ST. MARY'S COLLEGE (Autonomous)

(Re-accredited with 'A+' Grade by NAAC)

Thoothukudi-628001, Tamil Nadu

(Affiliated to Manonmaniam Sundaranar University)

Syllabus

B.Sc. Computer Science

School of Computing Sciences

Outcome Based Curriculum

(W.e.f.2021)

Preamble

B.Sc. Computer Science program helps students to master the basic skills needed to analyze a problem and design, implement, and find a solution to meet the ever-changing demands of the industry and nurture their innovation and creativity.

Vision

Empower girls byte by byte.

Mission

To create computer professionals of immense quality and impeccable manners who can face and survive the computing and communication revolution that lies ahead with great confidence.

Programme Outcome:

PO.No	**After completion of the Undergraduate programme the students of St. Mary's College will be able to**
PO- 1	develop language, numerical, experimental, analytical and computing skills.
PO- 2	pursue higher education programmes
PO -3	excel in the recent trends of the world, enhancing the level of knowledge to emerge as a holistic person
PO -4	function effectively as an individual in multidisciplinary settings and develop their ethical, social and cultural values to serve the nation.
PO -5	be proficient in the fields of Arts, Science and Management Studies to qualify for the job.
PO- 6	develop their communicative skills using a range of technologies which enable them to express their ideas and views effectively.
PO -7	become an environmentally conscious citizen.

PO -8	be an empowered and economically independent woman with efficient leadership qualities in an egalitarian society through liberative education.

Programme Specific Outcome

PSO.No	Upon completion of B.Sc Degree programme, the graduates will be able to	PO
PSO-1	acquire knowledge on core concepts of Computer Science	1
PSO-2	develop programming skills to solve problems through various computer languages and database concepts.	1
PSO-3	possess social , ethical values and being environmentally conscious.	4,7
PSO-4	empower with analytical mind and critical thinking	3
PSO-5	possess employability ,entrepreneurship skills and leadership qualities.	5,8
PSO-6	build skills on various technologies	2,5
PSO-7	enhance students with communicative skill and soft skill	6
PSO-8	posses adaptive skills to self learn new computing technologies and embrace it .	3,4

Department of Computer Science
Course Structure (w.e.f. 2021)
Semester – I

Part	Component	Course Code	Course Title	Contact Hours/ Week	Credits	Max. Marks		
						CIA	ESE	Total
I	Tamil / French	21ULTA11/ 21ULFB11	nghJj;jkpo; jhs; - 1 ,f;fhy ,yf;fpak; (nra;As>; ,yf;fzk;> , yf;fpa tuyhW> ciueil> rpWfij) Preliminary French and Commercial terms	6	3	40	60	100
II	General English	21UGEN11	Poetry, Prose, Extensive Reading and Communicative English – I	6	3	40	60	100
III	Core I	21UCSC11	C Programming	4	4	40	60	100
	Core Practical I	21UCSCR1	C Programming Lab	4	2	40	60	100
	Allied I	21UCSA11	Mathematics for Computer Science	3	3	40	60	100
	Allied Practical I	21UCSAR1	Office Automation Lab	3	2	40	60	100
IV	Skill Enhancement Course - I	21UCSPE1	Professional English for Computer Science - I	2	2	20	30	50

	Ability Enhancement Course - I	21UAVE11	Value Education	2	2	20	30	50
Total				**30**	**21**			

Semester II

Part	Component	Course Code	Course Title	Contact Hours/ Week	Credits	Max.Marks		
						CIA	ESE	Total
I	Tamil / French	21ULTA21 / 21ULFB21	nghJj;jkpo; jhs; 2 rka ,yf;fpaq;fSk; ePjp ,yf;fpaq;fSk; (nra;As;> ,yf;fzk>; ,yf;fpa tuyhW> ciueil> tho;f;if tuyhW) Progressive French and Commercial Correspondence	6	3	40	60	100
II	General English	21UGEN21	Poetry, Prose, Extensive Reading and Communicative English –II	6	3	40	60	100
III	Core II	21UCSC21	C ++ Programming	4	4	40	60	100
	Core Practical II	21UCSCR2	C ++ Programming Lab	4	2	40	60	100
	Allied II	21UCSA21	Digital Electronics	3	3	40	60	100
	Allied Practical II	21UCSAR2	Open Source Multimedia Lab	3	2	40	60	100
	Skill Enhancement Course - II	21UCSPE2	Professional English for Computer Science – II	2	2	20	30	50

	Ability Enhancement Course - II	21UAEV21	Environmental Studies	2	2	20	30	50
Total				**30**	**21**			

Semester III

Part	Component	Course Code	Course Title	Contact Hours/ Week	Credits	Max.Marks		
						CIA	ESE	Total
I	Tamil / French	21ULTA31 21ULFA31	nghJj;jkpo; jhs; 3 : fhg;gpaq;fSk; rpw;wpyf;fpaq;fSk; (nra;As;> ,yf;fzk;> ,yf;fpa tuyhW> ciueil> Gjpdk;) Advanced French Language	6	4	40	60	100
II	General English	21UGEN31	Poetry, Prose, Extensive Reading and Communicative English-III	6	4	40	60	100
III	Core III	21UCSC31	JAVA Programming	4	4	40	60	100
	Core Practical III	21UCSCR3	JAVA Programming Lab	3	2	40	60	100
	Allied III	21UCSA31	Data Structures	3	3	40	60	100
	Allied Practical III	21UCSAR3	Data Structures Lab	2	1	40	60	100
	Skill Based Elective	21UCSS31/ 21UCSS32	Microprocessors/ E-Commerce	2	2	20	30	50
IV	NME I	21UCSN31	Introduction to Computers	2	2	20	30	50
	Ability Enhancement Course - III	21UAWS31	Women's Synergy	2	2	20	30	50

	Self Study/ On-line Course/ Internship (Compulsory)	21UCSSS1	Computer Architecture		2		50	50
Total				**30**	**26**			

Semester IV

Part	**Component**	**Course Code**	**Course Title**	**Hrs/Week**	**Credits**	**Max.Marks**		
						CIA	**ESE**	**Total**
I	Tamil / French	21ULTA41 21ULFA41	nghJj;jkpo; jhs; 4: rq;f ,yf;fpak:; (nra;As;> ,yf;fzk;> ,yf;fpa tuyhW> ciueil> ehlfk); French Course and Literature	6	4	40	60	100
II	General English	21UGEN41	Poetry, Prose, Extensive Reading and CommunicativeEnglish-IV	6	4	40	60	100
III	Core IV	21UCSC41	RDBMS with PHP and MySQL	4	4	40	60	100
	Core Practical IV	21UCSCR4	PHP & MySQL Lab	3	2	40	60	100
	Allied IV	21UCSA41	Big data Analytics	3	3	40	60	100
	Allied Practical IV	21UCSAR4	Web designing Lab	2	1	40	60	100
	Skill Based Elective	21UCSS41/ 21UCSS42	DTP Lab/ Cyber Security	2	2	20	30	50
	NME II	21UCSN41	Introduction to Internet	2	2	20	30	50

	Ability Enhancement Course - IV	21UAYM41	Yoga & Meditation	2	2	20	30	50
	Self Study Course / On-line Course / Internship (Optional)	21UCSSS2	Web Technology MOOC		+2		50	50
V	NCC, NSS & Sports				1			
	Extension Activity				+1			
Total				**30**	**25+3**			

Semester V

Part	**Component**	**Course Code**	**Course Title**	**Contact Hours/ Week**	**Credits**	**Max.Marks**		
						CIA	**ESE**	**Total**
	Core V (Common Core)	21UCMC51	Computer Oriented NumericalMethods	6	5	40	60	100
III	Core VI	21UCSC51	Operating Systems	4	4	40	60	100
	Core VII	21UCSC52	Python Programming	4	4	40	60	100
	Core Elective- 1	21UCSE51/ 21UCSE52	Data Mining/Introduction to IoT	4	4	40	60	100
	Mini Project	21UCSP51	Mini Project	5	2	40	60	100
	Core Practical V	21UCSCR5	Python Programming Lab	5	3	40	60	100

IV	Common Skill Based	21UCSB51	Computer for Digital Era And Soft Skills	2	2	20	30	50
	Self Study / Online course (optional)	21UCSSS3	Mathematical Reasoning		+2		50	50
Total				**30**	**24+2**			

Semester VI

Part	**Component**	**Course Code**	**Course Title**	**Contact Hours/ Week**	**Credits**	**Max.Marks**		
						CIA	**ESE**	**Total**
III	Core VIII	21UCSC61	.NET Programming	5	4	40	60	100
	Core IX	21UCSC62	Software Engineering	5	4	40	60	100
	Core X	21UCSC63	Computer Networks	5	4	40	60	100
	Core Elective-2	21UCSE61/ 21UCSE62	Cloud Computing / Mobile Computing	4	4	40	60	100
	Core practical VI	21UCSCR6	.NET Programming Lab	5	3	40	60	100
IV	Project	21UCSP61	Project	6	4	40	60	100
Total				**30**	**23**			
Grand Total				**180**	**140+5**			

Semester	**Hours**	**Credits**	**Extra Credits**

I	30	21	---
II	30	21	---
III	30	26	--
IV	30	25	3
V	30	24	2
VI	30	23	--
Total	**180**	**140**	**5**

Courses	**Number of Courses**	**Hours**	**Credits**	**Extra Credits**
Tamil	4	24	14	--
English	4	24	14	--
Core	10T+6P	45T+24P	41T+14P	--
Skill Based Elective	2	4	4	--
Core Elective	2	8	8	--
Group Project	2	11	6	--
Allied	4T+4P	12T+10P	12T+6P	--
NME	2	4	4	--
Skill Enhancement Course	2	4	4	--
Ability Enhancement Course	4	8	8	--
Common Skill Based	1	2	2	--
NCC, NSS & Sports		--	1	
Extension Activities		--		1
Self Study Papers (Optional)	2	--		4
Self Study Papers (Compulsory)	1	--	2	--

Total		**180**	**140**	**5**

ghlj;jpl;lj;jpd; Nehf;fq;fs;

1. midj;Jj; Jiwkhzth;fSk; gad;ngWk; tifapy; ghlj;jpl;lk; tiuaiw nra;ag;gl;Ls;sJ.
2. jkpo; ,yf;fpaf; fy;tpia vspikAld; Mokhf;fpf; fw;gpf;Fk; tpjkhf ,f;fhy ,yf;fpak; njhlq;fp rq;f ,yf;fpak; tiufw;gpj;jy;.
3. jkpo; nkhopapy; gpioapd;wpf; fw;Fk; tpjkhf vOj;J> nrhy;> nghUs;> ahg;G>mzp vd ,yf;fzj;ijg; gapw;Wtpj;jy;.
4. khzth;fspd; eyd; fUjp ,yf;fpa tuyhw;Wg; gFjpahdJ nra;As; mikg;gpw;;Nfw;g tifg;gLj;jg;gl;Lf; fw;gpf;fg;gLjy**;.**

gad;fs;

1. fhye;NjhWk; tsh;e;JtUk; jkpo;f; ftpijfspd; tbtpidAk;> fUj;Njhl;lj;jpidAk; khztpah; mwpe;Jnfhs;th;.
2. jkpo; nkhopiag; gpioapd;wp vOjTk; NgrTk; KbAk;.
3. jd;dk;gpf;if cUthFk;
4. jfty; njhlh;Gr; rhjdq;fs; jkpo; tsh;r;rpf;Fg; gad;gLtij mwpe;Jnfhs;th;.
5. gilg;ghw;wiy tsh;j;Jf; nfhs;th;.
6. jkpo; ,yf;fpaq;fs; md;W Kjy; ,d;Wtiu ngw;WtUk; rpwg;ig czh;th;.

7. ,yf;fpatuyhw;wpd; top nkhopapd; tsh;r;rpiaAk; fhye;NjhWk; khwptUk;

,yf;fpaq;fspd; gy;NtW tiffisAk; njhpe;Jnfhs;th;.

8. JiwNjhWk; jkpo; nkhopapd; tsh;r;rpia mwpth;.

9. rq;fk; itj;Jj; jkpoha;e;j kd;dh;> Gyth;> kf;fs; ,th;fspd; tho;tpay;

mwq;fisf; fz;lwpth;.

10. gz;ghl;Lr; rpwg;gpid nkhopapd; top mwpe;J jk; tho;tpy; filg;gpbg;gh;.

11. Ntiy tha;g;gpw;fhd Njh;Tfspy; jpwikAld; gq;Nfw;gh.;;

SEMESTER - 1			
Part – 1 nghJj;jkpo; jhs; - 1 ,f;fhy ,yf;fpak; (nra;As;> ,yf;fzk;> ,yf;fpa tuyhW> ciueil> rpWfij)			
Course Code: 21ULTA11	**Hrs/Week:6**	**Hrs/Semester: 90**	**Credits: 3**

Objectives:

- khztpaUf;F ey;y kjpg;gPLfisf; fw;gpj;J tho;tpy; mtw;iwg; gpd;gw;w toptFj;jy;.
- ,yf;fpa khe;jhpd; tho;f;if mDgtq;fs; %yk; tho;tpy; gpur;ridfisvjph;nfhs;Sk; jpwk;> jd;dk;gpf;if> MSikj;jpwk;> nkhopmwpT ,tw;iw cUthf;Fjy;.

Course Outcome:

CO.NO	**,g;ghlj;jpl;lk; khztpaUf;F**	**mwpTrhh; kjpg;gPL**
CO-1	ngz; rhh;e;j tpLjiy> nghJikr; rpe;jid czh;itAk; tsh;f;fpwJ	tsh;r;rp
CO-2	,aw;ifiag; NgZjw;Fk; tho;tpd; tsh;r;rp epiyia Nkk;gLj;jpf; nfhs;Sjw;Fk; cjTfpwJ.	eilKiwg;gLj;Jjy;

CO-3	rka ey;ypzf;fk;> xw;Wik czh;T> ,iw ek;gpf;if ,tw;iw cUthf;FfpwJ.	cUthf;fk;
CO-4	nkhopiag; gpioapd;wp NgrTk; vOjTk; cjTfpwJ.	Ghpjy; jpwd; Nkk;ghL
CO-5	jdpkdpj tho;f;ifr; rpf;fy;fs;> rKjhag; gpur;ridfs; vjph;nfhs;Sk; jpwid vLj;Jiuf;fpwJ.	eilKiwg;gLj;Jjy;
CO-6	Nghl;bj; Njh;TfSf;Fg; gad;gLk; tifapy; gilg;ghf;fj; jpwid tsh;f;f cjTfpwJ.	gilg;ghw;wy; jpwd; Nkk;ghL

SEMESTER - 1			
Part – 1 nghJj;jkpo; jhs; - 1 ,f;fhy ,yf;fpak; (nra;As>; ,yf;fzk;> ,yf;fpa tuyhW> ciueil> rpWfij)			
Course Code: 21ULTA11	**Hrs/Week:6**	**Hrs/Semester: 90**	**Credits: 3**

myF – 1 nra;As; - 2 kzp

1. jkpo;nkhop tho;j;J – ghujpahh;
2. GJikg; ngz; - ghujpahh;
3. Gjpa cyF nra;Nthk; - ghujpjhrd;
4. cyif khw;WNthk; - ftpauR Kbaurd;
5. fz;zPhpd; ,ufrpak; - mg;Jy; uFkhd;
6. kuq;fs; - K.Nkj;jh
7. fhy tpj;jpahrk; - ituKj;J
8. itaj;ij ntw;wp nfhs;s - rp.rptukzp
9. ftpijg; G+q;fhL – gh.tp[a;
10. ngz; ,dNk – ikj;Nuap
11. i`f;$ ftpijfs;
12. ehl;lhh; ghly;fs;

m. jhyhl;Lg; ghly;

M. kPdth; ghly;

myF - 2 ,yf;fzk; - 1 kzp

vOj;J

1. vOj;J - tpsf;fk;>
2. KjnyOj;Jfs;;> rhh;ngOj;Jfs;
3. Rl;nlOj;Jfs;;> tpdh vOj;Jfs;
4. nkhop Kjy; vOj;Jfs;> nkhop ,Wjp vOj;Jfs;
5. ty;ypdk; kpFk; ,lq;fs;> ty;ypdk; kpfh ,lq;fs;

6. nkhopg;gapw;rp : GJf;ftpij> rpWfij>
gj;jphpiff;Fr; nra;jp mDg;Gjy;

myF - 3 ,yf;fpa tuyhW - 1 kzp

1. GJf;ftpij Njhw;wKk; tsh;r;rpAk;
2. rpWfij Njhw;wKk; tsh;r;rpAk;
3. ciueil Njhw;wKk; tsh;r;rpAk;
4. ehl;Lg;Gw ,ay; mwpKfk;

myF - 4 ciueil - 1 kzp

ePNa nty;tha; - f.g.mwthzd;

myF – 5 rpWfij - 1 kzp

1. Nfjhhpapd; jhahh; - fy;fp
2. tpbAkh? - F.g.uh[Nfhghyd;
3. fhyDk; fpotpAk; - GJikg;gpj;jd;
4. fUg;gz;zrhkp Nahrpf;fpwhh; - mwpQh; mz;zh
5. ehw;fhyp - fp.uh[ehuhazd;
6. uh[h te;jpUf;fpwhh; - mofphp rhkp
7. N[hbg; nghUj;jk; - n[aujp mf];bd;

I B.Com., / BBA / B.Sc (Computer Science) Part I FRENCH

SEMESTER – I			
PART – I French Paper – I Preliminary French and Commercial terms			
Course Code : 21ULFB11	**Hrs/week : 6**	**Hrs/ Sem : 90**	**Credits : 3**

Objectives

To impart knowledge of the culture of the French and to give training in all four competencies of language learning.

To provide ample knowledge and opportunities to induce and ignite the independent learning capacity. To familiarize with commercial terms.

Course Outcomes

CO	At the end of this course, the students will be able to	CL
1.	make initial conversation in French	Un

2.	understand the basic sentence structures	Un, Re
3.	remember the commercial terms in French and use them in translation	Re, Ap
4.	understand and analyse the civilisation of the French	Un, An
5.	apply the grammatical knowledge to do grammar exercises	Un, Re, Ap
6.	understand the French and francophonic lifestyle	Un, Ev

SEMESTER – I			
PART – I French Paper – I Preliminary French and Commercial terms			
Course Code : 21ULFB11	**Hrs/week : 6**	**Hrs/ Sem : 90**	**Credits : 3**

Unit 1 – La France et la Francophonie

1.1 - La France et la Francophonie
1.2 – Un cours de français
1.3 – Les couleurs
1.4 – L'alphabet
1.5 – Lire en Français

Unit 2 - Bonjour ça va ?

2.1 –Bonjour ça va ?
2.2 – Salut Je m'appelle Agnès
2.3 – Entrer en contact
2.4 – Se présenter et présenter quelqu'un
2.5 – Demander et dire la date

Unit 3 - Qui est-ce ?

3.1 – Qui est-ce ?
3.2 – Dans mon sac, j'ai…
3.3 – Demander et répondrepoliment
3.4 – Demander desinformations personnelles
3.5 – Le top des personnalités francophones

Unit 4 - Il est comment ?

4.1 – Il est comment ?
4.2 – Allo ?
4.3 – Décrire l'aspect physiqueet le caractère
4.4 – Parler au téléphone
4.5 – Le pays des vacances

Unit 5 – Les termes

5.1 – Les termes commerciaux
5.2 – Les termes informatiques

PrescribedTextbook :

Cocton Marie-Noëlle.*Génération 1 Niveau A1*.Paris : Didier, 2016.

Books, Journals and Learning Resources

- Cocton Marie-Noëlle.*Génération 1 Le cahier d'activités*. Paris : Didier, 2016.
- J.Girardet&J.Pécheur avec la collaboration de C.Gibble.*Echo A1*. Paris : CLE international, Paris, 2012.
- Carlo Catherine, Causa Mariella.*Civilisation Progressive du Français – I*. Paris : CLEInternational, 2003.
- Dintilhac Anneline, De Oliveira Anouchka, Ripaud Delphine, DupleixDorothée, Cocton Marie-Noëlle.*Saison 1 Niveau 1, Méthode de français et cahier d'exercices*. Paris : Didier, 2015
- www.francaisfacile.com/exercices/
- www.bonjourdefrance.com
- http://french-linguistics.co.uk/glossaries/commerce

SEMESTER-I			
Part II General English	**Poetry, Prose, Extensive Reading and Communicative English-I**		
Course Code 21UGEN11	**Hrs/Week: 6**	**Hrs/Semester:90**	**Credits:3**

Objectives:

- To provide adequate exposure and opportunities for students to imbibe, develop, practise and use LSRW skills
- To help students read and comprehend contents in English

Course Outcome:

CO. No.	Upon completion of this course, students will be able to	PSO Addressed	Cognitive Level

CO- 1	understand and extend their listening and writing skills.	1	Un
CO- 2	apply and incorporate basic grammar and mechanics in writing.	3	Ap
CO- 3	understand literary texts in its socio-cutural contexts	2, 4	Un, Ap
CO- 4	communicate in English with confidence for employability.	3	Ap
CO- 5	appreciate and imbibe ethical and moral values through the study of the literary pieces.	5	Ap, Ev
CO- 6	construct simple sentences and short paragraphs in response to reading and writing.	8	Cr

SEMESTER-I			
Part II General English	**Poetry, Prose, Extensive Reading and Communicative English –I**		
Course Code 21UGEN11	**Hrs/Week: 6**	**Hrs/Semester:90**	**Credits:3**

Unit I –Poetry

Rabindranath Tagore – Leave This Chanting

W.W. Gibson – The Stone

Ted Hughes – Hawk Roosting

Unit II – Prose

Stephen Leacock – My Lost Dollar

J.B. Priestley – On Doing Nothing

Robin Sharma – Your Commitment to Self- Mastery: Kaizen

Unit III – Short Story

Oscar Wilde – The Model Millionaire

Leo Tolstoy – Three Questions

K.A. Abbas – The Refugee

Unit IV – Grammar

Parts of Speech – Noun, Pronoun, Article, Adjective, Verb - Modals and Auxiliaries – Types of Sentences - Subject -Verb Agreement

Unit V- Communication Skills

Vocabulary, Listening Comprehension – Speaking – Reading, Filling Forms

(TANSCHE – Module I)

Text Books:

Units I-III – To be compiled by the Research Department of English

Unit IV- Joseph, K.V. *A Textbook of English Grammar and Usage*. Chennai: Vijay Nicole Imprints Private Limited, 2006. Print.

Unit – V – CLIL (Content & Language Integrated Learning) – Module I by TANSCHE (Tamil Nadu State Council for Higher Education)

Semester I			
Core – I	**C Programming**		
Course Code:21UCSC11	**Hrs / week : 4**	**Hrs / Semester: 60**	**Credits : 4**

Objectives:

- Understand the concepts of Structured programming language
- To understand the basic programming concepts.
- To develop programming skills using the C language.

Course outcome:

CO No.	**Upon completion of this course, students will be able to**	**PSO addressed**	**CL**

CO-1	describe algorithm, flowchart, various operators and library functions of C language	1	Un
CO-2	compare and contrast loops	4	An
CO-3	understand the concept of storage classes and input /output statements and functions	1	Un
CO-4	implement different operations on arrays	2,6	Ap
CO-5	develop programs using pointers , structures and union	2,6	Ap
CO-6	describe the file operations	1,2	Un

SEMESTER- I			
Core – I	**C Programming**		
Course Code:21UCSC11	**Hrs / week : 4**	**Hrs / Semester: 60**	**Credits : 4**

Unit I:

Algorithms - Flow charts: Developing algorithms and flowcharts for solving simple problems. Introduction to C

C Fundamentals: The C Character Set - Identifiers and Keywords - Data Types –Constants– Variables and Arrays - Declarations - Expressions - Statements - Symbolic Constants.**Operators and Expressions:** Arithmetic Operators - Unary Operators - Relational and Logical Operators - Assignment Operators - The Conditional Operator - Library Functions

Self- learning: Bitwise Operations

Unit II:

Data Input and Output: Single Character Input-The getchar Function-Single Character Output-The putchar Function-Entering Input Data-More about the scanf function-Writing output data – The printf function- The scanf Function-More about the printf function -The gets and puts Functions.

Control Statements: Branching: The if-else Statement-Looping: The While Statement-More Looping: The do-while Statement-Still More Looping: The for Statement-Nested Control Structures-The switch Statement-The break Statement-The continue Statement-The comma Operator-The go to Statement.

Unit III:

Functions: Defining a Function-Accessing a Function-Function Prototypes- Passing Arguments to a Function- Recursion. Program Structure: Storage Classes- Automatic Variables- External (Global) Variables- Static Variables.

Arrays: Defining an Array-Processing an Array - Passing Arrays to Functions- Multidimensional Arrays - Arrays and Strings.

Self learning: Register Variables

Unit IV:

Pointers: Fundamentals-Pointer Declarations- Passing Pointers to Functions- Pointers and One-Dimensional Arrays-Dynamic Memory Allocation- Operations on Pointers-Pointers and Multidimensional Arrays -Arrays of pointers-Passing Functions to Other Functions

Structures and Unions: Defining a Structure - Processing a Structure - User Defined Data types (typedef) - Structures and Pointers - Passing Structures to Functions -Passing Structures to Functions-Unions.

Self-learning: command-line arguments

Unit V:

Opening and Closing a Data File-Creating a Data File-Processing a Data -Unformatted Data Files.

Self learning: Macros-The CPreprocessor.

Text Book:

1. Byron Gottfried, *Programming with C* .India : McGraw Hill Education Private Limited.ThirdrdEdition 2017 .
   Chapters: 2,3,4,6,7,8,9,10,11,12 and 13.

Books for Reference:

1. Ashok N. Kamthane, *Programming with ANSI and Turbo* .New Delhi :Pearson education. Third Edition 2008.

2. Venugopal K R and Sudeep R Prasad .*Mastering C*. India: Tata McGraw Hill. Second Edition, 2017.
3. E. Balagurusamy, ,*Programming in ANSI C*.India:McGraw Hill Education Private Limited, Eighth Edition 2019.
5. computer-fundamental/algorithm-and-flowchart.htm
6. https://www.geeksforgeeks.org/an-introduction-to-flowcharts

SEMESTER- I			
Core Practical I	**C Programming Lab**		
Course Code: 21UCSCR1	**Hrs / week :4**	**Hrs / Semester:60**	**Credits :2**

1. Solve Quadratic Equation- control statements
2. Sum of Digits & reverse the number.
3. Prime number Checking
4. Sine Series evaluation
5. Sorting an Array of numbers
6. Binomial coefficient using function

7. Linear Searching using function
8. Sorting an array of names
9. Counting no. of vowels, consonants, words and white spaces in a line of text.
10. EB Bill using Structure.
11. Matrix multiplication using pointers
12. Create a file to store students details and retrieve the details from the file

SEMESTER- I			
Allied – I	**Mathematics for Computer Science**		
Course Code: 21UCSA11	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :3**

Objectives:

- To attain mathematical foundations this is very essential for the study of computer courses.
- To make the students capable of mathematically formulating certain practical problems.
- To understand the concept of central tendencies
- To learn about dispersions and regression
- To provide knowledge about graphs and its applications.

Course Outcomes:

CO.No.	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	create an argument using logical notation and evaluate if it is valid or not.	1	Cr
CO-2	apply logical reasoning to solve a variety of problems.	4	Ap
CO-3	compute measures of central tendency	4	Ap
CO-4	calculate and compare dispersion , Skewness, kurtosis	4	An
CO-5	compute the shortest path	1	An
CO-6	model problems in computer science using graphs and solve problems using graphs	1	Ap

SEMESTER- I			
Allied – I	**Mathematics for Computer Science**		
Course Code:21UCSA11	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :3**

Unit I:

Logic And Propositional Calculus– Introduction – propositions and compound propositions – tautologies and contradictions – logical equivalences– algebra of propositions – conditional and bi-conditional statements – arguments – logical implication – prepositional functions, Quantifiers – Negation of quantified statements.

Self-Learning: Basic Logical operations and truth tables

Unit II:

Measures of central tendency:

Arithmetic mean, Median, Mode, Geometric mean, Harmonic mean. Partition values: Quartiles, Deciles and percentiles**.**

Self -Learning: Types of Data, Organizing data

Unit III:
Measures of dispersion:
Mean deviation, Quartile deviation, Standard deviation, Coefficient of variation, measures of skewness, Kurtosis.
Self-Learning: Lorenz Curve

Unit IV:
Correlation and Regression:
Correlation: Karl Pearson coefficient of correlation, Spearman's rank correlation coefficient.**Regression**: Concept of errors, Principles of Least Square, Simple linear regression and its properties.
Self-Learning: Scatter plot, Temporal autocorrelation, spatial autocorrelation

Unit V:
Graph Theory
Introduction, data structures – graphs and multigraphs – subgraphs, Isomorphic and homeomorphic graphs – paths, connectivity – the bridges of konigsberg, traversable multigraphs – labelled and weighted graphs – complete, regular, and bipartite graphs – tree graphs.**Directed Graphs :** Introduction- Directed Graphs- Basic Definitions- Rooted Trees.
Self-Learning: Spanning tree

Text Books:

1. Seymour Lipschutz, Marc Lipson, *DiscreteMathematics,* New Delhi : Tata McGraw Hill,RevisedThird Edition, 2017.(Unit I and Unit V)

2. Gupta S.C and Kapoor V.K, *Fundamentals of Mathematical Statistics*, New Delhi : Sultan Chand &Sons,11th edition, 2014 (Unit II, Unit III, Unit IV)

Books for Reference:

1. B.S. Vatsa, *Discrete Mathematics*, New Delhi: New Age International (P) Ltd.**,** Fourth Edition, 2009.
2. K.D. Joshi, *Foundation of Discrete Mathematics,*New Delhi: New Age International (P) Ltd.**,**2014
3. Kenneth H. Rosen *,"Discrete mathematics and its application"*, New Delhi : Tata McGraw Hill,8th Edition, 2021
4. Mukhopadhyay P, *Mathematical Statistics*, Kolkata :Books and Allied (P) Ltd, 2015.
5. Agarwal B.L, *Basic Statistics*, 6th Edition, New Delhi: New Age International (P) Ltd., 2015.

SEMESTER- I			
Allied-Practical I	**Office Automation Lab**		
Course Code: 21UCSAR1	**Hrs / week:3**	**Hrs / Semester: 45**	**Credits :2**

Word:

1.Type a paragraph and use various formatting.
2.Design a wedding invitation in Word Document
3.Use mail merge in word.
4.Prepare a class time table.

Excel:

5. Prepare a semester wise mark statement for a computer class of 20 students.
6. Consider the sample employee worksheet and calculate their salary. Plot it using chart
7. Use any spreadsheet to use mathematical, statistical and logical functions

8. Plot various charts for marks obtained by the students

Access:

9. Create a database named "college.mdb" and perform the following tasks:
   a. Create a table named "student info"
   b. Fill at least 5 records.
   c. Prepare a query to display all records and Name should be in ascending order.
   d. Prepare a query named "senior" to display records including fields name, class, sec, roll no, status, photo and value of "status" field must be senior.
   e. Prepare a form of above query "senior"
   f. Prepare a report of all the fields of the above table.

10. Create a database named "library.mdb" and perform the following tasks:
   a. Create a table named "Book"
   b. Add at least 5 records.
   c. Prepare a query to display only records including book name, writer name and publication name. Save the query as "q_book".
   d. Prepare a query to display all records on the basis of price which is more than Rs.500.
   e. Prepare a form on the basis of a table.
   f. Prepare a report on the basis of a query named "q_book".

11. Create a database named "Nepal Bank" to store information about its staffs and do the following tasks:
   a. Create a table named "staffinfo".
   b. Create a form on the basis of "staffinfo" table and save as "entryform".
   c. Fill at least 5 records using the "entryform"
   d. Create a query named "depinfo" to display records only including department name, staff name and mobile number.
   e. Create a query named "post" to display staff name, post, department and phone number whose post is "teller " or"casher".
   f. Prepare a report on the basis of a query named "depinfo".

12. Create a database named exam.mdb and a table named class8 with the following structure.

Field name	Data type
Roll no	number (primary key)
Name	text
English	number
Science	number
Maths	number

   a. Add any 5 records in the table.
   b. Prepare a query named "total marks" to calculate the sum of all the marks.
   c. Prepare a query named "topper" of query "total marks" to display all records whose total is more than 200.
   d. Prepare a form of your query using form wizard with all the fields.
   e. Prepare a report on the basis of query "Total marks".

SEMESTER- I			
Skill Enhancement Course-I Professional English for Computer Science –I			
Course Code: 21UCSPE1	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits :2**

Objectives:

- To develop the language skills of students
- To train students in professional contexts.
- To enhance the lexical, grammatical and socio-linguistic skills
- To improve communicative competence of students

Course Outcomes:

CO.No	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	recognise their own ability to improve their own competence in using the language	7	Un
CO-2	use language for speaking with confidence in an intelligible and acceptable manner.	3	An
CO-3	understand the importance of reading for life	3	Un
CO-4	write simple sentences without committing error of spelling or grammar	7	An
CO-5	develop critical thinking skills and get culturally aware of the target situation	4	Cr
CO-6	develop communicative skill for professional collaboration	7	Cr

NB: All four skills are taught based on texts/passages.

SEMESTER- I			
Skill Enhancement Course-I	**Professional English for Computer Science –I**		
Course Code: 21UCSPE1	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits :2**

UNIT 1: COMMUNICATION

Listening: Listening to audio text and answering questions- Listening to Instructions
Speaking: Pair work and small group work.
Reading: Comprehension passages –Differentiate between facts and opinion
Writing: Developing a story with pictures**.**
Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 2: DESCRIPTION

Listening: Listening to process description.-Drawing a flow chart.
Speaking: Role play (formal context)
Reading: Skimming/Scanning-Reading passages on products, equipment and gadgets.
Writing: Process Description –Compare and Contrast Paragraph-Sentence Definition and Extended definition- Free Writing.
Vocabulary: Register specific -Incorporated into the LSRW tasks.

UNIT 3: NEGOTIATION STRATEGIES
Listening: Listening to interviews of specialists / Inventors in fields (Subject specific)
Speaking: Brainstorming.(Mind mapping). Small group discussions (Subject- Specific)
Reading: Longer Reading text.
Writing: Essay Writing (250 words)
Vocabulary: Register specific - Incorporated into the LSRW tasks

UNIT 4: PRESENTATION SKILLS
Listening: Listening to lectures.
Speaking: Short talks.
Reading: Reading Comprehension passages
Writing: Writing Recommendations Interpreting Visuals inputs
Vocabulary: Register specific -Incorporated into the LSRW tasks

UNIT 5: CRITICAL THINKING SKILLS
Listening: Listening comprehension- Listening for information.
Speaking: Making presentations (with PPT- practice).
Reading: Comprehension passages –Note making.
Comprehension: Motivational article on Professional Competence, Professional Ethics and Life Skills)
Writing: Problem and Solution essay– Creative writing –Summary writing
Vocabulary: Register specific - Incorporated into the LSRW tasks

References:
https://www.myindiamyglory.com/2018/07/12/raman-effect-how-indian-scientist-cv-raman-discovered-why-sea-is-blue/
https://opensource.com/resources/internet-of-things
Britannica, T. E. (Ed.). (2020, April 16). *Marie Curie.* Retrieved June 18, 2020, from Encyclopædia Britannica.
Wikipedia, T. E. (Ed.). (16, June 2020). *Marie Curie.* Retrieved June 18, 2020, from Wikipedia.
https://physicsabout.com/difference- between-ac-and-dc/
http://warofcurrents.newtfire.org/
https://www.youtube.com/watch?v=ubpsosv7mHM
https://www.englishclub.com/reading/health/cell-phone.htm
https://www.britannica.com/biography/Isaac-Asimov
https://www.softschools.com/

https://www.space.com/17056-kalpana-chawla-biography.html
https://labour.gov.in/childlabour/census-data-child-labour
https://www.bu.edu/csp/Conferences/Space_Exploration/Day1/Presentations/Kalam_Space%20Exploration%20and%20Human%20Life.pdf
https://www.youtube.com/watch?v=WEKzNH09Vqs
https://www.bbc.com/news/world-europe-48616174
https://semiengineering.com/how-5g-differs-from-previous-network-technologies/
https://www.thehindubusinessline.com/info-tech/scientists-caution-government-to-go- slow-on-5g-roll-out/article28737197.ece
https://www.downtoearth.org.in/interviews/science-and-technology/-5g-is-unlikely-to- cause-health-concerns--63698
https://www.intel.com/content/www/us/en/wireless- network/5g-benefits-features.html

SEMESTER - I			
Ability Enhancement Course -Value Education			
Code : 21UAVE11	**Hrs/Week : 2**	**Hrs / Semester: 30**	**Credits : 2**

Unit I: Introduction to Value Education

Concept of Values -Types of Values- Approaches to values - Benefits of Value Education-Characteristics of Values

Unit II: Human Values

Human Values -Sources of Human Values - Love -Compassion - Gratitude - Courage - Optimism - Forgiveness- the need and urgency to reinforce Human Values

Unit III: Social Values

Role of family and society in teaching values - Role of educational institutions in inculcating values-Three general functions of education for society-Self-Reflection- Our society's needs - Social Responsibilities of a student

Unit IV: Spiritual Values

Spiritual Values - Spiritual Development -Moral Development - Importance of Spiritual Values - Cultivation of Spiritual Values -Five most common spiritual values - Spiritual Resources

Unit V: Values for Life Enrichment

Goal Setting - Building relationship **-** Friendship - Love relationship - Family relationship - Professional relationship Interpersonal Relationship -Essential Life Skills that Help in Students Future Development-Life Enrichment Skills Domain

Books for Reference:

1. Sneha M. & K. Pushpanadham Joshi. *Value Based Leadership in Education Perspective and Approaches*, Anmol Publications Pvt. Limited, 2002.
2. Venkataiah.N. *Value Education*, APH Publishing, 1998
3. Pramod KumarM.*A Handbook on Value Education*, Ramakrishna Mission Institute of Culture (RMIC) 2007
4. Jagdosh Chand.*Value Education*. Shipra Publication 2007
5. Indrani Majhi (Shit)Ganesh Das, *Value Education*, Laxmi Publication Pvt. Ltd., 2017

6.Arumugam, N. S. Mohana, Lr.Palkani, *Value Based Education*, Saras Publication 2014

SEMESTER - II			
Part -1 nghJj;jkpo; - jhs; 2 rka ,yf;fpaq;fSk; ePjp ,yf;fpaq;fSk; (nra;As;> ,yf;fzk>; ,yf;fpa tuyhW> ciueil> tho;f;if tuyhW)			
Course Code: 21ULTA21	**Hrs/Week:6**	**Hrs/ Semester : 90**	**Credits :3**

Objectives:

- tho;tpay; ed;ndwpfshd kdpjNeak;> rkj;Jtk; Nghd;wtw;iw tsh;j;Jf; nfhs;sf; fw;Wf; nfhLj;jy;
- mwnewpiaf; filg;gpbg;gNj epiyahdJk; ePbj;jJkhd ed;ikiaj; jUtJ vd;gijr; rhd;Nwhhpd; tho;f;if newpfs; %yk; czur;nra;jy>; nkhop mwpT> ,yf;fpa mwpT ,tw;iw tsh;j;Jf; nfhs;sf; fw;Wf; nfhLj;jy;

Course Outcome

Co.No.	**,g;ghlj;jpl;lk; khztpaUf;F**	**mwpTrhh; kjpg;gPL**
CO-1	,iw Mw;wiy czh;e;Jnfhs;s cjTfpwJ	kjpg;gPL
CO-2	ey;y ez;gh;fisAk; ey;y kdpjh;fisak; ,dk; fz;Lnfhs;sTk;> md;G> ,uf;fk;> ew;nrhy;> ew;nray; Nghd;w ew;gz;GfNshL thoTk; top tFf;fpwJ.	eilKiwg;gLj;Jjy;
CO-3	kdpj Nea gz;GfNshL tho;e;j rhd;Nwhhpd; mDgtq;fisg; ngw;Wf;nfhs;s cjTfpwJ	eilKiwg;gLj;Jjy;
CO-4	jdpkdpj tho;f;ifr; rpf;fy;fisAk; gpur;ridfisAk; vjph;nfhs;Sk; Mw;wiy cUthf;FfpwJ.	eilKiwg;gLj;Jjy;> jpwd; Nkk;ghL
CO-5	,iwtd; Kd; midtUk; rkk; vd;w rpe;jidia cUthf;FfpwJ.	kjpg;gPL
CO-6	Nghl;bj;Njh;TfSf;Fg; gad;gLk; tifapy; gilg;ghf;fj; jpwid tsh;f;f cjTfpwJ.	gilg;ghw;wy;

SEMESTER - II			
Part -1 nghJj;jkpo; - jhs; 2 rka ,yf;fpaq;fSk; ePjp ,yf;fpaq;fSk; (nra;As;> ,yf;fzk>; ,yf;fpa tuyhW> ciueil> tho;f;if tuyhW)			
Course Code: 21ULTA21	**Hrs/Week:6**	**Hrs/ Semester : 90**	**Credits :3**

myF - 1 nra;As; - 2 kzp
rka ,yf;fpaq;fs;
,iwtzf;fk; - jpUehTf;furh;
irtk; 1. Njthuk; - jpUQhd rk;ge;jh;> jpUehTf;furh;> Re;juu;
2. jpUthrfk; - khzpf;fthrfh;
3. jpUke;jpuk; - jpU%yh;
4. jpUg;Gfo; - mUzfphp ehjh;

itztk;: 1. jpUg;ghit - Mz;lhs;
2. jpUtha;nkhop- ek;kho;thh;
ngsj;jk;: kzpNkfiy - rPj;jiyr; rhj;jdhh;
fpwpj;jtk;: 1. Njk;ghtzp - tPukhKdpth;
2. ,NaR fhtpak; - ftpQh; fz;zjhrd;
,Ryhkpak;: Ngl;il Mk;G+h; mg;Jy; fhjph; rhfpG ghly; - rf;fwhj;J ehkh

ePjp ,yf;fpaq;fs;

1. jpUf;Fws; - Cf;fKilik
2. ehybahh; - 1. ed;dpiyf; fz;
   2. cwq;Fk; JizaJ
3. gonkhop ehD}W- 1. nghy;yhj nrhy;yp
   2. tUtha; rpwpnjdpDk;

myF - 2 ,yf;fzk; - 1 kzp

1. nrhy;ypd; nghJ ,yf;fzk;
2. XnuOj;J xUnkhop> nrhy;ypd; tiffs;

3. ngah;r;nrhy; - mWtifg; ngah;fs;
4. tpidr;nrhy; - tiffs;- Kw;W> vr;rk;> Vty;> tpaq;Nfhs;> nra;tpid> nrag;ghl;Ltpid> jd;tpid> gpwtpid
5. ,ilr;nrhy; - Vfhu> Xfhu> ck;ik ,ilr;nrhw;fs;
6. chpr;nrhy; - ,yf;fzk;> tiffs;

nkhopg;gapw;rp–xyp NtWghL mwpjy;

myF - 3 ,yf;fpa tuyhW – 1 kzp

1. irt ,yf;fpaq;fs;
2. itzt ,yf;fpaq;fs;
3. fpwpj;jtk; jkpOf;Fr; nra;j njhz;L
4. ,Ryhkpak; jkpOf;Fr; nra;j njhz;L
5. gjpndz; fPo;f;fzf;F E}y;fspy; 11 mwE}y;fs;

myF - 4 ciueil - 1 kzp

epiwthd tho;f;iff;F Neuk; xJf;Fq;fs; - N[.nksu];

(10 Kjy; 19 tiu cs;s fl;Liufs;)

myF – 5 tho;f;if tuyhW - 1 kzp

kdpjNk Gdpjk; - Rlh;e;njO - Kidth; mUl;rNfhjhp M.khpa rhe;jp

I B.Com., / BBA / B.Sc (Computer Science) Part I FRENCH

SEMESTER – II			
PART – I French Paper – II Progressive French and Commercial correspondence			
Course Code : 21ULFB21	**Hrs/week : 6**	**Hrs/ Sem : 90**	**Credits : 3**

Objectives

To build upon the language skills acquired to reach a standard level of speaking and writing French.

To give thrust on the actional approach to motivate the autonomy of the learner.

Course Outcomes

CO	At the end of this course, the students will be able to	CL
1.	demonstrate proficiency in vocabulary	Un
2.	read and write basic sentence structures in French	Un, Ap
3.	create simple sentences in French	Ev
4.	know the nuances of French commercial correspondence	An
5.	get a gist of the French literature	Un
6.	write formal business letters	Ap, Cr

SEMESTER – II			
PART – I French Paper – II Progressive French and Commercial correspondence			
Course Code : 21ULFB21	**Hrs/week : 6**	**Hrs/ Sem : 90**	**Credits : 3**

Unit 1 – Les loisirs

1.1 –Les loisirs
1.2 – La routine
1.3 – Parler de ses gouts et de ses préférences
1.4 – Décrire sa journée
1.5 – Le roman-photo de ma journée

Unit 2- Où faire ses courses ?

2.1 –Où faire ses courses ?
2.2 – Découvrez et dégustez !
2.3 – Au restaurant : commander et commenter
2.4 – Inviter et répondreà une invitation
2.5 – Le pays des gourmands

Unit 3 - Tout le monde s'amuse

3.1 – Tout le monde s'amuse
3.2 – Les ados au quotidien
3.3 – Décrire une tenue
3.4 – Ecrire un message amical
3.5 – L'école des chefs

Unit 4 - Le texte littéraire

4.1. Le Petit Prince (Chapitre 1) - Antoine de Saint Exupéry
4.2. La colombe poignardée et le jet d'eau – Calligramme - Guillaume Apollinaire

Unit 5 – Les lettres et les termes

5.1 – Les lettres formelles
5.2 – Les termes informatiques

Prescribed Textbook :

Cocton Marie-Noëlle.*Génération 1 Niveau A1*.Paris : Didier, 2016.

Books, Journals and Learning Resources

- Cocton Marie-Noëlle.*Génération 1 Le cahier d'activités*. Paris : Didier, 2016.
- J.Girardet&J.Pécheur avec la collaboration de C.Gibble, Echo A1, CLE international, Paris, 2012.
- Carlo Catherine, Causa Mariella.*Civilisation Progressive du Français – I*. Paris : CLEInternational, 2003.

- Dintilhac Anneline, De Oliveira Anouchka, Ripaud Delphine, DupleixDorothée, Cocton Marie-Noëlle.*Saison 1 Niveau 1, Méthode de français et cahier d'exercices*. Paris : Didier, 2015
- Apollinaire Guillaume.*Calligrammes : Poèmes de la paix et de la guerre 1913-1916*.Paris: Gallimard, 1966
- Antoine de Saint-Exupéry.*Le Petit Prince*. Paris : Gallimard, 2007.
- www.francaisfacile.com/exercices/
- www.bonjourdefrance.com

  http://french-linguistics.co.uk/glossaries/commerce

SEMESTER-II			
Part II General English	**Poetry, Prose, Extensive Reading and Communicative English –II**		
Course Code 21UGEN21	**Hrs/Week: 6**	**Hrs/Semester:90**	**Credits:3**

Objectives

- To help students realise how life, literature and language are closely connected

- To expose students to language skills through the core subjects

Course Outcome:

CO.No	Upon completion of this course, students will be able to	PSO Addressed	Cognitive Level
CO-1	enhance their vocabulary through the texts.	1	Un
CO- 2	demonstrate effective communication skills.	3	Un, Ap
CO- 3	comprehend passages and interpret on their own.	1,2	Un, Ap
CO- 4	construct paragraphs and essays, make notes and sum up passages.	8	An
CO- 5	analyse literary pieces and inculcate ethical values.	5	An
CO- 6	evaluate how language and literature are closely related to life.	5,6	Cr

SEMESTER-II			
Part II General English	**Poetry, Prose, Extensive Reading and Communicative English–II**		
Course Code: 21UGEN21	**Hrs/Week: 6**	**Hrs/Semester:90**	**Credits:3**

Unit I –Poetry

William Wordsworth – Resolution and Independence
Henry W. Longfellow – Psalm of Life
Toru Dutt – The Lotus

Unit II – Prose

A.G. Gardiner – On Courage
Desmond Morris – A Little Bit of What You Fancy
Kalpana Chawla – The Sky is the Limit

Unit III – Short Story

Saki – Mrs. Packletide's Tiger
Liam O'Flaherty – The Sniper
Langston Hughes – Thank You Ma'am

Unit IV – Grammar

Tenses: Present, Past and Future

Unit V- Communication Skills

Listening, Reading, Pronunciation, Key Functions, Speaking (TANSCHE - Module - II)

Text Books:

Units I-III – To be compiled by the Research Department of English

Unit – IV - Joseph, K.V. *A Textbook of English Grammar and Usage*. Chennai: Vijay Nicole Imprints Private Limited, 2006.

Unit - V – CLIL (Content & Language Integrated Learning) – Module II by TANSCHE (Tamil Nadu State Council for Higher Education)

SEMESTER- II			
Core II	**C++ Programming**		
Course Code: 21UCSC21	**Hrs / week : 4**	**Hrs / Semester: 60**	**Credits : 4**

Objectives:

- Understand the basic concepts of object oriented programming language
- To develop programming skills using the C++ Programming language.

Course outcome:

CO No.	**Upon completion of this course, students will be able to**	**PSO Addressed**	**CL**
CO-1	know about object-oriented features.	1	Un
CO-2	develop program using inline ,friend function , overloading constructor and destructor	4	Ap
CO-3	develop the array of objects and demonstrate operator overloading	2,6	Un
CO-4	categorize various inheritance methods	1	An
CO-5	understand pointer operations	1	Un
CO-6	understand virtual function and file operations	1	UN

SEMESTER- II	
Core II	**C++ Programming**

Course Code: 21UCSC21	Hrs / week : 4	Hrs / Semester: 60	Credits : 4

Unit I

The Big Picture: Why Do Need Object-Oriented Programming- Characteristics of Object-Oriented Languages - C++ and C-Laying the Groundwork.C++ Programming Basics: Basic Program Construction - Output Using cout - Preprocessor Directives – Comments - Integer Variables- Character Variables - Input with cin- Type float- Manipulators-Variable type Summary-Type conversion-Arithmetic Operators-Library Functions.

Unit II

Function: Simple Functions - Passing Arguments to Functions -Returning Values from Functions - Reference Arguments - Overloaded Functions - Recursion-Inline Functions - Default Arguments- Variables and Storage Classes - Returning by Reference.

Objects and Classes: A Simple Class - C++ Objects as Physical Objects - C++ Objects as Data Types-Constructors - Objects as Function Arguments -Returning Objects from unction-Structures and Classes-Classes, Object, and Memory-Static Class Data

Unit III

Arrays: Array Fundamentals - Array as Class Member Data - Array of Objects - String. Operator Overloading: Overloading Unary Operators - Overloading Binary Operators- Data Conversion-Pitfalls of Operator Overloading and Conversion.

Unit IV

Inheritance Derived Class and Base Class - Derived Class Constructors - Overriding Member Functions-Inheritance in the English Distance Class - Class Hierarchies-Public and Private Inheritance-Levels of Inheritance-Multiple Inheritance-Ambiguity in Multiple Inheritance - Containership: Classes with Classes - inheritance and Program Development.

Pointers: Addresses and Pointers - Pointer Variables - Pointers and Array - Pointers and Functions - Pointers and Strings - Memory Management: new and delete - Pointers to Objects - A Linked List Example - Pointers to Pointers - Debugging Pointers.

Unit V:

Virtual Functions: Virtual Functions - Friend Functions - Static Functions - assignment and Copy Initialization -The this Pointer.

Streams and Files: Streams -String I/O -Character I/O - Object I/O -I/O with Multiple Objects-File Pointers - Disk I/O with Member Functions -File Pointers -Error Handling - Redirection - - Printer Output - Overloading the Extraction And Insertion Operators.

Self Learning: Command Line Arguments

Text Book:

1. Robert Lafore. *Object-Oriented Programming in C++*. New Delhi : Pearson and Dorling Kindersley Publications. Fourth thEdition 2011

Books for Reference:

1. E.Balagurusamy, *Object-Oriented Programming with C++* India: Tata McGraw Hill. 8th Edition 2020.
2. D.Ravichandran, *Programming with C++*.India: Tata McGraw-Hill. Second dEdition. 2010.
3. K.R. Venugopal Rajkumar Ravishankar. *Mastering C++*. India: Tata McGraw Hill. Second Edition 2017.

SEMESTER- II	
Core Practical II	**C++ Programming Lab**

Course Code: 21UCSCR2	Hrs / week : 4	Hrs / Semester: 60	Credits : 2

1. Area calculation using Function overloading (Minimum three functions).
2. Implement constructor overloading
3. Swap two values between two class objects using friend function.
4. Display the details of employees using array of objects.
5. Overload Binary + operator which adds two complex numbers.
6. Overload Relational operator = = to compare two strings.
7. Row and column total of a matrix using class and objects
8. Using class and objects, find the sum of two matrices using pointers.
9. Process students mark list using multiple inheritances.
10. Process telephone billing using multi level inheritance.
11. Program in C++ using virtual function.
12. Process mark list using binary file.
13. Open a file in output and input mode. Accept data and write to the file. Display the contents of the file.

SEMESTER II

Allied II	Digital Electronics		
Course Code: 21UCSA21	**Hrs / week : 3**	**Hrs /Semester:45**	**Credits : 3**

Objectives:

- To Understand the basic concepts used in the design and analysis of digital systems
- To study various Boolean Functions
- To study about number systems
- To Construct digital circuits
- Acquire knowledge in Boolean functions and MSI and LSI logic circuits.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO Addressed	CL
CO-1	understand various number systems and boolean functions.	1	Un
CO-2	apply various methods to simplify boolean function.	4	Ap
CO-3	construct digital circuits for boolean functions with logic gates.	4	Cr
CO-4	design combinational circuits with logic gates.	4	Cr
CO-5	define sequential logic circuits.	1	Re
CO-6	analyse the operation of various flip-flops.	1	An

SEMESTER- II

Allied II	Digital Electronics		
Course Code: 21UCSA21	**Hrs / week : 3**	**Hrs / Semester: 45**	**Credits : 3**

Unit I

Binary Systems : Digital Computers and Digital Systems – Binary numbers – Number base conversion – Octal and Hexadecimal numbers – Complements– Binary Codes –Basic theorems and properties of boolean algebra– Boolean functions– Canonical and Standard forms .
Self Learning : Digital Logic Gates .

Unit II

Simplification of Boolean Functions : The Map method – Two and Three variable Maps – Four Variable Map– Five and Six Variable Maps – Product of Sums Simplification – NAND and NOR Implementation– Don't care conditions – The Tabulation method – Determination of Prime – Implicants – Selection of Prime – Implicants

Unit III

Combinational Logic : Introduction– Design Procedure – Adders – Subtractors – Code Conversion– Multilevel NAND Circuits – Multilevel NOR Circuits – Exclusive-OR and Equivalence Functions.

Unit IV

Combinational Logic with MSI and LSI : Introduction– Binary Parallel Adder – DecimalAdder– Magnitude Comparator– Decoders – Multiplexers

Unit V

Registers and Counters: Sequential logic -Introduction – Flip-Flops -Basic Flip-Flop Circuit-Clocked RS Flip-Flop-D-Flip-Flop-JK Flip-Flop- T-Flip-Flop- Registers – Shift Registers
Self-Learning: Counters

Text Book :

1. M. Morris Mano, *Digital Logic and Computer Design*, Noida: Pearson education India, First Edition,2016

   Chapters : 1.2-1.6, 2.3-2.5,2.7,3.1-3.11,4.1-4.5,4.7-4.9,5.1-5.6,6.1,6.2,7.1-7.3

Books for Reference:

1. Charles H.Roth, Jr. *Fundamentals of Logic Design*, New Delhi: Cengage Learning India Private Limited, 7th Edition, 2015
2. DonaldD.Givone, *Digital Principles and Design*, New Delhi: Tata McGraw-Hill, First Edition,2012.
3. Donald P.Leach and Albert Paul Malvino, *Digital Principles and Applications*, New Delhi: Tata McGraw Hill, 8th Edition, 2014.

SEMESTER- II			
Allied-Practical II	**Open Source Multimedia Lab**		
Course Code: 21UCSAR2	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :2**

(GIMP)

1. Design a brochure.
2. Design greeting card.
3. Design a Textbook cover page.
4. Filters in GIMP
5. Design a homepage for a website
6. Design a visiting card.
7. Design a Bio data form
8. Design a CD label.
9. Create 2D logos.
10. Animate a candle flame using Liquefy filter.

SEMESTER- II	
Skill Enhancement Course-II	**Professional English for Computer Science –II**

Course Code: 21UCSPE2	Hrs / week :2	Hrs / Semester: 30	Credits :2

Objectives:

- To improve the communicative skill of students by refining their speaking, writing, reading, and listening skills.
- To make students competent in professional communication.
- To attain necessary skills to face interviews.

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	understand the basic objective of the course and obtain strong professional vocabulary for its application at different platforms	7	Un
CO-2	apply the knowledge for writing purposes such as Presentation, drafting and project report etc.	5	Ap
CO-3	evaluate the correct and error-free writing by being well-versed in rules of English grammar and cultivate relevant technical style of communication and presentation.	7	Ev
CO-4	apply techniques for developing inter-personal communication and to respond questions at a formal interview	5,7	Ap
CO-5	apply critical thinking skills to face everyday life situations.	4	Ap
CO-6	develop strategic competence that will help in efficient communication	3, 7	Ap

SEMESTER- II

Skill Enhancement Course-II	Professional English for Computer Science –II		
Course Code: 21UCSPE2	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits :2**

UNIT 1: COMMUNICATIVE COMPETENCE

Listening and Speaking:

Listening and responding to complaints (formal situation)

Listening to problems and offering solutions (informal)

Reading and writing:

Reading aloud (brief motivational anecdotes)

Writing a paragraph on a proverbial expression/motivational idea.

Word Power/Vocabulary:

Synonyms & Antonyms

Grammar in Context:

Adverbs, Prepositions.

UNIT 2: PERSUASIVE COMMUNICATION

Listening and Speaking:

Listening to famous speeches and poems

Making short speeches- Formal: welcome speech and vote of thanks.

Informal occasions- Farewell party, graduation speech

Reading and Writing:

Writing opinion pieces (could be on travel, food, film / book reviews or on any contemporary topic)

Reading poetry

Reading aloud: (Intonation and Voice Modulation)

Identifying and using figures of speech - simile, metaphor, personification etc.

Word Power/Vocabulary:

Idioms & Phrases

Grammar in Context

Conjunctions and Interjections.

UNIT 3: DIGITAL COMPETENCE

Listening and Speaking:

Listening to Ted talks

Making short presentations – Formal presentation with PPT, analytical presentation of graphs and reports of multiple kinds Interactions during and after the presentations

Reading and writing:

Writing emails of complaint

Reading aloud famous speeches

Word Power/Vocabulary:

One Word Substitution

Grammar in Context:

Sentence Patterns

UNIT 4: CREATIVITY AND IMAGINATION

Listening and Speaking

Participating in a meeting: face to face and online

Listening with courtesy and adding ideas and giving opinions during the meeting and making concluding remarks.

Reading and Writing

Reading visual texts – advertisements

Writing a Brochure

Word Power/Vocabulary:

Denotation and Connotation

Grammar in Context:

SentenceTypes.

UNIT 5: WORKPLACE COMMUNICATION & BASICS OF ACADEMIC WRITING

Listening and Speaking:

Informal interview for feature writing

Listening and responding to questions at a formal interview

Reading and Writing

Writing letters of application

Readers' Theatre (Script Reading)

Dramatizing everyday situations/social issues through skits. (Writing scripts and performing)

Word Power/Vocabulary:

Collocation

Grammar in Context:

Working With Clauses.

References:

English for Physical sciences, Tamilnadu state council for Higher Education(TANSCHE)

https://www.collinsdictionary.com

https://youtu.be/moJjKqkn_Xs

https://www.theguardian.com/commentisfree/2020/sep/08/robot-wrote-this-article-gpt-3

https://owl.purdue.edu/owl/general_writing/academic_writing/essay_writing/argumentative_essays

https://youtu.be/5ctbvkAMQO4

https://www.wareable.com/fitness-trackers/how-your-fitness-tracker-works-1449

https://www.hfe.co.uk/blog/a-study-of-fitness-trackers-and-wearables/

https://youtu.be/o_f7mp_tTqw

https://www.youtube.com/watch?v=IOluK9i1yiw&feature=youtu.be

https://www.sciencehistory.org/historical-profile/antoine-laurent-lavoisier

https://youtu.be/AE0kuHKoitE

https://science.howstuffworks.com/math-concepts/fibonacci-nature.html

https://youtu.be/nt2OlMAJj6o

https://youtu.be/dpSK7BMWt74

https://www.everythingrf.com/community/what-is-electronic-warfare

https://w0ww.youtube.com/watch?v=Rsa1zsOx5Mw

http://www.bhopal.com/

https://www.youtube.com/watch?v=4WZTzKu3CsY

https://www.youtube.com/watch?v=32vJxDUr-nE

https://www.youtube.com/watch?v=BLhwNhtYU5E

https://www.bbc.com/news/science-environment-55365434

https://www.ted.com/talks/ray_kurzweil_get_ready_for_hybrid_thinking?referrer=playlist-talks_on_artificial_intelligen#t-146994
https://futureoflife.org/2016/09/30/artificial-photosynthesis/
https://celebratepicturebooks.com/tag/writing-resources-for-kids/
http://guidetogrammar.org/grammar/marks/marks.htm
https://www.englishclub.com/writing/punctuation.htm
https://www.grammarbook.com/english_rules.asp

Semester – II

Environmental Studies			
Course Code : 21UAEV21	**Hrs/ Week : 2**	**Hrs/Sem:30**	**Credits : 2**

Course Outcomes:

Upon completion of this course, the students will be able to

1 Recognize the biotic and abiotic components of ecosystem and how they function.
2 Use natural resources more efficiently and know more sustainable ways of living.
3. Acquire an attitude of concern for the environment.
4. Participate in improvement and protection of environment.
5. Manage unpredictable disasters.
6 Create awareness about environmental issues to the public.

Unit I Environment and Ecosystem

Aim and need for Environmental Awareness - Components of Environment Ecosystem - Components of Ecosystem: Abiotic and biotic factors (Producer, Consumer and Decomposer) – Food Chain, Tropic Levels - Food Web, Energy flow and Ecological pyramids

Unit II Natural Resources:

Renewable and non-renewable resources – Water Resources: Uses and Conservation of Water – Rain Water Harvesting – Forest Resources: Importance of Forests - Major and Minor forest produces - Conservation of Forest Energy Resources: Solar Fossil Fuel – Wind – Role of individuals in the conservation of natural resources

Unit III Environmental Pollution

Pollutants – Types of pollution: Air, Water, Noise and Plastic Pollution – Causes, effects and Control measures – Global warming and Climate Change

Unit IV **Human Population and Environment**

Effect of human population on environment – Population Explosion problems related to population explosion – Involvement of population in conservation of environment – Measures adopted by the Government to control population growth – Environment and human health

Unit V **Disaster Management**

Floods–Drought–Earthquakes– Cyclones – Landslide–Tsunami–Control measures

SEMESTER – III			
Part-I nghJj;jkpo; - jhs; 3 fhg;gpa ,yf;fpaq;fSk; rpw;wpyf;fpaq;fSk; (nra;As;> ,yf;fzk;> ,yf;fpa tuyhW> ciueil> Gjpdk;>)			
Course Code: 21ULTA31	**Hrs / Week:6**	**Hrs / Semester: 90**	**Credits: 4**

Objectives:

- khztpah; ,iw ek;gpf;ifapYk;> ew;gz;GfspYk; tsh;e;J> ,yf;fpa mwptpYk; nkhopj;jpwdpYk; rpwe;J tpsq;f topfhl;ly;.
- fhg;gpa khe;jhpd; tho;f;ifapd; %ykhf flTs; ek;gpf;if> ey;y cwTfs;> ,aw;ifia Nerpj;jy;> nkhopmwpT Nghd;wtw;iw tsur; nra;jy;.

Course Outcome:

CO.No.	,g;ghlj;jpl;lk; khztpaUf;F	mwpTrhh; kjpg;gPL
CO-1	ngz;fspd; rl;lq;fs; chpikfs;> Ntiytha;g;G gw;wpa tpguq;fis mwp;e;J nfhs;s cjTfpwJ.	eilKiwg;gLj;jy;
CO-2	murpay; #o;r;rp> ,dk;> rhjp Fwpj;j ghFghL ,tw;wpypUe;J tpLjiy ngWk; toptiffisf; fw;Wf;nfhLf;fpwJ.	eilKiwg;gLj;jy;
CO-3	,yf;fpa mwptpid tsh;f;f> fhg;gpar; Rit czh;e;J Ritf;f tha;g;gspf;fpwJ.	eilKiwg;gLj;jy;
CO-4	jdpkdpj tho;f;ifr; rpf;fy;fis vjpHnfhs;Sk; epiyia cUthf;FfpwJ	eilKiwg;gLj;jy;
CO-5	,g;gFjpapy; thOk; mbj;jl;L kf;fspd; tho;T epiyia mwpe;J nfhs;s cjTfpwJ. ngz;fs; ePjpf;Fg; NghuhLk; czHit tsh;f;fpwJ.	eilKiwg;gLj;jy;> jpwd; Nkk;ghL
CO-6	Nghl;bj; NjHTfSf;Fg; gad;gLk; tifapy; gilg;ghf;fj; jpwid tsHf;f cjTfpwJ.	gilg;ghw;wy;>jpwd; Nkk;ghL

SEMESTER – III			
Part-I nghJj;jkpo; - jhs; 3 fhg;gpa ,yf;fpaq;fSk; rpw;wpyf;fpaq;fSk; **(nra;As;> ,yf;fzk;> ,yf;fpa tuyhW> ciueil> Gjpdk;>)**			
Course Code: 21ULTA31	**Hrs / Week:6**	**Hrs / Semester: 90**	**Credits: 4**

myF - 1 nra;As; - 2 kzp

fhg;gpaq;fs;

1. rpyg;gjpfhuk; - milf;fyf; fhij : 11 – 94 ghlybfs;
2. kzpNkfiy – MGj;jpud; jpwd; mwptpj;j fhij : 1 Kjy; 56 ghlybfs;
3. nghpaGuhzk; - fz;zg;g ehadhh; Guhzk;. (ghly;fs;: 757 - 762> 67> 74> 81> 84>85> 804> 05> 06> 12> 14> 18> 19> 825 – 832> 834.
4. fk;guhkhazk; - el;Gf;Nfhl; glyk;.
5. rPwhg;Guhzk; - fs;tiu ejp kwpj;j glyk;.
6. Njk;ghtzp - tsd; rdpj;j glyk;.- 9 Kjy; 31 ghly;fs;.

rpw;wpyf;fpak;

1. jpUf;Fw;whyf; FwtQ;rp. IV FwtQ;rp ehlfk;. 8. vq;fs; kiyNa.

myF -2 ,yf;fzk; - 1 kzp

nghUs; ,yf;fzk;

1. mfg;nghUs; : vOjpiz tpsf;fk; - Kjy;> fU> chpg;nghUs;
2. Gwg;nghUs; : ntl;rpj;jpiz Kjy; ghlhz;jpiz tiu tpsf;fk; kl;Lk;

ahg;G ,yf;fzk;

1. ahg;G cWg;Gfs;. (vOj;J> mir> rPh;> jis> mb> njhil)

myF - 3 ,yf;fpa tuyhW - 1 kzp

1. Ik;ngUq;fhg;gpq;fs;
2. IQ;rpWfhg;gpaq;fs;
3. rpw;wpyf;fpaj;jpd; Njhw;wKk; tsh;r;rpAk;> gps;isj;jkpo;> fyk;gfk;> FwtQ;rp> guzp.

4. Gjpdk; Njhw;wKk; tsh;r;rpAk;..

myF - 4 ciueil - 1kzp

,g;nghOJ ,ts; - g. jpUkiy.

myF - 5 Gjpdk; - 1 kzp
Njhpahazk; (r%f ehty;) - fz;zFkhu tp];t&gd;.

SEMESTER – III			
Course Title : PART – I French Paper – III Advanced French Language			
Course Code : 21ULFA31	**Hrs/week : 6**	**Hrs/ Sem : 90**	**Credits : 4**

Objectives

To enhance the acquisition of all the four competencies of language learning.

To create the independent capability of the learner to respond and tackle the various situations of communication when the learner is in the native country of the target language

Course Outcomes

CO	At the end of this course, the students will be able to	CL
1.	analyse and Interpret French realities	Un, Ap
2.	understand and analyse the various components of French life	Un, An
3.	evaluate French civilisation , appreciate the differences between eastern and western civilisation	Ev
4.	understand grammar and apply the acquired grammatical knowledge to do the grammar exercises	Re, Un, Ap
5.	create passages on her own civilisation in the target language	Un, Cr
6.	comprehend French literature	Un

SEMESTER – III			
Course Title : PART – I French Paper – III Advanced French Language			
Course Code : 21ULFA31	**Hrs/week : 6**	**Hrs/ Sem : 90**	**Credits : 4**

Unit 1 – Pas de chance !

1.1 –Se plaindre / plaindre quelqu'un

1.2 – Donner une explication

1.3 – Exprimer une émotion négative

1.4 – Demander et dire le poids et la taille

1.5 – Chance et malchance

Unit 2 – Beau travail ?

2.1 – Comprendre un programme d'échange universitaire

2.2 – Exprimer le but, le souhait et un projet professionnel

2.3 – Exprimer une capacite, une compétence

2.4 – Comprendre des taches professionnelles

2.5 – Universités 2.0

Unit 3 – Au grand air

3.1 – Comprendre une BD sur un changement de vie

3.2 – Exprimer son insatisfaction

3.3 – Exprimer un choix de vie

3.4 – Décrire son mode de vie

3.5 – Je cultive mon jardin

Unit 4 – C'était bien ?

4.1 – Parler de ses difficultés

4.2 – Encourager, rassurer

4.3 – Parler d'un projet

4.4 – Exprimer son accord, son désaccord et intérêt

4.5 – Les Français en chanson

Unit 5 – Le texte littéraire

5.1 – Demain dès l'aube - Victor Hugo

5.2 – La Laitière Et Le Pot Au Lait - Jean De La Fontaine

Prescribed Textbook :

Céline Braud, Aurélien Calvez, Guillaume Cornuau, Anne Jacob,Sandrine Vidal, Cécile Pinson, Marion Alcaraz. *Edito A1Méthode de français*. Paris : Didier, 2016.

Céline Braud, Aurélien Calvez, Guillaume Cornuau, Anne Jacob,Sandrine Vidal, Cécile Pinson, Marion Alcaraz. *Edito A1 Cahier d'exercises*. Paris : Didier, 2016.

Books, Journals and Learning Resources

- J.Girardet&J.Pécheur avec la collaboration de C.Gibble.*Echo A1*. Paris : CLE International, 2012.
- Carlo Catherine, Causa Mariella.*Civilisation Progressive du Français – I*. Paris : CLEInternational, 2003.
- Cocton Marie-Noëlle.*Génération 1 Niveau A1, Méthode de français et cahier d'exercices*.Paris : Didier, 2016.
- Dintilhac Anneline, De Oliveira Anouchka, Ripaud Delphine, DupleixDorothée, Cocton Marie-Noëlle.*Saison 1 Niveau 1, Méthode de français et cahier d'exercices*. Paris : Didier, 2015
- www.francaisfacile.com/exercices/

- www.bonjourdefrance.com
- https://www.frenchtoday.com/french-poetry-reading/

SEMESTER – III			
Part II English Poetry, Prose, Extensive Reading and Communicative English - III			
Course Code: 21UGEN31	**Hrs/ Week: 6**	**Hrs/ Semester: 90**	**Credits: 4**

Objectives:

- To acquaint students with literary art and writings of universal appeal.
- To strengthen the proficiency of communicative English through literary based study.

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO Addressed	CL
CO-1	understand the language and literary components of texts	1	Un
CO-2	develop interest and appreciate literary texts	2	Un, Ev
CO-3	comprehend aspects of grammar and its application	6	Un
CO-4	evaluate perspectives and human values for life	4, 5	Ev
CO-5	adopt appropriate technique to enhance communication and writing	3, 7	Ap, Cr
CO-6	enrich vocabulary and develop skills of formal writing and communication	7, 8	Ap, Cr

SEMESTER – III			
Part II General English Poetry, Prose, Extensive Reading and Communicative English - III			
Course Code: 21UGEN31	**Hrs/ Week: 6**	**Hrs/ Semester: 90**	**Credits: 4**

Unit I –Poetry

William Shakespeare – All the World's a Stage

Dylan Thomas – Do not go gentle into that good night

Sri Aurobindo Ghosh – The Divine Worker

Unit II – Prose

Bertrand Russell – How to Avoid Foolish Opinions

Virginia Woolf – Men and Women

M.K. Gandhi – At School

Unit III – Fiction

Charlotte Bronte -*Jane Eyre* (Abridged Version)

Unit IV – Grammar

Active and Passive Voice, Direct and Indirect Speech

Unit V –Communication Skills

Listening Comprehension, Close Reading, Conversational English, Formal Writing

Text Books:

Units I – III – Compiled by the Research Department of English.

Units IV – Joseph, K.V. *A Textbook of English Grammar and Usage*. Chennai: Vijay Nicole Imprints Private Limited, 2006.

Unit V – CLIL (Content & Language Integrated Learning) – Module IV by TANSCHE.

SEMESTER- III			
Core – III	**Java Programming**		
Course Code: 21UCSC31	**Hrs / week : 4**	**Hrs / Semester: 60**	**Credits : 4**

Objectives:

- To understand the basic concepts and fundamentals of platform independent Object Oriented Language.
- To demonstrate skills in writing programs using exception handling techniques and Multithreading
- To understand streams and efficient user interface design techniques.
- To understand the concept Applets, AWT and Database.

Course Outcome:

CO.No.	**Upon completion of this course, students will be able to**	**PSO addressed**	**CL**
CO-1	knowledge of the structure and model of the Java programming language	1,2	Re
CO-2	develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.	2	An
CO-3	apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.	2	Un
CO-4	design event driven GUI .	6	Ap
CO-5	Develop web related applications	8	Ap
CO-6	Develop applications using JDBC	6,8	Ap

SEMESTER-III			
Core – III	**Java Programming**		
Course Code: 21UCSC31	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit I:

The History and Evolution of Java: Creation of java - Operators – Control statements – Class , Methods , Inheritance

Packages and Interfaces: Packages - Access Protection – Importing Packages- Interfaces.

Self Learning: Data Types, Variables and Arrays.

Unit II:

Exception Handling: Exception-Handling Fundamentals-Exception Types-Uncaught Exceptions-Using try and catch- Multiple catch clauses-Nested try Statements-throw-throws-finally-Java's Built-in Exceptions.

I/O Basics-Reading Console Input-Writing Console Output-The PrintWriter Class-Reading and Writing Files

Multithreaded Programming:

Java Thread Model-Main Thread-Creating a Thread-Creating Multiple Threads- Using is Alive() and join ()-Thread Priorities-Synchronization - Interthread Communication-Suspending, Resuming, and Stopping Threads.

Unit III:

The Applet Class: Applet Basics -Applet Architecture - Applet Skeleton - Simple Applet Display Methods - Requesting Repainting - HTML APPLET tag - Passing Parameters to Applet.

Event Handling: Event Handling Mechanisms - Delegation Event Model - Event Classes(The Action Event, Item Event, Key Event , Mouse Event) - Sources of Events - Event Listener Interfaces(Action Listener ,Item Listener, Key Listener, Mouse Listener).

Introducing the AWT: AWT Classes-Window fundamentals -working with Frame Windows - Working with Graphics.

Self Learning: Adapter Classes

Unit IV:

Using AWT Controls:

Controls Fundamentals -Labels-Using Buttons-Applying Check Boxes-Check Box Group-Choice Controls-Using a Text Field-Using a Textarea-Understanding Layout Managers-[Flow Layout Only]-Menu Bars and Menus.

Unit V:

JDBC: JDBC – JDBC versus ODBC – Types of JDBC drivers – Connection – Statement – PreparedStatement.- Fields of ResultSet – Methods of ResultSet – Executing a query - ResultSetMetaData – DatabaseMetaData.

Self-Learning: Basic data types in JDBC

Text Books:

1. Herbert Schildt. *The Complete Reference Java™* . New Delhi:Tata Mc Graw Hill. 8thEdition 2011. Chapters: 1, 9, 10, 11,21,22,23,24,29,30,31(Unit I,II,III,IV)
2. S. Horstmenn and Gary Cornell, *Core Java2 Volume II Advanced Features.* The Sun Microsystems press Java Series. 2002. Chapter: 4.(Unit V)

Books for Reference:

1. Steven Holzner.*Java 2 Programming Black Book*. New Delhi: Dream Tech Press.2005.
2. Joseph O'Neil.*JavaBeans Programming from the GroundUp*. New Delhi : TMGH. 1998
3. KathyWalrath.*The J2EE Tutorial*.New Delhi:Pearson. Education Asia 2003.

SEMESTER- III			
Core – Practical III	**Java Programming Lab**		
Course Code: 21UCSCR3	**Hrs / week : 3**	**Hrs / Semester: 45**	**Credits : 2**

1. Implement Overloading Constructor and Overloading Method
2. Writing a Program to apply method Overriding concept.
3. Development of Java Packages
4. To create and implement an interface.
5. To create a thread i. Using Thread class ii. Using runnable interface
6. To create an applet with four Checkboxes with labels and a Text area object.
7. To create a window with a checkbox group with boxes for the colors, Violet, Indigo, Yellow, Orange, Red, Blue and Green. When the button is selected the background color must change accordingly.
8. To demonstrate the use of choice box.
9. To throw the following exception, i. Negative Array Size ii. Array Index out of bounds
10. To illustrate mouse event handling.
11. To create a File menu with options new, save, and close, edit menu with options cut, copy and paste.

SEMESTER- III			
Allied III	**Data Structures**		
Course Code: 21UCSA31	**Hrs / week : 3**	**Hrs / Semester: 45**	**Credits : 3**

Objectives:

- To understand the concepts of basic data structures such as stack, Queues and Linked list.
- To make the students understand the basic algorithms for searching and sorting.
- To represent real world problems using different data structures and solve them using best algorithms

Course Outcome:

CO No.	**Upon completion of this course, students will be able to**	**PSO addressed**	**CL**
CO-1	compare various search methods	4	An
CO-2	implement hashing methods	4	Ap
CO-3	discuss applications of stack	1	Un
CO-4	create an expression tree for an expression and evaluate it.	2	Cr
CO-5	implement heap concepts	4	Ap
CO-6	compare and contrast sorting methods	4	An

SEMESTER- III			
Allied III	**Data Structures**		
Course Code: 21UCSA31	**Hrs / week : 3**	**Hrs / Semester: 45**	**Credits : 3**

Unit I:

Introduction: Pseudo code – The Abstract Data Type – A Model for an Abstract Data Type Algorithms Efficiency.

Searching: List Searches – Hashed List Searches – Collision Resolution

Unit II:

Linked Lists: Linear List Concepts – Linked List Concepts – Linked List Algorithms – Processing a Linked List – Complex Linked List Structures

Unit III:

Stacks and Queues: Basic Stack operations – Stack Linked List Implementation – Stack Applications – Queue operations – Queue Linked List Design

Unit IV:

Trees: Basic Tree Concepts – Binary Trees – Binary Tree Traversals – Application of Binary tree – General Trees – Binary search Trees – Insertion ,Deletion

Unit V:

Heap and Sorting: - Heap Definition-Heap Structure – Basic Heap Algorithms. – Heap Data Structures – Heap Algorithms - General sort concepts – Quick sort – External sorts.

Text Book:

1. RichardF.Gilberg&Behrouz A. Forouzan. .*Data Structures A Pseudo code Approach with C++*. Thomson Brooks /Cole. 4thReprint, 4thedition 2006.

Chapters 11,2.1,2.3,2.4,3.1- 3.,3.6, 4.1-4.3 ,5.1 ,5.2,7.1 -7.5 ,8.1,9.1 -9.5,11.1,11.4(Quick sort only),11.5 , 12.1 -12.5

Books for Reference:

1. Ellis Horowitz &SartajSahni.*Fundamentals of Data Structures*.GalGotia publications. 2006.

2. Adam Drozdek.*Data Structures & Algorithm in Java* .Ingram .third edition2008.
3. Alfred V.Aho,JohnE.Hopcroft,Jeffrey D Ullman .*Data Structures & Algorithms*. New Delhi : Pearson Education India. 1st edition2002.
4. SeymourLipschutz. *Data Structures. New* Delhi: McGraw Hill .Schaum's Outline Series .Revised First Edition 2014.

SEMESTER- III			
Allied-Practical III	**Data Structures Lab**		
Course Code: 21UCSAR3	**Hrs / week : 2**	**Hrs / Semester: 30**	**Credits : 1**

1. Searching (Sequential and Binary)
2. Implement linked list and perform the following operations
   i. Add a node as first node ii. Add a node as last node iii.Add a node as middle node
3. Implement Linked list and perform the following operations.
   i. Delete the first node ii. Delete the last node iii Delete the middle node
4. Implement a stack using Linked List and perform the push and pop operations.
5. Implement a queue using Circular list and perform enqueue and dequeue operations.
6. Implement binary tree using Linked and perform the following traversal.
   i. Inorder Traversal ii. Preorder Traversal iii. Post order Traversal
7. Merge sort.
8. Quick sort.

SEMESTER- III			
Skill Based Elective	**Microprocessors**		
Course Code: 21UCSS31	**Hrs / week : 2**	**Hrs / Semester: 30**	**Credits : 2**

Objectives:

- To acquire fundamental knowledge on hardware and software concepts of microcomputer and microprocessors architecture and design.
- To provide assembly language programming Techniques.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	explain basic components and structure of Microprocessor and Microcomputers	1	Un
CO-2	describe 8085 Microprocessor and Memory Interfacing.	1	Un
CO-3	classify the various 8085 Microprocessor instruction set.	1	Un
CO-4	develop Assembly language Programs for various arithmetic operations	2	Ap
CO-5	develop Assembly language Programs for time delays	1	Ap
CO-6	. understand stack and subroutine operations in 8085	2	Un

SEMESTER- III			
Skill Based Elective1	**Microprocessors**		
Course Code: 21UCSS31	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits : 2**

Unit I:

Microprocessor, Microcomputers, and Assembly Language:

Microprocessors-Microprocessor Instruction Set and Computer Languages-From Large Computers to Single Chip Micro Controllers.

Unit II

Introduction to 8085 Assembly Language Programming:

Instruction Classification – Instruction Format -How to Write, Assemble and Execute a Simple Program8085 Microprocessor Architecture And Memory Interfacing: The 8085 MPU- Memory Interfacing – Interfacing the 8155 memory section.

Unit III:

Introduction to 8085 Instructions:

Data transfer operations-Arithmetic Operations-Logic Operation – Branch Operations – Writing Assembly Language Programs-Debugging a Program

Unit IV:

Programming Techniques With Additional Instructions:

Programming Techniques: Looping, Counting, and Indexing- Additional Data Transfer and 16bit Arithmetic Instruction- Arithmetic Operations Related to Memory-Logic Operations: Rotate, Compare-Dynamic Debugging.

Unit V:

Counters And Time Delays:

Counters and Time Delays-Hexadecimal Counter-Modulo ten Counter-Generating Pulse Waveforms-Debugging Counter and Time Delay Programs.

Stacks And Subroutines:

Stack-Subroutine-Restart, Conditional Call and Return Instruction-Advanced Subroutine Concepts.

Text Book:

1. Ramesh Gaonkar. *Microprocessor Architecture. Programming, And Applications With The 8085*. Bangalore. Shree Hari publications .6th edition. 2020

Books for Reference:

1. P Mathur. *Introduction to Microprocessors*. India:Tata McGraw Hill. Third edition 2018.
2. Walter A.Triebel,AvtarSing.*The 8088 and 8086 microprocessors (programming, interfacing,*

software, hardware and Applications. New Delhi:Pearson 2002 .
3. Kumar K. Udaya.*The 8085 Microprocessor* .India:Pearson Education. 1st Edition 2008.

SEMESTER- III			
Skill Based Elective 2	**E- Commerce**		
Course Code: 21UCSS32	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits: 2**

Objectives:

- To understand and ascertain the importance E-Commerce
- Acquire knowledge about E-marketing and E-advertising
- To Identify the key security threats in the E-commerce environment.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	Explain what is E-Commerce	6	Un
CO-2	Compare different business models of E-commerce	6	An
CO-3	Differentiate E-marketing versus traditional marketing	4	Ap
CO-4	Facilitate online marketing	5	Ap
CO-5	Implement E-advertising	5,8	Cr
CO-6	Devise security for E-Commerce	3	Cr

SEMESTER- III			
Skill Based Elective 2	**E-Commerce**		
Course Code: 21UCSS32	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits : 2**

Unit -I

E – Commerce: Meaning, definition, features, functions of E-Commerce, Scope, Benefits and limitations of E-Commerce — E-commerce opportunities and challenges for Industries.

Unit –II

Business Models for E-commerce: The Birth of Portals – E-Business Models – Business-to Consumer (B2C) – Business-to-Business (B2B) – Consumer-to Consumer (C2C) – Consumer to-Business (C2B) – Brokerage Model – Value Chain Model – Advertising Model.

Unit –III

E-marketing – Traditional Marketing Vs. E-Marketing – Impact of E-commerce on markets – Marketing issues in E-Marketing – Online Marketing

Unit –IV

E-advertising – Internet Marketing Trends – E-Branding – Marketing Strategies.
E-Commerce Legal Framework – Rights and Obligations in the World of E-commerce

Unit –V

E-Security: Security for E-commerce – Security Design – Analysing risk – E-Banks and Security

Text book:

P.T. Joseph, SJ, 'E-Commerce - An Indian Perspective', Third edition, PHI Publishing Co. Ltd., Newdelhi

Books for Reference:

1. Kamlesh K. Bajaj and Debjani Nay, 'E-Commerce - The Cutting Edge of Business' - Tata McGraw Hill Publishing Co. Ltd., New Delhi, 2000.
2. Turban, Efraim, and David King, "Electronic Commerce: A Managerial Perspective", 2010, Pearson Education Asia, Delhi.
3. Smantha Shurety, "E–Business with Net Commerce", Addison – Wesley, Singapore.

Websites:

https://forms.iimk.ac.in/libportal/ebook/EB8.pdf

https://backup.pondiuni.edu.in/storage/dde/dde_ug_pg_books/E-%20Commerce.pdf

SEMESTER –III			
Part –IV Non Major Elective - Introduction to Computers			
Course Code: 21UCSN31	**Hrs/week: 2**	**Hrs/Sem. : 30**	**Credits: 2**

Objectives

- Acquire knowledge on basic concepts, functions of computer system.
- Understand the various software and networking concepts.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	understand the various type of computers	1	Un
CO-2	practicing with the concept number system	1	Ap
CO-3	understand the input and output devices of computer and there uses	1	Un
CO-4	explain basic concepts of computer software and the various types of software	2	Un
CO-5	classify operating system software and their functions	1	Un
CO-6	outline the concepts of computer networking and the devices used in computer networking	6	Un

SEMESTER –III			
Part –IV Non Major Elective - Introduction to Computers			
Course Code: 21UCSN31	**Hrs/week: 2**	**Hrs/Sem. : 30**	**Credits: 2**

Unit I:

Introduction to Computers – Types Of Computers – Characteristics of Computers – Word Length – Speed – Storage – Accuracy – Automation – Diligence.

Five Generations Of Modern Computers – Introduction – First Generation(1945-1956) – Second Generation Computers(1956-1963) Third Generation Computers(1964-1971) - Fourth Generation Computers(1971-Present) - Fifth Generation Computers(Present and Beyond)

Unit II:

Classification Of Computer System – Introduction – Microcomputers– Personal Computers(PCs) – Workstations – Portable Computers – Minicomputers – Mainframes – Supercomputers – Network Computers.

Number System – Introduction – Decimal Number System – Binary Number System – Binary-Decimal Conversion – Decimal-Binary Conversion – Binary Addition\Subtraction – Gray Code – Excess-3 Code – ASCII Code – Hart Disk – Floppy Disk.

Unit III:

Input Devices – Keyboard – Mouse – Scanners – Joystick – Trackball – Light pen – graphic tablet – Barcode reader – Pointing stick – Webcam – Touchpad – Stylus .

Output Devices – Monitor – Printer – Headphones – Sound Card – GPS – Inkjet printing – Cathode-ray tube – Plotter – Projector.

Unit IV:

Introduction to Computer Software – Introduction – Operating System – Compilers & Interpreters – Word Processors – Database Management System(DBMS) – Image Processors

Operating System – Introduction – Functions of an Operating System – Classification Of Operating Systems – Introduction to UNIX , Windows NT, Mac OS , DOS , And Linux.

UNIT V:

Computer Networks – Introduction – Telecommunication Processors – Communication Processors

Types of Networks - Telecommunication Software – Network Protocols – Network Architecture – Communication Media.

Text Books:

1. Alexis Leon & Mathews Leon. *Introduction To Computers*. India: McGraw Hill Education Private Limited. Fifth Reprint, Edition 2008.

Books for Reference :

1. Dr.P.Velmani.,(Assistant Professor),M.C.A.,M.Phil.,Ph.D. *Computers Bascis to Advancements*. India: Chess Educational Publishers. First Edition.

2. Peter Norton's. *Introduction to computers* .India: New Delhi: Tata McGraw-Hill. Edition 2004

Semester – III			
Women's Synergy			
Code : 21UAWS31	**Hrs/ Week : 2**	**Hrs/Sem:30**	**Credits : 2**

Unit I - Physical Health

Woman's Structural Organisation – Levels of organisation – Body image - Reproductive health – Hormonal Cycle and its Psycho-somatic implications – Child birth – lactation – Nutritional status of women.

Unit II – Psychological Health

Examining factors determining psychological conditions of women – Depression, anxiety, stress, hysteria – Socio – cultural and familial conditioning of women's minds – Self Image, Discrimination against women.

Unit III – Women and Legal Awareness

Women specific – centered legislations – legal issues – laws to prevent gender based violence National / State Pro-women schemes – educational and Employment schemes. Laws for protection of Women – Women's rights to property – Women's Rights in the Indian Constitution – Maternity benefit act.

Unit IV – Women and Finance

Manager of domestic finance – Budgeting basics – Create a family budget - Set financial goals – Plan for financial emergencies – Budget for travel – Saving strategies – Investment options

Unit V – Women's Empowerment in Various Domain

Introduction - Women created history in sports and music – P. T. Usha, M. S. Subbulakshmi - Women who crossed hurdles in Social Service – Mother Theresa, Muthulakshmi Reddy, Medha Patkar - Role of Women in Indian independence movement and Politics – Indira Gandhi, Aruna Asaf Ali.

SEMESTER- III	
Self Study 1 **Computer Architecture**	
Course Code:21UCSSS1 (Compulsory)	**Credits : 2**

Objectives:

- To study basic computer organization.
- To understand the basic Arithmetic operations algorithms.
- To understand the memory organization.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	discuss the organization of basic computer	1	Un
CO-2	explain various types of instructions.	1	Un
CO-3	explain general register organization and stack organization	1	Un
CO-4	explain algorithms for arithmetic operations of various integer number systems	1	Un
CO-5	explain algorithms for arithmetic operations of floating number systems	1,4	Un
CO-6	discuss memory hierarchy with different types of memories.	1,2	Un

SEMESTER- III	
Self Study 1	**Computer Architecture**
Course Code:21UCSSS1(Compulsory)	**Credits : 2**

Unit I:

Basic computer organization and design :

Instruction codes –computer registers –computer instructions –timing and control – instruction cycle-memory reference instructions

Unit II:

Central processing Unit:

General register organization –stack organization-instruction formats –addressing modes- data transfer and manipulation-program control-Reduced Instruction Set Computer.

Unit III:

Computer Arithmetic:

Addition and subtraction – multiplication algorithms-division algorithms

Unit IV:

Computer Arithmetic:

floating point arithmetic operations- Decimal Arithmetic unit- Decimal Arithmetic operations

Unit V:

Memory organization:

Memory hierarchy –main memory –auxiliary memory-associative memory – cache memory – virtual memory

Text Book :

1. M. Morris Mano .*Computer System Architecture.* New Delhi: Pearson Education. Third Edition 2017 .

Books for Reference:

1. P.V.S. Rao .*Computer system Architecture* .New Delhi: PHI Learnings.Second Printing. 2011
2. John P.Hayes .*Computer Organization and Architecture.* India: Tata McGraw Hill. Third Edition 2002
3. John D. Carpinelli*Computer Systems Organization & Architecture.* India: Tata McGraw Hill. First edition 2002.

SEMESTER – IV			
Part-1 nghJj;jkpo; - jhs; 4 rq;f ,yf;fpak; (nra;As;> ,yf;fzk;> ,yf;fpa tuyhW> ciueil> ehlfk;)			
Course Code: 21ULTA41	**Hrs / Week:6**	**Hrs / Semester: 90**	**Credits: 4**

Objectives:

- khztpaUf;F ey;y kjpg;gPLfisf; fw;gpj;J> tho;tpy; mtw;iwg; gpd;gw;wtoptFj;jy;.
- ,yf;fpakhe;jhpd; %yk; ey;ytho;f;if mDgtq;fisg; ngwr; nra;J jd;dk;gpf;if> MSikj; jpwk;> nkhop mwpT ,tw;iw cUthf;Fjy;.

Course Outcome:

CO.No.	,g;ghlj;jpl;lk; khztpaUf;F	mwpTrhh; kjpg;gPL
CO-1	mDgt mwpit tsh;f;fpwJ.	eilKiwg;gLj;jy;
CO-2	goe;jkpoh; tho;tpay; Kiwfis fw;W gadila cjTfpwJ.	eilKiwg;gLj;jy;
CO-3	kdpjNeak;> ,iwek;gpf;if ,tw;iw cUthf;FfpwJ.	cUthf;fk;
CO-4	jdpkdpj tho;f;ifr; rpf;fy;fis vjpHnfhs;Sk; epiyia cUthf;FfpwJ	eilKiwg;gLj;jy;> cUthf;fk;
CO-5	rKjha gpur;rpidfis vjpHnfhs;Sk; jpwk; fpilf;fpwJ.	eilKiwg;gLj;jy;> jpwd; Nkk;ghL
CO-6	Nghl;bj; NjHTfSf;Fg; gad;gLk; tifapy; gilg;ghf;fj; jpwid tsHf;f cjTfpwJ.	gilg;ghw;wy;> jpwd; Nkk;ghL

SEMESTER – IV			
Part-1 nghJj;jkpo; - jhs; 4 rq;f ,yf;fpak; (nra;As;> ,yf;fzk;> ,yf;fpa tuyhW> ciueil> ehlfk;)			
Course Code: 21ULTA41	**Hrs / Week:6**	**Hrs / Semester: 90**	**Credits: 4**

myF - 1 nra;As; - 2 kzp

vl;Lj;njhif

1. ew;wpiz - ghly;fs; : 64> 318
2. FWe;njhif - ghly;fs; : 3> 20> 75
3. Iq;FEW}W - nryT mOq;Ftpj;jg; gj;J - ghly;fs; : 304> 307> 308> 309
4. gjpw;Wg;gj;J - ghly; : 25
5. ghpghly; - ghly; 6 (1-10 mbfs;)
5. fypj;njhif - ghly; : 51
6. mfehD}W - ghly;fs; : 20> 194
7. GwehD}W - ghly;fs; : 191> 204

gj;Jg;ghl;L

kJiuf;fhQ;rp - 63 thpfs;

myF -2 ,yf;fzk; - 1 kzp

1. **ghtiffs**; - ntz;gh>Mrphpag;gh nghJ ,yf;fzk;
2. **mzp ,yf;fzk**; -
   ctik>cUtfk;> Ntw;Wik> tQ;rg;Gfo;r;rp> rpNyil> jw;Fwpg;Ngw;wk;;
3. thf;fpa tiffs**;**
4. gpwnkhopr; nrhw;fisePf;fpvOJjy;
   m. Mq;fpyr; nrhw;fs;
   M. tlnkhopr; nrhw;fs;
   ,. njYq;Fr; nrhw;fs;

myF 3 ,yf;fpatuyhW - 1 kzp

1. vl;Lj;njhif E}y;fs;
2. gj;Jg;ghl;L E}y;fs;

3. rq;f ,yf;fpaj;jpd; jdpr;rpwg;Gfs;
4. ehlfk; - Njhw;wKk; tsh;r;rpAk;

myF - 4 ciueil - 1kzp

,yf;fpaj; njd;wy; - jkpo;j;Jiw - fl;Liuj; njhFg;G> J}a khpad;idfy;Y}hp (jd;dhl;rp)> J}j;Jf;Fb

myF -5 ehlfk; - 1 kzp

Mapuk; G+f;fs; kyul;Lk; - fPo;f;Fsk; tpy;ytd

SEMESTER – IV			
Course Title : PART – I French Paper – IV French Course and Literature			
Course Code : 21ULFA41	**Hrs/week : 6**	**Hrs/ Sem : 90**	**Credits : 4**

Objectives

To create and develop the taste for literary readings in the target language.

To motivate students to appreciate the French literature.

Course Outcomes

CO	At the end of this course, the students will be able to	CL
1.	reflect upon the author's ideas and transform their own personality	Un
2.	explore a literary text, with the perspective of analyzing the content and manner of writing	Un, An
3.	create critical appreciations	Ev
4.	evaluate the literary piece in comparison with any other of	An, Ap

	another language	
5.	identify grammar rules in literary text and apply the grammatical knowledge to do grammar exercises	Re, Un, Ap
6.	discover, interrogate and reflect on the humanistic value	An

SEMESTER – IV			
Course Title : PART – I French Paper – IV		**French Course and Literature**	
Course Code : 21ULFA41	**Hrs/week : 6**	**Hrs/ Sem : 90**	**Credits : 4**

Unit 1 – XVII^{e}siècle

1.1 – Le Corbeau et le Renard - Jean de la Fontaine
1.2 – Le Petit Chaperon Rouge - Charles Perrault
1.3 – Le Passe Composé

Unit 2 – XVIII^{e}siècle

2.1 – Zadig : La danse - Voltaire
2.2 – La Révolution française
2.3 – L'imparfait

Unit 3 – IX^{e}siècle

3.1 – Chansons d'automne - Paul Verlaine
3.2 – Le Père Goriot *(extrait)* - Honoré de Balzac
3.3 – Les Pronoms relatifs

Unit 4 – XX^{e}siècle

4.1 – Le Pont Mirabeau - Guillaume Apollinaire
4.2 – L'Etranger *(extrait)* - Albert Camus
4.3 – Les Indicateurs temporels

Unit 5 – La littérature francophone

5.1 – Le Grand Cahier*(extrait)* - Agota Kristof
5.2 – Le fils à la recherche de sa mère- Pape Faye
5.3 – Le Futur proche et le futur simple

Books, Journals and Learning Resources

- K. Madanagobalane, N.C.Mirakamal.*Le Francais par les Textes*. Chennai :Samhita Publications, 2019.
- Blondeau Nicole, Allouache Ferroud jà, Ne Marie-Françoise.*Littérature Progressive du Français*.Paris : CLE International,2004.
- Carlo Catherine, Causa Mariella.*Civilisation Progressive du Français – I*. Paris : CLE International, 2003.
- Akyuz Anne,Bazelle-Shahmaei Bernadette, Bonenfant Joelle, GliemannMarie-Francoise.*Les 500 exercices de grammaire*. Paris : Hachette livre,2005
- Grégoire Maria.*Grammaire Progressive du français*. Paris :CLE International,2002.
- Sirejols Evelyne, TempestaGiovanna,Grammaire. *Le Nouvel Entrainez-vous avec 450 Nouveaux Exercices.* Paris : CLE International, 2002
- www.francaisfacile.com/exercices/
- www.bonjourdefrance.com
- https://www.conte-moi.net/node/120

SEMESTER – IV			
Part II English Poetry, Prose, Extensive Reading and Communicative English - IV			
Course Code 21UGEN41	**Hrs/ Week: 6**	**Hrs/ Semester: 90**	**Credits: 4**

Objectives:

- To advance students' understanding of literary art and writings of universal appeal.
- To further the proficiency of communicative English through literary studies.

Course Outcome:

CO.No.	**Upon completion of this course, students will be able to**	**PSO Addressed**	**CL**
CO-1	comprehend better the language and literary components of texts	1	Un
CO-2	gain deeper insight into literary experience and expressions of writers	2	Un

CO-3	be competent in conversational and functional English	3	Ap
CO-4	employ nuances of verbal and non-verbal techniques in communication	5, 6	Ap
CO-5	adopt right perspectives of human values for life	4, 5	Ap
CO-6	face interviews and competitive exams with confidence	7	Ap

SEMESTER - IV			
Part II English Poetry, Prose, Extensive Reading and Communicative English - IV			
Course Code :21UGEN41	**Hrs/ Week: 6**	**Hrs/ Semester: 90**	**Credits: 4**

Unit I –Poetry

John Keats – Bright star, would I were steadfast

E.E. Cummings – I carry your heart with me

Jayanta Mahapatra – Relationship

Unit II – Prose

Helen Keller – Three Days to See

Jerzy Kosinski – TV as a Baby Sitter

Bhabani Bhattacharya – Names are not Labels

Unit III – Fiction

Thomas Hardy – *Tess of the d' Urbervilles* (Abridged Version)

Unit IV – Grammar

Types of Sentences, Transformation of Sentences

Unit V – Communication Skills

Verbal and Non-Verbal Communication, Interview, CV- Resume, Presentation Skills

Text Books:

Units I – III – Compiled by the Research Department of English.

Units IV – Joseph, K.V. *A Textbookof English Grammar and Usage*. Chennai: Vijay Nicole Imprints Private Limited, 2006.

Unit V – CLIL (Content& Language Integrated Learning) – Module IV by TANSCHE.

SEMESTER- IV			
CORE IV	**RDBMS with PHP and MySQL**		
Code: 21UCSC41	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives

- To understand the basic elements of a relational database management system
- To identify the data models for relevant problems
- To design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data
- To create dynamic web pages and websites.
- To connect webpages with database.

Course Outcomes:

CO No.	**Upon completion of this course, students will be able to**	**PSO Mapped**	**CL**
CO-1	explain the DBMS	1	Un

CO-2	describe Data models	2	Un
CO-3	explain the variable usage in PHP	1	Un
CO-4	creating forms with conditional statements	1	Cr
CO-5	describe about arrays, files, cookies and functions.	2	Un
CO-6	create an application using php and mysql	4	Cr

SEMESTER- IV			
CORE IV	**RDBMS with PHP and MySQL**		
Code: 21UCSC41	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit-I

Data base System Applications, Purpose of Database Systems-Data Models – Entity Relationship Model Constructs: Entities, Attributes & Relationships, Types of entities, Types of Attributes, Types of Relationships, Degree of Relationship: Unary, Binary & Ternary. Cardinality Constraints, Examples

Unit- II

Normalization – Introduction, Non loss decomposition and functional dependencies, First, Second, and third normal forms – dependency preservation, Boyee/Codd normal form. Higher Normal Forms - Introduction, Multi-valued dependencies and Fourth normal form, Join dependencies and Fifth normal form

Unit- III

Introduction to SQL -Introduction, SQL Environment, Data Definition Commands: Create, Alter, Drop, Truncate. Data Integrity Controls: Primary Key Constraint, Unique Key Constraint, Not Null Constraint, Foreign Key Constraint, Check Constraint. Data Manipulation Commands: Insert, Update, Delete. Data Control Commands: Commit, Rollback. SQL Operators: Arithmetic, Logical, Relational and Special Operators.

Unit-IV

Introduction to PHP- history- features-variables- statements-operators-conditional statements-if-switch-nesting conditions-merging forms with conditional statements-loops-while-do-for – loop iteration with break and continue- Arrays: Creating an array- user defined functions- using files-sessions- cookies

Unit-V

Working MySQL with PHP-database connectivity- usage of MYSQL commands in PHP-processing result sets of queries-formatting query output with Character- Numeric- Date and time –sample database applications.

Text Books:

1. Raghurama Krishnan*,Data base Management Systems*,Johannes Gehrke, TATA McGrawHill 3rd Edition.
2. Vikram Vaswani *,How to Do Everything with PHP & MySQL,* TATA McGrawHill

Books for Reference:

1. Elmasri Navathe ,*Fundamentals of Database Systems*, Pearson Education.
2. C.J. Date, A.Kannan, S.Swami Nadhan,*An Introduction to Database systems*, Pearson, Eighth Edition
3.Martin Gruber,*Understanding SQL,*Manish Jain for BPB publications
4.Steven Holzner,*The complete Reference*,TATA McGraw-Hill Edition
5.Alexis Leon Mathews,*Database Management Systems*,Leon Vikas

SEMESTER IV			
Core – Practical IV	**PHP& MySQL Lab**		
Course Code: 21UCSCR4	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :2**

1. Creating a simple webpage using PHP.
2. Write programs using conditional-looping statements in PHP.
3. File manipulation using PHP.
4. Creating a simple table with constraints.
5. Insertion, Updation and Deletion of rows in MYSQL tables.
6. Searching for data by different criteria.
7. Sorting of data.
8. Demonstration of joining tables.
9. Usage of subqueries.
10. Validating Input.

SEMESTER- IV			
Allied – IV	**Big Data Analytics**		
Course Code: 21UCSA41	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :3**

Objectives:

- To make the students understand Big Data Analytics
- To understand the various algorithms in Big Data Analytics

Course Outcome:

CO No.	**Upon completion of this course, students will be able to**	**PSO addressed**	**CL**
CO-1	understand the concept of Big Data	1	Un
CO-2	describe Big data Analytics	4	Un
CO-3	explain Big Data Analytics Process	4	Un

CO-4	understand Machine Learning	6	Un
CO-5	understand artificial Intelligence	6	Un
CO-6	explain the Applications of Big Data	5,8	Ap

SEMESTER- IV			
Allied – IV	**Big Data Analytics**		
Course Code: 21UCSA41	**Hrs / week :3**	**Hrs / Semester: 45**	**Credits :3**

Unit I:

From Data to Big Data: Introduction - No analytics without data - Databases - Raw data - Text- Images, audios and videos - The Internet of Things - From bytes to yottabytes: the data revolution - definition - The 3Vs model - Why now and what does it bring?

Big Data: Introduction - Beyond the 3Vs - From understanding data to knowledge – Improving decision-making - Things to take into account - Data complexity - Data quality: Not all data are the right data - Data security - Big data and businesses - Opportunities - Challenges

Unit II:

Building an Understanding of Big Data Analytics: Introduction - Before breaking down the process. What is data analytics? - Before and after big data analytics - Traditional versus advanced analytics: What is the difference? - Advanced analytics: new paradigm - New statistical and computational paradigm within the big data context
Why Data Analytics and When Can We Use It? Introduction - Understanding the changes in context - When real time makes the difference - What should data analytics address? - Analytics culture within companies - Big data analytics application.

Unit III:
Data Analytics Process: Introduction - Understanding data analytics is good but knowing how to use it is better- First phase: find the data - Second phase: construct the data - Third phase: go to exploration and modelling - Fourth phase: evaluate and interpret the results -Fifth phase: transform data into actionable knowledge - Disciplines that support the big data analytics process .

Unit IV:
Machine Learning: Introduction – descriptive analysis – prescriptive analysis – artificial Intelligence –Machine learning definition – how does it work – data scientist

Unit V:
Applications and Examples: Introduction – The duo big data/ML: examples of use – Netflix-,Amazon –proof that data are a source of creativity

Text book:

Soraya Sedkaoui *Data Analytics and Big Data* -, Wiley – ISTE 2018.

Books for Reference :

1. Michael Minelli, Michele Chamboss, Ambiga Dhiraj , "*Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for today's businesses*" John Wiley , 2014.
2. *Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data*,EMC Education Services.
3. Avid Loshin, "*Big data analytics: From Strategic planning to enterprise integration with tools, techniques, NoSQL, and Graph*, Elsevier,2013

SEMESTER- IV			
Allied - Practical– IV	**Web designing Lab**		
Course Code: 21UCSAR4	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits :1**

1. Create a web page of your College.
2. Create a web page to display your marks in the following table format.

Reg No.	Name	SEMESTER I			
		Language	English	C	HTML

		Int	Ext	Int	Ext	Int	Ext	Int	Ext

3. Write an HTML code to display a list of five cars in a frame,Link each one to a brief description in second frame. The left frame should display the list and the right frame should display the paragraph about the frame.

4.Write HTML program to create E-Mail registration form.

5. Design a Web page using CSS which includes the following:
   i. Use Different fonts and styles
   ii. Set the background image
   iii. Define styles for links as A: link, A: visited , A: active and A: hover
6. Write a Java Script to prepare EB Bill.
7. Write a Java Script to design a simple calculator to perform sum, product, difference and quotient operations.
8. Write a JavaScript to validate the following fields:
   i. Name (should contain alphabet and the length should not be less than 6 characters)
   ii. Password (should not be less than 6 characters length)
   iii. Email id (must follow the pattern)
   iv. Mobile No (should contain 10 digits)

SEMESTER- IV			
Skill Based Elective 1	**DTP Lab**		
Course Code: 21UCSS41	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits: 2**

1. Create a rolling ball animation.
2. Create a ball bouncing in the same place.
3. Create a bouncing ball across the screen.
4. Create multiple ball bouncing with multiple colours.
5. Create an object falling to the ground.
6. Create a morphing animation.
7. Create a moving character.
8. Create an animation with sound.

SEMESTER- IV			
Skill Based Elective 2	**Cyber Security**		
Course Code: 21UCSS42	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits: 2**

Objectives:

- To understand the basic concepts of Cyber Ethics, Virtues and Values
- To design and develop a security architecture for society.
- To learn about how to maintain the Confidentiality, Integrity and Availability of a data

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	identify how security issues in cyberspace raise ethical concerns	3	Un
CO-2	adapting Artificial Intelligence Ethics	6,8	Cr
CO-3	acquire the knowledge of Cyber laws, regulations in information Society	3	Un
CO-4	identify and explore the different types of Cyber Crimes	8	Un
CO-5	appraise the Cyber offences	5	Ev
CO-6	assess Cyber Bullying and digital literacy for protecting children from bullying.	8	Ap

SEMESTER- IV			
Skill Based Elective 2	**Cyber Security**		
Course Code: 21UCSS42	**Hrs / week :2**	**Hrs / Semester: 30**	**Credits: 2**

Unit-I:

Cyber Ethics: Ethics in Cyber Society: Core Values and Virtues: Definitions, Specificities of Cyberspace, Dimensions of Cyber Ethics in Cyber Society, Core Values and Virtues, Cyber Ethics by norms, Laws and Relations.

Unit-II:

Artificial Intelligence Ethics: "AI for Good". Cyber Ethics as Business Ethics. Cyber Law and Cyber Ethics: Importance of Cyber Law, The Significance of Cyber Ethics, and Cyber Crime is Unethical and Illegal, The need for Cyber Regulation.

Unit-III:
Ethics in the Information Society, Technologies Need Standards, Rules and Regulations, Technology
Ethics, Legal Ethics, the Nine P's of Ethics in Information Society.

Unit-IV:
Cyber Crime: Cybercrime offences, Computer Related Offences, Content Related offences, Government Efforts in Cyber security, Cyber security in the Academic world. Critical Thinking of Citizens: Ethics in Digital Age, Acting Responsibly in the Digital World, Three Dilemmas: Ethical Intelligence in Practice.

Unit-V:
Cyber Bullying: Introduction – Cyber Bullying, Peoples in Cyber Bullying, Signs of Cyber Bullying, Suicidal Tendencies, Role of Children and Duty of parents, Limiting Access of Technology, Child Bullying. Child Protection Online: Prevention through Education for Digital Literacy and Safety.

Text Book:
1. ChristophStuckelberger, PavanDuggal. *Cyber Ethics 4.0, Serving Humanity with Values*. Globethics.net Global series no 17, 2018.

Books for Reference:
1. Diane Bailey.*Cyber Citizenship and Cyber Safety: Cyber Ethics*.USA:The Rosen Publishing group 2008.
2. Kizza, Joseph Migga, Ethical and Social Issues in the Information Age, 5th edition, Springer, 2015.
3. Bynum, Terrel Ward &Rogerson, Simon, eds: *Computer Ethics & Professional Responsibility: Introductory Text & Readings*. Blackwell 2004.

SEMESTER-IV			
Part IV Non Major Elective		**Introduction To Internet**	
Course Code:21UCSN41	**Hrs/week:2**	**Hrs/sem:30**	**Credits: 2**

Objectives:

- Introduction about internet and applications.
- Awareness on Social Networks.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSOs addressed	CL
CO-1	outline the History of Internet	1	Un
CO-2	understand about E-mail and how it works	6	Un
CO-3	compare different types of browser and its tools	6	Ev
CO-4	explain Blogging and it's functions	7	Ev
CO-5	describe Electronic Publishing and applications	6	Un
CO-6	explain Social Networking and awareness on Social Networking	8	Un

SEMESTER-IV			
Part IV Non Major Elective		**Introduction To Internet**	
Course Code:21UCSN41	**Hrs/week:2**	**Hrs/sem:30**	**Credits: 2**

Unit I:

Introduction to Internet –A brief History of Internet – How does Internet Work – What is special about the Internet . **How Internet works** – Introduction – People and Organizations – Hardware .

Unit II:

Introduction- Dial-up Connection- Dedicated Lines- ISDN-DSL-Cable Modem-Satellite Internet- Cellular broadband-Wireless Broadband- Wired and Wireless Broadband Internet Access-Choosing the best Internet Connection.

Unit III:

World Wide Web – Introduction-Internet and Web- How the Web Works- A Brief History of WWW. **Web Browsers and Web Browsing** – Types of Browser – Web Browsing.

Unit IV:

Websites and Web pages - Introduction-Web Design-Creating a website-Web Hosting-Website Promotion-**Blogging**-Introduction-What is a Blog-Why Blog-History of Blogs-State of the Blogosphere-Why is Blogging so popular-Blog Search Engines and Communities-Authors, Books and Blogs-Blogs and Employment-Pitfalls to avoid while Blogging-Is Blogging Good or Bad.

Unit V:

Electronic Publishing - Introduction- Electronic Publishing(E-Publishing) - E-book Readers-Economics of E-Publishing-Application of E-publishing- E-publishing--Advantages and Disadvantages.

Social Networking-Introduction-Social Networking Timeline-Why Social Networking-Dangers of Social Networking-Getting Connection.

Text Book:

1. Alexis Leon & Mathews Leon. *Internet for Everyone*. India: Leon Press.15th Anniversary Edition.

Books for Reference:

1.*Computer Literacy*, Department of Foundation Courses in collaboration with School of Computing Sciences
2.Vikas Gupta. *Internet and Web design*, India: Rematch Press I. Edition 2003.
3.Rajeev Gupta B.Tech. *Internet Guide,* India: Copyright reserved Nipun Publications. First Edition November 2000.

SEMESTER- IV			
Ability Enhancement Course: Yoga and Meditation			
Course Code: 21UAYM41	**Hrs/Week : 2**	**Hrs/Semester : 30**	**Credits: 2**

Course Outcome:

- To learn and practice various meditation, yoga methods to transform the ordinary life into a healthy, harmonious life leading to holistic wellbeing,
- To create an eco-friendly, loving and compassionate world.

- Acquire knowledge and skill in yoga for youth empowerment.
- Increase their power of concentration
- Learn the causes and ways to overcome fear and sadness.
- Create a ecofriendly, loving and compassionate world.

Unit I: Meditation (6 Hrs)

Meditation – Purposes of meditation– Major types of meditations: Zazen, Mindfulness, Vipasana, Yoga, Self-inquiry, Listening, Qi Gong, Taoist, Tantra– Health benefits of meditation: physical, psychological, spiritual–Meditation and Silence:Silence of the body, mind, heart,and beyond – General methodology of meditation – Tips for better meditation **Exercises**: Practicing Zazen meditation – Self-enquiry meditation exercises

Unit II: Self-Awareness (6 Hrs)

Awareness – Self-awareness – Importance of self-awareness – Shades of self-awareness – Difference between Awareness and Concentration – Power of concentration – Levels of concentration – How to increase concentration? – Beauty of living here and now – Ways to develop your presence – Self-awareness and Ecology: interconnectedness **Exercises**: Body Scan exercise – Self-Witnessing exercise – Eating Raisin with full awareness

Unit III: Yoga (6 Hrs)

Meaning and importance of yoga – Yoga and human physical system – Principles of Yoga – Different types of yoga – Yoga and balanced diet – Yoga and energy balance – Pranayama – Surya namaskaram– Basic asanas for healthy life – Therapeutic benefits of simple yogasanas – Naturopathy for common ailments.

Exercises:Practicing basic Asanas – Doing Sun Salutation

Unit IV: Mindfulness (6 Hrs)

Definition of mindfulness – Three components of mindfulness– Benefits of mindfulness – Mindfulness and Brainwave patterns – Myths about mindfulness – Scientific Facts about mindfulness – Formal method to practice mindfulness – Qualities of Mindfulness – Obstacles for mindfulness – informal ways of practicing mindfulness – Mindfulness to get rid of addictions

Exercises: Practice Mindful Walking –Practice Mindful Talking

Unit V: Heartfulness (6 Hrs)

Attitude to life – Power of positive attitude – Techniques to develop positive attitude – Positive vs negative people – Forms of negative attitude – Heartfulness – Managing fear: Basic 5 fears, Ways to overcome fear–Handling anger: Anger styles, Tips to tame anger – Coping with sadness: Causes and ways to overcome sadness, dealing with depression – Ultimacy of compassion: Compassion to oneself, towards others: Forgiveness, to nature: Seeing God in all

Exercises: Practice Loving-Kindness meditation– Doing compassionate actions

Text Book:

1) Thamburaj Francis. *Meditation and Yoga for Holistic Wellbeing.* Trichy: Grace Publication. 2019.

Books References:

1) Osho. *Meditation the Only Way.* New Delhi: Full Circle Publication, 2009.
2) Thamburaj Francis. *Journey from Excellence to Godliness: Zen Meditation for Transformation.* Grace Publication, Trichy, 2017.
3) Osho. *Awareness: The Key to Living in Balance.* New York: St.Martin's Griffin Publication, 2001.
4) Tolle Eckart.*The Power of Now: A Guide to Spiritual enlightenment.* New World Library, 2004.
5) Swami Gnaneswarananda. *Yoga for Beginners.* Calcutta: Sri Ramakrishna Math, 2010.
6) HanhThichNhat. *The Miracle of Mindfulness: An Introduction to the Practice of Meditation.* Beacon Press, 2016.
7) Kamlesh D. Patel and Joshua Pollock. *The Heartfulness Way: Heart-Based Meditations for Spiritual Transformation.* Westland Publications, 2018.

Assessment

Internal Assessment :

Class Exercises (Unit wise exercises as given in syllabus)	5x10	50
Homework (Assignment, Charts, Aids, creative works, etc)	5x 5	25

External Assessment

Objective Type Questions	5x10	25
Total	100	

SEMESTER IV	
Self Study (optional)	**Web Technology**
Course Code: 21UCSSS2	**Credits :2**

Objectives:

- Understand the principles of creating an effective Web page.
- Learn the language of the web:HTML and CSS
- Develop basic programming skills using javaScript.
- Be able to embed social media content into webpages

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	understand Internet standard and Internet protocols	1	Un
CO-2	demonstrate JavaScript	6	Ap
CO-3	develop dynamic web pages using JavaScript (client side programming).	5	Ap
CO-4	design interactive web pages using DHTML	5	Ap
CO-5	discuss how XML DTDs differ from XML schemas	1	An
CO-6	design a simple website	6	Ap

SEMESTER IV	
Self Study (optional)	**Web Technology**
Course Code: 21UCSSS2	**Credits :2**

Unit I:

Introduction What is Internet? History of Internet, Internet Services and Accessibility, Uses of Internet, Protocols, Web Concepts, Internet Standards

Unit II:

Internet protocols Introduction, Internet Protocols, Host Names, Internet Applications and Application Protocols

Unit III:

Javascript Introduction, Language Elements, Objects of Javascript, Other Objects, Arrays

Unit IV:

Dynamic HTML(DHTML) Introduction, Cascading Style Sheets (CSS), DHTML Document Object Model and Collections, Event Handling, Filters and Transactions, Data Binding

Unit V:

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 Book:

1. N.P.Gopalan, J.Akilandeseswari*, Web Technology – A Developer's Perspective*, PHI,2007

Books for Reference:

1. Achyut S Godbole, AtulKahate, *Web Technologies - TCP / IP To Internet Application Architectures*, Tata McGraw - Hill Education,2008.
2. Vipin Kumar, *Web Technologies,* A.B. Publication publisher, 2008
3. Jeffry C. Jakson, *Web Technologies by Computer Science Perspective*,pearson publication, 2005

Semester -V			
Common Core VII Computer Oriented Numerical Methods			
Course Code: 21UCMC51	**Hrs/Week: 6**	**Hrs/Sem: 90**	**Credits : 5**

Objectives:

- To understand different methods of solution of the equations and compare them.
- To understand and apply different methods to find the value of definite integrals.
- To Understand the MATLAB environment.
- To introduce students to the use of a high-level programming language, MATLAB.
- Being able to do simple calculations using MATLAB

Course Outcome:

CO. No.	Upon completion of this course, students will be able to	PSO Addressed	CL
CO-1	recognize and apply appropriate principles and concepts relevant to Numerical Analysis.	6	Ap
CO-2	discover the most appropriate estimate for the missing data.	4	Cr
CO-3	analyze the errors obtained in the numerical solutions of problems.	4	An
CO-4	demonstrate the method of interpolation and find the solution for the data.	6	Un
CO-5	analyze and visualize data	4	An
CO-6	create and control simple plot and user-interface graphics objects in MATLAB	2,8	Cr

Semester -V			
Common Core VII	**Computer Oriented Numerical Methods**		
Course Code: 21UCMC51	**Hrs/Week: 6**	**Hrs/Sem: 90**	**Credits : 5**

Unit I:

Difference operators-Other difference operators-Newton's interpolation formula-Lagrange's interpolation formulae-Divided difference-Divided difference formula-Inverse interpolation.

(Textbook: 1, Chapter 3, Sec 3.1, 3.2, Chapter 4, Sec 4.1,4.3,4.4,4.5,4.6, pages 3.1 – 3.45, 4.1- 4.16, 4.31- 4.54)

Unit II:
Derivatives using Newton's forward difference formula-Derivatives using Newton's backward difference formula-Derivatives using Newton's central difference formula-Maxima and minima of the interpolating Polynomial-Numerical Integration-Newton – Cote's quadrature formula- Trapezoidal Rule-Simpson's one third rule-Simpson's three eighth rule-Wedley's rule.
(Textbook: 1, Chapter 5, Sec 5.1 – 5.4, Chapter 6, Sec 6.1 – 6.4, pages 5.1 – 5. 24, 6.1 – 6.26)

Unit III:
Taylor series method-Picard's method- Runge-Kutta method.
(Textbook: 1, Chapter 7, Sec 7.1,7.2,7.4, pages 7.1-7.15, 7.25-7.40)

Unit IV:
Introduction to MATLAB: MATLAB environment – Types of files _ platform – search path – Constants, variables and expressions – Vectors and Matrices – Polynomials – Input Output statements – MATLAB Graphics.
Self Learning: Create MATLAB program i.Create a menu ii. copy the data from one file to another file.

Unit V:
Control Structures- writing programs and functions – ordinary differential equation and symbolic mathematics.
Self Learning: Taylor Series - https://tutorial.math.lamar.edu/classes/calcii/taylorseries.aspx

Text Books:
1. Arumugam S and Thangapandi Isaac A*, Numerical Analysis with Programming in C*.Palayamkottai: New Gamma Publishing House 2006.
2. Raj Kumar Bansal, Ashok Kumar Goel, Manoj Kumar Sharma*, MATLAB and its Applications in engineering*,India:Pearsons Publications 2009.Chapters:1-9)

Books for Reference:
1. Stormy Attaway*, MATLAB- A Practical Introduction to Programming and Problem Solving:* Bostan University: 5th Edition 2018
2. Stephen J. Chapman*, Essentials of MATLAB Programming.*United States of America: Thomson Learning. 2nd Edition 2007

SEMESTER- V			
Core – VIII	**Operating Systems**		
Course Code: 21UCSC51	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:
- To acquire the fundamental knowledge of the operating system architecture and

components and to know the various operations performed by the operating system.

- Understand the basic working process of an operating system.
- Understand the importance of process and scheduling.
- Understand the issues in synchronization and memory management.
- Know about open source operating system Linux

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	define Operating System Structure and the various operations , process of operating system	1	Re
CO-2	analyze the Various Scheduling Algorithms of Process Management	4	An
CO-3	explain the concept of Deadlock.	4	Re
CO-4	implement the various allocation methods of Memory Management	5	Ap
CO-5	discuss about open source software	6	Un
CO-6	compare Linux with other operating systems	6	An

SEMESTER- V			
Core – VIII	**Operating Systems**		
Course Code: 21UCSC51	**Hrs/week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit I:

Introduction and System Structures: Operating system definition, computer system organization, and architecture, structure and operations, process, memory and storage management.

Unit II:

Process Management: Process concepts, scheduling and operations on processes. Process Scheduling: Basic concepts, scheduling criteria, scheduling algorithms, Synchronization: Background, critical section problems, Peterson's Solution, Synchronization Hardware, Classic problem of synchronization.

Self Learning : Multithreaded Programming

Unit III:

Deadlock: Deadlock: System model, deadlock characterization, methods for handling deadlock, deadlock prevention, avoidance and detection, Recovery from deadlock.

Memory Management: Memory Management Strategies: Background, swapping, Memory allocation, Paging, Structure of the page table.

Self Learning: Virtual Memory Management

Unit IV:

File system: File system: File concept, Access methods, File system structure, allocation methods and free-space management. Disk structure, disk scheduling algorithms and management RAID structure.

Unit V:

Open Source

Introduction to Linux: What is Linux? – A Brief History of Linux – System features – Differences between Linux and other Operating Systems .

Some Basic Linux Commands: Directory oriented commands, file oriented commands, Process oriented commands, General Purpose Commands.

Text Books:

1.A. Silberschatz, P.B. Galvin and G. Gagne.*Operating System Concepts*. New Delhi: Wiley India PrivateLtd.. 8th Edition 2011.

2.Grant Taylor,*Linux complete*, New Delhi: John Wiley & Sons; 2nd edition,2002 (Chapter 1).

Books for Reference:

1. Stalling William, *Operating Systems: Internals and Design Principle.* New Delhi : PrenticeHall India.7th Edition 2011.
2. Dietel, *Operating Systems*. New Delhi :Pearson Education.3rdEdition 2007.
3. A.S. Tanenbaum. *Modern Operating Systems*. New Delhi : Prentice Hall India. 3rd Edition 2007

Websites:

1.http://cc.iiti.ac.in/docs/linuxcommands.pdf

2.https://www.usm.uni-3.
3.muenchen.de/people/puls/lessons/intro_general/Linux/Linux_for_beginners.pdf

SEMESTER- V			
Core IX	**Python Programming**		
Course Code:21UCSC52	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives

- To understand about python

- To learn about various objects list, tuples and dictionaries
- To obtain knowledge about pattern matching
- To use recursion to solve problems
- To understand files and use them for reading and writing.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	explain what is python and how to execute python programs	2	Un
CO-2	distinguish various python objects	1	An
CO-3	apply decision and repetition structures in program design.	2	An
CO-4	demonstrate the use of Python lists and dictionaries	1	Ap
CO-5	demonstrate how to read and write files Programs in Python	2	Ap
CO-6	develop Python programs using files.	5	Ap

SEMESTER- V			
Core IX	**Python Programming**		
Course Code: 21UCSC52	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit I: Fundamentals of Python.

IDLE - Relational operators - Logical operators - bitwise operators – Variables- Assignment statements – Keywords - Script mode.

Functions : Built in functions - Function definition and call – Importing user defined module – Assert statement – Command line arguments.

Unit II: Control and Iteration structure.

If statement – If else - Chained conditional - For loops -While loops break continue Pass - scope of objects - Object ID local. Global variable – namespaces- scope Scoop- LEGB rule.

Unit III: Strings and Recursion

Strings – slicing – membership functions – built in functions on strings – string processing – pattern matching

Recursion – recursive solution to problems on numeric data – recursive solution to problems on strings - recursive solution to problems on list

Self study : Towers of Hanoi problem

Unit IV: Mutable and immutable objects

Lists - Operators, Built-in Functions, List comprehension - list as argument copying list objects-sets- set functions- Tuples, Tuple Operators and Built-in Functions on Tuples. Dictionary – dictionary operations – functions on dictionary.

Self study: Implement data structures stacks and Queues using python

Unit V: Files and Exceptions

File Objects, File Built-in Function, File Built-in Methods, reading and writing files - Exceptions – handling exceptions – using Try ….. Except – File processing

Text Book:

1. Sheetal Taneja and Naveen Kumar. *Python Programming: A modular approach*. Noida: Pearson education India, First Edition,2017

Books for Reference:

1. Chun, J Wesley, *Core Python Programming*, Noida: Pearson education India, 2nd Edition 2007 Reprint 2010.
2. Barry, Paul, *Head First Python*. Kolkatta: Shroff Publishers & Distributions pvt. Ltd. O' Reilly.2ndEdition, 2010
3. Lutz, Mark. *Learning Python*. Kolkatta: Shroff Publishers & Distributions pvt. Ltd. Reilly,4thEdition, , 2009.

Websites:

1. https://www.learnpython.org
2. https://www.python.org

SEMESTER- V			
Core – Elective I	**Data Mining**		
Course Code: 21UCSE51	**Hrs / week : 4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:

- To understand the basic techniques of data Mining
- To introduce research applications of data mining
- To develop skills of web data mining

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	implement Apriori algorithm	2	Ap
CO-2	compare different classification methods	4	An
CO-3	implement cluster analysis	6	Ap
CO-4	demonstrate the usage of various search engines	3	An
C0-5	discuss about data warehousing	6	Re
CO-6	compare and contrast OLAP AND OLTP	8	An

SEMESTER- V			
Core – Elective I	**Data Mining**		
Course Code: 21UCSE51	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit I:

Introduction: What is Data Mining?-Why Data Mining now!-The Data Mining Process-Data Mining Applications-Data Mining Techniques.

Association Rules: Introduction-basics-The Task and a Naïve Algorithm-The Apriori Algorithm-Improve the efficiency of the Apriori Algorithm.

Self Learning : Case Study 1 and 2

Unit II:

Classification: Introduction-Decision tree-Building a Decision Tree-Overfitting and pruning-Decision Tree Rules- Naïve Bayes Method-Estimating Predictive Accuracy of Classification Methods-Improve Accuracy of classification methods-other evaluation criteria for classification methods.

Unit III:

Cluster Analysis: What is Cluster Analysis?- Desired features of Cluster Analysis-Types of Data –Computing Distance- Types of Cluster Analysis Methods-Partition Methods-Hierarchical Methods-Density based methods- Quality and validity of cluster analysis methods.

Unit IV:

Web Data Mining: Introduction-Web Terminology and characteristics- Locality and Hierarchy in the web-Web Content mining- Web usage mining.

Search Engine: Introduction-Search Engine Functionality- Search Engine Architecture.

Self Learning : Search engines and browsers

Unit V:

Data Warehousing: Introduction-Operational Data Stores-Data Warehouses-Data Warehouse Design-Guidelines for Data Warehouse Implementation-Data Warehouse Metadata.

Online Analytical Processing (OLAP): Introduction- OLAP- Characteristics of OLAP Systems-Multi Dimensional View and Data Cube-Data Cube Implementation- Data Cube Operations.

Text Book:

1. G.K.Gupta.*Introduction to Data Mining with Case Studies*. New Delhi: Prentice Hall of India 2015.

Books for Reference:

1. Margaret H.Dunham; S.Sridhar, *Data Mining Introductory and Advanced Topics*. New Delhi: Pearson Education. 2007.
2. Alex Berson and Stephen J. Smith.*Data Warehousing, Data Mining, OLAP*. New Delhi: TMH Publication.1997.
3. Dunham. *Data Mining: Introductory and Advanced Topics*.NewDelhi: Pearson Education 2006.
4. Jiawei Han, MichelineKamber and Jain Pei. *Data Mining: Concepts and Techniques*.Elsevier Science. 3rd Edition 2011

SEMESTER- V			
Core – Elective I	**Introduction to IoT**		
Course Code: 21UCSE52	**Hrs / week : 4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:

- To understand the building blocks of the Internet of Things and characteristics.
- To understand the application areas of IoT ·
- To realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks ·
- To design some IoT based prototypes

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	understand and recall the characteristics and enabling technologies of IoT	8	Re
CO-2	analyse the appropriate transport protocols, addressing and identification techniques suitable for IoT Domain	6	An
CO-3	explore the apt cloud services and cloud service providers for IoT based Smart services	8	Ap
C0-4	discuss about challenges and obstacles of IoT	8	An
CO-5	compare and contrast fog and cloud computing	4	An
CO-6	describe IoT based Application to Monitor Water Quality	3	Un

SEMESTER- V			
Core – Elective I	**Introduction to IoT**		
Course Code: 21UCSE52	**Hrs / week : 4**	**Hrs / Semester: 60**	**Credits :4**

UNIT-I

Introduction to Internet of Things: Definition of Internet of Things – Application Areas of IoT – Characteristics of IoT – Things in IoT – IoT Stack – Enabling Technologies – IoT Challenges.

UNIT-II

Sensors, Microcontrollers and their interfacing: Introduction to sensor interfacing – Types of Sensors – Controlling sensors through Webpage – Microcontrollers: a quick walkthrough.

UNIT-III

Protocols for IoT: Introduction- Messaging Protocols – XMPP and DDS Protocols – Transport Protocols – Addressing and Identification: Internet Protocol Version 4 – Internet Protocol Version 4 – IPv6 vs IPv4 – Legacy of IPv4 devices – Switching over to IPv6.

UNIT-IV

Cloud for IoT: Introduction – IoT with Cloud – challenges – Selection of cloud service provider – Introduction to Fog computing – Cloud computing: Security aspects. Data Analytics: Introduction – Data Analysis.

UNIT-V

Application Building with IoT: Introduction – Smart Perishable tracking with IoT and Sensors – Smart Healthcare – IoT based Application to Monitor Water Quality – Smart Warehouse Monitoring – Smart Retail – IoT based Smart Driver Assistance System – System to measure Collision impact in an accident with IoT – Integrated Vehicle Health Management.

Text Book:

1. Shriram K Vasudevan, Abhishek S. Nagarajan, R.M.D., Sundaran.*Internet of Things*. Wiley Publication. 2nd Edition 2020.
   Unit I – Chapter 1 Unit II - Chapter 2 Unit III –Chapter 3, 4 Unit IV -Chapters5, 6 Unit - Chapter 7

Books for Reference:

1. ArshdeepBahga and Vijay Madisetti.*Internet of Things- A Hands-on Approach*. India: Universities Press Private Limited. 2015
2. Hanes, David, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton and Jerome Henry. *IoT fundamentals: Networking technologies, protocols, and use cases for the Internet of Things*. Cisco Press. 2017.
3. Qusay F. Hassan.*Internet of Things A to Z: Technologies and Applications*. Wiley Publication IEEE Press. 2018.

SEMESTER- V			
Core – Practical V	**Python Programming Lab**		
Course Code: 21UCSCR5	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :3**

1. Develop Python programs using user defined functions.
2. Write Python Programs using conditional statements.
3. Create Python Programs using for loops.
4. Solve problems using while loops in Python Programs
5. Write Python Programs to manipulate strings.
6. Develop Python Programs for pattern matching.
7. Write Python programs using String functions.
8. Write Python programs to solve problems using recursion.
9. Write Python programs using List object.
10. Create Python programs using Tuples.
11. Write Python programs using files for input and output.
12. Write Python programs for exception handling.
13. Create Python programs with command line arguments.

Semester - V			
Common Skill Based Core	**Computer for Digital Era and Soft Skills**		
Code : 21UCSB51	**Hrs / Week : 2**	**Hrs / Sem : 30**	**Credits : 2**

Course Outcome

- Identify different types of computer systems.
- Classify various types of software being used.
- Compare various digital payments and use them in day to day life.
- Recognise the innovative technologies IoT and integrate it in various fields.
- Analyze various social networking platforms and use them efficiently.
- Distinguish various cyber attacks and apply preventive measures.
- Understand the various soft skills needed to become successful.
- Analyze self and adapt oneself to work in a team.

Unit I: Fundamentals of Computers:

Introduction to computers- Components of computers-Working principle-Types of computers-Tablet-Notebook-Smart phone-PDA-Impact of computers on society-Types of software.

Unit II: Recent Trends in Computer Science and e-Governance:

IoT - applications- Mobile applications - E-Learning- E-Commerce - digital payments

Unit III: Social Media:

Face book-Twitter-Linked In-Instagram-Advantages of Social Networking-Issues/Risks of Social Networking-Protecting ourselves from social Networking problems-Cybercrimes-Hacking-Phishing- Cyber Security

Unit IV: Introduction to Soft Skills:

Learning objectives – What are soft skills?-Categories of Soft Skills-Integral Parts of Soft Skills.

Unit V: Understanding Self and Team Building:

Transactional Analysis (TA) - Structural analysis of Ego states- The functional model of Ego states - Egogram-Storkes - Life Position - Egogram and Life Positions Questionnaire-Team and Team Building- Features of effective creative teams

Books for Reference:

1. Peter Norton, Introduction to Computers 6th Edition
2. Charles P Pfleeger, Shari Lawrence Pfleeger, Security in Computing, I Edition, Pearson Education, 2003.
3. E.Balagurusamy, Fundamentals of Computers, McGraw Hill
4. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang , E-Commerce fundamentals and applications, Wiley Student edition
5. Benita Bhatia Dua, DeepaJeyaraman, Profit with Social Media, CNBC
6. Dr.K.Alex, Soft Skills, S.Chand & Co
7. http://www.digitalindia.gov.in/content/social-media-analytics
8. https://www.researchgate.net/publication/307878962_Introduction_to_E-Governance
9. http://www.ijqr.net/journal/v10
10. https://www.researchgate.net/publication/258339295_FUNDAMENTALS_OF_COMPUTER _____STUDIES

SEMESTER –V	
Self Study Course III	**Mathematical Reasoning**
Course Code: 21UCSSS3 (Optional)	**Credits: 2**

Objectives:

- Learn to build new mathematical knowledge through problem solving.
- Learn to use a combination of appropriate algebraic, graphical, and numerical methods to form conjectures about, and to solve, problems.
- Gain the ability to recognize inappropriate assumptions and solutions.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	simplify various expressions	4	Ev
CO-2	determine Averages of various calculations	6	Ap
CO-3	evaluate Partnership in enterprises	3	Ev
CO-4	analyse Percentage computation	6	An
CO-5	evaluate profit and loss.	6	Ev
CO-6	apply Simple interest and Compound interest Calculation	5	Ap

SEMESTER – V	
Self Study Course III **Mathematical Reasoning**	
Course Code: 21UCSSS3 (Optional)	**Credits: 2**

Unit I:

Simplification, Averages.

Unit II:

Ratio and Proportion, Partnership.

Unit III:

Percentage, profit and loss.

Unit IV:

Simple interest, Compound interest.

Unit V:

Time and work, Time and distance.

Text Book :

1. Aggarwal R.S. *Objective Arithmetic*.New Delhi: S.Chand and Company Ltd.Edition 2004. (Chapters 4,6,12,13,10,11,21,22,15,17)

Books for Reference :

1. Aggarwal R.S. *Arithmetic Subjective and Objective for Competitive Examinations* .New Delhi: S.Chand and Company Ltd.Revised Edition 2011.
2. AbhijitGuha.*Quantitative Aptitude for Competitive Examinations*. New Delhi: Tata McGraw-Hill Publishing Company Ltd.

SEMESTER VI			
Core – X	**.NET Programming**		
Course Code: 21UCSC61	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Objectives:

- To understand .NET framework.
- To learn C# programming.
- To attain Knowledge about web server controls.
- To learn about validation techniques and apply it.
- To know about ADO.NET.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	understand .NET framework	1	Re
CO-2	develop console applications with c#	2	Ap
CO-3	create web server applications using ASP.NET	6	Cr
CO-4	implement validation controls	2	Ap
CO-5	design applications with server controls	2	Cr
CO-6	develop databases using ADO.NET	2, 8	Ap

SEMESTER VI			
Core – X	**.NET Programming**		
Course Code: 21UCSC61	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Unit I:

Getting started with .NET Framework 4.5 and C#

Understanding Previous Technologies, Benefits of .NET Framework, Architecture of .NET framework 4.5,.NET Execution Engine, Components of .NET framework 4.5: CLR, CTS, Metadata and Assemblies, .NET Framework Class Library, Windows Forms, ASP .NET and ASP .NET AJAX, ADO .NET, Windows workflow Foundation, Windows Presentation Foundation, Windows Communication Foundation, Widows Card Space and LINQ.

Introducing C#

Creating a Simple C# Console Application, Identifiers and Keywords. System Data Types, Variables and Constants: Value Types, Reference Types, Understanding Type Conversions, Boxing and UnBoxing. Namespaces, The System namespace, .NET Array Types

Unit II :

Classes, Objects and Object Oriented Programming

Classes and Objects: Creating a Class, Creating an Object, Using this Keyword, Creating an Array of Objects, Using the Nested Classes, Defining Partial Classes and Method, Returning a Value from a Method and Describing Access Modifiers. Static Classes and Static Members, Properties: Read-only Property, Static Property, Indexers, Structs: Syntax of a struct and Access Modifiers for structs, System.Object Class.

Self Learning: Encapsulation and Polymorphism in c#

UNIT III:

Introducing ASP.Net – Gainting started with ASP.Net applications: Web forms - creating ASP.Net Webform applications – Using ASP.Net Webforms for server controls: Beginning with server controls – Talking a closer look at web controls – Illustrating Basic web controls – Working with Validation Controls: The compare Validator – The Range Validator – Regular Expression Validator – Custom validator – Validation Summery control – Multiple validation control.

UNIT IV:

Developing ASP.Net Server controls: Developing ASP.Net server controls – Creating and using Web User Control – Creating ASP.Net Pages to web user control–Composite controls using Rich controls- Web controls: Adrotator web server control – Calendar web server control.

UNIT V: Using ADO.Net with ASP.Net:ADO.Net – ADO.Net Object model – Creating a Database application.

Self Learning: Creating a Deployment project.

Text Book:

1. Christian Nagel, Bill Evjen, Jay Glynn, Karli Watson, Morgan Skinner. *Professional C# 2012 and .NET 4.5*. New Delhi: Wiley India Private Ltd. First Edition 2012

Books for Reference:

1. Harsh Bhasin. *Programming in C#*, New Delhi: Oxford University Press. First Edition 2014.
2. MridulaParihar, YeshSingal and Nitin Pandey. *"Visual Studio .Net Programming*". New Delhi: Prentice Hall India. First Edition 2002
3. Black Book. Kogent Learning Solutions Inc,*NET 4.0 Programming (6-in-1)*.New Delhi : Dream Tech Press.
4. Paul Deitel and Harvey Deitel, *C# 2010 for Programmers*, New Delhi: Pearson Education 4th Edition
5. G. Andrew Duthie. *Microsoft ASP.NET Step by step*. Microsoft Press, 2003

Website :

https://www.hesab.net/book/asp.net/ASP.NET%20Bible.pdf

SEMESTER VI			
Core – XI	**Software Engineering**		
Course Code: 21UCSC62	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

Objectives:

- Understand the concept of Software Engineering and its importance.
- Elicit and validate different types of requirements.
- Do different testing and enforce safety and security
- Understand component models and architectural patterns for distributed and embedded systems.
- Apply engineering principles and techniques in software development.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	describe Software development Process	1	Un
CO-2	discuss software Requirements and Architectural Design	1,3	Un
CO-3	explain Reliability and Safety Engineering	6	Un
CO-4	understand component models and architectural patterns for distributed and embedded systems.	1	Un
CO-5	explain engineering principles and techniques in software development.	2	Un
CO-6	discuss Software Quality Management System	1	Un

SEMESTER VI			
Core – XI	**Software Engineering**		
Course Code: 21UCSC62	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :4**

UNIT I

Introduction: Professional Software Development-Software Engineering Ethics. **Software Process:** Software Process Models-Process Activities - Copying with change. **Agile Software Development:** Agile methods - Agile development techniques-Agile project management.

UNIT II

Requirement Engineering: Functional and Nonfunctional Requirements - Roquinment Engineering Processes Elicitation-Specification-Validation- Change. **System Modelling:** Context Models-Interaction Models. **Architectural Design:**Architectural Patterns-Application Architectures. **Software Testing:** Development Testing-Test Driven Development - Release Testing-User Testing.

UNIT III

Dependable System: Dependability Properties-Dependable processes - Formal methods and system dependability. **Reliability Engineering:** Reliability and availability-Reliability Requirements- Reliability testing -**Safety Engineering:** Safety-critical Systems- Safety requirements - Safety engineering processes. Security Engineering: security and dependability - Security and organizations - Security requirements- Security testing and assurance

UNIT V

Component-Based Software Engineering: Component and Component Model CBS Processes - Component Composition. **Distributed Software Engineering:** Distributed Systems - Client Server Computing - Architectural Patterns for Distributed Systems **Real time Software Engineering:** Embedded Systems Design-Architectural Patterns for coal time systems - Real-time operating systems.

UNIT V

Project Management: Risk Management - Managing People. **Project Planning:** Software Pricing -Project Scheduling - Estimation Techniques. **Quality management:** Software quality - Software standards - Reviews and inspections. **Configuration Management:** Version management-System building - Change management - Release management

Text Book:

1. Ian Somerville. *Software Engineering*. United kingdom: Tata McGraw Hill Publication. Tenth Edition 2015.

Books for Reference:

1. Richard Fairly. *Software Engineering*. India:Tata McGraw Hill Publication. Indian Edition 2017.
2. Rajib Mall. *Fundamentals of Software Engineering*. NewDelhi: PHI Learning Private Limited. Fourth Edition 2015.
3. R.S.Pressman. *Software Engineering* A practitioners Approach.India: McGraw. Seventh Edition 2009.

SEMESTER VI			
Core – XII	**Computer Networks**		
Course Code: 21UCSC63	**Hrs / week :5**	**Hrs / Semester:75**	**Credits :4**

Objectives:

- To understand the concepts of data communication.
- To understand the different network topologies.
- To study the function of different layers.
- To get familiarized with different protocols and network components.

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	define Network and the various types of Network	1	Re
CO-2	analyze the structure of Switch and the Protocols.	4	An
CO-3	discuss Connection devices by using Wired LANs	1	Ap
CO-4	describe the various routing algorithms in network layer	4	Un
CO-5	define Network Security and other aspects of Security	1	Re
CO-6	acquire the basic knowledge of layers of OSI model	1	Re

SEMESTER VI			
Core – XII	**Computer Networks**		
Course Code: 21UCSC63	**Hrs / week :5**	**Hrs / Semester:75**	**Credits :4**

Unit I :

Introduction: Data communications-Networks- Network Types- Internet History- Standards and Administration.

Network Models : Protocol Layering- TCP/IP Protocol suite- The OSI Model.

Transmission Media: Guided Media- Unguided Media: Wireless

Unit II:

Switching: Introduction- Packet switching – Structure of a switch. **Data Link control :**DLC Services- Data Link Layer Protocols –HDLC. **Media Access Control :**Random Access- Controlled Access.

Unit III:

Wired LANs: Ethernet -: Ethernet Protocol – Standard Ethernet- Fast Ethernet- Gigabit Ethernet - 10Gigabit Ethernet.

Wireless LANS: Bluetooth.

Connecting Devices and Virtual LANs: Connecting Devices – Virtual LANs.

Self learning: Cellar Telephony and Satellite Networks.

Unit IV:

Network layer: Unicast Routing: Introduction – Routing Algorithms- Unicast Routing Protocols.

Introduction to Transport Layer: - Introduction – Transport-Layer Protocols.

Self learning: Next Generation IP**:**Ipv6 Addressing

Unit V:

Application Layer : Standard Client – Server Protocols: FTP- Electronic mail-TELNET Secure Shell –Domain Name System.

Cryptography and Network Security: Introduction – Confidentiality-Other aspects of Security

Self learning: World wide Web and HTTP

Text Book:

1. Behrouz A. Forouzan. *Data Communications and Networking*. New Delhi: McGraw Hill Education Private Ltd. Fifth Edition 2013.
   Unit I: Chapter 1.1-1.5, 2.1-2.3,7.1,7.3Unit II: Chapter 8.1-8.4, 11.1-11.3, 12.1-12.2
   Unit III: Chapter 13.1-13.5, 15.3, 17.1-17.2Unit IV : Chapter 20.1-20.3, 23.1-23.2,
   Unit V : Chapter 26.2-26.6, 30.1-30.3

Books for Reference:

1. Andrew S. Tanenbaum David J. Wetherall. *Computer Networks* .New Delhi: Pearson. 5th Edition 2010.
2. Stallings W. *Data and Computer Communications*. New Delhi: Prentice Hall. Ninth Edition 2010.
3. Peterson. L.L. and Davie. S.B. *Computer Networks*. San Fransisco: Morgan Kaufmann Publishers. Fifth Edition 2011.

SEMESTER VI			
Core – Elective II	**Cloud Computing**		
Course Code: 21UCSE61	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:

- To impart knowledge on the concepts of cloud computing, monitoring, management and applications of clouds .
- To analyse various cloud programming models and apply them to solve problems on the cloud.
- To study the available cloud services and open source solutions

Course Outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	examine the characteristics of cloud	3	An
CO-2	identify the technical foundations of cloud system architecture	3	An
CO-3	characterize the distinction between infrastructure , platform, software and service	6	An
CO-4	illustrate the use of load balancing techniques	5	Ap
CO-5	compare and contrast the various web services	8	An
CO-6	demonstrate the usage of mail services	7	An

SEMESTER VI			
Core – Elective II	**Cloud Computing**		
Course Code: 21UCSE61	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit I:

Understanding cloud computing: Cloud computing - cloud types- the cloud cube model-deployment models-service models- characteristics of cloud computing-assessing the role of open standards.

Assessing the value proposition: Measuring the cloud's value – the laws of cloudonomics –cloud computing obstacles – measuring cloud cost – avoiding capital expenditures

Unit II:

Cloud Architecture: The cloud computing stack – composability – infrastructure – platforms – virtual appliances – communication protocols – Connecting to the cloud: The Jolicloud net book OS – Chromium OS the browser as an operating system.

Developing Cloud Services: Infrastructure as a service (IaaS) – IaaS workloads- Platform as a service (PaaS) – Software as a service (SaaS)– Identity as a service (IDaaS) – Compliance as a service(CaaS).

Unit III:

Virtualization and CloudApplications: Virtualization technologies – load balancing and virtualization – advanced load balancing– the Google cloud

Cloud Security: Securing the cloud –security service boundary –security mapping- securing data –brokered cloud storage access-encryption-auditing and compliance

Unit IV:

Google Web Services: Google Analytics – Google translate- Google Toolkit –Google APIs

Amazon Web Services: Working with Amazon Elastic compute cloud(EC2)- Amazon simple storage system(S3) – Amazon Elastic block store(EBS)- Cloud front.

Microsoft Web Services: Windows azure platform – windows Azure App fabric.

Unit V:

Cloud Storage: Cloud storage definition – unmanaged cloud storage – managed cloud storage – creating cloud storage systems –Exploring Cloud Backup Solutions - Backup types - Cloud Backup features

Webmail Services: Cloud mail services -Introduction- functions

Self Learning: Google Gmail- Mail2Web – Windows Live Hotmail- Yahoo Mail

Textbook:

1. Barrie Sosinsky.*Cloud Computing Bible*.New Delhi: Wiley India Pvt. Ltd. 2012.

Books for Reference:

1. Michael Miller.*Cloud Computing: Web-Based Applications That Change the WayYou*
2. *Work and Collaborate Online*. Que Publishing. Second Edition 2008.
3. AleyBeard.*Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs*. EmereoPvt. Limited. July 2008.
4. SandeepBhowmik *Cloud Computing*.New Delhi: Cambridge University Press. July 2017
5. KailashJayaswal , JagannathKallakurchi , Donald J. Houde, DevenShah.*Cloud Computing Black Book*. New Delhi: Dreamtech Press 2014.

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SEMESTER VI			
Core – Elective II	**Mobile Computing**		
Course Code: 21UCSE62	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Objectives:

- Learn and build Android Applications using the Android SDK.
- Learn about packages and deploying Applications.
- Learnto deploy software to mobile devices.

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	distinguish different mobile techniques	8	Re
CO-2	install Android SDK	6	Ap
CO-3	design User Interface	5	Cr
CO-4	modify app to include multimedia content	6	An
CO-5	create app with Google Maps	3	Cr
CO-6	design messaging app	5	Cr

SEMESTER VI			
Core – Elective II	**Mobile Computing**		
Course Code: 21UCSE62	**Hrs / week :4**	**Hrs / Semester: 60**	**Credits :4**

Unit I:

Getting started with Android Programming: What is Android?─ Android versions─ Features and architecture of Android─ Android Devices in the market─ Obtaining the required tools─ Android Studio─ Android SDK─ Creating Android Virtual Devices (Avds)─ Android Developer Community─ Launching Android Application.

for Android **:** Exploring IDE─ Using Code Completion─ Debugging Application ─Setting Break points─ Publishing Application─ Generating a Signed APK

Unit II:

Activities, Fragments and Intents: Understanding activities ─ applying styles and themes to an activity─ Hiding the activity title─ Displaying a dialog Window and a Progress dialog─ Linking activities using intents─ returning results from an Intent─ Passing data using an Intent Object─ Fragments ─ adding Fragments dynamically ─ life Cycle of a Fragment─ interactions between Fragments─ Understanding the Intent Object─ Using Intent Filters─ Displaying notifications.

Getting to know the AndroidUser Interface: Understanding The Components of a Screen─ Views and View groups ─ Frame layout ─ Linear layout (Horizontal) and linear layout(Vertical)─ Table layout─ Relative layout ─ Frame layout─ Scroll view─ Adapting to Display Orientation─ Anchoring Views ─ Managing Changes to Screen Orientation ─ Persisting State information during changes in configuration─ detecting orientation changes─ Controlling the orientation of activity─ Utilizing the Action Bar─ adding action Items to Action Bar─ Creating the User Interface programmatically─ listening for UI Notifications

Unit III:

Designing user Interface with views: Using basic views ─ Text view -Button, Image button, Edit text, Checkbox, Toggle button,Radio button, and Radio group Views─ Progress bar View─ Auto complete text view View─ Using Picker Views─ Time picker View─ Date picker View─ using List Views To Display Long Lists─ List view View─ Using The Spinner View─ understanding Specialized Fragments─ using List fragment─ Dialog fragment─ Preference fragment

Displaying Pictures and Menus With Views: Using Image Views to Display Pictures─ Image view ─ Image switcher- Grid view─ Using Menus With Views─ Creating the helper Methods─ Options Menu─ Context,Web view

Unit IV:

Data persistence: Saving And Loading User Preferences─ Accessing Preferences Using An Activity─ Programmatically Retrieving And Modifying the Preferences Values─ Persisting Data to Files─ Saving To Internal Storage─ Saving To External Storage (SD Card)─Choosing the Best Storage option─ Creating and using Databases─ Creating Dbadapter Helper Class─ Using the Database Programmatically

Content Providers: Sharing Data In Android─ Using a Content Provider─ Predefined Query String Constants─ Projections─ Filtering─ Sorting─ Creating Your Own Content Providers─ Using The Content Provider

Unit V:

Messaging: SMS Messaging─ Sending SMS Messages Programmatically─ Sending SMS Messages using Intent─ Receiving SMS messages─ Caveats and warnings─ Sending Email

Location-Based Services: Displaying Maps─ Creating the Project─ obtaining the Maps API Key─ Displaying Map─ Zoom Control─ Changing Views─ navigating to a specific location─ Getting the location that was touched─ Geo coding and reverse Geo coding─ Getting location data─ Monitoring location

Text Book:

1. J. F.DiMarzio. *Beginning Android Programming with Android Studio.*John Wiley & sons, Inc, Fourth Edition

Books for Reference:

1. Ed Burnette, *HelloAndroid: Introducing Google's Mobile Development Platform*. Pragmatic Fourth Edition 2015.
2. Jerome (J.F) DiMarzio.*Android - A programmer's Guide*. New Delhi: Tata Mcgraw Hill 2010.
3. JhonHarton. *Android Programming for Beginners* .Packt Publishing. 2015

SEMESTER VI			
Core – Practical VI	**. NET Programming Lab**		
Course Code: 21UCSCR6	**Hrs / week :5**	**Hrs / Semester: 75**	**Credits :3**

1. Create Asp.Net projects with HTML server controls.
2. Create Asp.Net projects with basic Web server controls.
3. Create Asp.Net projects with validation controls.
4. Create Asp.Net projects with calendar controls.
5. Create Asp.Net projects with Ad rotator controls.
6. Create a simple website with ASP.NET using web user controls.
7. Create ASP.NET projects with Databases.
8. Create a website with ASP.NET.