-Governance, Risks and Compliance. Cloud migration Considerations: Migration Consideration- Phases to adopt the cloud.

Text Book: Course materials will be provided

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Ray J. Rafaels	Cloud Computing: From Beginning to End	Create Space Independent Publishing Platform	2015
2	Ronald L. Krutz	Cloud Security	Wiley	2010

Course Number	Course Name	Category	L	T	P	Credit
CS16C07	DATA MINING	Core	71	4	-	4

Preamble

This course helps the student to understand the data mining principles, methods and tools. This subject gives an insight into the various techniques and the applications of data mining.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Describe the concepts of evolutionary path which has led to the need for data mining and its applications	K1
CO2	Recognize the types of data to be mined and the tasks to integrate a data mining system	K1
CO3	Explain the concepts of Preprocessing techniques and the concepts of Data Warehousing	K2
CO4	Discuss the techniques of association finding, feature selection clustering and classification	K2
CO5	Illustrate the roles that data mining plays in various fields and helps to choose a proper data mining system	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	S
CO2	S	S	M	M	S
CO3	S	S	S	S	M
CO4	S	S	S	S	M
CO5	S	S	M	S	M

S- Strong; M-Medium; L-Low

DATA MINING - CS16C07 ((71 Hrs)

Syllabus

UNIT I (14 Hrs)

Introduction: Why Data Mining – What is Data Mining – What Kinds of Data Can Be Mined – Which Technologies are Used- Which Kinds of Applications are Targeted – Major

Issues in Data Mining- Getting to know your data: Data Objects and Attribute Types – Basic Statistical Description of Data.

UNIT II **(15 Hrs)**

Data Pre-processing : Data Pre-processing: An Overview – Data Cleaning – Data Integration – Data Reduction – Data Transformation and Data Discretization – Data Warehousing and online Analytical Processing : Data warehouse : Basic Concepts- Data Warehouse Design and Usage.

UNIT III **(14 Hrs)**

Data Cube Technology: Data Cube Computation: Preliminary Concepts- Data Cube Computation Methods - Mining Frequent Patterns, Associations, and Correlations: Basic Concepts – Frequent Item Set Mining Methods – Which Patterns are Interesting – Pattern Evaluation Methods.

UNIT IV **(14 Hrs)**

Classification: Basic Concepts - Decision Tree Induction: Decision Tree Induction - Attribute Selection Measures -Tree Pruning – Techniques to improve Classification Accuracy - Cluster Analysis: Basic Concepts and Methods: Cluster Analysis – Partitioning Methods - Evaluation of Clustering.

UNIT V **(14 Hrs)**

Outlier Detection: Outliers and Outlier Analysis - Outlier Detection Methods - Data Mining Trends and Research and Research Frontiers : Mining Complex data Types - Other Methodologies of Data Mining - Data Mining Applications: Data Mining for Financial Data Analysis - Data Mining for Retail and Telecommunication Industries - Data Mining Trends.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	JiaweiHan, MichelineKamber	Data Mining Concepts and Techniques	Morgan Kaufmann Publishers,	3rd Edition,2013

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Pang-NingTan, Michael Steinbach and Vipin Kumar	Introduction to Data Mining	Pearson Education	2016
2	Max Barmer	Principles of Data Mining	Springer	3rdEdition,2016

3	BharatBhushanAgarwalandSumitPrakashTayal	Data Mining and Data Warehousing	Laxmi Publications	2012
4	Gajendran Sharma	Data Mining, Data Warehouisng and OLAP	S Kataria and Sons	2013

Pedagogy

- Chalk and Talk, PPT, Discussion, Assignment, Demonstration, Quiz, Case study

Course Designers

- Dr. S. C. Punitha
- Mrs. C. Arunpriya

Course Number	Course Name	Category	L	T	P	Credit
CS16C08	COMPUTER NETWORKS	Core	71	4	-	4

Preamble

To provide in depth knowledge of the various network layers, network security and client server computing.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Tell about the different design issues and functionality of each network layer	K1
CO2	Discuss on Bluetooth architecture and distinguish various routing algorithms	K2
CO3	Illustrate the importance of network security and application of cryptographic methods in establishing security	K3
CO4	Interpret the data flow in each network layer and services of each layer	K3
CO5	Demonstrate the working principle of client server computing	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	M
CO2	S	S	M	M	S
CO3	S	S	M	M	S
CO4	S	S	M	M	S
CO5	S	S	S	S	S

S- Strong; M-Medium; L-Low

COMPUTER NETWORKS - CS16C08 (71 Hrs)

Syllabus

UNIT I (14 Hrs)

Introduction: Uses of computer networks - Network Hardware - Network Software - Reference models.

UNIT II **(14 Hrs)**

Physical layer: Guided Transmission media, Public switched telephone network: Structure of telephone system. Data link Layer: Data link layer design issues. Media access Control sub layer: The channel allocation problem, Blue tooth architecture and applications.

UNIT III **(15 Hrs)**

Network Layer: Network layer Design issues - Routing algorithms - The optimality principle - Shortest path routing – Flooding - Distance vector routing - Routing for mobile hosts. The Transport layer: The transport service: Services provided to the upper layers - Transport service primitives.

UNIT IV **(14 Hrs)**

The Application layer: Electronic mail: Architecture and Services - The User agent. Network security: Cryptography - Symmetric key algorithms: DES - Public key algorithms: RSA - Digital Signatures: Public key signatures.

UNIT V **(14 Hrs)**

Client/Server Computing - what is client server - file server - database server - transaction server - groupware server - object servers - web server - fat server or client server - client/server building blocks - Client/Server transaction processing: The magic of transaction: The ACID properties - Transaction models.

Text Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Andrew S Tanenbaum	Computer Networks	Pearson education	5th Edition, 2011
2	Robert Orfali, Dan Harkey, Jerry Edwards	Client/Server Survival Guide	John Wiley & sons	3rd Edition, 2008

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Larry L Peterson, Bruce S Davie	Computer Networks - A systems approach	Elsevier Press	5th Edition, 2012
2	Behrouz A Forouzan	Data communications and networking	Tata McGraw Hill	5th Edition, 2012
3	William Stallings	Data and Computer Communications	Prentice Hall of India Private Limited, New Delhi	8th Edition, 2011

Pedagogy

- Chalk and Talk, PPT, Discussion, Assignment, Demonstration, Quiz, Case Study

Course Designers

- Mrs. S. Karpagavalli
- Dr. J. VijiGripsy

Course Number	Course Name	Category	L	T	P	Credit
CS16C09	OBJECT ORIENTED PROGRAMMING WITH C++	Core	71	4	-	4

Preamble

This subject is designed to understand object-oriented programming features in C++. To apply these features to program design and implementation .It also provides object-oriented concepts and how they are supported by C++.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recall about POPs and OOPs Concept from C language	K1
CO2	Describe the functions, member functions, arrays and array of Objects	K2
CO3	Discuss on Constructors, Destructors and Type conversions in C++	K2
CO4	Illustrate different level of Inheritance and Pointer concepts by developing programs	K3
CO5	Apply the managing Console I/O and file Operations	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	M	S	S	M	S
CO3	S	M	S	M	S
CO4	S	S	M	S	S
CO5	M	S	S	M	M

S- Strong; M-Medium; L-Low

OBJECT ORIENTED PROGRAMMING WITH C++ - CS16C09 (71 Hrs)

UNIT I (14 Hrs)

Principles of object oriented programming – Basic concepts of object oriented programming – Benefits of OOPs – object oriented languages – Applications of OOPs – Beginning with C++ - what is C++ - Applications of C++ – C++ statements – structure of C++ program – tokens – expressions and control structures – tokens – identifiers – Basic and

user defined data types – operators in C++ – operator overloading – operator precedence – control structures.

UNIT II **(15 Hrs)**

Functions in C++ - the main functions – function prototyping – call by reference – return by reference – inline functions- function overloading- classes and objects – introduction- specifying a class- defining member function- nesting of member functions- private member functions- arrays within a class – static data members - static member functions - array of objects - objects as function arguments - friendly functions - pointers to members.

UNIT III **(14 Hrs)**

Constructors and destructors: Constructors: parameterized constructors - copy constructors, dynamic constructors – multiple constructors in a class – constructors with default arguments – Constructing two dimensional arrays- destructors- operator overloading- type conversions.

UNIT IV **(14 Hrs)**

Inheritance: Extending classes – defining derived classes – single, multilevel, multiple, hierarchical and hybrid inheritance- virtual base classes – abstract classes – pointers – virtual functions and polymorphism: pointers to objects, this pointer, pointers to derived classes, virtual functions.

UNIT V **(14 Hrs)**

Managing console I/O operations: C++ streams – C++ stream classes – unformatted I/O operations – formatted console I/O operations – managing output with manipulators – working with files – classes for file stream operations – opening and closing a file – file pointers and their manipulators– sequential I/O operations.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	E. Balagurusamy	Object Oriented Programming with C++	Tata Mc-Graw Hill Publication	6th Edition, 2015

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Harry H. Chaudhary	Head First C++ Programming	Create Space Independent Publishing Platform	2014
2	Ashok Kamathae	Programming in C++	Pearson Education	2nd Edition, 2013
3	SouravSahay	Object Oriented Programming with C++	Oxford University Press	2nd Edition, 2012

Pedagogy

- Chalk and Talk, PPT, Discussion, Assignment, Demonstration, Quiz, Case Study

Course Designers

- Mrs. J. Shalini
- Mrs. N. Deepa

Course Number	Course Name	Category	L	T	P	Credit
CS16CP4	C++ PROGRAMMING AND BIOINFORMATICS LAB	Core	-	-	60	3

Preamble

To acquire knowledge about object oriented concepts and develop an application. To analyze the protein sequence from protein databases.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the object oriented concepts	K1
CO2	Discuss the execution of the C++ program using control structures, classes and objects	K2
CO3	Recognize Friend Functions in C++ programs	K2
CO4	Demonstrate Constructor, Destructor and Inheritance	K3
CO5	Apply programming skills to experiment Protein sequence	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	M
CO2	S	M	S	M	M
CO3	S	M	M	S	S
CO4	M	S	M	S	S
CO5	S	S	S	S	S

S- Strong; M-Medium; L-Low

C++ PROGRAMMING AND BIOINFORMATICS LAB - CS16CP4 (60 HRS)

Syllabus

- Control structures
- Class and objects
- Friend function
- Constructors & Destructors

- Inheritance
- Operator Overloading
- Virtual Functions
- Analyse and retrieve Protein sequences from protein database
- Getting and analysis of primary protein structure
- Secondary structure analysis of protein
- Tertiary protein structure analysis using Rasmol

Pedagogy

- System, White Board, Demonstration through PPT

Course Designers

- Mrs. N.A. SheelaSelvakumari
- Mrs. C. Arunpriya

Course Number	Course Name	Category	L	T	P	Credit
PM16A01	MANAGEMENT INFORMATION SYSTEMS	Allied	86	4	-	5

Preamble

To inculcate knowledge to students why information systems are so important today for business and as well as educate the role of the major types of information systems in a business environment.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Tell about the basic concepts and Roles of Management Information Systems	K1
CO2	Describe the development of Business strategies, E-Business Models	K2
CO3	Discuss about the Decision Making concepts and Knowledge Management in MIS	K2
CO4	Examine the applications in Manufacturing Sector and Service sector in Industry	K3
CO5	Illustrate the Enterprise Management System and Information Systems processing	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	M
CO2	M	S	S	S	S
CO3	S	S	S	M	S
CO4	M	S	M	S	S
CO5	S	M	S	S	S

S- Strong; M-Medium; L-Low

MANAGEMENT INFORMATION SYSTEMS - PM16A01 (86 HRS)

Syllabus

UNIT I (18 Hrs)

Introduction to MIS: MIS concept – Definition – Role of MIS – Impact of MIS – MIS and the User – Management as a Control system – MIS: a support to Management – Management Effectiveness and MIS – Organization as a system – Organizational Behavior.

Process Management: Planning – Organizing – Staffing – Coordinating – Directing and – Controlling.

UNIT II **(17Hrs)**

Strategic Management of Business Performance: Essentiality of Strategic Planning – Tools of Planning – Strategic Management of Business Performance – What is Strategy? – Class and Types of Strategies. Electronic Business Technology: Introduction to E-Business – Models of E-Business- Electronic Payment System – Security in E-Business – MIS and E-Business. A tool for business management: Internet and Web Process Management – strategic Management under Web – Web Enabled Business Management – Application system Architecture in Web – MIS in Web Environment.

UNIT III **(17 Hrs)**

Decision Making: Decision-making concepts – Decision-making process– Behavioral Concepts in Decision-making – Organizational Decision-making – MIS and Decision-making – Decision Methods Tools and Procedures. Information and Knowledge: Information Concepts – Information: a quality product – Classification of Information – Methods of data and Information Collection – Value of Information – General Model of a Human as an Information Processor. Choice of Information Technology: Nature of IT decision – Strategic Decision – Configuration Design – Evaluation.

UNIT IV **(17 Hrs)**

Applications in Manufacturing Sector: Personnel, Financial, Production, Raw Material and Marketing Managements. Applications in Service Sector: Introduction to Service Sector – Creating a Distinctive Service MIS Application in Service Industry – MIS: Service Industry.

UNIT V **(17Hrs)**

Management of Global Enterprise: Enterprise Management Systems – ERP system – ERP Model and Modules –Benefits of ERP –ERP Product Evolution - ERP Implementation – EMS and MIS. Technology of Information Systems: Introduction – Data Processing – Transaction Processing – Application Processing – Information System processing – Human Factors and User Interface Real Time Systems and Good Design.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Waman S Jawadekar	Management Information Systems Text and cases	Tata McGraw Hill Publications	5th Edition,2013

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	James A O'Brien & George M. Marakas	Management Information Systems	Tata McGraw Hill Publications	7th Edition, 2007
2	Kenneth C Laudon & Jane P.Laudon	Management Information Systems Managing the Digital Firm	PHI	12thEdition, 2011
3	Mahadeo Jaiswal& Monika Mital	Management Information Systems	Oxford	2004

Pedagogy

- Chalk and Talk, PPT, Discussion, Assignment, Demonstration, Quiz, Case Study

Course Designers

- Mrs. R. Kavitha
- Mrs. C. Arunpriya

Semester : **III & IV**

Title : **Multimedia and DTP Software-Practical I**

Sub code : **SB11MDP1**

Credits : **2** **Practical Hours: 45**

1. Create a business card using Page maker.
2. Create a certificates using page maker.
3. Create greeting card for some festivals using page maker.
4. Type some text and give the drop cap effect
5. Create a slam book using page maker.
6. Create a simple logo using page maker.
7. Import a picture and give the mask effect for the picture.
8. Create an object and give reflect and rotate effect.
9. Create a newspaper for three page and insert images.
10. Draw two or more objects in a same place and bring forward, backward using the arrange options.

Note

* During Semester III Program 1 to Program 6

** During Semester IV Program 7 to Program 10

Semester : III & IV

Title : Object Oriented Analysis and Design-Practical I

Sub. Code : SB16ADP1

Credits : 2 **Practical Hours : 45**

Objective:

To apply and develop the UML diagrams for applications.

Choose any one of the projects given below and do the exercises program for the project. [Student Marks Management System, Library Management System, Employee Management System, Hostel Management System]

1. Write the complete problem statement
2. Write the software requirement specification document
3. Draw the entity relationship diagram
4. Draw the data flow diagrams at level 0 and level 1
5. Draw use case diagram
6. Draw activity diagram of all use cases
7. Draw state chart diagram of all use cases
8. Draw sequence diagram of all use cases
9. Draw collaboration diagram of all use cases
10. Assign objects in sequence diagram to classes and make class diagram

Note

* During Semester III, Program 1 to Program 6

** During Semester IV, Program 7 to Program 10

Semester	**:**	**III & IV**	
Title	**:**	**Basics of Web Design-Practical I**	
Sub. Code	**:**	**SB11WDP1**	
Credits	**:**	**2**	**Practical Hours: 45**

1. Write a HTML program which says "What is your name?" above the text input box, and replies with "Hello Saranya" (or whatever name was entered).

   Intermediate: the form should ask for: o Title: Mr, Mrs, Ms, Dr or Prof from a drop-down menu; o First name; o Family name; o Address.

   The reply should look like:

   "Hello, MsSaranya V, 7th Street, Gandhipuram, Coimbatore".

2. Write a HTML program that outputs a form as below, and calculates the total cost for each row and the grand total to 2 decimal places. The script and form should be in the same file

Item	**Price**	**Quantity**	**Total**
Widgets	13.75	0	0
Dongles	249.99	0	0

Grand Total 0

3. Design an online Voting Portal.
4. Create a simple web application form for College Admission.
5. Design an online Examination Portal with multiple sessions.
6. Design a Toolbar using CSS and HTML.

Note

* During Semester III Program 1 to Program 4

** During Semester IV Program 5 to Program 6

Course Number	Course Name	Category	L	T	P	Credit
PJA1610	JAVA PROGRAMMING	Core	71	4	-	4

Preamble

The course is an expository of the object-oriented programming methodology with emphasis on software design and code reuse as its core objectives. Language elements include loops, arrays, input/output structures, events, exceptions, and threads. It aims to develop the student's logical, critical thinking and problem solving skills on programming basics.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods	K1
CO2	Describe the fundamentals of object-oriented programming including defining classes, objects, invoking methods	K2
CO3	Apply the principles of inheritance, packages and interfaces	K3
CO4	Use exceptions, applets, graphics programming for real world problems	K3
CO5	Demonstrate the working features of files	K3

Mapping with Programme Outcomes

Cos	PO1	PO2	P03	P04	PO5
CO1	S	M	S	S	S
CO2	S	S	S	M	S
CO3	M	M	S	M	S
CO4	S	S	S	M	S
CO5	S	S	S	S	M

S- Strong; M-Medium; L-Low

JAVA PROGRAMMING - PJA1610 **(71 Hrs)**

Syllabus

UNIT–I **(14 Hrs)**

JAVA Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and WWW – Web Browsers. Overview of Java Language: Introduction – Simple Java program – Structure – Java tokens – Statements – Java virtual Machine.

UNIT-II **(15 Hrs)**

Constants – Variables – Data types – Operators and expressions -Decision making and Branching: Simple If Statement, the IF…Else statement, The Else... If ladder, The Switch Statement, The? : Operator, Decision making and looping: The While statement, the do Statement- The for Statement –Jumps in loops – labeled loops – Classes, Objects and Methods.

UNIT-III **(14 Hrs)**

Arrays, Strings and Vectors – Interfaces- Multiple Inheritance – Packages: Putting classes together – Multi Threaded Programming.

UNIT-IV **(14 Hrs)**

Managing Errors and Exceptions – Applet Programming – Graphics programming: The Graphics class-Lines and rectangles-Circles and ellipses-Drawing arcs-Drawing polygons-Line graphs-Using Control loops in applets-Drawing Bar charts.

UNIT-V **(14 Hrs)**

Files: Introduction – concept of streams – Stream classes – Using stream – I/O classes – File class – I/O Exceptions – creation of files – Reading / Writing characters/ Bytes – Handling primitive data types – Random Access Files.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	E. Balaguruswamy	Programming with JAVA - A Primer	McGraw Hill Professional	2015

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Herbert Schildt	Java: The Complete Reference	McGraw Hill Professional	2017
2	Robert Sedgewick & Kevin Wayne	Introduction to Programming in Java	Addison Wesley	2017
3	Y. Daniel Liang	Introduction to Java Programming, Brief Version	Pearson Education	2017

Pedagogy

- Lectures, Group discussions, Demonstrations.

Course Designer

- Dr. J. Viji Gripsy

Course Number	Course Name	Category	L	T	P	Credit
PCG1611	COMPUTER GRAPHICS	Core	71	4	-	4

Preamble

This course covers the computer graphics display devices. It covers the drawing, clipping algorithms, 2D and 3D transformations. It focuses on interactive input methods and functions in computer graphics.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Describe the graphics techniques used in various applications and display devices	K1
CO2	Differentiate the concept of drawing algorithms, rotation and transformation.	K2
CO3	Demonstrate the concepts of various clippings and transformations	K3
CO4	Illustrate the various input devices used in graphics	K3
CO5	Apply the three dimensional concepts using algorithm and display methods	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S- Strong; M-Medium; L-Low

COMPUTER GRAPHICS - PCG1611 **(71 Hrs)**

Syllabus

UNIT I **(14 Hrs)**

Basic Concepts: Uses of computer graphics – Display devices - Color CRT monitors – Direct view storage tube – Flat panel displays – Raster scan systems - Random scan system, Input and Hard copy device.

UNIT II **(14 Hrs)**

Line drawing algorithms: DDA algorithm, Bresenham's line drawing algorithm, Parallel line algorithms – Circle generating algorithms: Properties of circles, Midpoint circle algorithm.

UNIT III **(14 Hrs)**

Two dimensional transformations: Basic transformations - Composite transformation of translation, Rotation, Scaling – General Pivot point rotation – General fixed point scaling - Other transformations: Reflection, Shear. Two dimensional viewing: Clipping Operations– Point clipping Line clipping: Cohen Sutherland line clipping - Curve clipping – Text clipping – Exterior clipping.

UNIT IV **(14 Hrs)**

Graphical User Interface and Interactive Input methods: Input of graphical Data: Logical input devices, locator devices, stroke devices, string devices, valuator devices, choice devices, pick devices Input Functions: Input modes, request modes, locator and stroke input request modes, string modes, valuator modes, choice modes, pick modes, sample modes, event modes.

UNIT V **(15 Hrs)**

Three dimensional concepts: Three dimensional display methods – Three dimensional geometric and modeling transformations: Translation, Rotation and Scaling – Three dimensional viewing: Viewing pipeline – Viewing coordinates – Projections. Visible Surface Detection Methods: Back face detection method, Depth Buffer method, Octree method. Surface Rendering Methods: Polygon rendering methods.

Textbook

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Donald Hearn, M. Pauline & Baker	Computer Graphics – C Version	Pearson Education Publication	2nd Edition, 2008

Reference Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Udit Agarwal	Computer Graphics	S K Kataria& Sons	2013
2	Pradeep K. Bhatia	Computer Graphics	IK International Publishing House	3rd Edition 2013
3	John F Hughes et.al.,	Computer Graphics: Principles and Practice	Addison Wesley	3rd Edition 2013

Pedagogy

- Lectures, Demonstrations, Group Discussions, Case studies

Course Designer

- Mrs. R. Kavitha

Course Number	Course Name	Category	L	T	P	Credit
CS16C12	SOFTWARE ENGINEERING	Core	71	4	-	4

Preamble

This course provides the basic concepts of software engineering to design a new software project and develops skills to construct software of high quality. This Course also covers the fundamental techniques for modeling software requirements, analysis and design.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recognize, define, and make correct use of generally accepted software engineering techniques and terminology	K1
CO2	Understand common lifecycle processes to plan and deliver an effective Software engineering Process	K2
CO3	Describe broad range of concepts from software engineering, spanning all aspects of activities in software engineering process	K2
CO4	Apply written, graphical communication in both technical and an ability to identify and use appropriate Software techniques to develop software system.	K3
CO5	Apply a systematic, disciplined, cost-effective development, operation and maintenance of software systems to the satisfaction of their beneficiaries.	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	S	S	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S- Strong; M-Medium; L-Low

SOFTWARE ENGINEERING - CS16C12 **(71 Hrs)**

Syllabus

UNIT I **(14 Hrs)**

Software and Software Engineering: The Nature of Software – The Unique Nature of Web Apps - Software Engineering - The Software Process- Software Engineering Practice- Software Myths-How it All Starts. Process Models: A Generic Process Model-Process Assessment and Improvement- Prescriptive Process Models.

UNIT II **(15 Hrs)**

Understanding Requirements: Requirements Engineering-Establishing the Groundwork-Eliciting Requirements-Developing Use Cases-Building the Requirements Model-Negotiating Requirements- Validating Requirements. Requirements Modeling: Scenarios, Information and Analysis Classes: Data Modeling Concepts-Class-Based Modeling.

UNIT III **(14 Hrs)**

Design Concepts: The Design Process – Design Concepts - The Design Model. Architectural Design: Software Architecture-What is Architecture?- Why is Architecture Important?-Architectural Descriptions-Architectural Decisions Component-Level Design: What Is a Component?-Designing Class Based Components-Designing Traditional Components.

UNIT IV **(14 Hrs)**

Quality Concepts: What is Quality? - The Software Quality Dilemma-Achieving Software Quality Software Quality Assurance: Elements of Software Quality Assurance-SQA Tasks, Goals and Metrics-Formal Approaches to SQA-Statistical Software Quality Assurance-Software Reliability Software Testing Strategies: A Strategic Approach to Software Testing- Strategic Issues Product Metrics: A Framework for Product Metrics-Metrics for the Requirements Model- Metrics for Source Code-Metrics for Testing-Metrics for Maintenance.

UNIT V **(14 Hrs)**

Risk Management: Reactive versus Proactive Risk Strategies - Software Risks- Risk Identification- Risk Projection- Risk Refinement-Risk Mitigation, Monitoring and Management-The RMMM Plan Maintenance and Reengineering: Software Maintenance – Software Supportability-Reengineering-

Business Process Reengineering-Software Reengineering- Reverse Engineering-Restructuring- Forward Engineering-The Economics of Reengineering. Software Process Improvement: What is SPI? - The SPI Process -SPI Trends.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Roger S. Pressman	Software Engineering - A Practitioners Approach	Mc – Graw Hill Higher Education	7th Edition, 2017

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Ian Sommerville	Software Engineering	Pearson Education	10th Edition, 2017
2	Richard Fairley	Software Engineering Concepts	McGraw Hill Education	2017
3	Rajib Mall	Fundamentals of Software Engineering	Prentice Hall India Learning Private Limited	4th Edition, 2014

Pedagogy

- Lecture, Group Discussion, Demonstration, Case Study

Course Designers

- Dr. C. Arunpriya

Course Number	Course Name	Category	L	T	P	Credit
CS16E01	PARALLEL COMPUTING	Elective	71	4	-	5

Preamble

To develop structural intuition of how the hardware and the software work, starting from simple systems to complex shared resource architectures and shared memory programming paradigm. This development is accompanied by progress in the design, analysis and application aspects of parallel algorithms and awareness of the parallel computing technologies using multi core system.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To gain the knowledge about basic models of parallel machines and tools to program them	K1
CO2	To recognize how to use parallel computing and enable to Write parallel code for high performance computing	K2
CO3	Demonstrate the architecture of future multi- and many-core Processor systems	K3
CO4	Apply knowledge for a good understanding of optimizing serial programs and algorithms within computational Science	K3
CO5	Illustrate the pragmatic approach to parallel programming of Message-passing algorithms through C language	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	M
CO2	S	M	S	S	M
CO3	M	M	S	M	M
CO4	S	S	M	S	S
CO5	S	S	S	S	S

S- Strong; M-Medium; L-Low.

PARALLEL COMPUTING - CS16E01 **(71 Hrs)**

Syllabus

UNIT I **(15 Hrs)**

Introduction: Why do we need High speed computing? – How do we increase the speed of computers? – History of parallel computers – Some interesting features of parallel computers. Instruction Level parallel processing: some example commercial processors – multithreaded processors – Proposed future processor architectures.

UNIT II **(14 Hrs)**

Structure of parallel computers: A generalized structure of a parallel computer – Shared memory parallel computers – interconnection networks – Distributed shared memory parallel computers.

UNIT III **(14 Hrs)**

Introduction: Computational demands of modern science – Advent of practical parallel processing – Parallel processing terminology – The sieve of Eratosthenes. PRAM Algorithms: A model of serial computation – The PRAM model of parallel computation. PRAM algorithms: Parallel reduction – merging two sorted lists.

UNIT IV **(14 Hrs)**

Processor Arrays, Multiprocessors and Multicomputer: Processor organizations – Processor arrays – Multiprocessors – multicomputer – Flynn's taxonomy-speedup, scaled speedup and parallelizability.

UNIT V **(14 Hrs)**

Parallel programming languages & algorithms: Parallel language & algorithm design for the array processor – other von Neumann-type languages – C, C++ & parallel C++ - Non-von Neumann-type languages.

Text Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Michael J Quinn	Parallel Computing	Tata Mc-Graw Hill	2nd Edition, 2008
2	V.Rajaraman, C.Siva Ram Murthy	Parallel Computers Architecture and Programming	Prentice Hall of India Pvt Ltd	2008

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Micheal McCool, Arch D. Robinson, James Reindres	Structured Parallel Programming	Morgan Kaufmann Publishers	2012
2	Wilkinson Barry, Michael Allen	Parallel and Concurrent Programming	Pearson Education	2012
3	Peter Pacheco	Introduction to Parallel Programming	Morgan Kaufmann Publishers	2011

Pedagogy

- Lecture, Group Discussion, case Studies

Course Designer

- Mrs. N. A. Sheela Selvakumari

Course Number	Course Name	Category	L	T	P	Credit
CS16E02	BIG DATA ANALYTICS	Elective	71	4	-	5

Preamble

The course provides an introduction to big data analytics and Hadoop architecture. It introduces the Map Reduce programming model. It provides insight on NoSQL databases and querying model used in Big Data.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the big data, types of data and understand the need of big data analytics	K1
CO2	Describe the Hadoop architecture and File system	K2
CO3	Apply the Map Reduce Programming model for real-world problems	K3
CO4	Distinguish No SQL databases from RDBMS	K3
CO5	Demonstrate the working of row and column oriented data stores	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	M	S
CO3	M	M	S	M	M
CO4	S	S	S	M	M
CO5	S	S	S	M	M

S- Strong; M-Medium; L-Low

BIG DATA ANALYTICS - CS16E02 **(71 Hrs)**

Syllabus

UNIT I **(14 Hrs)**

Overview of Big Data: Defining Big Data - Big Data Types – Big Data Analytics – Industry Examples of Big Data - Big Data and Data Risk – Big Data Technologies – Benefits of Big Data.

UNIT II **(15 Hrs)**

Basics of Hadoop: Big Data and Hadoop – Hadoop Architecture – Main Components of Hadoop Framework - Analysing Big Data with Hadoop – Benefits of Distributed Applications - Hadoop Distributed File System – Advantages of Hadoop – Ten Big Hadoop Platforms.

UNIT III **(14 Hrs)**

Map Reduce: Introduction to Map Reduce –Working of Map Reduce – Map operations - Map Reduce User Interfaces.

UNIT IV **(14 Hrs)**

No SQL Databases: No SQL Data Management – Types of No SQL Databases – Query Model for Big Data – Benefits of No SQL – Mongo DB – Advantages of Mongo DB over RDBMS – Replication in Mongo DB.

UNIT V **(14 Hrs)**

HBase, CASSANDRA and JAQL: Introduction to HBase – Row-oriented and Column-oriented Data Stores – HDFS Vs HBase – Hbase Architecture – HBase Data Model – Introduction to Cassandra – Features of Cassandra . Introduction to JAQL – JSON – Components of JAQL.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	V.K. Jain	Big Data and Hadoop	Khanna Book Publishing	2017

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Frank J Ohlhorst	Big Data Analytics: Turning Big Data into Big Money	Wiley and SAS Business Series	2012

2	Anand Rajaraman, Jeffrey David Ullman	Mining of Massive Datasets	Cambridge University Press	2012
3	Paul Zikopoulos, Chris Eaton, Paul Zikopoulos	Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data	Tata McGraw Hill	2011

Pedagogy

- Lecture, Demonstration, Group Discussion

Course Designer

- Dr. S. Karpagavalli

Course Number	Course Name	Category	L	T	P	Credit
CS16E03	ARTIFICIAL INTELLIGENCE	Elective	71	4	-	5

Preamble

This course introduces the basic principle concepts in artificial intelligence like simple representation schemes, problem solving paradigms, constraint propagation, and search strategies. It also covers the areas of application such as knowledge representation, natural language processing and expert systems.

Course Outcome

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn about the artificial intelligence problem and the characteristics of the problem space.	K1
CO2	Demonstrate the fundamentals of heuristic search techniques and reasoning for problem solving.	K2
CO3	Understand the problem solving using predicates.	K2
CO4	Describe the concepts of expert systems with case studies for various applications	K2
CO5	Apply the concepts of game playing techniques.	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	S	M
CO3	S	M	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	S	M

S- Strong; M-Medium; L-Low

ARTIFICIAL INTELLIGENCE - CS16E03 **(71 Hrs)**

Syllabus

UNIT I **(15Hrs)**

Artificial intelligence meaning- The AI problems – The underlying assumption – What is an AI Techniques? – The level of the model. Problems, problem spaces, and search: Defining the system – problem characteristics – production system characteristics.

UNIT II **(14 Hrs)**

Heuristic search techniques: Generate and Test – Hill climbing – Best –first search – Problem reduction – Constraint satisfaction – Means –ends analysis. Knowledge representation issues: Representations and mappings – Approaches to knowledge representation.

UNIT III **(14 Hrs)**

Using predicate logic: Representing simple facts in logic – Representing instance and ISA relationships – computable functions and predicates resolution – natural deduction. Representing Knowledge using rules: Procedural versus declarative knowledge – Logic programming – Forward versus Backward reasoning – Matching – Control Knowledge.

UNIT IV **(14 Hrs)**

Game playing: Overview - The minimax search procedure – Adding alpha – beta cut-offs – Additional refinements - Iterative Deepening – References on specific games. Understanding: What understands? What makes understanding hard? Planning- The blocks world- components of a planning system - Good stack planning - Coral Stack planning-Nom linear planning using constraint posting.

UNIT V **(14 Hrs)**

Expert systems: Representing & using domain knowledge – Expert system shells – Knowledge acquisition. Perception and Action: Real-time search – perception- Action – Robot Architectures. Prolog - The Natural languages of Artificial intelligence- introduction-converting English to prolog facts and rules-Goals-prolog terminology-Variables-Control structure-Arithmetic Operators matching in prolog-Backtracking

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Elaine rich, Kevin Knight, Shivashankar B Nair	Artificial Intelligence	Tata McGraw Hill	3rd Edition, 2011

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Stuart Russell	Artifical Intelligence: A Modern Approach	Pearson	3rd Edition, 2013
2	Deepak Khemani	A First Course in Artificial Intelligence	McGraw Hill	2013
3	Mishra R. B.	Artificial Intelligence	Prentice Hall of India	2010

Pedagogy

- Lectures, Group discussions, Demonstrations, Case studies

Course Designers

- Mrs. N. Deepa

Course Number	Course Name	Category	L	T	P	Credit
CS16E04	PC HARDWARE & TROUBLE SHOOTING	Elective	71	4	-	5

Preamble

The course is designed to study the fundamentals of computer hardware components, assembly, upgrading, setup and configuration of the system. It also provides the concepts of networking connections, trouble shooting and installation of various drives.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of PC technology and memory works	K1
CO2	Demonstration of motherboard ,power supply and cooling protection	K2
CO3	Describe the storage principles and optical storage	K2
CO4	Classify the I/O Ports, Keyboard and mouse Interface	K3
CO5	Illustrate the Troubleshooting tools and Data, Disaster Recovery	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4
CO1	S	M	S	S
CO2	S	S	S	M
CO3	S	S	M	M
CO4	S	M	S	M
CO5	S	S	M	S

S- Strong; M-Medium; L-Low

PC HARDWARE & TROUBLE SHOOTING - CS16E04 (71 Hrs)

Syllabus

UNIT I (14Hrs)

Fundamentals of PC Technology: Fundamental building blocks of the PC - Principles of CPU operation - Trouble shooting the CPU: Handling and replacing the CPU- CPU configuration- CPU troubleshooting checklist - Memory: How memory works - Troubleshooting memory - Advanced memory technologies: DRAM – DDRAM – PPRAM.

UNIT II (14Hrs)

Motherboards: Motherboard controllers and system resources - The I/O system bus - On board I/O devices – Chipsets - ROM BIOS - ROM POST - The power supply - Ventilation and cooling protection.

UNIT III (14Hrs)

Magnetic storage Principles: Magnetic storage – How Magnetic field are used to Store – Head Sliders – Hard Disk Storage: Hard Disk Advancement and its Features – Removable Disk Storage: The Role of removable media drives – Optical Storage: Optical Technology – CD Construction and Technology - DVD Construction and Technology.

UNIT IV (14 Hrs)

External I/O Interfaces: Introduction to I/O Ports - Serial Vs Parallel –Universal Serial Bus (USB) – Input Devices: Keyboards/Mouse Interface - Keyboard troubleshooting and Repair – Mouse troubleshooting – Wireless Input Devices – Power management features of wireless input devices – Troubleshooting wireless input devices.

UNIT V (14 Hrs)

Troubleshooting Tools and Techniques: Tools of the Trade - Basic PC Handling Techniques. Basic data recovery and disaster recovery: Disk structure and Data recovery: partitions- the master boot record- partition tables- extended partitions- file allocation tables - Disaster recovery.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Scott Mueller's	Upgrading and Repairs PCs	Pearson Education, Inc.	19th Edition, 2010

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Craig Zacker and John Rourke	The Complete Reference PC Hardware	Tata McGraw-Hill Edition	2001
2	Winn L.Rosch	The Winn L.Rosch Hardware Bible	A Prentice Hall Computer, 6nd Edition	2003
3	Kate J.Chase	PC Hardware and A+ Handbook	Microsoft Corporation	2004

Pedagogy

- Demonstration, Case studies.

Course Designer

- Mrs. J. Shalini

Semester : **V**
Title : **Information Security –LEVEL II**
Subject Code : **NM13IS2**
Credits : **Grade**
Lecture Hours : **26**

Objective

This course aims on introducing the theory and practice of designing and building secure computer systems that protect information and resist attacks. It covers all aspects of cyber security including network security, computer security and information security.

UNIT I **(5 Hrs)**

Information security: History of IS-What is security?-characteristic of IS-components of I system – security system life cycle model.

UNIT II **(6 Hrs)**

Cryptography: Concepts and techniques- plain text and cipher text- Encryption principles- Cryptanalysis-cryptograph algorithm- Cryptograph tools. Authentication methods-passwords-keys versus passwords-Attacking Systems via passwords- Password verification

UNIT III **(5 Hrs)**

Fire walls: Viruses and worms- Digital rights management- What is firewalls- Types of Fire wall- Design Principles of Firewall

UNIT IV **(5 Hrs)**

Hacking: Hacker hierarchy-password cracking-Phishing- Network Hacking- Wireless hacking.- Windows hacking- Web hacking- Ethical hacking

UNIT V **(5 Hrs)**

Case studies: DNS, IP SEC- Social media

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Dr. Michael E.Whitman, Herbert. J. Mattord	Principles and Practices of Information Security	Course Technology Cengage Learning	4th Edition, 2012
2	Atul Kahato	Cryptography and Network Security	Mc - Graw Hill Education	3rd Edition, 2012
3	William Stallings	Network Security Essential Applications and Standard	Prentice Hall	2nd Edition, 2009

Course Number	Course Name	Category	L	T	P	Credit
CS16CP5	JAVA PROGRAMMING AND BIO INFORMATICSLAB	Core	-	-	75	3

Preamble

This course focuses to equip students with adequate high-level object-oriented programming techniques required for successful design, development, and deployment of today's complex software systems. Implement object oriented programming concepts. Create package and interfaces in a Java program. Use graphical user interface in Java programs and create applets. To align the sequence data using various tools in Bioinformatics

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the enabling technologies for building internet applications	K1
CO2	Illustrate the object-oriented technique to analyze software problems	K2
CO3	Apply the principles of inheritance, packages and interfaces	K3
CO4	Implement the multithreading, exception handling concepts	K3
CO5	Apply programming skills to experiment protein sequence	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	M	S
CO3	M	M	S	M	S
CO4	S	S	S	M	S
CO5	S	S	S	S	M

S- Strong; M-Medium; L-Low

JAVA PROGRAMMING AND BIO INFORMATICS LAB - CS16CP5 (75 Hrs)

Syllabus

- Exercises using classes and objects
- Exercises using Control Statements
- Exercises using different Inheritance
- Exercises using Mouse vents
- Exercises for implementing the font class method
- Exercises to implement Exception Handling
- Exercises using Interfaces
- Exercises to illustrate the Thread Priority
- Exercises using CLUSTALW tool for Pair-wise sequence alignment and multiple sequence alignment.
- Exercises using BLAST tool for pair wise and multiple sequence alignment.
- Exercises to align two sequences and find the PAM scoring matrix.

Pedagogy

- Lectures, Demonstrations

Course Designers

- Dr. J. Viji Gripsy

Semester : V &VI
Title : Multimedia and DTP Software- Level II
Sub code : SB11MD02
Credits : 4
Lecture Hours : 43

Objective

To provide a thorough discussion of the fundamentals of Adobe Photoshop and provide knowledge of how to design webpage.

UNIT I **(9 Hrs)**

Introduction-Tools Descriptions-Rectangular Marquee Tool (M)-Move Tool (V)-Polygon Lasso Tool (L)-Magic Wand Tool (W)-Crop Tool (C)-Slice Tool (K)-Healing Brush Tool (J)-Brush Tool (B)- Clone Stamp Tool (S).

UNIT II` **(9 Hrs)**

History Brush Tool (H)-Eraser Tool (E)-Gradient Tool (G)-Blur Tool (R)-Dodge Tool (O)-Path Selection Tool (A)-Horizontal Type Tool (T)-Pen Tool (P)-Rectangle Tool (U)-Notes Tool (N)- Eyedropper Tool (I)-Hand Tool (T)-Zoom Tool (Z).

UNIT III **(9 Hrs)**

Working with Layers: Active Layer-Color Modes: RGB-Indexed Color. Hue/Saturation: Hue Saturation shifts entire ranges of color within the image-Color modes.

UNIT IV **(8 Hrs)**

Color Channels: Introduction-Image Types-Image Sizes and Pixels-blending modes-Using filters- Previewing filters-To apply a filter-To add a drop shadow to text-To convert a color photo to black- and-white-Converting images to Bitmap mode.

UNIT V **(8 Hrs)**

Designing web pages: Page design- Slices-Rollovers- Animations- Preparation in Adobe Go Live- Automating the workflow. Slicing web pages: Introduction-Slice types- To create a slice with the Slice tool-Bitmap images and vector graphics.

Text Book: Course materials will be provided

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Scott Kelby	The Adobe Photoshop CS5 Book for Digital Photographers	New Roders	2011
2	Deke MsClelland	Adobe Photoshop CS5 one - on -one	Deke Press	2010
3	Ashok Banerji, Ananda Mohan Ghosh		Tata Mc Graw Hill	2010

Note

*During Semester V, UNIT I, UNIT II, till Horizontal Type Tool (T)

** During Semester VI, in UNIT II from Pen Tool (P), UNIT III, UNIT IV and UNIT V

Semester	**:**	**V &VI**
Title	**:**	**SOFTWARE TESTING TOOLS –Level II**
Sub code	**:**	**SB16ST02**
Credits	**:**	**4**
Lecture Hours	**:**	**43**

Objective

The course covers the testing process, planning strategies to test the script using testing tools.

UNIT I **(9 Hrs)**

System Testing Process: Generic challenges in software development-Identify the process elements- Test strategy, Master test plan, Preparing detailed test plan, Develop and review test cases, Identify test execution cycles. System Test Commencement- Components in test strategy.

UNIT II **(9 Hrs)**

System Test Planning and Design: Objective- Test plan Development Process- Test Design- Test Case definition- Necessity of test case documentation- Rules to be followed- Test Case Design methods- Functional Specification based Test Case design- Functional Specification.

UNIT III **(9 Hrs)**

System Test Execution- Level of test execution, text reporting and defect tracking- Defect report format- Defect submission- Life cycle- Types of defects- Defect tracking system.

UNIT IV **(8 Hrs)**

Performance Testing: Introduction to Performance Testing- Need of Performance Testing- Methods for Load Testing- Performance Test approach. VuserScript creation – Components – Virtual User Generator- Action Files – Output Window –Transactions.

UNIT V **(8 Hrs)**

Software Testing Tools: Need for tools – Classification of Tools – Benefits of Tools – Risk associated with the tools – Selecting tools – Introducing the tools in the testing process - Testing an application using any software testing tools.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Nageswara Rao Pusuluri	Software Testing Concepts and Tools	Dream Tech Press	2012

Reference Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1.	Dr. K.V.K.K.Prasad	Software Testing Tools	Dream Tech Press, Reprint ISBN	2012

Note

*During Semester V - Unit I, Unit II till Test design

** During Semester VI – From test case definition in Unit II, Unit III, Unit IV & Unit V

Semester	**:**	**V**
Advance Level Course	**:**	**1**
Paper	**:**	**1**
Title	**:**	**Wireless Communications**
Sub code	**:**	**CS14AC1**
Credits	**:**	**5***

Objective:

This subject aims in providing a strong foundation in Technology and Architecture, Design approaches, Applications.

UNIT I

Introduction: Wireless comes of age, the cellular Revolution, The global cellular Network, Broad band, Future trends, the trouble with wireless. Transmission Fundamentals: signals for conveying Information, Analog and Digital Data Transmission, Channel Capacity, Transmission Media, Multiplexing.

UNIT II

Antennas and propagation: Antennas, propagation modes, Line-of-sight Transmission, Fading in the Mobile Environment. Signal Encoding Technique: Criteria, Digital data, Analog signals, Analog data, Analog signals, Analog data, and digital signals.

UNIT III

Spread Spectrum: The concept of spread spectrum, frequency hopping spread spectrum, direct sequence spread spectrum, code division multiple access, generation of spreading sequences. Coding and Error control: Error Detection, Block Error correction codes, Convolution codes, convolution codes, automatic repeat request.

UNIT IV

Cellular Wireless Network: Principles, First generation analog, Second generation TDMA. Cordless systems and wireless local loop: cordless systems, wireless local loop. Mobile IP and wireless Access protocol: Mobile IP, Wireless Application Protocol.

UNIT V

Bluetooth and IEEE 802.15: Overview, Radio specification, Baseband specification, Link Manager Protocol, Logical link control and adaptation protocol.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	William Stallings	Wireless Communications and Networks	Pearson Education	2nd Edition, 2012

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Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Andreas F.Molisch	Wireless Communication	Wiley India Edition	2nd Edition, 2012
2	Ali Eksim	Wireless Communication Networks	Intech Publishing	2012
3	Ke-Lin Du, M.N.S. Swamy	Wireless Communication System	Cambridge University Press	2011

Semester	**: V**
Advance Level Course	**: 1**
Paper	**: 2**
Title	**: Cloud Computing**
Sub code	**: CS16AC2**
Credits	**: 5***

Objective

The main purpose of this subject is to provide the basic framework for estimating value and to determine benefits from cloud computing as an alternative to conventional IT infrastructure.

UNIT I

Introduction cloud computing: grasping the fundamentals-discovering the value of the cloud for business getting inside the cloud-developing your cloud strategy.

UNIT II

Understanding the nature of the cloud-seeing the advantages of highly scaled data center- Exploring the technical foundation for scaling computer systems-checking the cloud workload strategy – managing data

UNIT III

Examining the cloud elements: Seeing infrastructure as a service-Exploring platform as service.

UNIT IV

Managing the cloud: Managing and securing cloud service – Governing the cloud - Virtualization and the cloud.

UNIT V

Managing the cloud: Managing desktops and devices in the cloud- Service-oriented architecture and the cloud – Managing the cloud environment.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Judith Hurwitz, Robin Bloor, Marcia Kaufman and Dr. Fernhalper	Cloud Computing for Dummies	Willey India Publication Edition	2012

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Prasant Kumar Pattnaik	Fundamentals of Cloud Computing	Vikas Publishing House	2014
2	RajkimarBuyya.,et.al	Cloud Computing: Principles and Paradigms	Wiley Publications	2013
3	Barrie Sosinsky	Cloud Computing Bible	John Wiley and Sons	2011

Course Number	Course Name	Category	L	T	P	Credit
CS16C13	.NET PROGRAMMING	Core	71	4	-	4

Preamble

This course provides the students with an overview of .NET framework, Programming structure of C# in developing applications. This course covers the technologies like Common Language Runtime, C# and ADO.NET data access.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the basic concepts of .NET framework	K1
CO2	Understand the general programming structure of C# in developing software solutions based on user requirements	K2
CO3	Apply console based applications using C#	K3
CO4	Examine the background process with the help of windows application	K3
CO5	Illustrate the concepts of database access	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	M	M
CO2	S	M	S	S	S
CO3	S	S	S	S	M
CO4	S	M	S	M	S
CO5	M	M	M	S	S

S- Strong; M-Medium; L-Low

.NET PROGRAMMING - CS16C13 **(71 Hrs)**

Syllabus

UNIT I **(14Hrs)**

UNDERSTANDING .NET: The C# Environment: -.Net Strategy- Origins of .Net technology- .NET frame work- common language runtime- framework base classes- user and program interfaces - visualstudio.NET-.NET languages – benefits of. NET Approach-C#and .NET.-First C# program - Data types and Expressions.

UNIT II **(14 Hrs)**

Methods and behaviours - Making Decisions - Repeating Instructions - Arrays and Collections: array basics-array declaration- array class- string class.

UNIT III **(14 Hrs)**

Advanced Object Oriented Programming: Object Oriented Language features - Component based Development, - Inheritance- abstract classes- partial classes- interfaces- polymorphism. Debugging and Handling Exceptions: Errors-Exceptions- Exception handling Techniques- Exception Classes.

UNIT IV **(15 Hrs)**

Introduction to Windows Programming: Constrating windows and console applications- Graphical User Interface- Elements of good design - Using C# and visual studio to create windows based applications- windows forms - controls. Programming based on Events: Event handling in C# - List box control objects- Combo box control objects- Menu strip control objects- checkbox and Radio button objects.

UNIT V **(14 Hrs)**

Database Access Using ADO.NET: Database Access - ADO.Net - Data source configuration Tools.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1.	Barbara Doyle	Programming in C#	Cengage Learning India private Limited	5th Edition, 2015

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Andrew Troelsen	C# and the .Net platform	The Authors Press	2nd Edition, 2010
2	Mark J. Price	C#7 and .NET core	Packt Publisher	2nd Edition, 2017
3	E. Balagurusamy	Programming in C#	Tata McGraw Hill	3rdEdition, 2010

Pedagogy

- Lecture, Demonstration.

Course Designer

- Mrs. A.S. Kavitha

Course Number	Course Name	Category	L	T	P	Credit
CS16C14	SOFTWARE TESTING	Core	71	4	-	4

Preamble

This course provides the foundation techniques, and tools in the area of software testing. This course also includes various methodologies of different software testing techniques and their challenges for a real time project.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the characteristics of testing and software development life cycle models	K1
CO2	Recognize the facts of software development models to adopt with product characteristics	K1
CO3	Understand different types of testing, their objectives and challenges	K2
CO4	Interpret the software products to execute and report test cases	K3
CO5	Apply software testing methods and to perform various types of testing in a software project	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	M	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	M	S	S
CO5	M	S	S	S	S

S- Strong; M-Medium; L-Low

Software Testing - CS16C14 **(71Hrs)**

Syllabus

UNIT I **(15 Hrs)**

Software Development Life Cycle Models: Phases of Software project - Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing - Challenges in White-Box Testing

UNIT II **(14 Hrs)**

Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black- Box Testing? – How to do Black-Box Testing? Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash

UNIT III **(14 Hrs)**

System and Acceptance Testing: System Testing Overview – Why is System testing done? – Functional versus Non-functional Testing - Functional System Testing - Non-Functional Testing – Acceptance Testing - Summary of Testing Phases

UNIT IV **(14 Hrs)**

Performance Testing: Factors Governing Performance Testing – Methodology for Performance Testing - Tools for Performance Testing - Process for Performance Testing - Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing? – How to do Regression Testing? – Best Practices in Regression Testing

UNIT V **(14 Hrs)**

Test Planning, Management, Execution And Reporting:Test Planning – Test Management- Test Process – Test Reporting. Quick Test Professional (QTP): Overview of QTP – Testing an Application using QTP – Creating Check Points – Testing Database Application – Testing a Web Application

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Srinivasan Desikan, Gopalaswamy Ramesh	Software Testing Principles and Practices	Pearson Education	2012

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Dr. K.V.K.K. Prasad	Software Testing Tools	Dream Tech Press	2012
2	Renu Rajani	Testing Practitioner Handbook	Packt Publishing Limited	2017
3	Naresh Chauhan	Software Testing	Oxford University Press	2nd edition, 2016

Pedagogy

- Lectures, Group Discussion, Demonstration, Case Study

Course Designer

- Dr. C. Arunpriya

Course Number	Course Name	Category	L	T	P	Credit
PWT1615	WEB TECHNOLOGY	Core	71	4	-	4

Preamble

This course gives the basic principle, strategies and methodologies of web application development. The Course is designed to develop dynamic web page using scripting languages and various styles with CSS andHTML5.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the knowledge about HTML document with element types, hyperlinks, images, list, tables and forms	K1
CO2	Understand the concept of CSS for dynamic presentation effect in HTML and XML documents.	K2
CO3	Describe the mark-up languages for processing, identifying and presenting information in web pages.	K2
CO4	Apply scripting languages in HTML document to add interactive components to web pages.	K3
CO5	Illustrate the web technology concept to create schemas and dynamic web pages.	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	M	S	M
CO3	M	S	M	M	S
CO4	S	M	S	M	S
CO5	M	M	S	S	M

S- Strong; M-Medium; L-Low

WEB TECHNOLOGY - PWT1615 **(71 Hrs)**

Syllabus

UNIT I **(14 Hrs)**

Fundamentals of HTML: Understanding Elements: Root Elements-Metadata Elements-Section Elements-Heading Elements-Describing data types.

UNIT II **(15 Hrs)**

HTML 5:HTML5 and its essentials-Exploring New Features of HTML5-Next Generation of Web Development-Structuring an HTML Document-Exploring Editors and Browsers Supported by HTML5-Creating and Saving an HTML Document-Validating an HTML Document-Viewing an HTML Document-Hosting Web Pages.

UNIT III **(14 Hrs)**

DHTML: Introduction - Cascading Style sheets - DHTML Document Object Model and collections –Event Handling - Filters and Transitions – Data Binding.

UNIT IV **(14 Hrs)**

Scripting Languages: JavaScript: Introduction- Language Elements - Objects of JavaScript- Other Objects. VB Script: Introduction- Embedding VBScript Code in an HTML Document- Comments- Variables- Operators-Procedures- Conditional Statements- Looping Constructs - Objects and VBScript - Cookies.

UNIT V **(14 Hrs)**

Extensible Mark-Up Language (XML):Introduction- HTML vs. XML- Syntax of the XML Document- XML Attributes- XML Validation- XML DTD- The Building Blocks of XML Documents-DTD Elements - DTD Attributes- DTD Entities- DTD Validation – XSL - XSL Transformation- XML Namespaces- XML Schema.

Text Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	N.P.Gopalan, J.Akilandeswari	Web Technology A Developer's-Perspective (Unit III, IV & V)	PHI Learning Pvt.,Ltd	4th Edition, 2011
2	Kogent Learning Solutions Inc	HTML5 BlackBook (Unit I &II)	Dreamtech Press	2011

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Akanksha Rastogi	Web Technology	K. Nath& Co Educational Publishers	1st Edition, 2012
2	Anuranjan Misra, Arjun Kumar Singh	Introduction to Web Technology	Laxmi Publication	2011
3	C. Xavier	World Wide Web Design with HTML	TMH Publishers	2008

Pedagogy

- Lectures, Group Discussions

Course Designers

- Mrs. R. Kavitha

Course Number	Course Name	Category	L	T	P	Credit
CS16CP6	WEB TECHNOLOGY AND BIO INFORMATICS LAB	Core	-	-	75	2

Preamble

This course covers the basic structure of an HTML element for creating dynamic web pages. To impart practical knowledge in web design and database connectivity to create more sophisticated HTML documents with scripting languages. To align the sequence data using various tools in Bioinformatics

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify the basic tags used in HTML document	K1
CO2	Understand the implementation of various style tags.	K2
CO3	Use database connectivity for practical experience in developing solutions.	K3
CO4	Demonstrate the use of various controls and connectivity in windows application.	K3
CO5	Apply programming skills to experiment Various tools in bioinformatics.	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	M	M
CO2	M	S	M	S	S
CO3	S	M	S	M	S
CO4	S	M	S	M	M
CO5	S	M	M	S	S

S- Strong; M-Medium; L-Low

WEB TECHNOLOGY AND BIO INFORMATICS LAB - CS16CP6 - (75 Hrs)

Syllabus

- Exercises using Formatting Tags.
- Exercises to implement table tags. Exercises using List Tags.
- Exercises to implement Frames and Framesets
- Exercises using Cascading Style Sheets.
- Exercises to implement image, background color and text.
- Exercises using Radio buttons, Check boxes and List boxes.
- Exercises to implement ADD, DELETE and UPDATE records in the table using ADO.NET.
- Exercises to implement Align two sequences and find the BLOSUM scoring matrix.
- Exercises using BLAST tool for similarity search and interpret the results.
- Exercises to convert the gene sequence into its corresponding amino acid sequence.

Pedagogy

- System, Demonstration.

Course Designers

- Mrs. R. Kavitha

Semester	**:**	**VI**
Advance Level Course	**:**	**2**
Paper	**:**	**1**
Title	:	**Image Processing**
Sub code	**:**	**CS14AC3**
Credits	**:**	**5***

Objective:

Presents the basic concepts and methodologies in a student-friendly manner. Provides learning principles and how they are applied in real applications.

UNIT I

Introduction to Image Processing System: Introduction-Image sampling-Quantization-Resolution-Human Visual system- Classification of digital images. Elements of image processing system.

UNIT II

Image Transforms: Introduction- Need for transform- Image transforms. Image Enhancement: Introduction – spatial domain methods- frequency domain methods – point operations – Histogram modeling.

UNIT III

Image restoration and denoising: Introduction – Image degradation- Types of image blur- classification of image restoration techniques- image restoration model. Image segmentation: Introduction – Classification – Region approach to image segmentation – clustering techniques - Edge based segmentation – classification of edges- Edge detection.

UNIT IV

Object recognition: Introduction – Need for object recognition system – Patterns and pattern classes – Selection of measurement parameters- Relationship between image processing and object recognition Image compression: Introduction – Need for image compression – Redundancy in images – Image compression scheme –Classification.

UNIT V

Binary image processing – Introduction – Binarisation – Mathematical morphology-logical operations- Structure elements – Morphological image processing – Standard binary morphological –operations-dilation and erosion based operations properties of morphological based operations.

Text Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	S.Jayaraman, S.Esakkirajan , T.Veerakumar	Digital Image Processing	Tata McGraw Hill Publication	2009
2	MadhuriA.Joshi	Digital Image Processing - An algorithmic approach	PHI Learning Pvt Ltd	4th Edition, 2009

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	IRMA International	Image Processing: Concepts, Methodologies Tools and Applications	Idea Group, U.S	2013
2	Sachin Sharma Dr. D.J. Shah	Fundamentals Of Image Processing	Mahajan Publishing House	2013
3	Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins	Digital Image Processing using MATLAB	Pearson Education and Dorling Kindersley Publication,	5th Impression 2011

Semester : **VI**

Advance Level Course : **2**

Paper : **2**

Title : **Mobile Computing**

Sub code : **CS11AC4**

Credits : **5***

Objective:

Learn the basics of networking theory- networking concepts relevant to modern wireless systems- emerging mobile computing ideas and best practices- get hands on knowledge practice with mobile computing and cloud services.

UNIT I

Wireless Communication – Introduction – History – Types of wireless networks – Application of wireless technology.

UNIT II

Telecommunication Systems: Introduction to GSM –Technical details – Mobile services – System architecture – Radio channel structure in GSM – Protocols.

UNIT III

GPRS: Introduction – GPRS system architecture – Services – Technology – GPRS physical and logical channels – Bluetooth: Working principle – Modes of operation – Applications- Bluetooth vs Wi-Fi in networking.

UNIT IV

Satellite Communications: Introduction – Satellite Basics – Satellite parameters and configuration – IEEE 802.11 architecture – Services.

UNIT V

Wireless Lan: Overview – History – Benefits – Disadvantage – Design Goals – Architecture – Types of wireless LANs – Transmission Technologies used for WLANs – Mode of operation – Competing wireless technologies.

Text Book

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Sundara Rajan, Ramesh, Raja Sekaran	Mobile Computing	Sams Publishers	2008

Reference Books

S. No	Author	Title of the Book	Publisher	Year of Publication
1	Martin S. Nicklous, Thomas Stober	Mobile Computing: Theory and Practice	Pearson Education and Dorling Kindersley Publication	2012
2	Fundamentals of Mobile Computing	Pattnaik Prasant Kumar and Rajib Mall	Prentice Hall of India	2012
3	Raj Kamal	Mobile Computing	Oxford University Press	2nd Edition, 2011

Semester	**:**	**V &VI**
Title	**:**	**MULTIMEDIA and DTP SOFTWARE - PRACTICALII**
Sub code	**:**	**SB11MDP2**
Credits	**:**	**2**
Practical Hours	**:**	**45**

1. Import an image and then cut a particular part and move into another screen using rectangular marquee tool, move tool, polygon lasso tool and magic wand tool.
2. Import a damaged picture and modified into a perfect picture using clone stamp tool and healing brush tool.
3. Import two or more pictures and split those pictures and make it a new picture.
4. Import a face and remove the unwanted scratches and make it a clarity using blur tool, dodge tool, hand tool and zoom tool.
5. Import natural pictures and insert your own quotes using horizontal type tool.
6. Modify a picture using some tools and prepare notes about your changes using notes tool.
7. Merge two or more pictures using the layer options.
8. Convert a black and white picture into a color picture using color modes and hue/saturation options.
9. Convert a color photo into a black and white one.
10. Display a picture in paint and glass effects using filter options.
11. Create an image with multiple layers and give blending options.
12. Display a picture in texture and spherize effects using filter options.
13. Create a web page using slice tool and give link to it.

Note

*During Semester V Program 1 to Program 8

** During Semester VI Program 9 to Program 13

Semester	**:**	**V &VI**
Title	**:**	**SOFTWARE TESTING TOOLS - PRACTICALII**
Sub code	**:**	**SB16STP2**
Credits	**:**	**2**
Practical Hours	**:**	**45**

SOFTWARE TESTING LAB

1. Write a test case based on controls.
2. Test data in a flat file.
3. Manual test case to verify student grade
4. Write and test a program to select the number of students who have scored more than 60 in any one subject(or all Subjects)
5. Write and test a program to login a specific webpage.
6. Write and test a program to get the number of list items in a list / combo box.
7. Test a HTML file.
8. Test a program in MS Excel for Data Driven Wizard.
9. Test the addition of two values in C++Program.
10. Write a test suite containing minimum 4 test cases.

Note

* During Semester V -Exercises 1 to 6

** During Semester VI - Exercises 7 to 10