PERIYARUNIVERSITY

PERIYAR PALKALAI

NAGARSALEM–636011

B.Sc.INFORMATIONSCIENCE

CHOICEBASEDCREDITSYSTEM

OBE REGULATIONSANDSYLLABUS

(SEMESTERPATTERN)

(For Candidates admitted in the Colleges affiliated toPeriyarUniversity from2021-2022onwards)

OUTCOMEBASEDEDUCATIONREGULATIONSANDSYLLABUS
(Witheffectfromtheacademicyear2021-2022onwards)

1. PREAMBLE

The programme prepares under Graduates in **Information Science** with strong theoretical inputs andrelevant practical knowledge, who can be employed in industries. The programme develops requisiteprofessional skills and problem solving abilities to pursue a successfulcareerin software industry andforpursuinghigher studiesin InformationScience.

2. GRADUATEATTRIBUTES

1. ComputationalKnowledge
2. ProblemAnalysis&Solving
3. Design&DevelopmentofSolutions
4. ModernToolUsage
5. Communicationskills
6. Innovation&Entrepreneurship
7. Societal&Environmentalconcern

3. PROGRAMMESPECIFICQUALIFICATIONATTRIBUTES

Theprogrammespecificqualificationattributesmeanttobeachievedthroughsubjectsintheprogrammein termsof

1. Knowledgeandunderstandinglevel(K1andK2)
2. Applicationlevel(K3)
3. Analyticallevel(K4)
4. Evaluationcapabilitylevel(K5)
5. ScientificorSynthesislevel(K6)

4. ELIGIBILITYFORADMISSION

A candidate who has passed in Higher Secondary Examination with Mathematics or BusinessMathematicsorComputerScienceorStatistics(AcademicstreamorVocationalstream)asoneoft hesubjectunderBoardofHigherSecondaryExamination,TamilNaduaspernormssetbytheGovernmentof TamilNaduoranExaminationacceptedasequivalenttheretobythesyndicate,subjecttosuchconditionsas maybeprescribedarepermittedtoappearandqualifyforthe**BachelorofScience inInformationScience**degree examination of this university after aprogrammeofstudyofthreeacademicyears.

5. PROGRAMMEOBJECTIVESANDOUTCOMES

➢ ProgrammeEducationalObjectives(PEOs)

PEO1: GraduatesarepreparedtobeemployedinITindustriesbyprovidingexpecteddomainKnowledge.

PEO2: Graduates areprovided withpracticaltraining, hands-on andproject experiencetomeetthe industrialneeds.

PEO3: Graduatesaremotivatedintheircareerandentrepreneurialskilldevelopmenttobecomea global leader.

PEO4:Graduatesaretrainedtodemonstratecreativity,developinnovativeideasandtoworkinteams toaccomplish acommon goal.

PEO5: Graduatesaretrainedtoaddresssocialissuesandguidedtoapproachproblemswithsolutions.

➢ ProgrammeSpecificOutcomes(PSOs)

Aftercompletionofthe programthegraduateswillbeable

PSO1: Tounderstandtheimportant elementsofcomputersystem,including hardwareandnetworking.

PSO2: ToDesign,andanalyzeprecisespecificationsofalgorithms,procedures,andinteractionbehavior.

PSO3: Tocommunicateeffectivelyinbothverbalandwrittenforminindustryandsociety.

PSO4: ToApplythe technologiesinvariousfieldsofComputerScience.

➢ ProgrammeOutcomes(POs)

Aftercompletionofthe programme,thegraduateswillbeable

PO1: Todevelopfundamentalknowledgeofscientifictheoriesandmethodsincomputerscience.

PO2: ToDesign,andanalyzeprecisespecificationsofalgorithms,procedures,andinteractionbehavior toexpressclearlyonacademicissues.

PO3: To apply the technologies in various fields of Information Science, including Mobileapplications,Website developmentand management,databases,andcomputernetworks**.**

PO4: Tocommunicateeffectivelyinbothverbalandwrittenforminsuchawayastodemonstratetheirabilitytopresentinformation clearly,logicallyinindustryandsociety.

6. DURATIONOFTHEPROGRAMME

The programme shall extend over a period of three years comprising of six semesters with twosemesters in one academic year. There shall not be less than 90 working days for each semester.Examinationshall beconductedattheend ofeverysemesterforthe respective subjects.

7. COURSEOFSTUDY

The programme of study shall comprise instruction in the following subjects according to thesyllabus and books prescribed from time to time. The syllabus for various subjects shall be clearlydemarcated into five units in each subject. Part -I, Part-II, Part – III, Part – IV and Part-V subjectsare as prescribed in the scheme of examination. The Extension Activities are a must for eachstudent to take part in at least in any one of the activities like NSS, YRC, SPORTS and RRC for thefulfillmentof the degree.

8. EXAMINATIONS

The theory examination shall be threehour durationfor each paperatthe endof every semester.The candidate failing in any subject(s) will be permitted to appear in the subsequent examination.The practical examinations for core subjects and SBEC should be conducted at the end of the everysemester.

Submissionofrecordnotebooksforpracticalexaminations

CandidatesappearingforpracticalexaminationsshouldsubmitbonafideRecordnotebooksprescribed for practical examinations, otherwise the candidates will not be permitted to appear forthe practical examinations. However, in genuine cases where the students who could not submit therecord note books, they may be permitted to appear for the practical examinations, provided theconcerned Head of the Department certified that the candidate has performed the experimentsprescribed forthecourse.Forsuchcandidateszero (0)markswill beawardedforrecordnotebooks.

9. Revisionof Regulationsand Curriculum

The University may revise/amend/ change the Regulations and Scheme of Examinations, if foundnecessary.

10. PASSINGMINIMUM

(a) Theory

The candidate shall be declared to have passed the examination if the candidate **secures not lessthan 40marks** put together out of 100 marks (**CIA+EA). Minimum 40% should be secured (30outof75) inEA** ofeachtheorysubject**.**

(b) Practical/Projectvivavoce

The candidate shall be declared to have passed the examination if the candidate **secures not lessthan 40marks** put together out of 100 marks (**CIA + EA). Minimum 40% should be secured (24outof60) inEA** ofeachPractical subject.

11. MarksDistribution andQuestion PaperPatternforB.Sc.,IS

11.1Theory–MarksDistribution

MaximumMarks : 100Marks
External[EA] :75Marks
Internal[CIA] :25Marks

(a). Theory-QuestionPaperPattern [External] (Total Marks:75)

Part	Approaches	MarkPattern
A	Oneword(Answerallquestions&Threequ estions from each unit)	15X1 = 15 (MultipleChoiceQue stions)
B	100to200words(AnsweranyTwooutoffive questions & One question from eachunit)	2X5=10(Analyticalt ypequestions)
C	500 to 1000 words(Answer ALL questions &One question from each unit with InternalChoice)	5X10=50(Essaytypequesti ons)

(b)Theory-InternalMarksDistribution

(TotalMarks:25)Attendance : 5Marks
Assignment : 5Marks
Test : 15Marks

11.2. Practical – Marks

DistributionMaximumMarks: 100
MarksExternal[EA] : 60Marks
Internal[CIA] : 40Marks

(a) Practical-ExternalMarks Distribution(TotalMarks:60)

Foreachpractical questionthemarksshouldbeawardedasfollows**(External)**

i) Algorithm/flowchart -20%
ii) Writingthe program in themain answerbook -30%
iii) Testand debugthe program -30%
iv) Printingthecorrectoutput -20%

(Marksmaybeproportionatelyreducedfortheerrors committed ineach ofthe above)

PracticalQuestionPaperPattern

Studentshouldattendtwoquestions(eitherorpattern)

Note:

(i) Practical ItoPracticalVIIandSBECPractical havesamepattern

(ii) Core&SBECPracticalExaminationmust beconductedattheendofeverySemester

(b) Practical-InternalMarks Distribution(TotalMarks:40)

- Record :15Marks
- InternalPracticalexaminations : 25Marks

11.3ProjectEvaluation:

ContinuousInternalAssessment	:40Marks
Evaluation(External)	:40Marks
Viva-voce(jointly)	:20Marks

12. COMMENCEMENTOFTHIS REGULATION:

These regulations shall take effect from the academic year 2021-2022, i.e, for students who are to beadmittedtothefirstyear oftheprogrammeduringtheacademicyear2021-2022andthereafter.

Scheme of Examinations from the Academic Year 2021-2022CreditDistributionas pertheUniversity Norms.

SEMESTER	I	II	III	IV	V	VI	TotalCredits
PART–I	3	3	3	3	-	-	12
PART– II	3	3	3	3	-	-	12
ALLIED	4	6	4	6	-	-	20
CORETHEORY	5	10	9	4	12	5	45
COREPRATICAL	2	2	2	2	4	8	20
ELECTIVE	-	-	-	-	4	8	12
SBECN	-	-	-	-	3	3	6
MSDC	-	2	2	2	2	2	10
NMEC	-	-	2	2		-	4
PROFESSIONALENGLISH	4	4	-	-	-	-	8
EVS	-	-	-	-	-	-	-
ADD-ONCOURSE	-	-	-	-	-	-	-
VALUEEDUCATION	2	-	-	-	-	-	2
EXTENSIONACTIVITY	-	-	-	-	-	1	1
CumulativeTotalCredits	**23**	**30**	**25**	**22**	**25**	**27**	**152**

COURSEOFSTUDYANDSCHEMEOFEXAMINATION

SEM	PART	SUB CODE	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
				Lect.	Lab		CIA	EA	TOTAL
SEMESTER–I									
I	I	21UFTA01	TamilI	6	-	3	25	75	100
	II	21UFEN01	English I	6	-	3	25	75	100
	III	21UIS01	Core I:ProblemSolvingThroughC	6	-	5	25	75	100
	III	21UISP01	PracticalI:CProgramming	-	3	2	40	60	100
	III		AlliedI	7	-	4	25	75	100
	IV	21UVE01	ValueEducation	2	-	2	25	75	100
	IV		ProfessionalEnglish–PhysicalScienceI	4	-	4	25	75	100
			Total	**31**	**3**	**23**	**190**	**510**	**700**
SEMESTER–II									
II	I	21UFTA02	TamilII	6	-	3	25	75	100
	II	21UFEN02	English II	4	-	3	25	75	100
			NMSDC-IEffectiveLearning	2	-	2	25	74	100
	III	21UIS02	CoreII:DataStructureandAlgorithms	3	-	5	25	75	100
	III	21UISP02	PracticalII:DataStructureusingC	-	3	2	40	60	100
	III	21UIS03	Core III: ComputerOrganization and	4	-	5	25	75	100
			Architecture						
	III		AlliedII	5	-	4	25	75	100
	III		Allied–Practical		2	2	40	60	100
	IV	21UES01	EnvironmentalStudies	1	-	-	25	75	100
	IV		ProfessionalEnglish–PhysicalScienceII	4	-	4	25	75	100
			Total	**29**	**5**	**30**	**280**	**720**	**1000**
SEMESTER –III									
III	I	21UFTA03	Tamil– III	6	-	3	25	75	100
	II	21FEN03	English– III	6	-	3	25	75	100
	III	21UIS04	CoreIV:RelationalDatabaseManagement	3	-	5	25	75	100
			Systems						
	III	21UISP03	Practical III: SQLandPL/SQL	-	2	2	40	60	100
	III	21UIS05	CoreV:OperatingSystem	3	-	4	25	75	100
	III		Allied III	6	-	4	25	75	100
	III		Allied-Practical	-	-	-	-	-	-
	IV		NMSDC-IIProgrammingEssentialsfor Employability(Fundamentals of CodingandCloud)	2	-	2	25	75	100
	IV	NMEC-1	Non-MajorElectiveCourse–I	2	-	2	25	75	100
			Total	**28**	**2**	**25**	**215**	**585**	**800**

SEM	PART	SUB CODE	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
				Lect.	Lab		CIA	EA	TOTAL
SEMESTER –IV									
IV	I	21UFTA04	Tamil–IV	6	-	3	25	75	100
	II	21UFEN04	English–IV	6	-	3	25	75	100
	III	21UIS06	CoreVI: Programmingin Java	4	-	4	25	75	100
	III	21UISP04	Practical IV:Javaprogramming	-	3	2	40	60	100
	III		AlliedIV	5	-	4	25	75	100
	III		Allied-Practical Lab	-	2	2	40	60	100
	IV	NMSDC	DigitalsSkillsforEmployability-OfficeFundamentals	2	-	2	25	75	100
	IV	NMEC-2	Non-MajorElective–II	2	-	2	25	75	100
	IV	Add-on	Add-onCourseInternshipProgramme	-	-	-	-	-	-
			Total	**25**	**5**	**22**	**230**	**570**	**800**
SEMESTER –V									
V	III	21UIS07	CoreVII:InformationSecurity	4	-	4	25	75	100
	III	21UIS08	CoreVIII:Web Technology	4	-	4	25	75	100
	III	21UISP05	PracticalV:WebTechnologyLab	-	3	2	40	60	100
	III	21UIS09	CoreIX:OpenSource Technology	5	-	4	25	75	100
	III	21UISP06	PracticalVI:OpenSourceTechnologyLab	-	4	2	40	60	100
	III	21UISE01/02/0/03	Elective–I	5	-	4	25	75	100
	IV		**NMSDC –Cloud and IT Essentials for Employability-Cyber Security**	**2**	**-**	**2**	**25**	**75**	**100**
	IV	21UISSP03	SBECIII-MobileApplicationDevelopment	-	3	3	40	60	100
			Total	**20**	**10**	**25**	**245**	555	**800**
SEMESTER–VI									
VI	III	21UIS10	CoreX:Programmingin Python	6	-	5	25	75	100
	III	21UISP07	PracticalVII:PythonProgramming	-	4	3	40	60	100
	III	21UISPR01	MiniProject	-	5	5	40	60	100
	III	21UISE04/05 06	Elective-II	5	-	4	25	75	100
	III	21UISE07/08/09	Elective-III	5	-	4	25	75	100
	IV	21UISS01	SBEC IV-Quantitative Aptitude	3	-	3	25	75	100
	IV	NMSDC-III	EmergingTechnologyforEmployability-Cyber Security	2	-	2	-	75	100
	V	21UEX01	ExtensionActivities	-	-	1	-	-	-
			Total	**21**	**9**	**27**	**205**	**495**	**700**

PracticalExaminationshouldbeconductedinthesamesemester

ELECTIVESUBJECTS

Elective–I

Sem	Part	SubjectCode	Subject
V	III	21UISE01	ArtificialIntelligence
		21UISE02	ComputerNetwork
		21UISE03	MobileComputing

Elective–II

Sem	Part	SubjectCode	Subject
VI	III	21UISE04	DataMiningand Warehousing
		21UISE05	WirelessNetwork
		21UISE06	ComputerGraphics

Elective–III

Sem	Part	SubjectCode	Subject
VI	III	21UISE07	SoftwareTesting
		21UISE08	NetworkSecurity
		21UISE09	InternetofThings

NonMajorElectiveCourse–(NMEC)

ExtraDisciplinarySubjectsofferedbytheDepartmentofInformationScience

Thedepartmentcanoffer anyoneofthesubjects totheothermajorsubjectstudentsineachsemester.

PART	SEM	SUB CODE	TITLEOFTHESUBJECT	Lect. Hours	Credit	MARKS		
						CIA	EA	TOTAL
IV	III	21UISN01	NMEC I:BasicsOfComputers	2	2	25	75	100
		21UISN02	NMECI:ComputerApplicationsforAutomation	2	2	25	75	100
	IV	21UISN03	NMECII:BasicsofInternet	2	2	25	75	100
		21UISN04	NMEC II:ImageEditingTool	2	2	25	75	100

SBEC–SkillBasedElectiveCourses

SEM	PART	SUB CODE	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
				Lect.	Lab		CIA	EA	TOTAL
III IV	IV	21UISSP01	SBEC -I:OfficeAutomationLab	-	2	3	40	60	100
V	IV	21UISSP03	SBEC-III:MobileApplicationDevelopment	-	3	3	40	60	100
VI	IV	21UISS01	SBEC-IV:QuantitativeAptitude	3	-	3	25	75	100

Allied Subjectsfor anyDegree offeredbytheDepartmentof Computer/InformationScience

SYLLABUS-CBCSPATTERN

EFFECTIVEFROMTHEACADEMICYEAR2021-2022

All subjects should be handled and valued by Computer Science Department only. ForUniversity practical examinations bothInternaland External examiners should be appointedfromDepartment of Computer/Information Science.

FIRSTOPTION(AlliedComputerScience)
FirstYear/SecondYear(Selectany oneoftheSubjectwithPractical)

PART	SEMESTER	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
			Lect.	Lab		CIA	EA	TOTAL
III	I/III 21UISA01	AlliedPaper–I FundamentalofComputers	7	-	4	25	75	100
	II/IV 21UISA02	AlliedPaper–II ComputerApplicationsinOffice	5	-	4	25	75	100
	21UISAP01	AlliedPractical OfficeAutomation	-	2	2	40	60	100

SECONDOPTION(Allied ComputerScience)
FirstYear/SecondYear(SelectanyoneoftheSubjectwithPractical)

PART	SEMESTER	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
			Lect.	Lab		CIA	EA	TOTAL
III	I/III 21UISA03	AlliedPaper–I DatabaseSystems	7	-	4	25	75	100
	II/IV 21UISA04	AlliedPaper–II E-CommerceTechniques	5	-	4	25	75	100
	21UISAP02	AlliedPractical HTMLProgramming	-	2	2	40	60	100

Allied Subjects for Computer Science/InformationScience /BCA

SYLLABUS-CBCSPATTERN

EFFECTIVEFROMTHEACADEMICYEAR2021-2022

FIRSTOPTION

FirstYear/SecondYear(SelectanyoneoftheSubjectwithPractical)

PART	SEMESTER	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
			Lect.	Lab		CIA	EA	TOTAL
III	I/III	AlliedPaper–I StatisticalmethodsandtheirapplicationsI	7	-	4	25	75	100
	II/IV	AlliedPaper–II StatisticalmethodsandtheirapplicationsII	5	-	4	25	75	100
		AlliedPractical StatisticalPractical	-	2	2	40	60	100

SECONDOPTION

FirstYear/SecondYear(SelectanyoneoftheSubjectwithPractical)

PART	SEMESTER	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
			Lect.	Lab		CIA	EA	TOTAL
III	I/III	AlliedPaper–I PrinciplesofAccounting	7	-	4	25	75	100
	II/IV	AlliedPaper II CostandManagementAccounting	5	-	4	25	75	100
		AlliedPractical CommercePractical	-	2	2	40	60	100

THIRDOPTION
FirstYear/SecondYear(SelectanyoneoftheSubjectwithPractical)

PART	SEMESTER	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
			Lect.	Lab		CIA	EA	TOTAL
III	I/III	AlliedMathematicsPaper–I	7	-	4	25	75	100
	II/IV	AlliedMathematicsPaper–II	5	-	4	25	75	100
		AlliedMathematicsPractical	-	2	2	40	60	100

FOURTHOPTION
FirstYear/SecondYear(SelectanyoneoftheSubjectwithPractical)

PART	SEMESTER	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
			Lect.	Lab		CIA	EA	TOTAL
III	I/III	AlliedPhysicsPaper–I	7	-	4	25	75	100
	II/IV	AlliedPhysicsPaperII	5	-	4	25	75	100
		AlliedPhysicsPractical	-	2	2	40	60	100

FIFTHOPTION
FirstYear/SecondYear(SelectanyoneoftheSubjectwithPractical)

PART	SEMESTER	TITLEOFTHESUBJECT	Hrs.		CREDIT	MARKS		
			Lect.	Lab		CIA	EA	TOTAL
III	I/III	AlliedElectronicsPaper–I	7	-	4	25	75	100
	II/IV	AlliedElectronicsPaperII	5	-	4	25	75	100
		AlliedElectronicsPractical	-	2	2	40	60	100

SEMESTERI

SubjectTitle	**PROBLEMSOLVINGTHROUGHC**	**Semester**	I
SubjectCode	**21UIS01**	**Specialization**	NA
Type	**Core:**Theory	**L:T:P:C**	86:6:0:5

CourseObjective:

1. Itaimstoprovideexposuretoproblem-solvingthroughprogramming.
2. To apprehend the basic concepts of C- Programming language. This course introducesfundamentalconcepts such as arrays andstructures.
3. Itcoversconcepts suchasarrays,pointersandfile handlingmethods.
4. Itprovidestechnical skillstodesignanddevelopvariousapplications.

CO Number	**COStatement**	**KnowledgeLevel**
CO1	RecognizetheBasicTerminologiesofC Programming.	K1
CO2	Understandingthe statement structureand apply simpleproblems.	K2,K3
CO3	Understandandapplythepre-definedfunctions anduserdefined functionsandthenapplythesimpleproblems.	K3
CO4	DemonstratetheoperationofStructuresand unions.	K3,K4
CO5	Recognizetheoperation ofFiles.	K3,K4

SubjectTitle	**PROBLEMSOLVINGTHROUGHC**	**Semester**	**I**	
SubjectCode	**21UIS01**	**Specialization**	**NA**	
Type	**Core:Theory**	**L:T:P:C**	**86:6:0:5**	
Unit	**Contents**		**Levels**	**Sessions**
I	OverviewofComputersandProgramming:ElectronicComputersThenandNow,ComputerHardware,Computer Software , The Software Development Method,Applying the Software Development Method , ProfessionalEthicsforComputerProgrammersFundamentals ofCLanguages:History ofC,CharacterSet,IdentifiersandOverview of C:– Introduction - character set - C tokens -keyword & identifiers – constants – variables - data types – Declarationsofvariables,operators-expressions- Evaluationofexpression-Mathematicalfunctions- Formattedinput and output		**K1**	**17**
II	Decision Statements: If, if else, switch, break, continue - the?Operator-TheGOTOstatement.– LoopControlStatements: Introduction – for, nested for loops – while,do-whilestatements–Arrays:One-dimensional-Twodimensional -Multidimensional arrays		**K2,k3**	**17**
III	Character string handling - Declaring and initializing stringvariables - Reading strings from terminal - Writing stringstoscreen-Stringhandlingfunctions-User-definedfunctions:Needforuserdefinedfunctions– Typesoffunctions - calling a function category of functions - noarguments and no return values - Arguments but no returnvalues-Argumentswithreturnvalues–Recursion- functions with arrays - The scope and lifetime of variablesinfunctions		**K2,K3**	**17**
IV	Structure: Definition- Structure initialization - Comparisonof structure variables - Arrays of structures - Arrays withinstructures - Structures within structures – unions. Pointers:understandingpointers-accessingthe address ofavariable - declaring and initializing pointers - accessing a variablethrough its pointers - pointer expressions - pointers andarrays-pointersandcharacterstrings- pointersandfunctions -pointers and structures		**K3,K4**	**17**

V	FileManagementinC:definingandopeningafile-closing file - I/O operations on files - error handling duringI/O operations - Random access to files - command linearguments. Preprocessors	**K3,K4**	**18**
	LearningResources		
TextBooks	1. ProblemsolvingandprogramdesigninC/JeriR.Hanly,ElliotB.Koffman .—7th ed.,PEARSON 2. E.Balagurusamy,ProgramminginANSIC,fifthedition,TataMcGraw-Hill.		
Reference Books	1.V.RajaramanComputerProgramminginCPrenticeHallofIndiaPvtLtd,1st Edition,2004 2YashwvantKanetkar LetusCBPBPublications 13thEdition, 2014		
Website /Link	http://www.learn-c.org/http://crasseux.com/books/ctutorial/		

MappingwithProgrammeOutcomes

CO Number	PO1	PO2	PO3	PO4
CO1	S	S	S	-
CO2	S	M	M	S
CO3	S	L	L	M
CO4	M	S	M	S
CO5	S	L	S	S

S-Strong,M-Medium,L–Low

Subject Title	PRACTICALI:C-PROGRAMMING	Semester	I
Subject Code	21UISP01	Specialization	NA
Type	Core:Practical	L:T:P:C	45:0:3:2

CourseObjective:

1. ToimpartPracticalTraininginCProgrammingLanguage.
2. Familiarizethe differentcontrol anddecision makingstatements in –C‖.
3. Buildprogramsusingarraysandstrings.
4. Provideknowledgeonworkingwithfilesand functions.

LISTOFPROGRAMS

1. DevelopaCprogram toprintprimenumberswithin therangeofintegersgiven..
2. DevelopaCProgram tofindthesumandaverage ofgivenNnumbers.
3. DevelopaCProgramusingall decisionmakingandloopingstatements.
4. DevelopaCProgramto arrangethegivennumbersinascending/descendingorder.
5. DevelopaCProgramtoperformmatrix multiplication.
6. DevelopaCProgram tomanipulatestringfunctions.
7. DevelopaCProgramtofindtheFibonacciseriesforagivenumberusingrecursivefunction.
8. DevelopaC ProgramtoshowCall byValueandCallbyReference.
9. DevelopaCprogram toswaptwonumbersusingpointers.
10. DevelopaCProgram toupdatethestudent'sdetailsusingvariousfilemodes.
11. DevelopaCProgram tocopythecontentof onefiletoanotherfile.

COURSEOUTCOME:

1. StudyalltheBasicStatementsinC Programming.
2. Practicetheusageofbranchingandloopingstatements.
3. Applystringfunctionsandarrays usage.
4. Analysistheuseofpointersandfiles.

SubjectTitle	**DATA STRUCTURES ANDALGORITHMS**	**Semester**	**II**
SubjectCode	**21UIS02**	**Specialization**	**NA**
Type	**Core:Theory**	**L:T:P:C**	**45:3:0:5**

CourseObjective:

1. Understandthebasicconceptofalgorithms.
2. Tointroducethevariousdatastructuresandtheirimplementations.
3. Evaluatetheperformance ofvarious sortingalgorithms.

CO Number	**COStatement**	**KnowledgeLevel**
CO1	Remembertheconcept ofalgorithms.	K1
CO2	Understandingthestackandqueues.	K2
CO3	Applylinkedlist forother data structures.	K2,K3
CO4	Evaluatethe trees and sortingmethods.	K3,K4
CO5	Analyzethesortingandfileorganizations.	K5

Subject Title	**DATASTRUCTURESANDALGORITHMS**	**Semester**	**II**	
Subject Code	**21UIS02**	**Specialization**	**NA**	
Type	**Core:Theory**	**L:T:P:C**	**45:3:0:5**	
Unit	**Contents**		**Levels**	**Sessions**
I	Introductionofalgorithms,analyzingalgorithms,Arrays:Representation of Arrays, Implementation of Stacks and queues,Application of Stack: Evaluation of Expression - Infix to postfixConversion-Multiplestacksand Queues,SparseMatrices.		**K1**	**8**
II	Linkedlist:SinglyLinkedlist-Linkedstacksandqueues-polynomialaddition-MoreonlinkedLists-DoublylinkedListandDynamicStorageManagement-Garbagecollectionand compaction.		**K2**	**8**
III	Trees:BasicTerminology-BinaryTrees-BinaryTreerepresentations-Binarytrees-Traversal-MoreonBinary Trees -ThreadedBinarytrees-countingBinarytrees.Graphs:TerminologyandRepresentations-Traversals,connectedcomponentsandspanningTrees,SingleSource Shortestpathproblem.		**K2,K3**	**8**
IV	SymbolTables:StaticTreeTables-DynamicTreeTables-HashTablesHashingFunctions-overflowHandling.Externalsorting: StorageDevices-sortingwithDisks:K-waymerging-sortingwithtapes.		**K3,K4**	**10**
V	Internal Sorting: Insertion sort - Quick sort - 2 way Merge sort - Heap sort - shell sort - sorting on keys. Files: Files, Queries andsequentialorganizations -Index Techniques-File organization		**K5**	**11**
	LearningResources			
Text Books	EllisHorowitz,SartajShani,FundamentalsofDataStructures,Galgotiapublication.			
Reference Books	1. DatastructuresUsingCAaronM.Tenenbaum,YedidyahLangsam,MosheJ.Augenstein, Kindersley(India)Pvt.Ltd., 2. DatastructureandAlgorithms,AlfredV.Aho,JohnE.Hopcroft,JeffreyD.Ullman,Pearson Education Pvt.Ltd.,			
Website/ Link	1. www.freetechbooks.com/a-practical-introduction-to-data-structures-and-algorithm-analysis-thirdedition-c-version-t804.html 2. http://www.nptel.ac.in/courses/106101060/ 3. http://www.nptel.ac.in/courses/106104019/			

MappingwithProgrammeOutcomes

CONumber	**PO1**	**PO2**	**PO3**	**PO4**
CO1	S	S	S	-
CO2	S	M	M	S
CO3	S	L	L	M
CO4	M	S	M	S
CO5	S	L	S	S

S-Strong,M-Medium ,L–Low

SubjectTitle	DATASTRUCTURESUSINGC	Semester	II
SubjectCode	21UISP02	Specialization	NA
Type	Core:Practical	L:T:P:C	45:0:3:2

CourseObjective:

1. ToimpartPracticalTraininginCProgrammingLanguage.
2. Understandingthe datastructures stackand queues.
3. Applylinked list forother data structures.
4. Analyzethesortingandfileorganizations.

LISTOFPROGRAMS:

1. Write aC programtocreatetwoarraylistofintegers.Sortandstoretheelementsof bothofthem in third list.
2. WriteaC programto multiplytwomatricesAandBandstoretheresultantmatrixinCusingarrays.
3. WriteaCprogram toexperiment theoperationof STACKusingarray.
4. WriteaCprogramtocreatemenudrivenoptionstoimplementQUEUEtoperformthefollowing
   (i) Insertion(ii)Deletion(iii)Modification (iv) Listingofelements
5. WriteaCprogramtocreateLinkedlistrepresentationsofemployeerecordsanddothefollowingo perations usingpointers.
   (i) Toaddanewrecord.
   (ii) Todeleteanexistingrecord.
   (iii) Toprintthedetailsaboutanemployee.
   (iv) Tofindthenumberofemployeesinthestructure.
6. WriteaCProgramtocountthetotalnodesofthelinkedlistandtoinsertanelementattheend ofthelinked list.
7. WriteaCprogramtoinsert anelement at thebeginningof adoublylinkedlist.
8. WriteaC programto displaythe hashtable, using themid squaremethod.
9. WriteaC programtotraversethegivenbinarytreeusingall traversalmethods.
10. WriteaC programto insertan elementinabinarytree.

COURSEOUTCOME:

1. Studyall the Basic operationof matricesandstack.
2. Practicetheusageofbranchingand loopingstatementsin hashtable.
3. Applyarraysforstackand queue.
4. Analysis theuseofpointersforlinkedlist,doublylinkedlist andtreetraverse.

SubjectTitle	**COMPUTERORGANIZATIONAND ARCHITECTURE**	**Semester**	**II**
SubjectCode	**21UIS03**	**Specialization**	**NA**
Type	**Core:Theory**	**L:T:P:C**	**56:4:0:5**

CourseObjective:

1. ToknowStructureand functionsofComputerarchitectureandorganizations.
2. Observethecharacteristics ofvariouscomputermemoryconcepts.
3. Tounderstandthecomputerarithmeticandmachineinstructions.
4. Understandtheparallelprocessingconcepts.

CO Number	**COStatement**	**KnowledgeLevel**
CO1	Recognizethe BasicNumbersystemandlogic gates	K1
CO2	UnderstandingtheflipflopsandKarnaughmaps	K2,K3
CO3	Understandandapplymicrooperation anddatatransfer	K3
CO4	Demonstratethecomputerarithmeticand addressing modes.	K3,K4
CO5	AnalyzethememoryandI/Oorganizations.	K3,K4

Subject Title	**COMPUTERORGANIZATIONAND ARCHITECTURE**	**Semester**	**II**
Subject Code	**21UIS03**	**Specialization**	**NA**
Type	**Core:Theory**	**L:T:P:C**	**56:4:0:5**

Unit	**Contents**	**Levels**	**Sessions**
I	DigitalPrinciples:Definitionfordigitalsignals– Digitalwaveforms–Digitallogic– MovingandStoringDigitalInformation–DigitalOperations– Digitalcomputers– DigitalIntegratedCircuits.DigitalLogic:TheBasicGates-NOT,OR,AND–Universal Logic Gates–NOR,NAND –AND-OR-InvertGates–PositiveandNegativeLogic.	**K1**	**12**
II	Combinational Logic Circuits: Boolean Laws And Theorems – Sum-of-products Method – Truth Table to Karnaugh Map – Pairs, Quads, and Octets – Karnaugh Simplification – Don't-careConditions–Product-of-sumsSimplification.Data– ProcessingCircuits:16-to-1Multiplexer–1-to-16De-multiplexer– BCD-to-decimalDecoder–Decimal-to-BCD Encoder – Exclusive-or Gates – Parity Generation andApplication.	**K2,K3**	**12**
III	Number Systems and Codes: Binary Number System – Binary-to-decimal Conversion – Decimal-to- binary Conversion – OctalNumbers – Hexadecimal Numbers – The ASCII Code – TheExcess-3 Code – The Gray Code. Arithmetic Circuits: BinaryAddition–BinarySubtraction–UnsignedBinaryNumbers– Sign-magnitudeNumbers-2'SComplementRepresentation-2'SComplimentArithmetic.	**K2,K3**	**12**
IV	Arithmetic Circuits: Arithmetic Building Blocks – The Adder - subtractor–FastAdder–ArithmeticLogicUnit– BinaryMultiplication and Division. Clocks and Timing Circuits: ClockWaveforms.Flip-Flops:RSFlip-flops–Edge-triggeredDFlip-flops - Edge triggered JK Flip-flops –JK Master-slaveFlip-flops.	**K3,K4**	**12**
V	Registers:Serial-InSerial-Out–Serial-InParallel-Out–Parallel-In Serial-Out – Parallel-In Parallel-Out. Memory: Introduction - MagneticMemory-OpticalMemory-MemoryAddressing- ROMs, PROMs, EPROMs and EEPROM – RAMs. A SimpleComputerDesign.	**K3,K4**	**12**
	LearningResources		
Text Books	Donald PLeach, Albert Paul Malvinoand GoutamSaha, ‖Digital Principlesand Applications‖, 8th Edition,TMH,2006.		

Reference Books	1. MorrisMano,"DigitalLogic andComputerDesign,"4th Edition,Pearson,2008 2. Thomas C Bartee, "Digital Computer Fundamentals," sixth edition, McGraw-Hill,1985 3. PradeepK.Sinha,PritiSinha,"ComputerFundamentals,"SixthEdition,BPBPublications,2007
Website /Link	www.javatpoint.com/computer-organization-and-architecture-tutorial

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	S	-
CO2	S	M	M	S
CO3	S	L	L	M
CO4	M	S	M	S
CO5	S	L	S	S

S-Strong,M-Medium,L–Low

SubjectTitle	RELATIONAL DATABASEMANAGEMENTSYSTEMS	Semester	III
SubjectCode	21UIS04	Specialization	NA
Type	Core:Theory	L:T:P:C	41:3:0:5

CourseObjective:

1. UnderstandthebasicconceptofDataBaseanddatabasemanagementsystem.
2. UnderstandandapplytheSQLfundamentals.
3. EvaluatetheRelationaldatabasedesign.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthеconceptofdatabase.	K1
CO2	Understandingthedata models andERDiagram.	K2
CO3	ApplySQLcommands.	K2,K3
CO4	EvaluatetheDBMSinSQL.	K3,K4
CO5	AnalyzetheTransactionmanagement.	K5

Subject Title	**RELATIONAL DATABASEMANAGEMENTSYSTEMS**	**Semester**	**III**	
Subject Code	**21UIS04**	**Specialization**	**NA**	
Type	**Core:Theory**	**L:T:P:C**	**41:3:0:5**	
Unit	**Contents**		**Levels**	**Sessions**
I	Introduction:DatabaseSystemApplications-PurposeofDatabaseSystems-ViewofData-DatabaseLanguages-Transaction Management-Database Architecture-Database usersandAdministrators. Relational Model: Structure of Relational Databases – DatabaseDesign–ERModel-OverviewoftheDesignProcess–The Entity – relationship Model – Constraints – Entity RelationshipDiagrams.		**K1**	**6**
II	RelationalAlgebraOperations–RelationalLanguages:TheTuple Relational Calculus –The Domain Relational Calculus – SQL:Background–DataDefinition–BasicStructureofSQL Queries – Set Operations – Aggregate Functions – Null Values – NestedSub-Queries–Views–Modification oftheDatabase.		**K2**	**9**
III	DataNormalization:PitfallsinRelational DatabaseDesign–Decomposition – Functional Dependencies – Normalization – FirstNormalForm– Second NormalForm – ThirdNormalForm – Boyce-Codd Normal Form – Fourth Normal Form– FifthNormalForm–De-normalization– DatabaseSecurity:DataSecurityRequirements– ProtectingtheDatawithinthe Database – Granting and Revoking Privileges – DataEncryption.		**K2,K3**	**9**
IV	PL/SQL: A programming Language: History - Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration–Assignmentoperation–Bindvariables– SubstitutionVariables–Printing– ArithmeticOperators.ControlStructuresandEmbeddedSQL:ControlStructures–NestedBlocks–SQLINPL/SQL–DataManipulation-TransactionControlstatements.PL/SQLCursorsandExceptions:Cursors–Implicit&ExplicitCursorsandAttributes –CursorFORloops–SELECT...FORUPDATE–WHERE CURRENTOFclause–CursorwithParameters–CursorVariables– Exceptions–Typesof Exceptions.		**K3,K4**	**9**
V	PL/SQL Composite Data Types: Records – Tables – Varrays.Named Blocks: Procedures – Functions – Packages - Triggers –DataDictionaryViews.		**K5**	**8**
	LearningResources			
Text Books	1. ‐DatabaseSystem Concepts‖,AbrahamSilberschatz, HenryF.Korth, S.Sudarshan, TMH 5th Edition (Units–I,II) 2. ‐Fundamentals ofDatabaseManagement Systems‖, AlexisLeon, Mathews Leon,VijayNicoleImprintsPrivateLimited. (Unit-III) 3. ‐DatabaseSystemsUsingOracle‖NileshShah,2nd edition,PHI.UNIT-IV:			

	Chapters10&11 UNIT-V:Chapters12,13&14.
Reference Books	AlexixLeon&MathewsLeon,"EssentialofDBMS",2ndreprint,VijayNicolePublications, 2009.
Website /Link	1. https://www.w3schools.com/sql 2. https://www.tutorialspoint.com/sql 3. https://livesql.oracle.com

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	S	-
CO2	S	M	M	S
CO3	S	L	L	M
CO4	M	S	M	S
CO5	S	L	S	S

S-Strong,M-Medium,L –Low

SubjectTitle	PRACTICALIII–SQL and PL/SQL	Semester	III
SubjectCode	21UISP03	Specialization	NA
Type	Core:Practical	L:T:P:C	30:0:2:2

CourseObjective:

1. ToimpartPractical TraininginDDLCommands.
2. FamiliarizethedifferentDMLCommands.
3. Buildquerieswith SQLCommands.
4. Provideknowledge on workingwith bigtables.

LISTOFPROGRAMS:

NOTE:Demonstratethe followingSQLcommandsand cantakeanybackendRDBMS systemforimplementation purpose.

1. DataDefinitionofBaseTables.
2. DDLwithPrimarykeyconstraints.
3. DDLwith constraintsand verification byinsertcommand.
4. DataManipulationofBaseTablesand Views.
5. DemonstratetheQuerycommands.
6. Write a PL/SQL code block that will accept an account number from the user and debit anamount of Rs. 2000 from the account if the account hasa minimum balance of 500 aftertheamount is debited. TheProcessis tofireon theAccounts table.
7. Write a PL/SQL code block to calculate the area of the circle for a value of radius varyingfrom 3 to 7. Store the radius and the corresponding values of calculated area in a tableAreas.Areas – radius, area.
8. WriteaPL/SQLblockofcodefor reversinganumber. (Example:1234 as 4321).
9. Create a transparent audit system for a table Client_master (client_no, name, address,Bal_due). The system must keep track of the records that are being deleted or updated. Thefunctionality being when a record is deleted or modified the original record details and thedate of operation are stored in the audit client (client_no, name, bal_due, operation, userid,opdate)table, then thedeleteorupdate is allowedto go through.

COURSEOUTCOME:

1. Studyall theBasicDDL and DMLCommands.
2. PracticetheusageofSQLStatements.
3. ApplyPL/SQLcodeusage.
4. AnalysistheuseofPL/SQLforcomplexproblems.

SubjectTitle	OPERATINGSYSTEM	Semester	III
SubjectCode	21UIS05	Specialization	NA
Type	Core:Theory	L:T:P:C	71:5:0:4

CourseObjective:

1. TounderstandthefundamentalconceptsandroleofOperatingSystem.
2. TolearntheProcess ManagementandSchedulingAlgorithms.
3. TounderstandtheMemoryManagement policies.
4. TogaininsightonI/OandFilemanagementtechniques.

CO Number	COStatement	KnowledgeLevel
CO1	Understand the structure and functions of OperatingSystem.	K1
CO2	ComparetheperformanceofSchedulingAlgorithms.	K2
CO3	Understandandorganizethememory.	K1,K3
CO4	Evaluatethedeadlockmeasures.	K3,K4
CO5	AnalyzetheI/Ohardwareandsoftware.	K5

Subject Title	OPERATINGSYSTEM	Semester	III	
Subject Code	21UIS05	Specialization	NA	
Type	Core:Theory	L:T:P:C	71:5:0:4	
Unit	Contents		Levels	Sessions
I	Introduction–Historyofoperatingsystem-Differentkindsof operatingsystem–Operationsystemconcepts-Systemcalls-Operatingsystemstructure.		K1	15
II	ProcessesandThreads:Processes–threads– threadmodelandusage– inter process communication.		K2	15
III	Scheduling-MemoryManagement:MemoryAbstraction– Virtual Memory-pagereplacement algorithms.		K1,K3	15
IV	Deadlocks:Resources-introductiontodeadlocks– deadlockdetectionandrecovery–deadlocksavoidance–deadlock prevention.Multipleprocessorsystem:multiprocessors– multicomputers.		K3,K4	15
V	Input/Output:principlesofI/O hardware-principlesofI/Osoftware.Filessystems:Files–directories-filessystemsimplementation– FileSystemManagementandOptimization.		K5	11
	LearningResources			
TextBooks	AndrewS. Tanenbaum, ‑Modern OperatingSystems‖, 2ndEdition, PHIprivate Limited,NewDelhi,2008.			
Reference Books	1. WilliamStallings,―OperatingSystems– Internals&DesignPrinciples‖,5thEdition,Prentice– Hall of India privateLtd,NewDelhi, 2004. 2. SridharVaidyanathan,‑OperatingSystem‖,1stEdition,VijayNicole Publications, 2014.			
Website /Link	1. www.wikipedia.org/wiki/Operating_system 2. http://www.freetechbooks.com/introduction-to-operating-systems-t340.html			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	S	-
CO2	S	M	M	S
CO3	S	L	L	M
CO4	M	S	M	S
CO5	S	L	S	S

S-Strong,M-Medium,L –Low

Subject Title	SBECI-OFFICEAUTOMATION LAB	Semester	III
Subject Code	21UISSP01	Specialization	NA
Type	SBEC:Practical	L:T:P:C	30:0:2:3

CourseObjective:

1. Toacquireknowledgeon editor,spreadsheet andslidepreparation.
2. Toimprovecreativethinkinginpresentationsoftware.

LISTOFPROGRAMS:

I. MS-WORD

1. TextManipulation:Writeaparagraphaboutyour institutionandChangethefontsizeandtype,Spell check, Aligningand justification of Text.
2. Biodata:PrepareaBio-data.
3. FindandReplace:Writeaparagraphaboutyourselfanddothefollowing.FindandReplace-UseNumberingBullets,FooterandHeaders.
4. Tablesandmanipulation:Creation,Insertion,Deletion(ColumnsandRows).Createamarkshee t.
5. Mail Merge: Prepare an invitation to invite your friends to your birthday party. Prepare atleastfiveletters.

II. MS-EXCEL

1. Datasorting-AscendingandDescending(bothnumbersandalphabets).
2. Marklistpreparation forastudent.
3. IndividualPayBillpreparation.
4. InvoiceReportpreparation.
5. DrawingGraphs. Takeyourowntable.

III. MS-POWERPOINT

1. Createaslideshow presentationforaseminar.
2. PreparationofOrganizationCharts.
3. Createaslideshowpresentationtodisplaypercentageofmarksineachsemesterforallstudents
   (i) Usebarchart(X-axis: Semester,Y-axis:%marks).
   (ii) Usedifferent presentationtemplatedifferenttransition effect foreachslide.

CO Number	COStatement	KnowledgeLevel
CO1	Remembertheconceptofwordprocessing.	K1
CO2	UnderstandingthetoolsinMicrosoft word.	K2
CO3	UnderstandandApplyExcel Features.	K3
CO4	Evaluatethe EXCELfunctions.	K3,K4
CO5	AnalyzethedifferentdesignsofMSPresentations.	K5

Subject Title	**PROGRAMMINGINJAVA**	**Semester**	**IV**
Subject Code	**21UIS06**	**Specialization**	**NA**
Type	**Core:Theory**	**L:T:P:C**	**60:4:0:4**

CourseObjective:

1. TounderstandtheconceptsofObjectOrientedProgramming.
2. Tolearnaboutthecontrol structures,class withattributesandmethodsused inJava.

CO Number	**COStatement**	**KnowledgeLevel**
CO1	RemembertheconceptsofOOPS.	K1
CO2	UnderstandthebasicTerminologiesoflanguagesand statements.	K2
CO3	Demonstratetheuseclassesandobjects.	K2,K3
CO4	Evaluatethepackages and exception handlingmethods.	K3,K4
CO5	AnalyzetheI/OStreams andgraphicsclasses.	K5

Subject Title	PROGRAMMINGINJAVA	Semester	IV	
Subject Code	21UIS06	Specialization	NA	
Type	Core:Theory	L:T:P:C	60:4:0:4	
Unit	Contents		Levels	Sessions
I	Introduction to OOPS: Paradigms of Programming Languages – Basic concepts of Object Oriented Programming – Differencesbetween Procedure Oriented Programming and Object Orientedprogramming - Benefits of OOPs – Application of OOPs. Java:History–Javafeatures–JavaEnvironment–JDK–API.IntroductiontoJava:Typesofjavaprogram–CreatingandExecutingaJavaprogram–JavaTokens-JavaVirtualMachine (JVM) – Command Line Arguments–Comments in Javaprogram.		K1	10
II	Elements:Constants–Variables–Datatypes-Scopeofvariables–Typecasting–Operators:Specialoperators–Expressions – Evaluation of Expressions. Decision making andbranching statements- Decision making and Looping– break –labeledloop–continueStatement.Arrays:One DimensionalArray–Creatinganarray–Arrayprocessing–Multidimensional Array – Vectors – ArrayList – Advantages ofArrayList over ArrayWrapperclasses.		K2	10
III	Classandobjects:Definingaclass–Methods–Creatingobjects –Accessingclassmembers–Constructors–Methodoverloading–Staticmembers–NestingofMethods–thiskeyword–Commandlineinput.Inheritance:Defininginheritance –types of inheritance– Overriding methods – Finalvariables and methods – Final classes – Final methods - Abstractmethods and classes – Visibility Control- Interfaces: Defininginterface–Extendinginterface-ImplementingInterface-Accessinginterfacevariables.Strings:StringArray–StringMethods– StringBufferClass.		K2,K3	10
IV	Packages:JavaAPIPackages–SystemPackages–NamingConventions –Creating & Accessing a Package –Adding Classto a Package – Hiding Classes. Exception Handling: Limitationsof Error handling –Advantages of Exception Handling -TypesofErrors–BasicsofExceptionHandling–tryblocks–throwinganexception–catchinganexception–finallystatement. Multithreading: Creating Threads – Life of a Thread –Defining&RunningThread– ThreadMethods–Thread Priority – Synchronization –Implementing Runnable interface – ThreadScheduling.		K3,K4	15
V	I/O Streams: File – Streams – Advantages - The stream classes – Byte streams –Character streams. Applets: Introduction – AppletLifecycle–Creating&ExecutinganApplet–Applettagsin		K5	15

	HTML – Parameter tag – Aligning the display - Graphics Class:Drawing and filling lines – Rectangles – Polygon – Circles –Arcs –Line Graphs – Drawing Bar charts AWT Componentsand Even Handlers: Abstract window tool kit – Event Handlers –Event Listeners – AWT Controls and Event Handling: Labels –TextComponent–ActionEvent–Buttons– CheckBoxes–ItemEvent–Choice–Scrollbars–LayoutManagers- InputEvents– Menus.		
	LearningResources		
Text Books	1. E.Balagurusamy,–*Programming with Java*‖, TataMc-GrawHill, 5th Edition. 2. Sagayaraj, Denis,Karthickand Gajalakshmi, –*Java Programming forCore andadvancedlearners*‖,UniversitiesPress(INDIA)PrivateLimited2018.		
Reference Books	HerbertSchildt, –*The completereference Java*‖,TataMc-GrawHill,7th Edition.		
Website /Link	1. NPTEL & MOOC courses titled Javahttps://nptel.ac.in/courses/106105 191/ 2. https://www.geeksforgeeks.org/ 3. https://www.tutorialspoint.com/java/		

MappingwithProgrammeOutcomes

CO Number	PO1	PO2	PO3	PO4
CO1	S	S	S	-
CO2	S	M	M	S
CO3	M	S	L	M
CO4	M	S	M	S
CO5	S	S	-	-

S-Strong,M-Medium,L–Low

SubjectTitle	PRACTICALIV-JAVAPROGRAMMING	Semester	IV
SubjectCode	21UISP04	Specialization	NA
Type	Core:Practical	L:T:P:C	45:0:3:2

CourseObjective:

1. ToimpartPracticalTraininginJAVAProgrammingLanguage.
2. FamiliarizethedifferentcontrolanddecisionmakingstatementsinJAVA.
3. BuildprogramsusingPackages.
4. Provideknowledgeon workingwith Exceptionhandlingfunctions.

LISTOFPROGRAMS:

1 WriteaprogramtofindtheAreaofSquare,RectangleandCircleusingMethodOverloading.

2 Writeaprogramtosortthelist ofnumbersusingCommandLineArguments.

3 Writeaprogram tomultiplythegiventwo matrices.

4 Writeaprogramtodesignaclasstorepresent abankaccount.Includethefollowing:

DataMembers:Nameof thedepositor,Accountnumber,Typeofaccount,and Balanceamountin theaccount.

Methods:Toassigninitialvalues,Todepositanamount,Towithdrawanamountaftercheckingbalance,and Todisplaythe nameand balance.

5 Writeaprogram thatimport theuserdefinedpackageandaccesstheMembervariable ofclassesthat contained byPackage.

6 Writeaprogramto handle theException usingtryand multiplecatch blocks.

7 Writeaprogramtoillustrate theuseofmulti threads.

8 WriteaprogramtocreatestudentregistrationformusingappletwithName,Address, Sex,Class, Email-id.

9 Writeaprogramtodraw theline,rectangle, oval,text usingthegraphicsmethod.

10 Write a program to create a sequential file that could store details about five products.Detailsincludeproduct code,cost,andnumberofitemsavailableandareprovidedthroughthekeyboard. Computeand printthe total valueof all the five products

COURSEOUTCOME:

1. StudyalltheBasicStatements injavaProgramming.
2. Practicetheusageofbranchingand loopingstatements.
3. ApplyPackagesand Interfaces.
4. Analysis the useofgraphicstools inJAVA.

B.Sc.(ComputerScience)/BCA/B.Sc.(Information Science)

SemesterIV:Add-onCourseInternshipProgramme

OBJECTIVES:

- Tomakestudents acquirepractical knowledgebygoingto a companyandlearn in aliveenvironment
- Tomakestudents learnteamworkandwork ethics
- TomakestudentstoknowtherecenttrendsinWeb/MobileApplication Development,Networkingoranyotheraarearelevant to their study
- Tomakestudents analysetheirskills andinterests
- Tohelpstudentsexamineacademicandcareer goals

OUTCOME:

Attheendofthis internshipprogrammethestudents willbeableto

- applytheorytoreal life
- workasapartofteam
- learnfrom thecompanyexperts
- learnlatesttrendingtechnologies
- comeoutwithahighmorale
- enrichCV

About the internship programme: The internship programme provides students with practical,real-world experience and a valuable complement to their academic training. It enhances thestudents' skills in problem solving by making him/her work in a live environment in whichsystematicproblem solvingmethods arepractised.

Duration:Internshiprequiresstudentstospendaminimumof15days(duringvacation)employed,full-time, asIT interns or trainees during vacation at theendof fourthsemester. During this period, they are engaged in work of direct relevance to their programme ofstudy.

Areas:Someofthefieldsthat areopentostudentsinclude:

- Online Publishingand Editing
- OnlineAdvertising
- Web/MobileApplicationDevelopment
- E-Marketing/OnlineMarketing
- AnyotherfieldrelatedtoComputerScience/Applications/ Information Science

Certificate: A certificate is to be obtained from the organization in which the student undergoesinternship programme. This certificate is to be submitted to the college within fifteen days afterthecollegereopens for thenext semester.

Credits: TheInternshipprogrammedoesnotcarryanycredit.

SubjectTitle	INFORMATIONSECURITY	Semester	V
SubjectCode	21UIS07	Specialization	NA
Type	Core:Theory	L:T:P:C	71:5:0:4

CourseObjective:

1. Understandthebasicsofinformationsecurity.
2. Abletomanagetheinformationanddetects threatsandvulnerabilitiesthatareaffectingthedata.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasicsof security.	K1
CO2	Understandorganizationalsecurity.	K2
CO3	Demonstratetheprotectionofinformation.	K3
CO4	Studytheprotection ofsystem.	K4
CO5	Analyzecloudcomputingsecurity.	K5

Subject Title	INFORMATIONSECURITY	Semester	V	
Subject Code	21UIS07	Specialization	NA	
Type	Core:Theory	L:T:P:C	71:5:0:4	
Unit	Contents		Levels	Sessions
I	TheLanguage of Security-Threatsand Vulnerabilities:Threats-PhysicalThreats-Vulnerabilities-TheInformationSecurityManager -InformationSecurityJobRoles-Training,Experience,andProfessionalism-GettingStarted inSecurityManagement		K1	15
II	OrganizationalSecurity:SecurityinOrganizationalStructures-WorkingwithSpecialistGroups-WorkingwithStandardsandRegulations-WorkingwithRiskManagement-WorkingwithEnterpriseArchitecture-WorkingwithFacilitiesManagement-InformationSecurityImplementation:IntegrationwithRiskManagement -SecureDevelopment-Standards,Frameworks,Guidelines,andLegislation:WhyDoWeNeedStandards?–Legislation-TheISO/IEC27000SeriesofStandards-BusinessContinuity-RiskManagementStandards-COBIT-PaymentCard Industry Data Security Standard - Health Insurance Portability andAccountabilityAct		K2	15
III	Protection of Information : Information Classification-Identification,Authentication,andAuthorization-ProtectionofPeople:HumanVulnerabilities-BuildingaSecurityCulture-PersonnelSecurityLife Cycle-ProtectionofPremises:WhatIsPhysicalSecurity?-StartwithaRiskAssessment-PerimeterDesign-InternalBuildingSecurity		K3	15
IV	ProtectionofSystems-IntroducingMalware-ThreatVectors--TechnicalCountermeasures- Network Security-DigitalEvidenceandIncidentResponse:TheDigitalForensicProcess-Forensic Readiness- Incident Response and Digital Investigations-InvestigatingaMalwareOutbrea		K4	15
V	Cloud Computing Security: Cloud Computing 101- Cloud Security - Cloud Security Architectures-API Security: An Old Threat with NewTargets–Virtualization-IndustrialControlSystems:ICSArchitectures- ICS Security- Secure Systems Development: SecureDevelopment-SecureDevelopmentBusinessProcesses-Security Testing-Auditing		K5	11
	LearningResources			
Text Books	TonyCampbellBurnsBeach,Practical InformationSecurityManagement:ACompleteGuideto PlanningandImplementation ,Apress,2016(http://file.allitebooks.com/20161204/Practical%20Information%20Security%20Management.pdf)			

Reference Books	1. MarkRhodesOusley,TheInformationsecuritythecompleteReference,SecondEdition ,2013 2. JosiahDykstra,EssentialCyberSecurityScience,FirstEdition, 2016
Website/ Link	www.geeksforgeeks.org/Informationsecurity

MappingwithProgrammeOutcomes

CONumber	PS01	PS02	PS03	PS04
CO1	S	M	M	L
CO2	M	M	L	L
CO3	S	M	L	M
CO4	M	S	M	L
CO5	S	M	L	L

S-Strong,M-Medium ,L–Low

SubjectTitle	WEBTECHNOLOGY	Semester	V
SubjectCode	21UIS08	Specialization	NA
Type	Core:Theory	L:T:P:C	71:5:0:4

CourseObjective:

1. Tounderstandthefundamentalconceptsandrole ofWebTechnology.
2. TolearntheProcess ofCSS.
3. Tounderstandthewebpages.
4. Togaininsightonscriptobjects.

CO Number	COStatement	Knowledge Level
CO1	Understandthestructure thedocumentsinWeb.	K1
CO2	Rememberandunderstand thetablehandlingtags.	K2
CO3	UnderstandandorganizeCSS.	K1,k3
CO4	Implementscriptsinweb page.	K3,K4
CO5	Evaluatescriptobjects.	K5

SubjectTitle	WEBTECHNOLOGY	Semester	V	
SubjectCode	21UIS08	Specialization	NA	
Type	Core:Theory	L:T:P:C	71:5:0:4	
Unit	Contents		Levels	Sessions
I	Structuring Documents for the Web: Introducing HTMLandXHTML,BasicTextFormatting,PresentationalElements,PhraseElements,Lists,EditingText,CoreElementsandAttributes,AttributeGroups.LinksandNavigation:BasicLinks,CreatingLinkswiththe<a>Element, Advanced E-mail Links.Images, Audio, andVideo: Adding Images Using the <img> Element, UsingImagesasLinksImageMaps,ChoosingtheRightImage Format, Adding Flash, Video and Audio to your webpages.		K1	15
II	Tables: Introducing Tables, Grouping Section of a Table,NestedTables,AccessingTables.Forms:IntroducingForms, Form Controls, Sending Form Data to the Server.Frames: Introducing Frameset, <frame> Element, CreatingLinksBetweenFrames,SettingaDefaultTargetFrame Using <base> Element,NestedFramesets, Inline orFloatingFrameswith<iframe>.		K2	15
III	CascadingStyleSheets:IntroducingCSS,WhereyoucanAdd CSSRules.CSSProperties:ControllingText,TextFormatting, TextPseudoClasses,Selectors,Lengths,IntroducingtheBox Model.MoreCascadingStyleSheets:Links,Lists,Tables,Outlines,The:focusand:activatePseudoclassesGeneratedContent,MiscellaneousProperties,AdditionalRules,Positioningand Layoutwit, PageLayoutCSS, DesignIssues.		K1,K3	15
IV	Java Script: How to Add Script to Your Pages, VariablesandDataTypes– StatementsandOperators,ControlStructures,ConditionalStatements,LoopStatements– Functions - Message box, Dialog Boxes, Alert Boxes,Confirm Boxes, PromptBoxes		K3,K4	15
V	WorkingwithJavaScript:PracticalTipsforWritingScripts, JavaScript Objects: Window Object - Documentobject-BrowserObject-FormObject-Navigatorobject Screen object - Events, Event Handlers, Forms – Validations,FormEnhancements,JavaScriptLibraries.		K5	11
	LearningResources			
TextBooks	JonDuckett,BeginningHTML,XTML,CSSandJavascript,WileyPublishing			
Reference Books	1. ChrisBates,-Web Programming‖, WileyPublishing3d Edition. 2. M. Srinivasan, –Web Technology:TheoryandPractice‖, PearsonPublication			
Website/Link	www.geeksforgeeks.org/webtechnology			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	S	-
CO2	S	M	M	S
CO3	S	L	L	M
CO4	M	S	M	S
CO5	S	L	S	S

S-Strong,M-Medium ,L–Low

Subject Title	PRACTICALV:WEBTECHNOLOGYLAB	Semester	V
Subject Code	21UISP05	Specialization	NA
Type	Core:Practical	L:T:P:C	45:0:3:2

CourseObjectives:

1. ToimpartPracticalTraininginControlpaneltools.
2. FamiliarizewithHTMLTags.
3. Buildprograms usingJavascript.
4. Provideknowledgeon workingwithevents and methods.

LISTOFPROGRAMS:

1. Create a form having number of elements (Textboxes, Radio buttons, Checkboxes, and soon).WriteJavaScript code to count the numberof elements in aform.
2. Create a HTML form that has number of Textboxes. When the form runs in the Browser fillthe Text boxes with data. Write JavaScript code that verifies that all textboxes has beenfilled. If a textboxes has been left empty, popup an alert indicating which textbox has beenleftempty.
3. Develop a HTML Form, which accepts any Mathematical expression. Write JavaScript codetoEvaluates the expression and Displays theresult.
4. Createapagewithdynamiceffects.Writethecodetoincludelayersandbasicanimatio n.
5. WriteaJavaScript codetofind thesumofNnaturalNumbers.(Useuser-definedfunction)
6. Write a JavaScript code block using arrays and generate the current date in words, this shouldincludethe day, month andyear.
7. CreateaformforStudentinformation.WriteJavaScriptcodetofindTotal,Average,ResultandGrade .
8. CreateaformforEmployeeinformation.WriteJavaScriptcodetofindDA,HRA,PF,TAX,Grosspay ,Deduction and Net pay.
9. CreateaformconsistsofatwoMultiplechoicelistsandone singlechoicelist(a)Thefirstmultiplechoicelist,displaystheMajordishesavailable(b)The secondmultiplechoice list,displaysthe Startersavailable.(c)Thesingle choice list,displaysthe Soft drinks available.

COURSEOUTCOME:

1. Studyall the Basic tools.
2. Practicetheusageofwebpagecreationanduseableobjects.
3. Applyvariouseffects onwebpage.
4. Analysis theuseofjavascriptandhtmlcode.

SubjectTitle	OPENSOURCETECHNOLOGY	Semester	V
Subject Code	21UIS09	Specialization	NA
Type	Core:Theory	L:T:P:C	71:5:0:4

Courseobjective:

1. TousePHPandMySQLtodevelopdynamicwebsitesforuserontheInternet.
2. Todevelopwebsitesrangingfromsimpleonlineinformationformstocomplexe-commercesiteswith MySQLdatabase,building,connectivity,andmaintenance.

CO Number	CO Statement	KnowledgeLevel
CO1	Understandtherelationshipwithopensourceandfreesoftware.	K1
CO2	Understandtheflowcontrolinprograms.	K2
CO3	ImplementArrays.	k3
CO4	Evaluatefunctionsandclasses.	K4
CO5	Analyzedatabase andSQL.	K5

SubjectTitle	OPENSOURCETECHNOLOGY	Semester	V	
SubjectCode	21UIS09	Specialization	NA	
Type	Core:Theory	L:T:P:C	71:5:0:4	
Unit	Contents		Levels	Sessions
I	Introduction: Open Source, Free Software, Free Software vs.Open Source software Introducing PHP – Basic developmentConcepts – Creating first PHP Scripts – Using Variable andOperators–StoringDatainvariable– UnderstandingData types – Setting and Checking variables Data types – UsingConstants – ManipulatingVariableswithOperators.		K1	15
II	Controlling Program Flow: Writing Simple ConditionalStatements-WritingMoreComplexConditionalStatements – Repeating ActionwithLoops–Workingwith String andNumericFunctions.		K2	15
III	WorkingwithArrays:StoringDatainArrays–ProcessingArrayswithLoopsandIterations–UsingArrayswithForms - Working withArray Functions–Working withDates andTimes.		K3	15
IV	Using Functions and Classes: Creating User-DefinedFunctions-CreatingClasses–UsingAdvancedOOPConcepts.WorkingwithFilesandDirectories:Reading Files-WritingFiles-ProcessingDirectories.		K4	15
V	Working with Database and SQL : Introducing Database andSQL- Using MySQL-Adding and modifying Data-HandlingErrors–UsingSQLiteExtensionandPDOExtension. Introduction XML-SimpleXMLandDOM Extension.		K5	11
	LearningResources			
TextBooks	VikramVaswani,―PHPABeginner'sGuide‖,TataMcGrawHill2008.			
Reference Books	Steven Holzner ,–ThePHP CompleteReference‖, TataMcGrawHill, 2007. Steven Holzer,–Springinto PHP‖,TataMcGrawHill 2011, 5thEdition.			
Website /Link	1. https://www.w3schools.com/php/ 2. https://www.phptpoint.com/php-tutorial-pdf/			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	M	---
CO2	M	M	M	S
CO3	S	M	L	M
CO4	M	S	M	S
CO5	S	M	L	L

S-Strong,M-Medium ,L–Low

SubjectTitle	PRACTICALVIII:OPENSOURCET ECHNOLOGYLAB	Semester	V
SubjectCode	21UISP06	Specialization	NA
Type	Core:Practical	L:T:P:C	60:0:4:2

CourseObjectives:

1. Todeveloptechnicalsolutionsforproblemsusingtheopensourcesoftware'sreadilyavai lableatfree ofcost.
2. ToinstallWampServer.
3. ProvideknowledgeonworkingwithPHPSCRIPTS.

LISTOFPROGRAMS

1. CreateasimpleHTMLformandaccepttheusernameanddisplaythenamethroughPHPechostate ment.
2. WriteaPHPscript to redirectausertoadifferentpage.
3. WriteaPHPfunctiontotestwhetheranumberisgreaterthan30,20or10usingternaryoperator.
4. CreateaPHPscriptwhichdisplaythecapitalandcountry namefromthegivenarray.Sortthe list bythename of thecountry.
5. WriteaPHPscripttocalculateanddisplayaveragetemperature,fivelowestandhighesttemperatur es.
6. Createascriptusingaforlooptoaddalltheintegersbetween0and30anddisplaythetotal.
7. WriteaPHPscript usingnestedforloopthatcreates achess board.
8. WriteaPHPfunctionthatchecksifastringis alllowercase.
9. WriteaPHP scripttocalculate thedifferencebetween twodates.
10. WriteaPHPscript to displaytimein aspecified time zone.

COURSEOUTCOME:

1. Knowall TheBasiccommands
2. Practicetheusageofhtml Tags andPHPstatements.
3. Applyvariouscommands inPHPfor simpleprograms
4. Analysistheuseoftimeanddateoperations.

SubjectTitle	SBECIII:MOBILEAPPLICATION DEVELOPMENT	Semester	V
Subject Code	21UISSP03	Specialization	NA
Type	SBEC:Practical	L:T:P:C	45:0:3:3

COURSEOBJECTIVE:

1. ToimpartPracticalTraininginandroiddevelopertools.
2. BuildprogramsusingFlutter/AndroidStudioenvironment.
3. Provideknowledge onworkingwithsimple androidapps.

LISTOFPROGRAMS:

1. SampleapplicationaboutAndroidResources
2. Sampleapplicationabout Layouts.
3. SampleapplicationaboutIntents.
4. SampleapplicationaboutUserInterfaces.
5. Sampleapplication aboutAnimations.
6. CreatecalculatorappinAndroid.
7. CreatesampleandroidCameraApplication.
8. Createbasiclist viewdemoin Android.

COURSEOUTCOME:

1. StudyalltheBasic Tools.
2. Practicetheusageofcontrolpanelobjects.
3. Applyvariouscommands forlayoutsandanimations.
4. AnalysistheuseofSQLiteI.

SubjectTitle	PROGRAMMINGINPYTHON	Semester	VI
SubjectCode	21UIS10	Specialization	NA
Type	Core:Theory	L:T:P:C	86:6:0:5

CourseObjective:

1. TounderstandthebasiccomponentsofcomputerprogrammingusingthePythonlanguage.
2. To demonstrate significant experience with the Python program developmentenvironment.

CONumber	COStatement	KnowledgeLevel
CO1	UnderstandtheBasicProgrammingLogic.	K1
CO2	UnderstandthebasicStatements.	K2
CO3	ImplementFilesandSQL.	K3
CO4	EvaluateGraphicsinpython.	K4
CO5	AnalyzeVersioncontrolsystem.	K5

SubjectTitle	PROGRAMMINGINPYTHON	Semester	VI	
Subject Code	21UIS10	Specialization	NA	
Type	Core:Theory	L:T:P:C	86:6:0:5	
Unit	Contents		Levels	Sessions
I	Python – origins – features – variable and assignment - Pythonbasics–statementandsyntax–Identifiers– Basicstyleguidelines – Python objects – Standard types and other built-intypes–Internaltypes–Standardtypeoperators–Standardtype built-infunctions.		K1	15
II	Numbers–IntroductiontoNumbers–Integers– Doubleprecisionfloatingpointnumbers–Complexnumbers– Operators – Numeric type functions – Sequences: Strings, ListsandTuples–Sequences–Stringsandstringsoperators–String built-inmethods–Lists–ListtypeBuiltinMethods–Tuples.		K2	11
III	Mappingtype:Dictionaries–Mappingtypeoperators–Mapping type Built-in and Factory Functions - Mapping typebuilt in methods – Conditionals and loops – if statement – elseStatement–elifstatement–conditionalexpression– whilestatement–forstatement–breakstatement–continuestatement – pass statement – Iterators and the iter( ) function - Files andInput/Output–Fileobjects–Filebuilt-infunctions–Filebuilt-in methods – File built-in attributes – Standard files – commandlinearguments.		K3	20
IV	Functions and Functional Programming – Functions – callingfunctions–creatingfunctions–passingfunctions–Built-inFunctions:apply(),filter(),map()andreduce()-Modules– Modules and Files – Modules built-in functions - classes – classattributes–Instances.		K4	20
V	DatabaseProgramming–Introduction-BasicDatabaseOperationsandSQL -Example of using Database Adapters,Mysql-RegularExpression– SpecialSymbolsandCharacters– REsandPython.		K5	20
	LearningResources			
TextBooks	TitleofBookPublisherYearofPublication1WesleyJ.ChunCorePythonProgramming PearsonEducation Publication 2012			
Reference Books	1 WesleyJ.ChunCorePythonApplicationProgrammingPearsonEducationPublication 2015 2 EricMatthes PythoncrashcourseWilliam pollock2016 3 ZedShaw LearnPython thehardwayAdditionWesley2017 4 MarkLutz Python pocketreferenceO'ReillyMedia2014Pedagogy			
Website /Link	1.https://www.tutorialspoint.com/python/ 2.www.spoken-tutorial.org			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	M	---
CO2	M	M	M	S
CO3	S	M	L	M
CO4	M	S	M	S
CO5	S	M	L	L

S-Strong,M-Medium,L–Low

Subject Title	PYTHONPROGRAMMING	Semester	VI
Subject Code	21UISP07	Specialization	NA
Type	Core:Practical	L:T:P:C	60:0:4:3

CourseObjectives:

1. ToimpartPractical Traininginbasicpython statements.
2. Familiarizewithcontrolflowtools.
3. Buildprograms usingdatastructureconcepts.
4. Provideknowledgeonworkingwithexceptionand stringhandling.

LISTOFPROGRAMS:

1. Createasimplecalculatortodoall thearithmeticoperations.
2. Writeaprogram to use controlflow tools like if.
3. Writeaprogram touse forloop.
4. Datastructures
    a. uselist asstack.
    b. uselist asqueue.
    c. tuple,sequence.
5. Createnewmoduleformathematicaloperations andusein yourprogram.
6. Writeaprogramtoreadandwritefiles,createanddeletedirectories.
7. Writeaprogramwithexceptionhandling.
8. Writeaprogram usingclasses.
9. ConnectwithMySQLandcreateaddressbook
10. Writeaprogram usingstringhandlingandregularexpressions

COURSEOUTCOME:

1. StudyalltheBasic commands.
2. Practicetheusageofcontrolflowstatements.
3. Applyvarious commandsin files anddirectories.
4. AnalysistheuseofMYSQLto connectdatabase.

SubjectTitle	QUANTITATIVEAPTITUDE	Semester	VI
Subject Code	21UISS01	Specialization	NA
Type	Theory	L:T:P:C	41:3:0:3

CourseObjective:

1. Toimprovethequantitativeskillsof thestudents.
2. Topreparethestudents forvariouscompetitiveexams.

CO Number	COStatement	KnowledgeLevel
CO1	Remember thebasicmathematicalfunctions.	K1
CO2	Understandtheproblemsofages,profitsandloss.	K2
CO3	Demonstratetherelationshipoftimewithworkanddistance.	k3
CO4	Implementpermutationandcombinationsproblem.	K4
CO5	Analyzedatarepresentationmethods.	K5

SubjectTitle	QUANTITATIVEAPTITUDE	Semester	VI	
Subject Code	21UISS01	Specialization	NA	
Type	SBEC:Theory	L:T:P:C	41:3:0:3	
Unit	Contents		Levels	Sessions
I	Numbers-HCFandLCMofnumbers-Decimalfractions-Simplification-Squarerootsandcuberoots-Average-problemsonNumbers.		K1	8
II	ProblemsonAges-SurdsandIndices-percentage-profitsandloss-ratioand proportion -partnership-Chainrule.		K2	8
III	Timeandwork-pipesandcisterns-TimeandDistance-problemson trains-Boatsandstreams-simpleinterest-compoundinterest-Logarithms -Area-Volumeandsurface area-racesandGamesofskill.		K3	8
IV	Permutationandcombination-probability-TrueDiscount-BankersDiscount-HeightandDistances-Oddmanout&Series.		K4	8
V	Calendar-Clocks-stocksandshares-Datarepresentation-Tabulation -BarGraphs-Piecharts - Linegraphs.		K5	9
	LearningResources			
TextBooks	-Quantitative Aptitude‖,R.S. AGARWAL., S. Chand &CompanyLtd.,			
Reference Books	-Quantitative Aptitudefor Competitive examinations‖AbhijitGuha– 4th edition – TataMH			
Website /Link	1.https://textbook.com/aptitude2.www.carrierbless.com/aptitude/qa/home.php			

MappingwithProgrammeOutcomes

CO Number	PO1	PO2	PO3	PO4
CO1	S	S	M	---
CO2	M	M	M	S
CO3	S	M	L	M
CO4	M	S	M	S
CO5	S	M	L	L

S-Strong,M-Medium,L–Low

MINI PROJECT

IIIYEAR/ VI SEM

OBJECTIVES:
Theaimoftheminiprojectisthatthestudenthastounderstandtherealtimesoftwaredevelopment environment. The student should gain a thorough knowledge in the problem andlanguage/ softwarewhich he/she has selectedfortheirproject work.

Project Planning:
B.Sc (Computer Science /Information Science)/BCA Mini Project isan involved exercise,which has to be planned well in advance. The topic should be chosen in the beginning of finalyear itself. Related reading training and discussions of project should be completed in the firsttermoffinalyear.

ISelection ofTeam
To meet the stated objectives, it is imperative that mini project is done through a team effort.Though it would be ideal to select the team members at random and this should be stronglyrecommended, due to practical consideration students may also be given the choice of formingthemselves into teams with Two members. A team leader shall be selected. Team shall maintainthe minutes of meeting of the team members and ensure that tasks have been assigned to everyteam member in writing. Team meeting minutes shall form a part of the project report. Even ifstudents are doing project as groups, each one must independently take different modules of theworkand must submit thereport.

II Selection of Tools
No restrictions shall be placed on the students in the choice of platform/tools/languages to beutilized for their project work, though open source is strongly recommended, wherever possible.Novalue shall beplacedon the useoftools intheevaluation of theproject.

III ProjectEvaluation:

ContinuousInternalAssessment	:	40Marks
Evaluation(External)	:	40Marks
Viva-voce(jointly)	:	20Marks

Thereshallbeacommonwrittenexaminationconductedforallthecandidatesineachgrouptogetherfor aminimumof10 minutes.

(i) RequirementSpecificationofProject
(ii) DesignofProject
(iii) TestingandImplementationofProject

IV REGULATIONSOF PROJECTWORK

- Three copiesoftheprojectreportmust besubmittedbyeachstudent..
- Thefinalouterdimensionsoftheprojectreportshall be21cm X30cm.

- Onlyhardbindingshouldbedone.Thetextofthereportshouldbesetin12pt,Times New Roman, 1.5 spaced.
- Headingsshouldbesetasfollows:CHAPTERHEADINGS16pt,Arial,Bold,All caps, Centered.
- SectionHeadings14ptBookmanoldstyle,Bold, Leftadjusted.
- SectionSub-heading12 pt,Bookmanoldstyle.
- Title of figures tables etc are done in 12 point, Times New Roman, Italics,centered.
- Only 1.5 space need be left above a section or subsection heading andnospacemaybeleft after them.
- References shall be IEEE format (see any IEEE magazine for detail) Whiledoing the project keep note of all books you refer, in the correct format andincludethem in alphabetical order inyour referencelist.
- The Candidate should submit the filled in format as given in Annexure-I to thedepartmentforapproval duringtheFirst Week ofDecember.
- Periodicallytheproject shouldbereviewed.
- ASampleformatisenclosedinAnnexure-II.
- FormatoftheTitlepage andCertificateareenclosedinAnnexureIII.
- Thestudentsmayusepowerpoint presentationduringtheirvivavoceexamination.

ANNEXURE-I

PERIYARUNIVERSITY

NameoftheCollege :

Programme :

NameoftheStudent :

RegisterNumber :

TitleoftheProjectWork :

AddressofOrganization/Institution:

Nameofthe Internal Guide :

Qualification :

Place:

Date: SignatureofInternalGuide

ANNEXURE59

CONTENTS

ANNEXURE60

A. Formatofthetitlepage

TITLEOFTHEPROJECTWORK

A Project Work submitted in partial fulfillment

oftherequirementsfor thedegreeof

Bachelor of Science in ComputerScience/InformationScien ce

tothe

PeriyarUniversity,Salem-11

By

NAME OF

THESTUDENTREG.

NO.

College emblem

COLLEGENAME

(AFFILIATEDTOPERIYARUNIVERSITY)

PLACEwithPinCode

MONTH– YEAR

B. FormatoftheCertificate

NameandAddressoftheInternal Guide

Date

CERTIFICATE

Thisisto certifythattheProjectWorkentitled_____

submitted in partial fulfillment of the requirements of the degree of Bachelor of Science in ComputerSciences/Information Science/Computer Applications to the Periyar University, Salem is a record ofbonafideworkcarried outby ..... Reg. No.under mysupervisionandguidance.

InternalGuide

HeadoftheDepartment

DateofViva-voice:

InternalExaminer ExternalExaminer

ELECTIVEI

SubjectTitle	SEMESTER – V PAPER – IARTIFICIALINTELLIGENCE	Semester	V
SubjectCode	21UISE01	Specialization	NA
Type	Elective:Theory	L:T:P:C	71:5:0:4

CourseObjective:

1. Tomakethestudentunderstandtheconcepts ofArtificialIntelligence.
2. TofamiliarwithvariousAITechniquesandExpert Systems.
3. Tohaveenrichedknowledge regardingheuristicsearch, KnowledgerepresentationandExpertsystems

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasic conceptsofArtificial Intelligence.	K1
CO2	UnderstandingHeuristicSearchtechniques.	K1,K2
CO3	ApplyKnowledgerepresentations.	K3
CO4	EvaluateUsingPredicateLogic.	K4
CO5	ImplementExpertSystem.	K5

SubjectTitle	SEMESTER – V PAPER – IARTIFICIALINTELLIGENCE	Semester	V	
Subject Code	21UISE01	Specialization	NA	
Type	Elective:Theory	L:T:P:C	71:5:0:4	
Unit	Contents		Levels	Sessions
I	Introduction:AIProblems–AItechniques–Criteriaforsuccess.Problems,ProblemSpaces,Search:Statespacesearch–ProductionSystems–ProblemCharacteristics–Issues in design of Search.		K1	15
II	HeuristicSearchtechniques:GenerateandTest–HillClimbing – Best-Fist, Problem Reduction, Constraint Satisfaction,Means-endanalysis.		K1,K2	15
III	Knowledge representation issues: Representations andmappings– ApproachestoKnowledgerepresentations– IssuesinKnowledge representations–FrameProblem.		K3	15
IV	Using Predicate Logic: Representing simple facts in logic – RepresentingInstanceandIsarelationships– Computablefunctionsandpredicates–Resolution – Naturaldeduction.		K4	15
V	Representingknowledgeusingrules:ProceduralVsDeclarative knowledge – Logic programming – Forward VsBackward reasoning – Matching – Control knowledge BriefexplanationofExpertSystems-Definition-Characteristics-architecture-KnowledgeEngineering-ExpertSystemLife Cycle-Knowledge Acquisition Strategies- Expert SystemTools.		K5	11
	LearningResources			
TextBooks	ElaineRichandKevinKnight,ShivaShankarNair,–*ArtificialIntelligence*‖, McGraw-Hill Companies, 3rd edition.			
Reference Books	1. StuartRussell&PeterNorvig,–*ArtificialIntelligenceAModernApproach*‖, Perason, 2nd Edition. 2. GeorgeFLuger ,–*ArtificialIntelligence"*, Pearson2002, 4th Edition. 3. VSJanakiRaman,KSarukesi, PGopalakrishnan, –*Foundationsof ArtificialIntelligentandExpertSystems*‖,MacMillanIndialimited.			
Website/ Link	NPTEL&MOOCcoursestitledArtificial IntelligenceandExpertSystems1.https://nptel.ac.in/courses/106106140/2.https://nptel.ac.in/courses/106106126/			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	M	S	M	L
CO2	S	M	M	L
CO3	S	M	M	L
CO4	M	S	M	L
CO5	S	M	L	L

S-Strong,M-Medium ,L–Low

SubjectTitle	SEMESTER–VPAPER–II COMPUTERNETWORKS	Semester	V
SubjectCode	21UISE02	Specialization	NA
Type	Elective:Theory	L:T:P:C	71:5:0:4

CourseObjective:

1. TounderstandtheconceptofComputerNetwork.
2. Toimpartknowledgeaboutnetworkingandinternetdevices.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthеconceptofnetworksanditstypes.	K1
CO2	Understandingthe wirelesscommunications.	K2
CO3	UnderstandandApplydata link protocols.	K3
CO4	Evaluatethenetworkdesignissues.	K3,K4
CO5	Analyzethe connectionissues.	K5

Subject Title	SEMESTER – V PAPER – IICOMPUTERNETWORKS	Semester	V	
Subject Code	21UISE02	Specialization	NA	
Type	Elective:Theory	L:T:P:C	71:5:0:4	
Unit	Contents		Levels	Sessions
I	Introduction–NetworkHardware-Software-ReferenceModels-OSIandTCP/IPModels-ExampleNetworks:Internet,ATM,EthernetandWirelessLANs-PhysicalLayer -TheoreticalBasisforDataCommunication-GuidedTransmission Media.		K1	15
II	Wireless Transmission - Communication Satellites - TelephoneSystem:Structure,LocalLoop,Trunksand MultiplexingandSwitching.DataLinkLayer:DesignIssues-ErrorDetectionandCorrection.		K2	15
III	Elementary Data Link Protocols - Sliding Window Protocols - Data Link Layer in the Internet - Medium Access Layer - Channel Allocation Problem - Multiple Access Protocols - Bluetooth.		K3	15
IV	NetworkLayer-DesignIssues-RoutingAlgorithms-Congestion Control Algorithms - IP Protocol - IP Addresses - InternetControl Protocols.		K3,K4	15
V	TransportLayer-Services-ConnectionManagement-Addressing,EstablishingandReleasingaConnection - SimpleTransportProtocol-InternetTransportProtocols(ITP)-NetworkSecurity:Cryptography.		K5	11
	LearningResources			
Text Books	A.S.Tanenbaum,―ComputerNetworks‖,Prentice-HallofIndia2008,4thEdition.			
Reference Books	1. Stallings,–DataandComputerCommunications‖,PearsonEducation2012,7th Edition. 2. B. A. Forouzan, –Data Communicationsand Networking‖,Tata McGrawHill 2007, 4th Edition. 3. F. Halsall, –Data Communications, Computer Networksand Open Systems‖, PearsonEducation 2008.			
Website/ Link	NPTEL&MOOCcoursestitledComputerNetworkshttps://nptel.ac.in/courses/106106091/			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	S	-
CO2	S	M	M	S
CO3	S	L	L	M
CO4	M	S	M	S
CO5	S	L	S	S

S-Strong,M-Medium,L –Low

SubjectTitle	SEMESTER – V PAPER – IIIMOBILECOMPUTING	Semester	V
Subject Code	21UISE03	Specialization	NA
Type	Elective: Theory	L:T:P:C	71:5:0:4

CourseObjective:

1. Tomakethestudent understandtheconcepts ofmobilecomputing.
2. Tofamiliarwiththenetworkprotocolstack.
3. Tobeexposedto Ad-Hocnetworks.
4. Gainknowledge aboutdifferentmobileplatformsandapplicationdevelopment.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasicconcepts ofmobile computing.	K1
CO2	Understandingmobile IP.	K1,K2
CO3	ApplyMobileTelecommunicationsystem.	K3
CO4	Evaluatemobileadhocsystem.	K4
CO5	Implementmobileoperatingsystem.	K5

SubjectTitle	SEMESTER–VPAPER–III MOBILECOMPUTING	Semester	V	
Subject Code	21UISE03	Specialization	NA	
Type	Elective:Theory	L:T:P:C	71:5:0:4	
Unit	Contents		Levels	Sessions
I	Introduction-MobileComputing– MobileComputingVswirelessNetworking– MobileComputingApplications–Characteristics of Mobile computing – Structure of MobileComputingApplication.MACProtocols– WirelessMACIssues FixedAssignmentSchemes–RandomAssignmentSchemes –Reservation BasedSchemes		K1	15
II	Mobile Internet Protocol and Transport Layer-Overview ofMobileIP–FeaturesofMobileIP–KeyMechanisminMobileIP– routeOptimization.OverviewofTCP/IP– Architecture of TCP/IP- Adaptation of TCP Window – ImprovementinTCPPerformance.		K1,K2	15
III	Mobile Telecommunication System-Global System forMobileCommunication(GSM)– GeneralPacketRadio Service(GPRS)– UniversalMobileTelecommunicationSystem(UMTS).		K3	15
IV	MobileAd-HocNetworks-Ad-HocBasicConcepts– Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols –Popular RoutingProtocols–VehicularAdHocnetworks(VANET)– MANETVs VANET–Security.		K4	15
V	Mobile Platforms and Applications-Mobile Device OperatingSystems – Special Constrains & Requirements – CommercialMobile Operating Systems – Software Development Kit: iOS,Android,BlackBerry,WindowsPhone– M-Commerce– Structure– Pros & Cons – Mobile Payment System – SecurityIssues.		K5	11
	LearningResources			
TextBooks	PrasantKumarPattnaik,RajibMall,–*FundamentalsofMobileComputing*‖, PHILearningPvt.Ltd,New Delhi 2012.			
Reference Books	1. JochenH.Schller,–*MobileCommunications*‖,PearsonEducation,NewDelhi, 2007, 2nd Edition. 2. DharmaPrakashAgarval,QingandAnZeng,"*IntroductiontoWirelessandMobilesystems*", Thomson Asia PvtLtd.2005. 3. UweHansmann,LotharMerk,MartinS.NicklonsandThomasStober, –*Principles of MobileComputing*‖, Springer 2003.			

Website/ Link	NPTEL & MOOC courses titled Mobile Computing1.https://www.smartzworld.com/notes/mobile-computing-pdf-notes-mc-notes-pdf/2.https://www.vidyarthiplus.com/vp/Thread-IT6601-Mobile-Computing-Lecture-Notes-All-Uni

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	M	S	M	L
CO2	S	M	M	L
CO3	S	M	M	L
CO4	M	S	M	L
CO5	S	M	L	L

S-Strong,M-Medium ,L–Low

ELECTIVEII

SubjectTitle	SEMESTER – VI PAPER - IDATAMININGANDWAREHOUSING	Semester	VI
SubjectCode	21UISE04	Specialization	NA
Type	Elective:Theory	L:T:P:C	86:6:0:4

CourseObjective:

1. Tointroducethebasicconceptsandtechniquesof DataMining.
2. Tostudythebasicconcepts of cluster analysis.
3. Tostudyasetoftypicalclusteringmethodologies,algorithms andapplications.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasic concepts ofdatamining anddatapreprocessing.	K1
CO2	Understandingthe data miningprimitives.	K2
CO3	Applymining associationrule.	K3
CO4	EvaluateclassificationandPrediction.	K4
CO5	Implementclusteranalysis.	K5

Subject Title	SEMESTER – VI PAPER – IDATAMININGANDWAREHOUSING	Semester	VI	
Subject Code	21UISE04	Specialization	NA	
Type	Elective:Theory	L:T:P:C	86:6:0:4	
Unit	Contents		Levels	Sessions
I	Introduction:Dataminingapplication–data miningtechniques–dataminingcasestudies-thefutureofdatamining–dataminingsoftware-Associationrulesmining:basics-taskandanaïvealgorithm-Apriorialgorithm– improve the efficient of theApriorialgorithm–miningfrequentpatternwithoutcandidate generation(FP-growth)–performanceevaluationofalgorithms.		K1	17
II	Classification:Introduction–decisiontree–overfittingandpruning-DTrules-Naivebayesmethod-estimationpredictive accuracyofclassificationmethods-otherevaluationcriteriaforclassificationmethod–classificationsoftware.		K2	17
III	Cluster analysis: cluster analysis – types of data – computingdistances-typesofclusteranalysismethods-partitionedmethods–hierarchical methods –density based methods– dealing withlarge databases–qualityandvalidityofclusteranalysismethods-clusteranalysissoftware.		K3	17
IV	Webdatamining:Introduction-webterminologyandcharacteristics-locality and hierarchy in the web- web contentmining-web usage mining- web structure mining – web miningsoftware - Search engines: Search engines functionality-searchenginesarchitecture–rankingofwebpages.		K4	17
V	Data warehousing: Introduction – Operational data sources-datawarehousing - Data warehousing design – Guidelines for datawarehousingimplementation-Datawarehousingmetadata-Onlineanalyticalprocessing(OLAP):Introduction–OLAPcharacteristicsofOLAPsystem–Multidimensionalviewand data cube - Data cube implementation - Data cube operationsOLAPimplementationguidelines.		K5	18
	LearningResources			
Text Books	G.K.Gupta,–IntroductiontoDataminingwithcasestudies‖,2nd Edition,PHI Privatelimited, NewDelhi, 2011			
Reference Books	Arun KPujari,–DataMiningTechniques‖, 10th impression, UniversityPress,2008.			
Website/ Link	NPTEL & MOOC courses titled Data Mining1.http://nptel.iitm.ac.in/video.php?subjectId=106106092.http://cecs.louisville.edu/datamining/PDF/0471228524.pdf			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	M	-
CO2	S	L	M	S
CO3	S	M	L	M
CO4	M	S	-	S
CO5	S	L	M	S

S-Strong,M-Medium ,L–Low

SubjectTitle	SEMESTER – VI PAPER – IIWIRELESSNETWORK	Semester	VI
SubjectCode	21UISE05	Specialization	NA
Type	Elective:Theory	L:T:P:C	86:6:0:4

CourseObjective:

1. Tounderstandabout WirelessNetworks.
2. TofamiliarwithProtocolStackandStandards.
3. Tobeexposedto3G/4GServices.
4. GainknowledgeaboutItsProtocolsandApplications.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasicconcepts ofWLAN technologies.	K1
CO2	Understandingmobile IP.	K2
CO3	ApplyTCPenhancements.	K3
CO4	EvaluateUTMS.	K4
CO5	Implement4G.	K5

Subject Title	SEMESTER–VIPAPER– IIWIRELESSNETWORK	Semester	VI	
Subject Code	21UISE05	Specialization	NA	
Type	Elective:Theory	L:T:P:C	86:6:0:4	
Unit	Contents		Levels	Sessions
I	Introduction-WLAN Technologies: Infrared, UHF Narrowband,Spread Spectrum -IEEE802.11: System Architecture, ProtocolArchitecture, Physical Layer, MAC Layer, 802.11b, 802.11a – HiperLAN:WATM,BRAN,HiperLAN2– Bluetooth:Architecture,RadioLayer,BasebandLayer,LinkManagerProtocol,Security–IEEE802.16-WIMAX:PhysicalLayer,MAC, Spectrum Allocation for WIMAX.		K1	18
II	Introduction–MobileIP:IPPacketDelivery,AgentDiscovery, Tunneling And Encapsulation, IPV6-Network LayerInTheInternet-MobileIPSessionInitiationProtocol–Mobile Ad-Hoc Network: Routing, Destination Sequence DistanceVector,DynamicSourceRouting.		K2	18
III	TCP Enhancements For Wireless Protocols – Traditional TCP:CongestionControl,FastRetransmit/FastRecovery,ImplicationsOfMobility– ClassicalTCPImprovements:IndirectTCP,SnoopingTCP,Mobile TCP,TimeOutFreezing, Selective Retransmission, Transaction Oriented TCP – TCPOver3GWireless Networks.		K3	18
IV	Overview Of UTMS Terrestrial Radio Access Network-UMTSCore Network Architecture: 3G-MSC, 3G-SGSN, 3G-GGSN,SMS-GMSC/SMS-IWMSC, Firewall, DNS/DHCP-High SpeedDownlinkPacketAccess(HSDPA)-LTENetworkArchitectureAnd Protocol.		K4	18
V	4GIntroduction – 4G Vision – 4G Features And Challenges – ApplicationsOf4G– 4GTechnologies:MulticarrierModulation,SmartAntennaTechniques,OFDM-MIMOSystems,AdaptiveModulationAnd Coding WithTime SlotScheduler,CognitiveRadio.		K5	14
	LearningResources			
Text Books	1. JochenSchiller,‖MobileCommunications‖,SecondEdition,PearsonEducation2012.(UnitI,II,III) 2. VijayGarg,–WirelessCommunicationsAndNetworking‖,FirstEdition, Elsevier2007.(UnitIV,V)			
Reference Books	1. Erik Dahlman, Stefan Parkvall, Johan SkoldAndPer Beming, –3GEvolution HSPAAndLTEForMobileBroadband‖,SecondEdition,AcademicPress,2008. 2. AnuragKumar,D.Manjunath,JoyKuri,–WirelessNetworking‖,FirstEdition, Elsevier2011. 3. Simon Haykin , Michael Moher, David Koilpillai, –Modern WirelessCommunications‖, First Edition, Pearson Education 2013			

Website/ Link	1.www2.scut.edu.cn2.www.iqyt echnicalcollege.com3.www.reji nPaul.com

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	M	S	S	L
CO2	S	S	M	L
CO3	S	M	L	L
CO4	M	S	L	L
CO5	S	M	M	L

S-Strong,M-Medium ,L–Low

SubjectTitle	SEMESTER – VI PAPER – IIICOMPUTERGRAPHICS	Semester	VI
SubjectCode	21UISE06	Specialization	NA
Type	Elective:Theory	L:T:P:C	86:6:0:4

CourseObjective:

1. Tounderstandabout ComputerGraphics.
2. TofamiliarwithscanandI/Odevices.
3. Tobeexposedto2DTransformations andclipping.

CO Number	COStatement	KnowledgeLevel
CO1	RememberthebasicconceptsofGraphics system.	K1
CO2	Understandingscansystem and I/ODevices.	K2
CO3	Apply2DTransformations.	K3
CO4	Evaluate3DTransformations.	K4
CO5	Implementvisualsurfacetechniques.	K5

Subject Title	SEMESTER – VI PAPER – IIICOMPUTERGRAPHICS	Semester	VI	
Subject Code	21UISE06	Specialization	NA	
Type	Elective:Theory	L:T:P:C	86:6:0:4	
Unit	Contents		Levels	Sessions
I	Overview of graphics Systems: Video Display Device – RefreshCathode-RaytubesRaster–ScanDisplaysRandom–ScanDisplays–ColorCRTMonitors–DirectviewStoragetubesFlat–PanelDisplaysThree–DimensionalViewingDevices.StereoscopicandVirtual–RealitySystems.		K1	18
II	Raster–ScanSystemsVideoController–Random–ScanSystemsVideoController–Random-ScanSystems–Inputdevice–KeyboardMouse–TrackballandSpaceball.Joysticks – Data Glove – Digitizers- Image Scanners – Touch Panels – Lightpens.VoiceSystems–Hard-CopyDevices–LineDrawingAlgorithmsDDAAlgorithms–CirclegeneratingAlgorithm Properties of Ellipses		K2	18
III	TwoDimensionalGeometricTransformation:BasicTransformations- Translation–Rotation–Scaling – MatrixRepresentationsandHomogeneousCoordinates–OtherTransformationsReflectionsTwoDimensionalViewing:WindowstoviewpointcoordinateTransformations–Clipping Operations – Point Clipping – Line Clipping – Curve Clipping – TextClipping– ExteriorClipping.		K3	18
IV	ThreeDimensionalConcepts:ThreeDimensionalDisplaymethod – Parallel projection – Depth cueing - visible line andsurface–ThreeDimensionalGeometricandmodelingTransformations: Translation – Rotation - Scaling – CompositeTransformations.ThreeDimensionalViewing:Viewing pipeline – Viewing Coordinates– Projections – Parallel Projections – PerspectiveProjections.		K4	18
V	VisibleSurfaceDetectionMethods:ClassificationVisibleSurfaceDetectionAlgorithms–BackFaceDetection–Depth–BufferMethod–A-BufferMethod–Scanlinemethod–Depthsortingmethod –BSP treemethod – AreaSubdivisionMethod.		K5	14
	LearningResources			
Text Books	DonaldHearn&M.PaulineBaker ,‖ComputerGraphics‖,2nd Edition, 1996			
Reference Books	Johnf.Hughes,AndriesVanDam,MorganMcguire,DavidF.Sklar,JamesD.Foley,StevenK.Feiner,KurtAkeley,‖*ComputerGraphics*PrinciplesandPractice‖ 3rd*Edition*,PearsonEducation,2014.			
Website /Link	1.www.javatpoint.com/computer-graphics2.www.taylorfrancis.com			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	M	S	M	L
CO2	S	M	M	M
CO3	S	M	L	L
CO4	M	S	L	M
CO5	S	S	M	L

S-Strong,M-Medium ,L–Low

ELECTIVEIII

SubjectTitle	SEMESTER–VIPAPER–ISOFTWARETESTING	Semester	VI
Subject Code	21UISE07	Specialization	NA
Type	Elective:Theory	L:T:P:C	86:6:0:4

CourseObjective:

1. Tostudyvarious Software techniques.
2. To studyfundamental conceptsin softwaretesting.

CO Number	COStatement	KnowledgeLevel
CO1	RememberthebasicconceptsofSDLC.	K1
CO2	UnderstandingBlockbox testing.	K2
CO3	Applysystemtesting.	K3
CO4	Evaluateperformancetesting.	K4
CO5	Implementtestplanning.	K5

Subject Title	SEMESTER–VIPAPER–I SOFTWARETESTING	Semester	VI	
Subject Code	21UISE07	Specialization	NA	
Type	Elective:Theory	L:T:P:C	86:6:0:4	
Unit	Contents		Levels	Sessions
I	SOFTWAREDEVELOPMENT LIFE CYCLE MODELS: PhasesofSoftwareproject–Quality,QualityAssurance,Quality control – Testing, Verification and Validation – ProcessModeltorepresentDifferentPhases-LifeCyclemodels.White-BoxTesting:StaticTesting– StructuralTesting–Challenges inWhite-BoxTesting		K1	18
II	BLACK-BOX TESTING: What is Black-Box Testing? - WhyBlack-Box Testing? – When to do Black-Box Testing?– HowtodoBlack-BoxTesting?IntegrationTesting:Integration Testing as Type of Testing – Integration Testing as a Phase ofTesting– Scenario Testing- DefectBash		K2	18
III	SYSTEMANDACCEPTANCETESTING:SystemTesting Overview – Why is System testing done? – Functional versusNon-functionalTesting-FunctionalSystemTesting-Non-FunctionalTesting-AcceptanceTesting-SummaryofTesting Phases		K3	18
IV	PERFORMANCE TESTING: Factors Governing PerformanceTesting – Methodology for Performance Testing - Tools forPerformanceTesting-ProcessforPerformanceTesting-Challenges. Regression Testing: What is Regression Testing? – TypesofRegressionTesting–Whento doRegressionTesting? – How to do Regression Testing? – Best Practices in RegressionTesting		K4	18
V	TESTPLANNING,MANAGEMENT,EXECUTIONAND REPORTING:TestPlanning–TestManagement-TestProcess – Test Reporting. Quick Test Professional (QTP): Overview ofQTP – Testing an Application using QTP – Creating CheckPoints–TestingDatabaseApplication– TestingaWebApplication		K5	14
	LearningResources			
Text Books	SrinivasanDesikan,GopalaswamyRameshSoftwareTestingPrinciplesandPractices, Pearson Education 2012			
Reference Books	1. Dr.K.V.K.K.Prasad,SoftwareTestingTools,DreamtechPress2012 2. RenuRajani,TestingPractitioner,HandbookPacktPublishingLimited2017 3. NareshChauhan ,SoftwareTesting,Oxford UniversityPress2nd edition, 2016			
Website/ Link	https://s3_ap_southeast-1,amazonaws.com/tv-prod/documents%2F7619-2.software+system+principles+and+practices_srinivasan+desikan_gopalaswamy+ramesh.pdf			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	L	L
CO2	S	M	L	M
CO3	S	M	L	L
CO4	L	S	M	M
CO5	S	M	M	L

S-Strong,M-Medium ,L–Low

SubjectTitle	SEMESTER – VI PAPER – IINETWORKSECURITY	Semester	VI
SubjectCode	21UISE08	Specialization	NA
Type	Elective:Theory	L:T:P:C	86:6:0:4

CourseObjective:

1. ToUnderstand OSIsecurityarchitecture.
2. Toacquirefundamentalknowledgeoffinitefieldsand numbertheory.
3. ToUnderstandvariousblockcipherandstreamciphermodels.
4. Studytheprinciples ofsymmetric&publickeycryptosystems.
5. Tolearn thesystemsecuritypractices.

CO Number	COStatement	KnowledgeLevel
CO1	RemembertheOSISecurityArchitecture.	K1
CO2	UnderstandingNumber theoryandfinitefields.	K2
CO3	ApplyBlockCiphersand DataEncryption Std.	K3
CO4	EvaluatePublicKeyCryptographyand RSA.	K4
CO5	ImplementHashfunctions.	K5

Subject Title	SEMESTER–VIPAPER– IINETWORKSECURITY	Semester	VI	
Subject Code	21UISE08	Specialization	NA	
Type	Elective:Theory	L:T:P:C	86:6:0:4	
Unit	Contents		Levels	Sessions
I	OSISecurityArchitecture– Securityattacks,servicesandmechanisms – Network security Model – Classical encryptiontechniques: Symmetric cipher model, Substitution techniques –Transposition techniques– Rotor machines–Steganography		K1	18
II	Numbertheoryandfinitefields:TheEuclideanalgorithm–Modular arithmetic-Groups,RingsandFields–Finite fieldsof theFormGF(p)–Polynomialarithmetic–primenumbers– Fermat'sand eulerstheorems		K2	18
III	Block Ciphers and Data Encryption Standard: Traditional blockcipherstructure–DataEncryption–Strengthsof DES– BlockCipherDesignPrinciples–AdvancedEncryption Standard – AES structure – AES transformation functions – AES Keyexpansion–implementation		K3	18
IV	Public Key Cryptography and RSA – Principles of Public-keyCryptosystems–RSAalgorithm-Diffie– HellmanKeyexchange-Elgamal Cryptographic System		K4	18
V	Hash functions – Applications – two simple hash functions – Hash functions based on Cipher block chaining - Secure HashAlgorithm (SHA)		K5	14
	LearningResources			
Text Books	WilliamStallings,–*CryptographyandNetworkSecurity:PrinciplesandPractice*‖, PearsonEducation 2013,6th Edition.			
Reference Books	1. BehrouzA. Ferouzan, –*Cryptography&NetworkSecurity*‖, Tata McGraw Hill2007. 2. Man YoungRhee, –*Internet Security: CryptographicPrinciples,Algorithms andProtocols*‖, WileyPublications2003. 3. CharlesPfleeger, –*Security in Computing*‖, Prentice Hall of India 2006, 4th Edition. 4. UlysessBlack,–*Internet SecurityProtocols",* PearsonEducation Asia2000. 5. Charlie Kaufman and RadiaPerlman, Mike Speciner, –*NetworkSecurity, PrivateCommunicationinPublicWorld*‖,PHI2002,2nd Edition.			
Website /Link	NPTEL & MOOC courses titled NetworkSecurityhttps://nptel.ac.in/courses/10610 5031/			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	M	L
CO2	S	M	L	L
CO3	S	M	L	L
CO4	M	L	S	M
CO5	S	M	M	L

S-Strong,M-Medium ,L–Low

SubjectTitle	SEMESTER–VIPAPER–III INTERNETOFTHINGS	Semester	VI
SubjectCode	21UISE09	Specialization	NA
Type	Elective:Theory	L:T:P:C	86:6:0:4

CourseObjective:

1. UseofDevices,Gateways andDataManagementinIoT.
2. DesignIoTapplications indifferentdomainandbeabletoanalyzetheirperformance
3. ImplementbasicIoTapplications onembeddedplatform**.**

CO Number	COStatement	KnowledgeLevel
CO1	RememberIoTandWebtechnology.	K1
CO2	UnderstandingM2M toIoT.	K2
CO3	ApplyIoTArchitecture.	K3
CO4	Evaluate IoTApplications.	K4
CO5	ImplementIoTPrivacy,Securityand Governance.	K5

Subject Title	SEMESTER–VIPAPER–III INTERNETOFTHINGS	Semester	VI	
Subject Code	21UISE09	Specialization	NA	
Type	Elective:Theory	L:T:P:C	86:6:0:4	
Unit	Contents		Levels	Sessions
I	IoT& Web Technology, The Internet of Things Today, Time forConvergence,TowardstheIoT Universe,Internetof ThingsVision, IoT Strategic Research and Innovation Directions, IoTApplications,FutureInternetTechnologies,Infrastructure,Networks and Communication, Processes, Data Management,Security,Privacy&Trust,DeviceLevelEnergyIssues,IoT Related Standardization, Recommendationson ResearchTopics.		K1	18
II	M2MtoIoT–ABasicPerspective– Introduction,SomeDefinitions,M2MValueChains,IoTValueChains,Anemerging industrial structure for IoT, The international drivenglobal value chain and global information monopolies. M2M toIoT-AnArchitectural Overview–Buildingan architecture,Main design principles and needed capabilities, An IoT architectureoutline,standardsconsiderations.		K2	18
III	IoTArchitecture-StateoftheArt– Introduction,Stateoftheart,Architecture.ReferenceModel-Introduction,ReferenceModelandarchitecture,IoTreferenceModel,IoTReferenceArchitecture-Introduction,FunctionalView,InformationView,Deploymentand OperationalView,OtherRelevant architecturalviews		K3	18
IV	IoTArchitectureIntroduction,IoTapplicationsforindustry:Future Factory Concepts, Brownfield IoT, Smart Objects, SmartApplications, Four AspectsinyourBusiness toMasterIoT,ValueCreationfromBigDataandSerialization,IoTfor RetailingIndustry,IoTForOilandGasIndustry,Opinionson IoT Application and Value for Industry, Home Management, e-Health.		K4	18
V	Internet of Things Privacy, Security and GovernanceIntroduction,OverviewofGovernance,PrivacyandSecurityIssues,ContributionfromFP7Projects,Security,PrivacyandTrustinIoT-Data-PlatformsforSmartCities,FirstStepsTowardsaSecurePlatform,SmartieApproach.DataAggregation fortheIoTin Smart Cities, Security		K5	14
	LearningResources			
Text Books	VijayMadisettiandArshdeepBahga,–*InternetofThings:(AHands-onApproach)*‖, Universities Press (INDIA) PrivateLimited 2014,1st Edition.			

Reference Books	1. MichaelMiller,–*TheInternetofThings:HowSmartTVs,SmartCars,Smart Homes,andSmartCitiesAre ChangingtheWorld*‖,PearsonEducation2015. 2. FrancisdaCosta,–*RethinkingtheInternetofThings:AScalableApproachto*

	ConnectingEverything‖,ApressPublications2013,1st Edition. **3.** WaltenegusDargie, Christian Poellabauer,"*Fundamentals ofWireless SensorNetworks:Theoryand Practice*‖, Wiley2014**.** **4.** CunoPfister, ‒*Getting Started with the Internet of Things*‖, O'Reilly Media2011.
Website /Link	1.https://github.com/connectIOT/iottoolkit2.https:// www.arduino.cc/3.http://www.zettajs.org/

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	M	L
CO2	S	M	M	L
CO3	S	M	M	M
CO4	M	L	S	M
CO5	S	L	M	L

S-Strong,M-Medium ,L–Low

NONMAJORELECTIVECOURSE(NMEC)-I

Subject Title	SEMESTER – III PAPER – IBASICSOFCOMPUTERS	Semester	III
Subject Code	21UISN01	Specialization	NA
Type	NMEC:Theory	L:T:P:C	26:2:0:2

CourseObjective:

1. ToUnderstandthebasicsofcomputers.
2. Topreparethestudentsforanalyzedataprocessing.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasicsof computers.	K1
CO2	Understandnumbersystem.	K2
CO3	Demonstratethefunctionsofcomputersystem.	k3
CO4	Studytheinput andoutputsystem.	K4
CO5	Analyzedataprocessing.	K5

Subject Title	SEMESTER – III PAPER – IBASICSOFCOMPUTERS	Semester	III	
Subject Code	21UISN01	Specialization	NA	
Type	NMEC:Theory	L:T:P:C	26:2:0:2	
Unit	Contents		Levels	Sessions
I	IntroductiontoComputer:Introduction–Typesofcomputers – Characteristics of Computers. Generations of Computers: FirstGeneration–SecondGeneration–ThirdGeneration– FourthGeneration– FifthGeneration.ClassificationofDigitalComputers:Introduction– Microcomputers–PersonalComputer – Portable Computers – Mini Computers – Super Computers – MainFrames.		K1	5
II	Number System: Introduction – Decimal Number System – BinaryNumber System – Binary-Decimal Conversion – Decimal BinaryConversion–BinaryAddition–BinarySubtraction– Complements–9'sComplement–10'sComplement–1'sComplements – 2's Complements – BCD - Bits, Bytes, Words –Octal– HexadecimalNumberSystem.		K2	5
III	AnatomyofDigitalComputer:FunctionsandComponentsofComputer –CentralProcessingUnit–ControlUnit–Arithmetic– LogicUnit–Memory–Registers– Addresses.MemoryUnits:RAM,ROM,PROM, EPROM, EEPROM, AndFlash Memory		K3	5
IV	InputDevices:Introduction–Keyboard–Mouse–TypesofMice – Connections – Mouse pad – Trackball – joystick – DigitizingTablet – Scanners – Digital Camera – MICR – OCR – OMR – BarCode Reader – Speech Input Device- Touch Screen – Touch Pad –LightPen.OutputDevices:Introduction–Monitor– Classification of Monitors – Monochrome – Gray Scale – Color – DigitalMonitor–AnalogMonitor–Characteristicsofmonitor– Printers.		K4	5
V	Computer Software: Introduction – Operating System – Utilities – CompilerandInterpreters–WordProcessor–Spreadsheets– PresentationGraphics–DBMS–ProgrammingLanguages:Machine Language – Assembly Language – High level language – TypesofHighLevelLanguage.DataProcessing:DataVS Information – File Processing – Sequential File Processing – DirectAccessfileProcessing.		K5	6
	LearningResources			
Text Books	AlexisLeon and MathewsLeon,‖FundamentalsofComputerScience and Communication Engineering‖,Leon Tech world,1998.			
Reference Books	1. BRam and SanjayKumar,‖ComputerFundamentals‖,5th Edition, NewAge International Publishers,2014. 2. PradeepKSinha, PritiSinha,‖ComputerFundamentals‖, BPBPublications, 2004. 3. AnitaGoel,‖ComputerFundamentals‖,1st Edition, Pearson EducationIndia, 2010.			

Website/ Link	https://www.gopeaople.edu/blog/the_basics_of_computer_science_how_to_get_started/ www.tutorialspoint.com>basics_of_computer

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	M	---
CO2	M	M	-	S
CO3	S	M	L	M
CO4	M	S	M	-
CO5	S	M	-	L

S-Strong,M-Medium ,L–Low

NONMAJORELECTIVECOURSE(NMEC)-I

SubjectTitle	SEMESTER – III PAPER – IICOMPUTERAPPLICATIONSFORAUTOMATION	Semester	III
SubjectCode	21UISN02	Specialization	NA
Type	NMEC:Theory	L:T:P:C	26:2:0:2

CourseObjective:

1. Toacquireknowledgeoneditor,spreadsheetand slidepreparation.
2. Toimprovecreativethinkinginpresentationsoftware.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasicsof computers.	K1
CO2	UnderstandMSword.	K2
CO3	DemonstratethefunctionsofMSexcel.	k3
CO4	Studythe basics ofMSpower point.	K4
CO5	AnalyzedataprocessingwithMS Access.	K5

Subject Title	SEMESTER – III PAPER – IICOMPUTERAPPLICATIONSFOR AUTOMATION	Semester	III	
Subject Code	21UISN02	Specialization	NA	
Type	NMEC:Theory	L:T:P:C	26:2:0:2	
Unit	Contents		Levels	Sessions
I	IntroductiontoComputers:Introduction-Importance-History-Anatomy		K1	5
II	MS-Word:Basics–Do'sandDon'ts–Menus–Commands–ToolBars–Icons – WordFormattingTool Bar		K2	5
III	MS-Excel:Basics–Do'sandDon'ts–Menus–Commands–ToolBars–Icons		K3	5
IV	MS-PowerPoint: Basics–Menus–ToolBars–Navigation		K4	5
V	MS-Access: Introduction – Parts of an Window: - Creating a NewData Base – Table Wizard – Renaming – Saving the Database –Relationships –Query–Form–Reports– ExitingMS-Access		K5	6
	LearningResources			
TextBooks	SanjaySaxena, ‑MS-Office2000 foreveryone‖,VikasPublishingHousePvt.Ltd, Reprint 2006			
Reference Books	1. NellaiKannan,‑MS-Office‖, NelsPublications, 3rdEdition, 2004. 2. John Walkenbach, Herb Tyson, Michael R.Groh, FaitheWempen and LisaA.Bucki ,‑Microsoft Office2010Bible‑, Wiley IndiaPvt.Ltd , Reprint 2010			
Website/ Link	1. https://ptgmedia.pearsoncmg.com/images/9780735623026/samplepages/9780735623026.pdf 2. https://www.dit.ie/media/ittraining/msoffice/MOAC_Excel_2016_Core.pdf 3. https://ptgmedia.pearsoncmg.com/images/9780735697799/samplepages/9780735697799.pdf			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	M	---
CO2	S	M	-	-
CO3	S	S	L	M
CO4	M	S	M	-
CO5	S	M	M-	L

S-Strong,M-Medium ,L–Low

NONMAJORELECTIVECOURSE(NMEC)–II

SubjectTitle	SEMESTER – IV PAPER – IBASICS OFINTERNET	Semester	IV
Subject Code	21UISN03	Specialization	NA
Type	NMEC: Theory	L:T:P:C	26:2:0:2

CourseObjective:

1. Toimprovetheskillsofsurfinginternet.
2. Topreparethestudentsfor developingwebpageusingHTML.

CO Number	COStatement	KnowledgeLevel
CO1	RememberthebasicsofInternet.	K1
CO2	Understandinternettechnologies.	K2
CO3	DemonstratetagsinHTML.	K3
CO4	Studythe basics ofcreatelist and tables.	K4
CO5	Analyzeframesandforms.	K5

Subject Title	SEMESTER – IV PAPER – IBASICSOFINTERNET	Semester	IV	
Subject Code	21UISN03	Specialization	NA	
Type	NMEC:Theory	L:T:P:C	26:2:0:2	
Unit	Contents		Levels	Sessions
I	Introduction To The Internet: ComputerinBusiness– Networking–Internet-E-mail–ResourceSharing–Gopher– WorldWideWeb–Telnet–BulletinBoardService– WideAreaInformationService.		K1	5
II	InternetTechnologies:Modem-Internetaddressing– Physicalconnections–TelephoneLines– Internetbrowsers – Internet Explorer–NetscapeNavigator.		K2	5
III	IntroductiontoHTML:Designingahomepage –HTML documents–Anchortag–Hyper Links. Traditionaltextandformatting		K3	5
IV	Types of lists: Ordered, Unordered – Nesting Lists – Othertags:Marquee,HR,BR-UsingImages– CreatingHyperlinks ,Tables: Creating basic Table, Table elements, Caption – Tableandcell alignment – Rowspan,Colspan –Cellpadding		K4	5
V	Frames: Frameset–Targeted Links–Noframe– Forms:Input,Textarea, Select,Option.		K5	6
	LearningResources			
TextBooks	1. C Xavier,-World Wide Web withHTML‖, TataMcGrawHill Education, 2000. 2. H.M.Deital,P.J.Deital,—InternetandWorldWideWeb– HowtoProgram‖,4th Edition -PHILearning.			
Reference Books	Laura Lemay,-*HTMLComplete Reference,Teach YourselfWeb Publishing with HTML".*			
Website/ Link	1. NPTEL&MOOC coursestitled HTML. 2. https://www.codecademy.com/learn/learn-html/			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	M	---
CO2	S	M	-	-
CO3	S	S	M	L
CO4	M	S	L	-
CO5	S	L	M-	L

S-Strong,M-Medium ,L–Low

NONMAJORELECTIVECOURSE(NMEC)–II

SubjectTitle	SEMESTER – IV PAPER – IIIMAGEEDITINGTOOL	Semester	IV
SubjectCode	21UISN04	Specialization	NA
Type	NMEC:Theory	L:T:P:C	26:2:0:2

CourseObjective:

1. ToimpartPracticalTraininginPHOTO SHOPimageeditingTool.
2. Familiarizethedifferenttextandfiltereffects.
3. Buildprograms usingstamptools.
4. Provideknowledgeonworkingwith severallayouts.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasicsof Photoshop.	K1
CO2	Understandtheworkingwithimages.	K2
CO3	DemonstratethelayeringinPhotoshop.	k3
CO4	Implementthelayerstyle.	K4
CO5	Analyzetheactionconcept.	K5

Subject Title	SEMESTER – IV PAPER – IIIMAGE EDITINGTOOL	Semester	IV	
Subject Code	21UISN04	Specialization	NA	
Type	NMEC:Theory	L:T:P:C	26:2:0:2	
Unit	Contents		Levels	Sessions
I	Getting Started with Photoshop CS5: Launching Photoshop CS5 - ExploringtheInterface-UsingScreenModes-OpeninganExistingImage-OpeninganImageUsingAdobeBridge-Exploring Commonly Used Tools in the Tools Panel - Creating aNew Document - Saving a Document - Reverting a Document - SelectingaWorkspace-CreatingaNewWorkspace-Deletinga Workspace - Working with Panels in Photoshop CS5 - KeyboardShortcutsandMenuSettings-CustomizingPreferences.		K1	5
II	WorkingwithImages:DifferencesbetweenBitmapandVectorImages-UnderstandingImageResolutionEditingImages-DifferentColorModesinPhotoshopCS5-MakingColorAdjustments - File Formats in Photoshop CS5 -Creating a PDF FileinPhotoshopCS5-ImportingaPDFFileintoPhotoshopCS5-Making a Selection with Selections Tools - Modifying a Selection-TransformingaSelection -TransformingPixels.		K2	5
III	Mastering Layers in Photoshop CS5:Exploring LAYERS Panel - Working with Layers -Organizing Layers Working with Opacityand Blend Modes - Working with Adjustment Layers - Masking inPhotoshop CS5 - Setting the Current Foreground and BackgroundColors-FillingaSelectionwiththeCurrentForegroundColor-UsingtheContent-AwareFeature-ExploringDrawingTools-ExploringPaintingTools -ExploringRetouching Tools.		K3	5
IV	WorkingwithLayerStylesandFilterEffects:UnderstandinLayerStyles -WorkingwithSmartObjects-UnderstandingFilters.		K4	5
V	Animation,3D,andPrintinginPhotoshopCS5:WorkingwithActions-WorkingwithAutomateCommands-Exploring3Din Photoshop-WorkingwithAnimationinPhotoshopCS5-Printingin PhotoshopCS5.		K5	6
	LearningResources			
Text Books	C KogentLearningSolutionsInc,–Photoshop CS5in SimpleSteps‖,Dreamtech Press, NewDelhi, 2012.			
Reference Books	1. BrieGyncild,–Ado bePhotoshop CS6 Classroomin aBook‖,Adobe Press/Peachpit, 2012 2. LisaDanaeDayley,BradDayley,–AdobePhotoshop Cs6 Bible‖, WileyIndiaPvt Ltd. 3. Edward Bailey,–Photoshop: 7 Ways to UseAdobePhotoshopLikeaPro‖,Create space Independent PublishingPlatform			
Website/ Link	1.www.online_image_editor.com2.www.cs5_on_demand_sampler.pdf			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	L	---
CO2	S	M	-	L
CO3	S	M	L	L
CO4	M	S	L	L
CO5	S	L	-	M

S-Strong,M-Medium ,L–Low

ALLIEDOPTIONI

SubjectTitle	SEMESTER I/III PAPER – IFUNDAMENTALSOFCOMPUTERS	Semester	I/III
SubjectCode	21UISA01	Specialization	NA
Type	Allied:Theory	L:T:P:C	86:6:0:4

CourseObjective:

1. Tounderstandthebasicsofcomputers.
2. Topreparethestudentsfortheanalyzeofdataprocessing.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasicsof computers.	K1
CO2	Understandthenumbersystem.	K2
CO3	Demonstratethefunctionsofcomputersystem.	K3
CO4	Studytheinput and output system.	K4
CO5	Analyzethedataprocessing.	K5

Subject Title	SEMESTER I/III PAPER – IFUNDAMENTALSOFCOMPUTERS	Semester	I/III	
Subject Code	21UISA01	Specialization	NA	
Type	Allied:Theory	L:T:P:C	86:6:0:4	
Unit	Contents		Levels	Sessions
I	IntroductiontoComputer:Introduction–Typesofcomputers –CharacteristicsofComputers. Generations of Computers: First Generation – Second Generation – ThirdGeneration–FourthGeneration– FifthGeneration.ClassificationofDigitalComputers:Introduction– Microcomputers – Personal Computer – Portable Computers – MiniComputers– SuperComputers– Main Frames.		K1	17
II	Number System: Introduction – Decimal Number System – BinaryNumber System – Binary-Decimal Conversion – Decimal BinaryConversion–BinaryAddition–BinarySubtraction– Complements–9'sComplement–10'sComplement–1's Complements – 2's Complements – BCD - Bits, Bytes, Words – Octal– Hexadecimal NumberSystem.		K2	17
III	AnatomyofDigitalComputer:FunctionsandComponentsofComputer –CentralProcessingUnit– Control Unit– Arithmetic–LogicUnit–Memory–Registers– Addresses.MemoryUnits:RAM,ROM,PROM,EPROM,EEPROM,And FlashMemory.		K3	17
IV	InputDevices:Introduction–Keyboard–Mouse–TypesofMice – Connections – Mouse pad – Trackball – joystick – DigitizingTablet – Scanners – Digital Camera – MICR – OCR – OMR – BarCode Reader – Speech Input Device- Touch Screen – Touch Pad –Light Pen. Output Devices: Introduction – Monitor – ClassificationofMonitors –Monochrome– GrayScale– Color– DigitalMonitor – AnalogMonitor–Characteristicsofmonitor–Printers.		K4	17
V	Computer Software: Introduction – Operating System – Utilities – CompilerandInterpreters–WordProcessor–Spreadsheets– PresentationGraphics–DBMS–ProgrammingLanguages:Machine Language – Assembly Language – High level language – TypesofHighLevelLanguage.DataProcessing:DataVS Information – File Processing – Sequential File Processing – DirectAccessfileProcessing.		K5	18
	LearningResources			
Text Books	AlexisLeon and MathewsLeon,-Fundamentalsof ComputerScience and CommunicationEngineering‖,LeonTechworld,1998.			
Reference Books	1. BRam and SanjayKumar,-ComputerFundamentals‖,5th Edition, NewAge International Publishers,2014. 2. PradeepKSinha, PritiSinha,-ComputerFundamentals‖, BPBPublications,2004. AnitaGoel,—ComputerFundamentals‖,1st Edition,PearsonEducationIndia,2010\			

Website/ Link	1.https://www.gopeople.edu/blog/the_basics_of_computer_science_how_to_get_started 2.www.tutorialspoint.com>basics_of_computer

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	M	---
CO2	M	M	-	S
CO3	S	M	L	M
CO4	M	S	M	-
CO5	S	M	-	L

S-Strong,M-Medium ,L–Low

SubjectTitle	COMPUTER APPLICATIONS INOFFICE	Semester	II/IV
SubjectCode	21UISA02	Specialization	NA
Type	Allied:Theory	L:T:P:C	56:4:0:4

CourseObjective:

1. Toimprovethequalityof studentsinofficeautomation process.
2. Topreparethe studentsfor various abilityto preparereportsand presentations.

CO Number	COStatement	KnowledgeLevel
CO1	Rememberthebasicsof MSword	K1
CO2	UnderstandMSword	K2
CO3	DemonstratethefunctionsofMSexcel	k3
CO4	Studythe basicsofMS excelworkbooks	K4
CO5	AnalyzeofdataprocessingwithMS powerpoint	K5

Subject Title	COMPUTERAPPLICATIONSINOFFICE	Semester	II/IV	
Subject Code	21UISA02	Specialization	NA	
Type	Allied:Theory	L:T:P:C	56:4:0:4	
Unit	Contents		Levels	Sessions
I	MSWordExploringWord2007:WorkingintheWordEnvironment– Opening,MovingAroundin,andclosingDocument – Creating and Saving A Document – Previewing andPrintingDocument– EditingandProofreadingDocuments:Making Changes to document – Inserting Saved Text– Findingthe MostAppropriateWord– Reorganizing aDocumentOutline– Finding andReplacing Text– Correcting spelling andGrammatical errors –FinalizingDocument		K1	12
II	MS Word Changing the Look of Text: Quickly Formatting TextandParagraphs–Manually changing the lookof characters– Manuallychangingthelookofparagraphs–Creatingandmodifying Lists-Presenting Information in Columns and Tables :PresentingInformationinColumns–CreatingTabularList– PresentingInformationinaTable–FormattingTableInformation – Performing Calculations in a Table- Using a Table to controlPage Layout.		K2	12
III	MSExcelSettingUpaWorkbook:CreatingWorkbooks–Modifying Workbooks - Modifying Worksheets – Working withData and Data Tables : Entering and Revising Data– MovingDatawithinaWorkbook-FindingandReplacingData– Correcting and Expanding Upon Worksheet Data – Defining aTable – Performing Calculations on Data :Naming Groups ofData–CreatingFormulastoCalculateValues–Summarizing Data that meets Specific Conditions –Finding and CorrectingErrorsinCalculations- ChangingDocumentAppearance.		K3	12
IV	MS-Access:Introduction–PartsofanWindow:-CreatingaNew DataBase–TableWizard–Renaming–SavingtheDatabase– Relationships –Query–Form–Reports –ExitingMS-Access		K4	10
V	MS PowerPoint Starting a New Presentation – Working with SlideText : Entering Text – Editing Text – Adding and ManipulatingText Boxes –Correcting and Sizing text – Checking Spelling –Findingandreplacingtextandfonts– Changingthesize,Alignment,Spacing– AdjustingtheSlideLayout,Order and Look :ChangingtheLayoutofaslide–RearrangingSlidesinaPresentation – Applying a theme -Switching to a Different ColorScheme – Adding Shading and texture to the background ofaslide– DeliveringaPresentation Electronically.		K5	10
	LearningResources			
TextBooks	1. StepbyStep2007MicrosoftOfficeSystem- JoyceCoxandTeam,PHIlearningPrivate ltd,Newdelhi 2009 2. SanjaySaxena,–MS-Office2000foreveryone‖,VikasPublishingHousePvt. Ltd, Reprint 2006			

Reference Books	1. NellaiKannan,–MS-Office‖, NelsPublications, 3rdEdition, 2004. 2. John Walkenbach, Herb Tyson, Michael R.Groh, FaitheWempen and LisaA.Bucki,–MicrosoftOffice2010Bible–,WileyIndiaPvt.Ltd,Reprint 2010
Website/ Link	1.https://ptgmedia.pearsoncmg.com/images/9780735623026/samplepages/9780735623026.pdf2.https://www.dit.ie/media/ittraining/msoffice/MOAC_Excel_2016_Core.pdf3.https://ptgmedia.pearsoncmg.com/images/9780735697799/samplepages/9780735697799.pdf2010

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	M	M
CO2	S	M	L	M
CO3	S	S	L	M
CO4	M	S	L	M
CO5	S	M	M-	L

S-Strong,M-Medium ,L–Low

Subject Title	OFFICE AUTOMATION LAB	Semester	II/IV
Subject Code	21UISAP01	Specialization	NA
Type	Allied:Practical	L:T:P:C	30:0:2:2

CourseObjective

1. Toenablethestudents todesignanddeveloptheOfficeapplications.
2. Toqualifythestudents workingineditor, spread sheet and slidepreparation.3.Toimprovecreativethinkinginpresentation software.

LISTOFPROGRAMS

I. MS-WORD

1. TextManipulation:Writeaparagraphaboutyour institutionandChangethefontsizeandtype,Spellcheck, Aligning and justification ofText.
2. Biodata:PrepareaBio-data.
3. FindandReplace:Writeaparagraphaboutyourselfanddothefollowing.FindandReplace-UseNumberingBullets,Footerand Headers.
4. Tablesandmanipulation:Creation,Insertion,Deletion(ColumnsandRows).Createamarksheet.
5. Mail Merge:Prepareaninvitationtoinviteyourfriendstoyourbirthdayparty.Prepareatleastfiveletters.

II. MS-EXCEL

1. Datasorting-
AscendingandDescending(bothnumbersandalphabets).2.Marklist
preparation for astudent.
3.IndividualPayBillpreparation.4
.InvoiceReport preparation.
5.DrawingGraphs.Take yourowntable.

III. MS-POWERPOINT

1.Createaslideshowpresentationforaseminar.2.Pr
eparationofOrganization Charts.
3.Createaslideshowpresentationtodisplaypercentageofmarksin eachsemesterforall
students4.Usebarchart(X-axis: Semester, Y-axis: % marks).
5.Usedifferentpresentation templatedifferenttransitioneffectforeachslide.

CourseOutcome

Onsuccessfulcompletionofthecourse,thestudents will.

1. Understandthefeatures inMSWord.
2. Selectandapplyworksheet andfunctionsinMSEXCEL.
3. CombinemultiplefeaturesinMSPOWERPOINTtoprepare presentations.

ALLIEDOPTIONII

SubjectTitle	DATABASESYSTEMS	Semester	I/III
Subject Code	21UISA03	Specialization	NA
Type	Allied:Theory	L:T:P:C	86:6:0:4

CourseObjective:

1. Toimprovetheunderstandingofdatabasetheoryand practices.
2. Topreparethestudents implementdatabasemanipulation inSQL.

CO Number	COStatement	KnowledgeLevel
CO1	RememberthebasicsofDatabase.	K1
CO2	UnderstandDatabaseSystemsConceptandArchitecture.	K2
CO3	DemonstratethefunctionsoftheRelationalDataModel andSQL.	K3
CO4	StudythebasicsofBasics SQL.	K4
CO5	AnalyzeadvancedSQLcommandsandstatements.	K5

Subject Title	DATABASESYSTEMS	Semester	I/III	
Subject Code	21UISA03	Specialization	NA	
Type	Allied:Theory	L:T:P:C	86:6:0:4	
Unit	Contents		Levels	Sessions
I	IntroductiontoDatabases–Introduction-Characteristicsofthe DatabaseApproach-AdvantagesofUsingtheDBMSApproach-ABrief HistoryofDatabaseApplications.		K1	18
II	DatabaseSystemsConceptandArchitecture:DataModels,Schemas,and Instances-ThreeSchemaArchitectureandDataIndependence-DatabaseLanguagesandInterfaces- -TheDatabase System Environment - Centralized and Client/Server ArchitecturesforDBMSs-ClassificationofDatabaseManagement Systems.		K2	18
III	TheRelationalDataModelandSQL-DatabaseConstraints-RelationalModelConcepts-Keyconcepts-RelationalModel ConstraintsandRelationalDatabaseSchemas-UpdateOperations,Transactions, and DealingwithConstraintViolations.		K3	18
IV	BasicSQL-SQLDataDefinitionandDataTypes-SpecifyingConstraintsinSQL-BasicRetrievalQueriesinSQL-INSERT, DELETE,andUPDATEStatementsinSQL-AdditionalFeaturesofSQL.		K4	18
V	MoreSQL:ComplexQueries,Triggers,Views,andSchemaModification-MoreComplexSQLRetrievalQueries-Specifying Constraints as Assertionsand Actions asTriggers-Views (VirtualTables)in SQL.		K5	14
	LearningResources			
Text Books	RamezElmasri andShamkantB. Navathe,–Fundamentals of database systems‖,6th Edition,Addison-WesleyPublication,2011.			
Reference Books	RaghuRamakrishnan,Madison,JohannesGehrke,—DatabaseManagementSystems‖,3rd Edition,McGraw-HillHigherEducation, 2003.			
Website/ Link	1.www.db-book.com/db7,2.www.mh education.co.in			

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	S	M	M
CO2	S	M	L	S
CO3	S	M	L	M
CO4	M	S	M	M
CO5	S	M	L	L

S-Strong,M-Medium ,L–Low

SubjectTitle	E-COMMERCETECHNIQUES	Semester	II/IV
SubjectCode	21UISA04	Specialization	NA
Type	Allied:Theory	L:T:P:C	56:4:0:4

CourseObjective:

1. ToimprovetheunderstandingofE-COMMERCEandE-payments.
2. TopreparethestudentsimplementHTMLandE-mailcreation.

CO Number	COStatement	KnowledgeLevel
CO1	RememberthebasicsofE-commerceandIndianBusiness.	K1
CO2	Understand WWW.	K2
CO3	DemonstratetheEpaymentsystem.	K3
CO4	Studythe basics Webdesigning.	K4
CO5	AnalyzeEmailcomponents.	K5

Subject Title	E-COMMERCETECHNIQUES	Semester	II/IV	
Subject Code	21UISA04	Specialization	NA	
Type	Allied:Theory	L:T:P:C	56:4:0:4	
Unit	Contents		Levels	Sessions
I	HistoryofE-commerceandIndian BusinessContext:E-Commerce –EmergenceoftheInternet–EmergenceoftheWWW–AdvantagesofE-Commerce–TransitiontoE-CommerceinIndia –TheInternetandIndia–E-transitionChallengesforIndianCorporate. Business Models for E-commerce: Business Model – E-businessModelsBasedon theRelationshipof TransactionParties-E-businessModelsBasedontheRelationshipofTransactionTypes..		K1	12
II	EnablingTechnologiesoftheWorldWideWeb:WorldWideWeb – Internet Client-Server Applications – Networks and Internets – Software Agents – Internet Standards and Specifications – ISP.E-Marketing:TraditionalMarketing–IdentifyingWebPresence Goals–OnlineMarketing–E-advertising–E-branding.		K2	12
III	E-Payment Systems: Main Concerns in Internet Banking – DigitalPaymentRequirements–DigitalToken-basede-paymentSystems –ClassificationofNewPaymentSystems– PropertiesofElectronicCash– ChequePaymentSystemsontheInternet.Information systems for Mobile Commerce: Introduction – Wireless Applications – Cellular Network – Wireless Spectrum – TechnologiesforMobile Commerce–WirelessTechnologies.		K3	12
IV	HTMLandWeb Designing:BriefHistoryofHTML–HTMLTags –TableCreation–Hyperlink–Reference–Headings–Alignment -SimpleWeb PageCreation.		K4	10
V	E-mail: Email – Email Components - use of Email–Email creation–browsing–search engines–downloads.		K5	10
	LearningResources			
Text Books	1. P.T.Joseph, ‑E-Commerce-AnIndian Perspective‖, 4th Edition,PHILearning, 2012. 2. C Xavier,‑World Wide Web Design with HTML‖, 13th Reprint, TataMcGraw Hill, 2006. 3. A.Leonand M.Leon,‑Introduction toInformationTechnology‖, 1st Edition, Vijay NicolePublications, 2013.			
Reference Books	1. David Whiteley,‑E-CommerceStrategy, TechnologiesandApplications‖,1st Edition,Tata Mc-Graw-Hill, 2001. 2. KamaleshKBajajand DebjaniNag,‑E-Commerce– Thecuttingedgeof Business‖,2nd Edition, TataMcGraw-HillEducation, 2005.			

	3. AlexisLeon and MathewsLeon,-Internet forEveryone‖, 15th AnniversaryEdition, LeonTechworld, UBS Publications, 2012. 4. RitendraGoel,-e-commerce‖,NewAgeInternational Publishers, 2016.
Website/ Link	1.https://e_commerce_pdf_download.peatix.com/ 2.www.tutorialpoints.com/html 3.https://books.google.com/books/about/a//_wide_web_design_with_html.html?id=6apoxl=z4nwc

MappingwithProgrammeOutcomes

CONumber	PO1	PO2	PO3	PO4
CO1	S	M	L	L
CO2	S	M	L	L
CO3	S	M	L	L
CO4	M	S	M	M
CO5	S	M	M	L

S-Strong,M-Medium ,L–Low

Note:Thispapershouldbehandledandvaluedby DepartmentofComputerScience.

Subject Title	ALLIED PRACTICAL - IIHTMLPROGRAMMING	Semester	II/IV
Subject Code	21UISAP02	Specialization	NA
Type	Allied:Practical	L:T:P:C	30:0:2:2

CourseObjective

1. ToenablethestudentstodesignanddeveloptheWEBPAGES.
2. Toqualifythestudents workingwith tags intable.
3. Toimprovecreativethinkinginforms,listsandframes.

LISTOFPROGRAMS

1. WriteHTMLcodeto developa webpagethatcontains thedifferent backgroundand foregroundcolor,with various styles.
2. WriteHTMLcodetocreate aWebpagethatcontains anImageat its left handsideofthepagewhen user clicks on the image; it should open another web page that displays the details of thatimage.
3. CreateawebPageusingHREFtaghavingthe attributeALINK,VLINKetc.
4. Createawebpage,whenuserclicksonthelinkitshouldgotothebottomof thepage.
5. WriteaHTMLcodeto createawebpageofpink colorand displaymovingmessagein redcolor.
6. Createawebpage,showinganorderedlistofnameof yourfive friendsandunorderedlist ofanyfive your hobbies.
7. Create a HTMLdocument containinganested list showingthecontent page ofanybook.
8. Createastudent mark listin HTMLusingTables.
9. CreateaHTMLpagetodemonstratetheusageof Frames.Choosethecontent ofthepageonYourown.
10. Design anapplication forpayslipthroughHTMLforms

CourseOutcome

Onsuccessfulcompletionofthecourse,thestudents will

1. UnderstandthefeaturesinHTML.
2. Selectand applytags forcreatetext, listand table.
3. Combinemultiplefeaturesinforms,framesandtexts.

Note:ForUniversity PracticalExam,bothInternalandExternalshouldbeappointedfrom DepartmentofComputerScience/InformationScience.