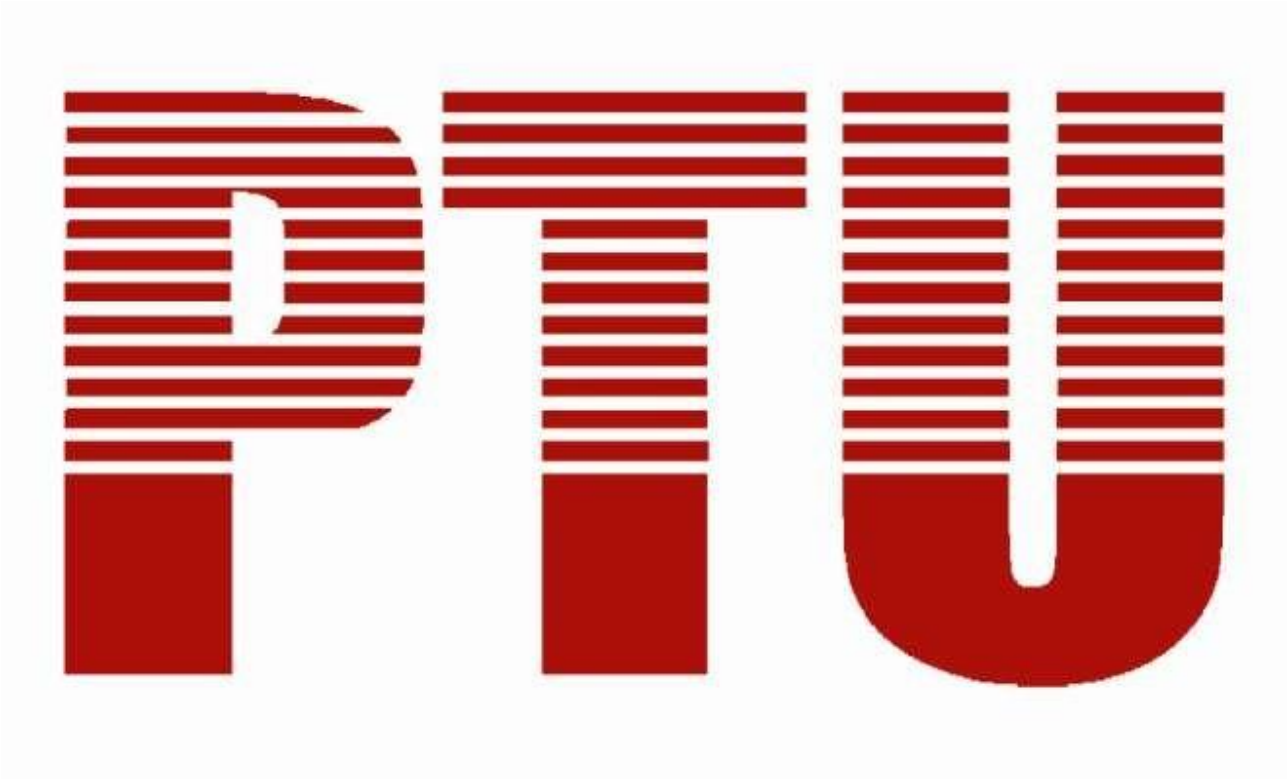
Scheme & Syllabus of
BachelorofComputerApplications
(BCA)
Batch2015



By
Department ofAcademics

IKG Punjab TechnicalUniversity

SEMESTER-I		L	T	P	INT	EXT	TOTAL	Credits
BSBC101	Communication-I	3	1	-	40	60	100	4
HVPE101	Human Values and ProfessionalEthics	3		-	40	60	100	3
BSBC102	Programmingin C	4	1	-	40	60	100	5
BSBC103	Mathematics-I	4	2	-	40	60	100	6
BSBC104	InformationTechnology	3	1	-	40	60	100	4
BSBC105	Software Lab-I(Programmingin C)	-	-	4	60	40	100	2
BSBC106	Software Lab-II(Information Technology)	-	-	4	60	40	100	2
	Total	**17**	**5**	**8**	**320**	**380**	**700**	**26**
SEMESTER-II		**L**	**T**	**P**	**INT**	**EXT**	**TOTAL**	**TOTAL**
EVSC101	EnvironmentalScience	2	-	-	40	60	100	2
BSBC201	Communication-II	3	1	-	40	60	100	4
BSBC202	Mathematics-II	4	2	-	40	60	100	6
BSBC203	OOPS UsingC++	4	1	-	40	60	100	5
BSBC204	ComputerSystemArchitecture	3	1	-	40	60	100	4
BSBC205	Workshop onWeb Development	-	-	4	60	40	100	2
BSBC206	Software Lab-III(OOPS UsingC++)	-	-	4	60	40	100	2
	Total	**16**	**5**	**10**	**320**	**380**	**700**	**25**
SEMESTER-III		**L**	**T**	**P**	**INT**	**EXT**	**TOTAL**	**TOTAL**
BSBC301	SystemAnalysis & Design	3	1	-	40	60	100	4
BSBC302	Data Structures	4	1	-	40	60	100	5
BSBC303	DigitalCircuits &Logic Design	4	1	-	40	60	100	5
BSBC304	Basic Accounting	4	1	-	40	60	100	5
BSBC305	Software Lab-IV (Data Structures)	-	-	6	60	40	100	3
BSBC306	Hardware Lab-I(DigitalCircuits &Logic Design)	-	-	4	60	40	100	2
	Total	**15**	**4**	**10**	**280**	**320**	**600**	**24**
SEMESTER-IV		**L**	**T**	**P**	**INT**	**EXT**	**TOTAL**	**TOTAL**
BSBC401	Software Engineering	4	1	-	40	60	100	5
BSBC402	Microprocessors &Microcontrollers	4	1	-	40	60	100	5
BSBC403	OperatingSystems	4	1	-	40	60	100	5
BSBC404	DatabaseManagementSystems	4	1	-	40	60	100	5
BSBC405	Hardware Lab-II(Microprocessors & Microcontrollers)	-	-	4	60	40	100	2
BSBC406	Software Lab-V (DatabaseManagement Systems)	-	-	4	60	40	100	2
	Total	**16**	**4**	**8**	**280**	**320**	**600**	**24**

17th June 2011

SEMESTER-V		L	T	P	INT	EXT	TOTAL	Credits
BSBC501	DataWarehousing&Mining	3	1	-	40	60	100	4
BSBC502	Programmingin Java	4	1	-	40	60	100	5
BSBC503	ManagementInformation System	3	1	-	40	60	100	4
BSBC504	Workshop onAdvanced Web Development	0	0	6	60	40	100	3
BSBC505	Software Lab-VI(Programmingin Java)	0	0	4	60	40	100	2
BSBC506	ProjectWork-I	0	0	6	60	40	100	6
	Total	**10**	**3**	**16**	**300**	**300**	**600**	**24**
SEMESTER-VI		**L**	**T**	**P**	**INT**	**EXT**	**TOTAL**	**Credits**
BSBC601	PrinciplesofManagement	3	1	-	40	60	100	4
BSBC602	ComputerGraphics	4	1	-	40	60	100	5
BSBC603	ComputerNetworks	4	1	-	40	60	100	5
BSBC604	Information security	3	1	-	40	60	100	4
BSBC605	Software Lab-VII(ComputerGraphics)	0	0	4	60	40	100	2
BSBC606	Project Work- 2	0	0	6	120	80	200	6
	Total	**14**	**4**	**10**	**340**	**360**	**700**	**26**

First Semester

BSBC101 COMMUNICATION–I

Objective and Expected outcome:

Theobjectiveofthiscourseistomakestudentsunderstandthatbothoral&written communicationsareequallyimportant.Thestudentsshouldbecomfortablewithboth verbal&writtencommunication.

SECTION-A

EnglishLanguage:Sentence,Partsofspeech,Tenses,Activepassivevoice,Direct Indirectspeech,Creativewriting&vocabulary,Comprehensionpassage,Readingof biographiesofatleast10ITbusinesspersonalities(canbeahomeassignmentor classroom reading). **(9) SECTION-B**

Businesscommunication-Types,Medias,Objectives,Modals,Process,Importance UnderstandingBarriers tocommunication&ways to handleandimprove barriers. **(9)**

SECTION-C

Presentation skills-Its Purpose in business world, How to find material for presentation,Howtosequencethespeechwithproperintroductionandconclusion, How toPreparePPT&Completesetofrequiredbody languagewhiledelivering presentation.

Reading&writingskills-Importanceofreadingandwriting,improvingwritingskills through understanding andpracticing Notice,E-mail, Tenders,Advertisement, formal letter. **(9)**

SECTION-D

Listeningskills-Itsimportanceasindividual andasaleaderorasaworker,Itstypes, barriers tolistening&remediestoimprovelisteningbarriers.

NonverbalCommunication-understanding whatiscallednonverbalcommunication, its importanceasanindividual, as astudent,as aworker andasaleader, itstypes. **(9)**

Suggested Readings/Books:

1. **Effective Business Communication**, M.V.RODRIGUEZ
2. **Business Communication**, MeenakshiRaman, ParkashSingh, Paperback Edition, Oxford University Press.

HVPE101 HumanValues&ProfessionalEthics

Objective/s and Expected outcome:

Tohelpthestudentstodiscriminatebetweenvaluableandsuperficialinthelife. To helpdevelopthecriticalability todistinguishbetweenessenceandform,orbetween whatis ofvalue andwhatis superficial, inlife–this ability is to be developed notfor a narrow areaor fieldofstudy,butforeveryday situations inlife,coveringthewidest possiblecanvas.To helpstudentsdevelopsensitivity andawareness;leadingto commitment andcourageto actontheir ownbelief.It is notsufficienttodevelopthe discriminationability,itisimportantto acton suchdiscriminationin agivensituation. Knowingly orunknowingly,oureducationsystemhas focusedontheskillaspects (learning anddoing) –itconcentratesonprovidingtoitsstudentstheskillstodo things. Inotherwords,itconcentratesonproviding“How todo”things.The aspects ofunderstanding“Whattodo” or“Whysomethingshouldbedone”isassumed.No significantcogentmaterialonunderstanding isincludedasapartofthecurriculum.A resultofthisistheproduction ofgraduates whotendtojoinintoablindracefor wealth,positionandjobs. Oftenitleadstomisuseoftheskills;andconfusionandwealth thatbreedschaos infamily,problems insociety,andimbalanceinnature. Thiscourse isanefforttofulfill ourresponsibility toprovideourstudents thissignificantinputabout understanding.This courseencourages students to discover what they consider valuable.Accordingly,they should be ableto discriminatebetweenvaluableandthe superficialinrealsituationsintheirlife.Ithasbeen experimented atIIITH,IITKand UPTU onalargescale withsignificantresults.

SECTION-A

1. CourseIntroduction–Need,BasicGuidelines,ContentandProcessfor ValueEducation

- Understandingtheneed,basicguidelines,contentandprocessforValue Education.
- SelfExploration–whatisit?-itscontentandprocess;„NaturalAcceptance" andExperientialValidation- asthemechanism for selfexploration.
- Continuous HappinessandProsperity- Alook atbasic HumanAspirations

- Right understanding, Relationship and Physical Facilities- the basic requirementsfor fulfillmentofaspirationsofeveryhumanbeingwiththeir correct priority
- UnderstandingHappinessandProsperitycorrectly-Acriticalappraisalofthe currentscenario

•Methodtofulfill theabovehumanaspirations:understandingandlivingin **harmony**atvarious levels **(8)**

2. Understanding Harmonyin theHumanBeing–Harmonyin Myself!

- Understandinghumanbeingasaco-existenceofthesentient„I" andthe material „Body"

•Understandingtheneeds ofSelf(„I")and„Body"–*Sukh*and *Suvidha*

•UnderstandingtheBodyasaninstrumentof„I"(Ibeingthedoer,seerand enjoyer)

•Understandingthecharacteristics andactivitiesof„I"andharmonyin„I"

•Understanding the harmony of I with the Body: *Sanyam*and *Swasthya*; correct appraisal ofPhysical needs,meaningofProsperityin detail

•Programs toensure*Sanyam*and*Swasthya***(7)**

3. UnderstandingHarmonyintheFamilyandSociety-HarmonyinHuman-HumanRelationship

•Understandingharmonyin theFamily- the basic unit ofhumaninteraction

- Understandingvaluesinhuman-humanrelationship;meaningof*Nyaya*and programforitsfulfillmenttoensure*Ubhay-tripti*;Trust(*Vishwas)*andRespect (*Samman)*as thefoundational values ofrelationship
- Understandingthemeaningof*Vishwas*;Differencebetweenintentionand competence
- Understandingthemeaningof*Samman*,Differencebetweenrespectand differentiation;theother salientvaluesinrelationship
- Understandingtheharmonyinthesociety(societybeinganextensionof family): *Samadhan, Samridhi, Abhay, Sah-astitva*as comprehensive Human Goals

- Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj),*UniversalOrder (*SarvabhaumVyawastha)*-from familyto worldfamily! **(8)**

PART B

4. UnderstandingHarmonyintheNatureandExistence–Wholeexistenceas Co-existence

- UnderstandingtheharmonyintheNature
- Interconnectednessandmutualfulfillmentamongthefourordersofnature-recyclabilityandself-regulationinnature
- Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units inall-pervasivespace
- Holistic perceptionofharmonyat alllevels of existence **(5)**

5. Implications of the above Holistic Understanding of Harmony on ProfessionalEthics

- Natural acceptance of humanvalues
- Definitiveness ofEthical HumanConduct
- Basis forHumanistic Education, Humanistic Constitution and Humanistic Universal Order
- Competenceinprofessional ethics:
  - Abilitytoutilizetheprofessionalcompetence foraugmentinguniversal humanorder
  - Abilitytoidentifythescopeandcharacteristicsofpeople-friendlyandeco-friendlyproductionsystems
  - Abilitytoidentifyanddevelopappropriatetechnologiesandmanagement patternsforabove productionsystems.
- Case studiesof typical holistic technologies, management models and productionsystems
- Strategyfor transitionfromthepresentstatetoUniversal Human Order:
  - At the level of individual: as socially and ecologically responsible engineers, technologists andmanagers

- Atthelevel ofsociety: as mutuallyenrichinginstitutions andorganizations

(8)

Suggested Readings/Books:

1. R RGaur, R Sangal,G P Bagaria,2009,*A FoundationCoursein ValueEducation*.

2. IvanIllich,1974,*Energy&Equity,*TheTrinity Press,Worcester, andHarperCollins,USA

3. E.F.Schumacher,1973,*SmallisBeautiful:astudyofeconomicsasifpeoplemattered*, Blond &Briggs, Britain.

4. A Nagraj,1998, *JeevanVidyaekParichay,*DivyaPathSansthan,Amarkantak.

5. SussanGeorge,1976,*How theOtherHalf Dies,*PenguinPress.Reprinted 1986, 1991

6. PL Dhar, RRGaur,1990,*Science andHumanism*,Commonwealth Purblishers.

7. A.N. Tripathy,2003,*HumanValues*, NewAgeInternational Publishers

8. SubhasPalekar,2000,*HowtopracticeNaturalFarming,*Pracheen(Vaidik)KrishiTantra Shodh,Amravati.

9. DonellaH.Meadows,DennisL.Meadows,JorgenRanders,WilliamW.BehrensIII, 1972,*Limitsto Growth–ClubofRome's report*,UniverseBooks.

10.E GSeebauer&Robert L. Berry, 2000, *Fundamentals of Ethics for Scientists &Engineers,* Oxford University Press

11.MGovindrajran,SNatrajan&V.S.SenthilKumar,*EngineeringEthics(includingHuman Values)*,Eastern Economy Edition,Prentice Hall ofIndia Ltd

12.B P Banerjee, 2005,*Foundations of Ethicsand Management,*Excel Books.

13.B L Bajpai, 2004, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow.Reprinted2008.

BSBC102 PROGRAMMINGIN C

Objective andExpected Outcome:

Theobjectiveofthiscourseistohelpthestudentsin findingsolutionstovariousreallife problems andconverting thesolutionsintocomputer program using Clanguage (structured programming).Studentswilllearntowritealgorithmfor solutionstovarious real-lifeproblems.Convertingthealgorithms intocomputer programs usingC language.

SECTION-A

AlgorithmandProgrammingDevelopment:Steps indevelopmentofa program,Flow charts, AlgorithmDevelopment,ProgramDebugging,Compilationand Execution.

Fundamentalsof„C": I/Ostatements,AssignmentStatements,Constants,Variables, OperatorsandExpressions,Standardsand Formatted statements, Keywords,Data Types andIdentifiers. **(12)**

SECTION-B

Control Structures: Introduction, Decision making with if – statement, if-else and Nestedif,whileanddo-while,forloop.Jumpstatements: break,continue,goto,switch Statement

Functions: Introduction toFunctions, Function Declaration, Function Categories, StandardFunctions,ParametersandParameterPassing,Call–byvalue/reference, Recursion,GlobalandLocal Variables,Storageclasses. **(12)**

SECTION-C

Arrays:IntroductiontoArrays,Array Declaration,SingleandMultidimensionalArray, MemoryRepresentation,Matrices,Strings,Stringhandlingfunctions.

StructureandUnion:Declarationofstructure,Accessingstructuremembers,Structure Initialization,Arrays ofstructure,nestedstructures,Unions **(12)**

SECTION-D

Pointers: Introduction toPointers, Address operator and pointers, Declaring and Initializingpointers, Assignmentthroughpointers, Pointers and Arrays

Files:Introduction,Creatingadatafile,openingandclosingadatafile,processing a datafile.

PreprocessorDirectives:IntroductionandUse,Macros,ConditionalPreprocessors, Header Files **(12)**

Suggested Readings/Books:

1. **LetusC**,Yashvant PKanetkar,Seventh Edition, BPB Publications,NewDelhi.
2. **ProgramminginANSIC**,E. Balagurusami,FourthEdition, Tata McGrawHill
3. **ProgramminginC**,ByronS. Gottfried, SecondEdition,McGrawHills.
4. **The C Programming Language**,Kernighan&Richie,SecondEdition,PHIPublication
5. **Object OrientedProgramming**, Lafore R,ThirdEdition,Galgotia Publications
6. **Problem Solving andProgramminginC**, R.S. Salaria,SecondEdition

BSBC103MATHEMATICS–I

Objectives andExpected Outcome:

Thesyllabusofthiscourseisspecially designed forthebeginnersincomputerscience with thefirstexposuretomathematicaltopicsessentialto theirstudyof computer scienceor digital logic. Topicslikerecursion andrecurrencerelationswillhelpthemin learning theimportant concepts of C language. The topicGraph Theory has applicationsinvarious fields ofcomputersciencelikeswitchingtheory,logicaldesigns, artificiallanguageandcomputergraphics etc.Thesetopicswillhelpthestudentsto understandvariousimportantconceptsofthe othersubjects ofthecourse.Furtheritwill also providegroundforhigher studies inthese topics.

SECTION-A

SET THEORYANDRELATIONS

Sets-Elementsofaset,methodsofdescribingaset,typesof sets,Operationson sets--union,intersectionanddifferenceof sets,Venndiagrams,statementproblems, Associative Laws, Distributivelaws,DeMorgan"slaws, duality, partitioning ofaset. **Relation** -Basic definition of relation and types of relations, graphs of relations, properties of relations, (domain, range, inverse and composite relations), Matrix representationofarelation. **(12)**

SECTION-B

ALGEBRAOF LOGIC, MATHEMATICAL INDUCTION

Propositionsand Logicoperations,truthtables,arguments andvalidity ofarguments, propositions generated by a set, equivalence and implication laws of logic, mathematicalsystemandpropositionsoverauniverse,Quantifiers,Principle of MathematicalInduction. **(12)**

SECTION-C

GRAPH THEORY

Varioustypesofgraphs-Simpleandmulti graphs,directedandundirectedgraphs, Eulerian and Hamiltoniangraphs, Graph connectivity, graphtraversals, graph optimizations,graphcoloring,Trees,spanningtrees. **(12)**

SECTION-D

RECURSION AND RECURRENCE RELATIONS

Recursion,manyfacesofrecursion,recurrencerelations,somecommonrecurrence relations, Matrix Operations: Adittion, Subtraction, Multipication and Inverse

(12)

Suggested Readings/Books:

1. **DiscreteMathematical Structurewith application toComputerScience**, TremblayJ.P. and ManoharR,McGrawHill ,30thReprint (2007)
2. **TextBook of Mathematics** (for XI Class),RD Sharma,Dinesh Publications
3. **Applied Discrete Structure of Computer Science**,DoerrA&Kenneth L., Paperback Edition,Galgotia Publications Pvt.Ltd. NewDelhi
4. **GraphicsNetworksandAlgorithms**, Swami M.N.S &ThisiramanE., Second Edition, John Wiley&Sons

BSBC104 INFORMATION TECHNOLOGY

Objectives and Expected Outcome:

Thiscoursewill enablethestudent togain anunderstanding ofthecoreconceptsand technologieswhichconstituteInformation Technology. Theintentionisforthestudentto be able to articulate and demonstrate a basic understanding of the fundamental conceptsofInformationTechnology

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SECTION-A

ComputerFundamentals:Blockstructure ofacomputer,characteristicsofcomputers, problemsolvingwithcomputers,generationsofcomputers, andclassificationof computersonthebasis ofcapacity, purpose,and generation.

Number System: Bit, byte, binary, decimal, hexadecimal, and octal systems, conversionfromone systemtothe other,representation ofcharacters,integers and fractions.

BinaryArithmetic:Addition,subtractionandmultiplication. **(9)**

SECTION-B

MemoryTypes:Magnetic core,RAM,ROM,Secondary,Cache,BubbleMemory.

Input andOutput Units: Keyboard, Mouse, Monitor (CRT and LCD): Light pen, joystick,Mouse,Touchscreen;OCR, OMR,MICR

Overview of storage devices: Floppy disk, hard disk, compact disk, tape. **Printers**:Impact, non-impact,working mechanism ofDrum printer,DotMatrixprinter, Inkjetprinter andLaserprinter.

Computer languages:Machinelanguage,assemblylanguage,higher level language, 4GL.IntroductiontoCompiler,Interpreter,Assembler, Assembling,SystemSoftware, ApplicationSoftware. **(9)**

SECTION- C

Operating system:Batch, multi-programming,timesharing,network operatingsystem, on-line andreal time operatingsystem,Distributed operatingsystem,multi-processor, Multi-tasking.

GraphicalOS: Fundamentalsofwindows,typesofwindows,anatomyof windows, windows explorer, customizing windows, control panel, taskbar setting, Network

Neighborhood.

PersonalProductivitySoftware:

Word processing: Editingfeatures,formattingfeatures,saving, printing,table handling, pagesettings,spell-checking,macros,mail-merge,equationeditors.

Spreadsheet : Workbook, worksheets, data types, operators, cell formats, freeze panes, editingfeatures, formatting features, creating formulas, using formulas, cell references, replication, sorting, filtering, functions, Charts &Graphs.

Presentation GraphicsSoftware: Templates, views, formatting slide, slides with graphs, animation,usingspecialfeatures, presentingslideshows. **(9)**

SECTION-D

ComputerNetworkandCommunication:Networktypes,networktopologies,network communicationdevices, physical communicationmedia.

Internet and its Applications: E-mail, TELNET, FTP, World Wide Web, Internet chatting;Intranet,Extranet,Gopher, Mosaic,WAIS.

Securitymanagement tools:PC tools, NortonUtilities,Virus, worms,threats,virus detection,preventionandcureutilities,Firewalls,Proxyservers. **(9)**

Suggested Readings/Books:

1. **"ComputersToday",**D.H.Sanders, FourthEdition,McGrawHill,1988.
2. **"FundamentalsofComputers"**,V.Rajaraman,SecondEdition,PrenticeHallofIndia, NewDelhi,1996.
3. **"InformationTechnology",**SatishJain, Paperback Edition, BPB 1999.
4. **"Information TechnologyInside and Outside",** David Cyganski, John A. Orr, PaperbackEdition, PearsonEducation2002.
5. **"ComputerFundamentals",** B. Ram, ThirdEdition,Wiley,1997.
6. **"FundamentalsofInformationTechnology**",ChetanSrivastva,Thirdedition,Kalayani Publishers
7. **Computers**,Larry long&Nancy long,Twelfthedition,Prentice Hall

BSBC105 SOFTWARELAB-I(Programmingin C)

Objectiveand Expected Outcome:

Theobjectiveofthiscourseistohelpthestudentsin findingsolutionstovariousreallife problems andconverting thesolutionsintocomputer program using Clanguage (structuredprogramming).Studentswilllearntowriteprogramsfor solvingvariousreal-lifeproblems.

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1. **Keywordsand Identifiers:**introduction,purpose
2. **Variablesandconstants:**datatypes,Initialization,declaration,scope,memory limits
3. **Input-output statements:**formattedandnon-formattedstatements
4. **Operators:** Arithmetic, logical, conditional, assignment, bitwise, increment/decrementoperators
5. **Decision Making**:switch,if-else,nestedif, else-ifladder, break,continue,goto
6. **Loops**:while, do-while,for
7. **Functions**: definition, declaration, variable scope, parameterized functions, return statement,call by value,callbyreference,recursivefunctions
8. **Pre-processor Directives**: Pre-processor directives like INCLUDE, IFDEF, DEFINE,etc
9. **HeaderFiles**:STDIO.H, MATH.H, STRING.H, PROCESS.Hetc
10. **Arrays:**Arraydeclarations,Singleandmulti-dimensional,memorylimits,strings andstringfunctions
11. **Pointers**:Pointer declarations,pointer tofunction,pointer toarray/string,
12. **Files:**Creationandeditingofvarioustypesoffiles,closingafile(usingfunctions andwithoutfunctions)

BSBC106 SOFTWARELAB-II(Information Technology)

1. Familiarizingwith PC andWINDOWScommands,

2. Filecreation,

3. Editing

4. Directorycreation.

5. MasteryofDOSinternal & external commands.

6. Learning to useMSOffice: MSWORD,MSEXCEL&MSPowerPoint.

SecondSemester

EVSC 101ENVIRONMENTAL SCIENCE

Objective/s and Expected outcome:

Uponsuccessful completion ofthecourse,studentsshouldbeableto:

1.Measureenvironmental variables andinterpretresults

2.Evaluatelocal,regionalandglobalenvironmentaltopicsrelatedtoresourceuseand management

3.Propose solutionsto environmental problems related to resource use and management

4.Interprettheresultsofscientific studiesofenvironmentalproblems

5.Describe threatstoglobal biodiversity,theirimplications andpotentialsolutions

SECTION-A

Introduction: Definition and scope and importance of multidisciplinarynatureof environment.Needfor public awareness. **(2)**

NaturalResources: Natural Resources and associated problems, use and over exploitation,casestudies offorestresourcesandwater resources. **(4)**

Ecosystems: ConceptofEcosystem, Structure,interrelationship,producers, consumersanddecomposers,ecologicalpyramids-biodiversity andimportance.Hot spots ofbiodiversity **(4)**

EnvironmentalPollution: Definition, Causes,effects andcontrolmeasures ofair pollution, Waterpollution,Soilpollution,Marinepollution,Noisepollution,Thermal pollution,Nuclear hazards.SolidwasteManagement:Causes,effectsandcontrol measure ofurban and industrial wastes. Role ofan individual in prevention of pollution.Pollutioncasestudies.Disaster Management:Floods,earthquake,cyclone andlandslides. **(5)**

SECTION-B

SocialIssuesandthe EnvironmentFromUnsustainabletoSustainabledevelopment, Urbanproblemsrelatedtoenergy, Waterconservation,rainwaterharvesting, watershedmanagement.Resettlementandrehabilitation ofpeople; its problemsand

concerns. Casestudies.Environmental ethics:Issuesand possible solutions.Climate change,globalwarming,acidrain,ozonelayerdepletion,nuclearaccidents and holocaust.Casestudies. Wastelandreclamation.Consumerismandwasteproducts. EnvironmentProtectionAct.Air(PreventionandControlofPollution)Act. Water (Preventionandcontrolofpollution)Act. WildlifeProtectionAct,ForestConservation Act, Issues involvedinenforcement of environmental legislation Public awareness

(5)

Human Populationand the Environment, Population growth, variation among nations. Population explosion– Family Welfare Programme. Environment andhuman health, Human Rights, Value Education, HIV/AIDS. Women andchild Welfare.RoleofInformationTechnologyinEnvironmentandhumanhealth.Case studies

(4)

Suggested Readings/Books:

1. Agarwal,K. C. 2001**EnvironmentBiology**,Nidi Publ.Ltd.Bikaner.
2. Jadhav,H&Bhosale,V.M.1995.**EnvironmentProtectionandLaws**.HimalayaPub House,Delhi 284p.
3. RaoM.N.&Datta A.K.1987.**Waste WaterTreatment**.Oxford & IBH Publ.Co.Pvt.Ltd. 345 p.
4. **Principle ofEnvironmentScience** byCunninghan,W.P.
5. **Essentialsof EnvironmentScience** byJoseph.
6. **EnvironmentPollutionControl Engineering**byRao,C.S.
7. **Perspectives inEnvironmentalStudies**byKaushik,A.
8. **Elementsof EnvironmentScience&Engineering**byMeenakshi.
9. **Elementsof EnvironmentEngineering** byDuggal.

BSBC 201COMMUNICATION–II

Objective& Expected Outcome: The objective ofthis course is to makestudents understandthevalueofbusiness communication,written&presentationskillsin professionallife. The studentsshouldbewell equippedwithbusiness&written communicationwitheffective presentationskills.

SECTION-A

Introduction to BusinessCommunication (09)

Meaning and Definition; process and classification of communication; elements & characteristics of communication; barriers to effective communication in business organization;FormalandInformalcommunication;grapevine,importanceofeffective communicationinbusiness house;Principals ofeffectivecommunication

SECTION-B

Writing Skills (09)

Inter-officememorandums;faxes;E-mails;writingeffectivesalesletters-toagents; suppliers; customers; report writing;projectwriting.

SECTION-C

CurriculumVitae(CV) (09)

DraftingaCV;writingjobapplicationandotherapplications;do"sanddon"tswhile appearingfor an Interview;types ofinterview.

SECTION-D

Presentation Skills (09)

Introduction;needofgoodpresentationskillsinprofessionallife;preparingagood presentations;groupdiscussion;extempore speaking.

SuggestedReadings/Books:

1. **Effective Business Communication**-M.V.RODRIGUEZ
2. **Business Communication**-MeenakshiRaman, ParkashSingh, Paperback Edition, Oxford University Press

BSBC202MATHEMATICS–II

Objectives&ExpectedOutcome: Thissyllabusisspecially designedtohelpthe studentsofcomputer sciencetounderstandthe mathematicalconceptslike matrices, differentialcalculusandintegralcalculuswhichhaveapplicationsinvarioussubjects of computerscience.AlsoStatisticshasbeenaddedtohelpthemunderstandthetopics likecentraltendency, deviations,andmomentsetcwhichareveryusefulinday today life. After learning these topics, students will be able to apply these concepts in designingthesoftware applicationsfor somespecific devices.

SECTION-A

MATRIXALGEBRA (12)

Matrix algebra- Matrices, types of matrices, operations on matrices, determinants (withoutproperties),minors,cofactors,adjointandinverseofa matrix,Elementary transformationsinamatrixRankofamatrix,solutionofsimultaneousequationsusing Crammer‟sruleand matrixinversionmethod.

SECTION-B

STATISTICS&APPLICATIONS OF LOGARITHMS (12)

Statistics-Introductiontostatistics,measuresofcentraltendency-mean,medianand mode,measuresofdispersion,meandeviation,standarddeviationandcoefficientof variation.

ApplicationsofLogarithms-Problemsrelatedtocompoundinterest,depreciation andAnnuities.

SECTION-C

DIFFERENTIAL CALCULUS (12)

Introductiontodifferentiation,derivativeofafunctionofonevariable,powerfunctions, sumandproductoftwofunctions,functionofafunction,differentiationbymethodof substitution,maximaandminima.

SECTION-D

INTEGRAL CALCULUS (12)

IndefiniteIntegral,Integrationbysubstitution,Integrationbyparts,Integrationbypartial

fractions,DefiniteIntegral.NumericalIntegration:Trapezoidalrule,Simpson‟s1/3rule, Simpson‟s3/8rule.

Suggested Readings/Books:

1. **Numerical MethodstoEngineering**.,B.S.Grewal,Seventh Edition, Khanna Publishers
2. **BusinessMathematics**, D.C.Sancheti,Eleventh Edition,SultanChand&Sons
3. **Computer Oriented Numerical Methods**, Rajaraman,Third Edition,PHI Publications

BSBC203 OOPS USINGC++

Objective&ExpectedOutcome: Theobjectiveofthiscourse tolearn programming fromrealworldexamples andunderstandingobjectorientedapproachfor finding solutionstovariousproblemswiththehelpofC++language.Studentswilllearnto createcomputerbasedsolutionstovariousreal-worldproblemsusingC++andwill learn various conceptsofobjectorientedapproachtowards problem solving.

SECTION-A

Introduction:Object orientedprogramming approach,characteristicsofobject orientatedlanguages,BridgingC &C++(OverviewofC Concepts).

StructuresandUnions:Declarationofstructures,Accessing structure members, Structure Initialization, Arraysofstructure, nestedstructures,structurewithpointers, functions &structures,Unions,Structure/Union VersusClassinC++.

ClassDeclaration:DataMembers, Member Functions,PrivateandPublicMembers, DataHidingandEncapsulation,Array withinaclass. **(12)**

SECTION-B

ClassFunctionDefinition:MemberFunctiondefinitioninside theclassandoutsidethe class,FriendFunction, InlineFunction,Static Members&Functions,ScopeResolution Operator, Private andPublicMember Functions,Nesting ofMemberFunctions.

CreatingObjects,Accessingclassdatamembers,Accessingmember functions,Arrays ofObjects,Objectsasfunctionarguments:Passbyvalue,Passbyreference,Pointers to Objects.

Constructors and Destructors: Declaration andDefinition, Default Constructors, ParameterizedConstructors,ConstructorOverloading,Copy Constructors.Destructors: Definition anduse. **(12)**

SECTION-C

Inheritance-ExtendingClassesConcept ofinheritance,Baseclass,Derivedclass, Defining derived classes, Visibility modes : Private, public, protected; Single inheritance:Privatelyderived,Publicly derived;Makingaprotected memberinheritable, AccessControltoprivateandprotectedmembersby member functionsofaderived class,Multilevel inheritance,Nesting ofclasses.

Function Overloading & Operator Overloading:Binary&Unary. **(12)**

SECTION-D

Polymorphism: Definition, early Binding, Polymorphism with pointers, Virtual Functions,late binding, pure virtualfunctions.

Input/outputfiles:Streams,buffers&iostreams,headerfiles,redirection, fileinputand output. **(12)**

SuggestedReadings/Books:

1. **ObjectOrientedProgrammingwithC++,**E.Balagurusami,FourthEdition,TataMc-Graw Hill
2. **ObjectOrientedProgramminginTurboC++,** RobertLafore,FourthEditionGalgotia Publications.
3. **The C++ Programming Language**, BjarnaStroustrup, Third Edition, Addison-Wesley PublishingCompany.
4. **ObjectOrientedProgrammingUsingC++,**Salaria,R.S,FourthEdition,KhannaBook Publishing

BSBC204COMPUTER SYSTEMARCHITECTURE

ObjectivesandExpectedOutcome: Tomakestudentsawareaboutthebasic building blocksofcomputersystemandhow thedifferentcomponentsareinterfacedtogether. Studentswillknow aboutthebasicfunctioning ofvariouspartsofcomputersystemfrom hardwarepointofview andinterfacingofvariousperipheral devicesusedwiththe system.

SECTION-A

Introduction to Computer Organization: Introduction to Computer and CPU (Computer Organization, Computer Design and Computer Architecture), Stored ProgramConcept-VonNeumannArchitecture.IntroductiontoFlynn‟s Classification- SISD, SIMD,MIMD

RegisterTransferandMicrooperations-IntroductiontoRegisters,RegisterTransfer Language,Data movementamongRegisters andMemory.

Microoperations:Introductiontomicrooperations,Typesofmicrooperations--Logic Operations,Shiftoperations,ArithmeticandShiftoperations.

CommonBusSystem:IntroductiontoCommon BusSystem, TypesofBuses(Data Bus,ControlBus,AddressBus),16bitCommon BusSystem--DataMovementamong registers usingBus. **(09)**

SECTION-B

BasicComputerInstructions-IntroductiontoInstruction, TypesofInstructions (Memory Reference,I/OReferenceandRegisterReference),InstructionCycle, InstructionFormats(DirectandIndirectAddressInstructions, ZeroAddress,One Address,TwoAddressandThreeAddressInstructions)

Interrupt:Introductionto InterruptandInterruptCycle.

DesignofControlUnit:IntroductiontoControlUnit,TypesofControlUnit(Hardwired &Micro programmedControl Unit).

Addressing Modes-Introduction&differenttypes ofAddressing Modes**.** **(09)**

SECTION-C

I/OOrganization:I/OInterfaceUnit,typesofports(I/Oport,NetworkPort,USBport, Serial andParallel Port), ConceptofI/Obus,Isolated I/OversusMemoryMapped I/O.

I/ODataTransferTechniques:ProgrammedI/O, InterruptInitiated I/O,DMAController andIOP.

Synchronous and Asynchronous Data Transfer: Concept of strobe and handshaking,source anddestinationinitiateddatatransfer. **(09)**

SECTION-D

StackOrganization:MemoryStackandRegister Stack

Memory organization: Memory Hierarchy, Main Memory (RAM and ROM chips, LogicalandPhysicalAddresses,Memory AddressMap,MemoryConnectiontoCPU), AssociativeMemory

CacheMemory: Cache Memory(Initialization of Cache Memory,Writingdata into Cache,LocalityofReference,Hit Ratio), ReplacementAlgorithms (LRUandFIFO).

CacheMemoryMappingTechniques:DirectMapping,AssociativeMappingandSet-Associative Mapping. Harvard Architecture, Mobile Devices Architecture (Android, Symbian andWindows Lite), LayeredApproach Architecture. **(09)**

Suggested Readings/Books:

1. **Computer SystemArchitecture**, M.M.Mano, Third Edition, PHI
2. **Computer OrganizationandArchitecture**,J.P. Hayes, ThirdEdition,TMH
3. **Computer OrganizationandArchitecture**,Stallings,Eighth Edition, PHI

BSBC 205WORKSHOPON WEB DEVELOPMENT

ObjectivesandExpectedOutcome/s: Thiscoursewill enablethe studenttobuildand publishwebsites using Dreamweaver, apopular visualwebsite production and management program,usingHTML,DHTML,CSSandJavaScript. Thiscoursewill enablethestudentto buildandpublishwebsites usingDreamweaver,apopularvisual websiteproductionandmanagementprogram.Theintentionisforthestudenttobe ableto:

1. Identifytheentities responsiblefor implementingmark-uplanguagestandards.
2. CodeandtroubleshootHTMLandXHTMLwebpages,incorporatingCSSand scripts.
3. Incorporate multimedia(images,animation,sound,andmovies) intoweb pages.
4. Demonstrate effective useofDreamweavertobuild andpublish professionalweb sitesthatemploy bestpractices,adheretocurrentwebstandards,andpass validation.

- **Introduction to WebDevelopment:**

  Website,Webpage,StaticWebsite,DynamicWebsite.

- **Introduction to HTML/DHTML:**

  HTMLBasics,HTMLElements(Tags),StructureofHTMLProgram,Attributes, Headings,Paragraphs,
  Formatting,Links,Images,Tables,Lists,Forms,Frames,WheretoputTables, Lists,Images,Forms,CSSinDHTML,ImplementationofWebPagesusingCSS.

- **Introduction to JavaScript:**

  How&Whereto puttheJavaScriptCode,JavaScript Statements,Comments, Variables,Operators,Control Statements,Loops,PopupBoxes,Functions.

- **Introduction to Dreamweaver:**

  UnderstandingWorkspaceLayout,ManagingWebsites,Creatinga Website, Using Dreamweaver Templates,AddingNewWebPages,Text andPageFormat, InsertingTables, Lists,Images,AddingLinks.

- **Purchasing aDomain Name&Web Space:**

  DomainName&WebSpace,GettingaDomainName&WebSpace(Purchase or Free), UploadingtheWebsitetoRemote Server.

SuggestedReadings/Books:

1. **HTML & CSS:The CompleteReference**, ThomasPowell,FifthEdition
2. **SamsTeachYourself HTML and CSS in 24 Hours** Julie C. Meloni&Michael Morrison,Eighth Edition
3. **HTMLABeginner's Guide**WendyL.Willard, FourthEdition
4. **HTML,XHTML and CSSAll-In-One**For Dummies Andy Harris, SecondEdition
5. **JavaScript,ABeginner's Guide** John Pollock,Third Edition
6. **Professional JavaScript for Web Developers (WroxProgrammer)** Nicholas C. Zakas,SecondEdition
7. **DreamweaverCS5 For Dummies** JanineC.Warner, PaperbackEdition
8. **Adobe DreamweaverCS5**Bible JosephLowery,PaperbackEdition
9. **The Essential GuidetoDreamweaverCS4**David Powers

Websites:

1. www.w3schools.com
2. www.html.net
3. www.thesitewizard.com
4. www.learndreamweavertutorials.com

BSBC 206 SOFTWARELAB-III(OOPSusing C++)

Instructionsfor candidates: Allthefollowingconcepts needto bepractisedwithat least10programspertopicandsub-topicalongwiththeiralgorithms.Practicalfile needs tobemaintained.

SECTION –A

Structures:Definition,declaration,scope,functions

Union:Definition,declaration,scope,functions

Class:Definition,declaration,members, scopeofmembers.

SECTION–B

ClassFunction:definition(Insideclass,outsideclass),in-linefunctions,staticfunction, friendfunctions,scope offunctions (public, private),andnestingofmemberfunctions

ClassDatamembers:creatingobjects,accessingmemberfunctions,arrayofobjects, objectsasarguments(Passby value,pass byreference)

Constructoranddestructor:creatingdefaultconstructor,parameterizedconstructor, copyconstructor, destructor

SECTION–C

Inheritance:baseclass, derivedclass,visibilitymode(public,private, protected),single inheritance, multi-level inheritance, multiple inheritance, nesting of classes, access control tofunctions(with differentscope),

Functionoverloading and overriding, operatoroverloading,

SECTION–D

Earlybinding,latebinding,virtualfunctions,pure virtual functions

Input/output files: streams, buffers and io-streams, various input-output functions, processingfiles usingclassfunctions

Third Semester

BSBC301SYSTEMANALYSIS&DESIGN

Objective/s&ExpectedOutcome: Toteachtheanalysisandpracticalityofvarious systemsonwhichsoftwaresystemcanbedeveloped.Aftercompletingthiscourse studentswill be abletodesign anddevelopsystems.

SECTION-A

SystemDevelopmentLife Cycle*:*SystemDefinition,characteristics,elements&types of system,PhasesofSDLC,Informationgatheringtools,StructuredAnalysistools, Roleof System Analyst.

SECTION-B

SystemDesign: Processandstages ofsystemsdesign,Input/Output andfiledesign, Documentation(User Manual,DesignDocumentation,TrainingManual),CaseStudy techniques insystem design.

SECTION-C

Systemtesting: Unit Testing,SystemTesting,IntegrationTesting,Alpha&Beta Testing, AcceptanceTesting,RegressionTesting.

SECTION-D

System Implementation: System implementation Process, Implementation methods, Systemmaintenance,Postimplementation maintenance.

Suggested Readings/Books:

- **SystemAnalysisand Design**AwadElias N.*Second Edition,*GalgotiaPublications
- **Analysisand DesignofInformationSystem**SenJamesA.*SecondEdition,* Tata McGraw Hill.

BSBC302DATASTRUCTURES

Objective/sExpected Outcome: Objectiveisto makethestudentsunderstand how datais managedinternallywithinany computerwiththeunderstandingofbasic knowledgeofCandC++.Thestudentswillgaintheknowledgeofbasicsofinternal datastructure.

SECTION-A

IntroductiontoDataStructures: Basicconceptofdata, Problemanalysis,algorithm complexity,Big Onotationandtimespace tradeoff, Typesofdatastructures:arrays records, pointers, stack,queue,trees,linkedlist packet, blocks,tracks,sector(instorage devices).

SearchingandSorting:Useofvariousdata structures forsearching andsorting,linear andbinarysearch,bubblesort, insertionsort,selectionsort.

SECTION-B

Stacks&Queues: Basicsofstacksandqueues,Recursion,Polishnotation,circular Queues,priorityQueues.

SECTION-C

LinkedLists: Singlelinkedlist,Circularlinkedlist,DoublylinkedlistandDynamic storagemanagement, generalizedlist,GarbageCollection.

SECTION-D

Trees: Definition &Concepts,Basictrees,Binarytreerepresentations,Binarytree traversals andapplicationoftrees.

Suggested Readings/Books:

- **DataStructures,**Lipschutz Seymour,Second Edition, TMH
- **Algorithm+ DataStructures=Programs**,NiclausWirth, Prentice Hall
- **DataStructures,**Tanenbaum, PaperbackEdition
- **AnIntroductionto DataStructures Applications,**Trembley&Soreson,SecondEdition

BSBC303DIGITAL CIRCUITS&LOGIC DESIGN

Objective/s&ExpectedOutcome: Togiveknowledge aboutthevariouselectronicscomponentsand digitalcircuitsto the studentsanddesigningofvariousbuilding blocksofcomputersystem.After studyingthissubjectstudentswillbeabletodesignsmallprojectsandcaneasilyunderstandthe internalworking ofdigital electroniccircuits.

SECTION-A

Number System: DecimalNumberSystem,Binary NumberSystem,OctalNumberSystem,Hexa-decimalNumberSystem,Conversion fromOneNumberSystemto another,ArithmeticOperation withoutChangingtheBase,1"sComplementand2"sComplement.**Logic Gates:**AND,OR,NOT, NAND,NOR,XOR,XNOR,NAND & NORasUniversal Gates,LogicGatesApplications.

SECTION-B

Boolean Algebra: Introduction, Theorems, Simplification of Boolean Expression using Boolean Algebra,SOP& POS Forms,RealizationofBoolean ExpressionusingGates,K-Maps,Simplification of BooleanExpressionusing K-Maps.**Combinational LogicCircuits:**HalfAdder&HalfSubtractor, Full Adder&Full Subtractor,Parallel BinaryAdder,BinaryAdder/Subtractor.

SECTION-C

CombinationalLogic Circuits: Multiplexers&Demultiplexers,ImplementationofBooleanequations using MultiplexerandDemultiplexer,Encoders&Decoders.**SequentialLogic Circuits:**Latch, Flip Flops-R-SFlip-Flop, J-KFlip-Flop,Master-SlaveJ-KFlip-Flop,RaceCondition,RemovingRace Condition,D Flip-Flop,T Flip-Flop,ApplicationsofFlip-Flops.

SECTION-D

Counters: Clock Pulse Generator using 555 Timer as Monostableand Multivibrator, Design of AsynchronousCounters,Design ofSynchronousCounters,Up-Down Counters,MOD-N Counters.

SuggestedReadings/Books:

- **Digital ComputerElectronics,** Malvino,Second Edition, Mc-GrawHill
- **ModernDigitalElectronics,**R.P.Jain,Fourth Edition,TMH
- **DigitalLogic&ComputerDesign,** D.Morris Mano,Second Edition,PHI
- **Digitaland ElectronicCircuits,**T.C.Bartee, McGrawHill
- **DigitalFundamentals,**Floyd,NinethEdition,PHI
- **Digital IntegratedElectronics,** Taub&Schilling,EighthEdition, Mc-GrawHill

BSBC304BASIC ACCOUNTING

Objective/s&ExpectedOutcome: Thiscourseprovidesanorientationinthefieldofaccounting andbasicaccountingfundamentals.Aftercompletionofthiscourse,candidatewouldbeableto recordandposttransactions inthebasicaccountingequationandmaintainsubsidiaryledgers.

SECTION-A

BasicAccountingConcepts: BackgroundofAccounting,Introduction,importanceandscope, Accounts – Types and classification; basic terms– Capital, Income, Expenditure, Expenses, Assets,LiabilitiesandapplicationtoProblems.,Accounting Equation,DoubleEntrySystem. **Generallyaccepted accounting principles.**

SECTION-B

JournalandLedger-Journal andrecording ofentriesinjournalwithnarration;Ledger–Posting fromJournaltorespectiveledgeraccounts. Basicconceptsofpurchasebook,salesbookand cashbook.**TrialBalance:**Needandobjectives;ApplicationofTrialBalance;differenttypesof errors escaped,trial Balancepreparation.

SECTION-C

FinalAccounts: FinalAccountswithoutadjustments.**BankReconciliation Statement:**Bank transactions,Preparationofsimplebank reconciliationstatement.

SECTION-D

Sourcesof raising ofcapitalin corporate undertaking:workingCapitalandLongtermCapital. **Application ofcomputers in accounting.**

SuggestedReadings/Books:

- Managerial Accounting, JawaharLal,FirstEdition
- Financial Accounting,Dr. R.K. Mittal &M.R.Bansal
- BasicAccounting, RajniSofat&PreetiHiro,SecondEdition
- Accountingfor management, Bhattacharya &Deaden,PaperbackEdition, Vikas 1986
- Financial Accounting (Part I and Part II),R.LGupta &V.KGupta
- Fundamental Accountancy,S.N. Maheshwari
- Accounting Principal,Antony&Reece,Sixth Edition.

BSBC305SOFTWARELAB-IV(DataStructures)

Note:Programshould befullydocumentedwith sample I/O.Data Flowcharts should bedeveloped wherever necessary.

WriteanAlgorithm and Programusingfunctionsfor:

1. ProgramusingRecursion.
2. Traversingthe elements ofan Array
3. Insertinganelementinan Array
4. Deletinganelementfrom anArray
5. Mergingoftwo Arrays
6. LinearSearch
7. BinarySearch
8. InsertionSort
9. Bubble Sort
10. Selection Sort
11. ImplementingPUSH&POPoperationsofaStack
12. ArrayImplementation ofaQueueandCircular Queue
13. Convertinginfixnotationintopostfixnotation
14. Insertioninsingleanddouble LinkedList
15. Deletionfromsingle and doubleLinked List

BSBC306 HARDWARELAB-I(Digital Circuits&LogicDesign)

BasicElectronics: IntroductiontoDiode,Diode asLogicElement,Schottkydiode,Transistor,Transistor Characteristics,TransistorasaSwitch&LogicalElement,IntroductiontoTTL andMOSTechnology, Transformer.

Practicals:

1. To studythe function ofbasic logicgates and verifythe truth tableof AND, OR, NOT, XOR, NAND, NOR.
2. To studyapplications of AND, OR, NAND, X-OR gates forgatingdigital signals.
3. To develop thedifferentArithmeticCircuits:
    a. Half-Adder and Subtractor.
    b. Full-Adderand Subtractor.
4. To studytheBCD to binaryandbinaryto BCD Code converter.
5. Studyof Decoder Circuits:
    a. BCD-to-Decimal Decoder
    b. BCD-to-7-Segment Decoder
6. Studyof Encoder Circuits:
    a. BCD-to-Decimal Encoder
    b. Octal-to-BinaryEncoder
7. To studythe flip flop circuitusingGates:
    a. R-SFlip Flop
    b. J-K Flip Flop
    c. Master SlaveJ-K Flip Flop
    d. D-Flip Flop
8. To studyR-S, J-K and DFlip Flop Using IC's.
9. Studyof RingCounter.
10. Studyof Asynchronous and Synchronous Counters.

Fourth Semester

SOFTWARE ENGINEERING

BSBC401

Objective: Theobjectiveofthis courseis to makestudents familiarwith all thesoftware development principles,models and designingtools required to develop thesoftware.

Expected Outcome: After completing this course, students will learn new techniques and models on which softwaredevelopment is based.

Instructions forPaper-Setter

The questionpaperwillconsistoffive sectionsA,B,C,DandE. SectionsA,B,CandDwill havetwoquestionsfromtherespectivesectionsofthesyllabusandwillcarry 10markseach. Section E will have 10 short answer type questions, which will cover the entire syllabus uniformlyandwillcarry20 marks in all.

Instructions forCandidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthe question paper and the entireSection E.

Useof non-programmablescientificcalculator is allowed.

SECTION A

Software:Characteristics,ComponentsApplications,**SoftwareProcessModels:**Waterfall, Spiral,Prototyping,FourthGenerationTechniques,Conceptsof ProjectManagement,RoleOf Metrics And Measurement.

SECTION B

S/WProjectPlanning: Objectives,**DecompositionTechniques:**S/WSizing,ProblemBased Estimation,ProcessBasedEstimation,**CostEstimationModels:**COCOMOModel,The S/W Equation,**System Analysis:**PrinciplesOf StructuredAnalysis, Requirement Analysis,DFD, Entity RelationshipDiagram,DataDictionary.**S/WDesign**:Objectives,Principles,Concepts, **Design Methodologies:** Data Design, Architecture Design, Procedural Design, Object – Oriented Concepts.

SECTION C

TestingFundamentals: Objectives, Principles,Testability,**TestCaseDesign:**White Box&Black Box testing,**TestingStrategies:**Verification&Validation,UnitTesting, Integration Testing, Validation Testing, System Testing.

SECTION D

Advancedtopics inSoftware Engineering:

Reengineering: ReverseEngineering, Restructuring,Forward Engineering.

ComputerAided SoftwareEngineering (CASE): Taxonomyof CASE tools.

SuggestedBooks:

1. RogerS.Pressman,"SoftwareEngineering–APractitioner'sApproach",SixthEdition, McGrawHill
2. R.E. Fairley, "Software EngineeringConcepts",PaperbackEdition,McGraw Hill.
3. Jalota, "An Integrated Approach to Software Engineering", Third Edition, Narosa PublishingHouse

MICROPROCESSORS &MICROCONTROLLERS

BSBC402

Objectives: Tomakestudentsaware abouttheinternalarchitecture ofmicroprocessorsandgive the basic knowledgeabout the assemblylevel languageprogramming.

ExpectedOutcomes: Afterstudying thissubjectstudentswillbeabletounderstandthe architecture ofmicroprocessorsandthevariouscontrollersusedwithittoenhancethe performanceofcomputersystem.Studentswillbeabletowriteassembly levelprogramsfor hardwareinterfacing.

Instructions forPaper-Setter

The questionpaperwillconsistoffive sectionsA,B,C,DandE. SectionsA,B,CandDwill havetwoquestionsfromtherespectivesectionsofthesyllabusandwillcarry 10markseach. Section E will have 10 short answer type questions, which will cover the entire syllabus uniformly andwillcarry 20marksinall. Papershouldbedesignedtoemphasizetheconceptsof various technologies ratherthan memorizing.

Instructions forCandidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthe question paper and the entireSection E.

Useof non-programmablescientificcalculator is allowed.

SECTION-A

Introduction to Microprocessors: HistoricalBackground ofMicroprocessors, Applications of Microprocessors,Introduction to 8085, Architectureof 8085, Pin Diagramof8085.

SECTION-B

Instruction Cycle,Timing DiagramsofMemory Read/WriteOperations&timing diagramsof variousInstructions,Addressing Modes,InstructionSet,DataTransferInstructions,Arithmetic Instructions,LogicalInstructions, BranchInstructions, ControlInstructions, RISC &CISC Processors.

SECTION-C

Introduction to Microcontrollers:

Architectureof Microcontroller, Microcontroller Resources, Resources in Advancedand Next Generation Microcontroller, 8051 Microcontroller,Internal and External Memories, ROM Based Controller, Counters andTimers, Synchronous Serial and Asynchronous Serial Communication, Interrupts.

SECTION-D

Peripheral Devices andControllers:

Introduction and Architecture ofDMA Controller8257, Architectureof ProgrammableInterrupt Controller 8259, ClockGenerator, Architectureof8284.

SuggestedBooks:

1. Microprocessor Architecture, Programming and Applications with 8085, Ramesh. S. Gaonkar,Fourth Edition,PenramInternational Publishing
2. 8051 MicrocontrollerandEmbedded Systems,Muhammad Ali Mazidi JaniceGillispie Mazidi, Second Edition,PHI
3. Fundamentals of Microprocessorsand Microcomputers,B. Ram,Fourth Edition,Dhanpat Rai Publications
4. TheIntel Microprocessors 8086/8088,80186/80188, 80286, 80386, 80486, Pentium Pro Architecture, ProgrammingandInterfacing,B. Brey,Fifth Edition,PrenticeHall International

OPERATINGSYSTEMS

BSBC403

Objective: The objectiveof thiscourseistohelpstudentsbecome familiarwiththe fundamental conceptsofoperatingsystemsandprovidestudentswithsufficientunderstanding ofoperating system design.

ExpectedOutcome: Uponsuccessful completionof this course, the student shall be able to:

1. Exhibit familiaritywith the fundamentalconceptsofoperatingsystems;
2. Exhibit competencein recognizingoperatingsystems featuresand issues; and
3. Applyamatureunderstandingofoperating systemdesignandhowitimpactsapplication systems design and performance.

Instructions forPaper-Setter

ThequestionpaperwillconsistoffivesectionsA,B,C,DandE.SectionA,B,CandDwill havetwoquestionsfromtherespectivesectionsof thesyllabusandwillcarry 10markseach. Section E will have 10 short answer type questions, which will cover the entire syllabus uniformlyandwillcarry20 marks in all.

Instructions forCandidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthe question paper and the entireSection E.

Useof non-programmablescientificcalculator is allowed.

SECTION A

Introduction: Application programs and systemprograms;functions of an operatingsystem; classification ofoperatingsystems-Multi-user, multiprogramming, multiprocessing, time sharing, multi-threaded.Subsystems– TopLayer,MiddleLayer,BottomLayer,Bootstrap, Protection and security.

Processes andThreads: Program vs. Process; Process context, address space, identification, transition, state&management. Thread management-benefits, synchronization issues; applications of threads.

SECTION B

CPU Management: Objectives, Pre-emptive vs. Non-pre-emptive, context switching, schedulingschemes; multi-processor scheduling, thread scheduling.

Inter-process Communications: Introduction, messagepassingmodel, shared memorymodel. Pipe, FIFO and Socket.

SECTION C

MemoryManagement: Introduction, address binding, relocation, loading,linking, memory sharing and protection; Paging and segmentation;Virtual memory: basic concepts of demand paging, performance, page replacement. Thrashing.

I/ODevice Management:I/O devices andcontrollers, devicedrivers; disk storage, scheduling and management.

SECTION D

File Management: Basic concepts, fileoperations, access methods, directorystructuresand management, remote filesystems;fileprotection.

Protection &Security: Need, environments:software, hardware, unauthorized use, denial of services, access control and authentication. Application security, attacks, virus &anti-virus, firewall.

SuggestedBooks:

1. OperatingSystem Principles byAbraham Silberschatzand PeterBaer Galvin,Seventh Edition, PublishedbyWiley-India
2. OperatingSystems bySibsankarHaldar and AlexA. Aravind, PublishedbyPearson Education.
3. AnIntroduction to OperatingSystemsByDietelH.M., Second Edition,Publishedby Addison Wesley.
4. Operatingsystem byMilan Milenkovic, Second Edition
5. OperatingsystembyStalling, W., Sixth Edition, PublishedbyPrenticeHall(India)

DATABASE MANAGEMENT SYSTEMS

BSBC404

Objectives: Thiscoursecoversfundamentalsofdatabase architecture,databasemanagement systems,anddatabase systems. Principlesandmethodologiesof databasedesign,andtechniques fordatabase application development.

ExpectedOutcome: Upon completion ofthis course, participants willhavegained knowledgeof databasesystem conceptsand the abilityto:

- understand userrequirements/views
- analyzeexistingand futuredata processingneeds
- develop an enterprise data model that reflects theorganization's fundamental business rules
- develop and refinetheconceptual data model, includingallentities, relationships, attributes, andbusiness rules

Instructions forPaper-Setter

ThequestionpaperwillconsistoffivesectionsA,B,C,DandE.SectionA,B,CandDwill havetwoquestionsfromtherespectivesectionsofthesyllabusandwillcarry 10markseach. Section E will have 10 short answer type questions, which will cover the entire syllabus uniformlyandwillcarry20 marks in all.

Instruction forCandidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthe question paper and the entireSection E.

Useof non-programmablescientificcalculator is allowed.

SECTION A

An overviewofDBMS: Concept of FileProcessingSystems and databasesystems, Database Administrator and his responsibilities. Physical andLogicaldata independence.
Threelevel ArchitectureofDatabase System: the external level, conceptual level and the internal level.

SECTION B

Introduction to Data Models: EntityRelationship Model, Hierarchical, Network and Relational Model. Comparison ofNetwork, Hierarchical andRelational Model.

SECTION C

Relational data Model: Relational database,relational algebraand calculus, SQLdependencies, functional dependency,multi-valued dependencyand join, normalization.

SECTION D

Database protection: Recovery, ConcurrencyManagement, DatabaseSecurity,Integrityand Control, DisasterManagement

Distributed databases: Structureof adistributeddatabase, design of distributed databases.

SuggestedBooks:

1. "AnIntroduction to DatabaseSystem",Bipin C. Desai,GalgotiaPublications.
2. “AnIntroduction to DataBaseSystems",C.J. Date, Eighth Edition,Narosa Publications.
3. "DatabaseSystem Concepts",HenryF. Korth,Fifth Edition,McGraw Hill.
4. "Introduction to DatabaseManagement",NaveenPrakash,TMH
5. "Principles of DatabaseSystems",Ullman, SecondEdition,GalgotiaPublications.
6. “DatabaseSystems:Design,Implementation, andManagement”, Rob Coronel,Ninth Edition

HARDWARE LAB-II(Microprocessors&Microcontrollers)

BSBC405

Using**8085 Microprocessor kits**do the followingprograms:

1. To examine and modifythecontents of aregister and memorylocation.
2. To add two 8-bithexadecimal numbers withoutconsideringthecarrygenerated.
3. To add two 8-bithexadecimal numbers consideringthecarrygenerated.
4. To subtract two 8-bit hexadecimal numbers without consideringborrow.
5. To subtract two 8-bit hexadecimal numbers consideringborrow.
6. To add two 8-bithexadecimal nos. Theresultshould not be greater than199.
7. To add two 16-bithexadecimalnumberswithoutconsideringthe carrygenerated.
8. To add two 16-bithexadecimalnumbersconsideringthe carrygenerated.
9. To subtract two 16-bitnumbers without consideringborrow.
10. To subtract two 16-bit numbers consideringborrow.
11. Tofind 2's complement of 8-bithexadecimalnumber.
12. To add series of 8-bithexadecimalnumbers neglectingthe carrygenerated.
13. To separate8-bithexadecimal numberinto two digits (Breakingthe byteinto two nibbles).
14. To arrangethe seriesof8-bithexadecimal numbers in ascendingorder.
15. To arrangethe seriesof 8-bithexadecimal numbers in descendingorder.

SOFTWARE LAB-V (Database Management Systems)

BSBC406

Thislaboratorycoursewillmainlycompriseofexerciseonwhatislearntunderthepaper:

BSBC208

FamiliarizationwithMSAccess: Features,Elements,PartsofMSAccessWindow,Creating and SavingDatabase, and Tables.

Using Queries: Running various DDLandDML commands usingSQL, CreatingViews

Using Forms andReports inMSAccess

IntroductoryPracticalson using Crystal Reports

Fifth Semester

DATAWAREHOUSING &MINING

BSBC501

Objective: The objective of this course is to get students familiar with the data mining techniques, softwares and tools beingusedinIndustries.

ExpectedOutcome: Aftercompleting this course, studentswilllearn various toolsand techniques which areprominent fromIndustrial point of view.

Instructions forPaper-Setter

ThequestionpaperwillconsistoffivesectionsA,B,C,DandE.SectionA,B,CandDwill havetwoquestionsfromtherespectivesectionsofthesyllabusandwillcarry 10markseach. SectionEwillhave 10shortanswertypeconceptualquestions,whichwillcover theentire syllabus uniformlyand will carry20 marks in all.

Instructions forCandidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthe question paper and the entireSection E.

Useof non-programmablescientificcalculator is allowed.

Internal Assessment-40Marks
External Assessment-60Marks

SECTION-A

IntroductiontoData Warehousing,The needfordatawarehousing,Operational&Informational Data Stores,Data Warehouse Characteristics,Data Warehouse role&Structure,The costof warehousingdata.

Introduction to OLAP &OLTP, Differencebetween OLAP &OLTP. OLAPOperations

SECTION-B

Building aDataWarehouse,Design/Technical/ImplementationConsiderations,DataPre- processing Overview.DataSummarization,DataCleaning,DataTransformation,Concept Hierarchy, Structure. Patterns &Models, ArtificialIntelligence(Overview).

MultidimensionalDataModel,SchemasforMultidimensionalData(StarSchema,Snowflake Schema,FactConstellation),DataWarehouseArchitecture,DataWarehouseDesign,OLAP

Three-tierArchitecture,Indexing&QueryinginOLAP,OLAM,EfficientMethodsofCube Computation, DiscoveryDriven Exploration ofData Cubes, Attributed-OrientedInduction.

SECTION -C

AssociationRuleMining,MarketBasketAnalysis,AprioriAlgorithm,Mining Multilevel AssociationRules, FromAssociationMiningtoCorrelationAnalysis, ConstraintBased AssociationMining,IntroductiontoClassification,Classification by decisionTree,Attribute Selection Measure.

SECTION -D

IntroductiontoPredictiontechniques,Accuracy ofaClassifier,Cross-Validation,Bootstrap, Boosting,Bagging,IntroductiontoClustering,Classificationof VariousClustering Algorithms, SelectingandUsingRightDMTechnique,SelectingandUsing RightDMTechnique,Data Visualization.

SuggestedBooks:

1. DataWarehousing,DataMining,andOLAP,AlexBerson,FirstEdition,TataMcGraw Hill
2. DataMiningConcepts&Techniques,JiaweiHan&MichelineKamber,SecondEdition, Morgan Kaufmann Publishers
3. ModernDataWarehousing,Mining&VisualizationCoreConcepts,GeorgeMMarakas, First Edition, PearsonEducation
4. Data Warehousing, Architecture&Implementation,Hawkin, PrenticeHall
5. DataMining:ModellingDataforMarketing,RiskandCustomerRelationshipMgmt, Rud,Olivia, Paperback Edition
6. Data MiningTechniques,Berry,Michael, Third Edition
7. Data Mining,Data Warehousingand OLAP, Sharma, Gajendra, Second Edition
8. Data Mining with CaseStudies, GuptaGK, Second Edition
9. Principles of Data Mining, Hand,David

PROGRAMMING IN JAVA

BSBC502

Objective: Theobjective of this courseis to letstudents understand basics ofjavaprogramming language, developmentofprograms and databaseconnectivity.

Expected Outcome: Students willbe abletocreate numberofsmallapplicationsinJava.

InstructionsforPaper-Setter

ThequestionpaperwillconsistoffivesectionsA,B,C,DandE.SectionA,B,CandDwillhavetwo questionsfromtherespectivesectionsofthesyllabusandwillcarry10markseach.SectionEwillhave 10shortanswertypeconceptualquestions,whichwillcovertheentiresyllabusuniformlyandwillcarry 20 marks in all.

Instructionsfor Candidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthequestionpaper and the entireSection E.

Useofnon-programmable scientific calculatoris allowed.

InternalAssessment-40 Marks

External Assessment-60 Marks

SECTION-A

FUNDAMENTALSOFOBJECT–ORIENTEDPROGRAMMING: -Introduction;Object-Oriented Paradigm;Basic ConceptsofObject-Oriented ProgrammingBenefits ofOOP; Applications of OOP.

JAVAEVOLUTION: -JavaHistory;JavaFeatures;HowJavaDiffersfromCandC++;Javaand Internet, JavaandWorldWide Web, WebBrowsers;HardwareandSoftwareRequirements;JavaSupport Systems, Java Environment

OVERVIEW OFJAVALANGUAGE:-Introduction;SimpleJavaProgram;Comments injava; An application with Two Classes; Java Program Structure; Java Tokens; Java Statements; ImplementingaJava Program;JavaVirtualMachine; Command Line Arguments;ProgrammingStyle.

CONSTANTS,VARIABLESANDDATATYPES:-Introduction;Constants; Variables;Data Types; Variables, Constants, Standard DefaultValues.

OPERATORSANDEXPRESSIONS:-Introduction toOperators,Expressions; OperatorPrecedence; MathematicalFunctions.

DECISION MAKING, BRANCHING AND LOOPING: - Decision making and Branching Statements, LoopingStatements, Labeledloops,JumpingStatements

SECTION-B

CLASSES,OBJECTSANDMETHODS:-Introduction;Defining aClass;Adding Variables; Adding Variables; Adding Methods; Creating Objects; Accessing ClassMembers;Constructors;Methods Overloading;Static Members;NestingofMethods;

Inheritance: Extending a Class; Overriding Methods; Final Variables and Methods; Final Classes; FinalizerMethods;AbstractMethods andClasses;VisibilityControl.

ARRAYS,STRINGSANDVECTORS:- Arrays;ZaggedArrays:;Strings; String functions:Vectors; WrapperClasses.

INTERFACES: Introduction;Defining Interfaces;ExtendingInterfaces;Implementing Interfaces; AccessingInterfaceVariables, ImplementingMultipleInheritence usingInterfaces.

PACKAGES: Introduction; SystemPackages; Using System Packages; Naming Conventions; Creating Packages; Accessing a Package; Using a Package; Adding aClass to aPackage;Hiding Classes.

SECTION-C

MANAGING ERRORSANDEXCEPTIONS:- Introduction; TypesofErrors;Exceptions;Exception Handling using Try,CatchandFinally block:Throwing OurOwnExceptions;Using Exceptions for Debugging.

APPLET PROGRAMMING:- Introduction; How Applets Differ from Applications;Applet Life Cycle; Creating anExecutableApplet;PassingParameters toApplets;AligningtheDisplay;More aboutHTMLTags;DisplayingNumericalValues;Getting Input from the User.

GRAPHICSPROGRAMMING:-Introduction;The GraphicsClass;Lines and Rectangles;Circlesand Ellipses;Drawing Arcs;Drawing Polygons;LineGraphs;Using ControlLoopsinApplets;Drawing Bar Charts.

SECTION–D

JAVAAWT: -Java AWTpackage Containers;Basic User Interface components;Layouts.

EVENT HANDLING: -Eventdelegation Approach;ActionListener;AdjustmentListener, MouseListener;MouseMotionListener;WindowListener;KeyListener;ItemListener

JAVA I/O HANDLING : I/O File Handling(InputStream &OutputStreams,FileInputStream &FileOutputStream,DataI/PandO/PStreams,FileClass,ReaderandWriterStreams,RandomAccess File).

SuggestedBook:

1. Programming InJava, E-Balagurusami, Fourth Edition,TataMcGraw Hill
2. MasteringJava, Second Edition, BPBPublications
3. AdvanceJava, Ivan Bayross, BPBPublications

MANAGEMENT INFORMATIONSYSTEM

BSBC 503

Objective: Tofamiliarizestudents with different types of information systems used at different levels in organizations.

ExpectedOutcome: After thecompletionof thiscoursestudentswillbe abletoknowthe conceptsandusageof differenttypesofinformationsystemsatvariousmanageriallevelsinthe organizations.

Instructions forPaper-Setter

The questionpaperwillconsistoffive sectionsA,B,C,DandE. SectionsA,B,CandDwill havetwoquestionsfromtherespectiveunitsofthesyllabusandwillcarry10markseach. SectionEwillhave 10shortanswertypeconceptualquestions,whichwillcover theentire syllabus uniformlyand will carry20 marks in all.

Instructions forCandidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthe question paper and the entireSection E.

Useof non-programmablescientificcalculator is allowed.

Note: SuitableCase Studiesmustbe incorporatedwhileteachingfor betterunderstandingofthe concepts.

Internal Assessment-40Marks

External Assessment-60Marks

SECTION-A

IntroductiontoSystemsandBasicSystemsConcepts,Elements(Components) of System, Characteristics of System, Types ofSystems, System Approach.Information Systems:Definition & Characteristics, TypesofInformation,RoleofInformationinDecision-Making,Levelsof Management.IntroductiontodifferentkindsofInformationSystems:ESS,EIS,DSS,MIS, KWS, TPS, OASand EDP.

SECTION-B

An overview ofManagementInformationSystem:Definition&Characteristics,Componentsof MIS, Frame Work for Understanding MIS: Robert Anthony's Hierarchy of Management Activity, Structured VsUnstructured Decisions, Formal Vs.Informal Systems, Pitfalls in MIS Development.

SECTION-C

Simon'sModelofDecision–
Making.DSS:Concept,CharacteristicsandComponents,Gorry&ScottMorton Grid,Introduction to GDSS.

Developing Information Systems:Analysis&Design ofInformation Systems:Implementation& Evaluation.

SECTION-D

Functional MIS: A Studyof Marketing, Personnel, Financialand Production MIS.

SuggestedBooks:

1. ManagementInformation Systems, Goyal, D.P.,Third Edition,Macmillan.
2. ManagementInformation Systems,Oz, Effy, ThomsonPressIndian Edition.
3. "ManagementInformation Systems", Kanter, J.,ThirdEdition, PHI.
4. "ManagementInformation Systems", Davis, GordanB.&Olson, M.H, Second Edition
5. "InformationSystemsforModern Management",Murdick,RobertG.,&Ross,JoelE.,&Claggett, James R.,Third Edition, PHI.
6. "Analysis, Design&Implementation ofInformation System",Lucas, Fourth Edition
7. ManagementInformation Systems,Laudon K.C.,Eleventh Edition, Pearson

WORKSHOPONADVANCEDWEB DEVELOPMENT

BSBC 504

Objective: Objectiveof this courseto learn modern web development technologyusing Microsoft ASP.Net and its various controls.

ExpectedOutcome: StudentswilldevelopawebsiteinASP.NETandmakeitonlineby theend ofthe semester**.**

Internal Assessment-60Marks

External Assessment-40Marks

SECTION-A

Introduction to ASP.NET:

.NETFramework(CLR,CLI,BCL),ASP.NETBasics,ASP.NETPageStructure,PageLife Cycle.

Controls:

HTMLServerControls,WebServerControls,WebUserControls,ValidationControls,Custom Web Controls.

SECTION-B

State Management:

ViewState,ControlState,HiddenFields,Cookies,QueryStrings,ApplicationState,Session State, ProfileProperties,Master Pages, Themes, SiteNavigation.

IntroductiontoADO.NET,DataBinding,ImportingtheSqlClientNamespace,Definingthe DatabaseConnection, ManagingContent UsingGrid View and Details View.

Security andUserAuthentication:

Basic SecurityGuidelines, Securing ASP.NET Applications, ASP.NETMemberships and Roles.

Working withFiles andEmail:

Writingand ReadingText Files, Uploading Files,SendingEmailwith ASP.NET.

Introduction to Web Services, Ajax, Silverlight.

SuggestedBooks:

1. BeginningASP.NET4: in C# andVB(Wrox),ImarSpaanjaars, PaperbackEdition
2. Sams Teach Yourself ASP.NET4 in 24 Hours, Complete Starter Kit ScottMitchell
3. Microsoft ASP.NET4 Step byStep(Microsoft),GeorgeShepherd, Paperback Edition

Websites:

- www.asp.net
- www.w3schools.com
- www.learn-asp.net
- www.aspnettutorials.com

SOFTWARE LAB-VI(Programmingin Java)

BSBC505

Internal Assessment-60Marks

External Assessment-40Marks

Implementationofalltheprogramsrelatedtotheoryconceptsstudiedin Programming in Java Paper[BSBC 502].

1. Operatorsand Mathematical Functions.
2. Decision making,BranchingandLoopingStatements.
3. Classes, Objects and Methods.
4. Arrays, Strings andVectors.
5. Interfaces.
6. Packages.
7. Exception handling.
8. Applet Programming.
9. AWT.
10. Event Handling.
11. I/OHandling.

BSBC506
PROJECT WORK-I

Internal Assessment-60Marks

External Assessment-40Marks

Startingof Major Projectnamed as Minor Project(FeasibilityStudy, Requirement Analysisand Design)

Tools for MinorProjects

Frontend	**VB or.NET(EitherVB .Net or ASP.Net)orJava**
Backend	**SqlServerorOracle**

In Minor Projects 2 normal applications and onedatabaserelatedapplication is must

Note: Thebreak upofmarks for theExternal practical will beas under

VivaVoce	15 marks
System Development	25 marks

Sixth Semester

PRINCIPLES OFMANAGEMENT

BSBC601

Objective: To havein-depth knowledge about different types of businessorganizations,practical applicabilityof theconcepts of management across the different functions in organizations.

ExpectedOutcome: After the completion of thecoursestudents will haveinsights about the existence and practical functioning of business organizations.

Instructions forPaper-Setter

The questionpaper willconsistof five sectionsA,B,C,DandE. SectionsA,B,CandDwillhave two questions from therespectivesections of thesyllabus and will carry10 marks each. Section E willhave10 shortanswertypeconceptualquestions,whichwillcovertheentiresyllabusuniformly andwillcarry 20 marks in all.

Instructions forCandidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthequestionpaper and the entireSection E.

Useof non-programmablescientificcalculator is allowed.

Internal Assessment-40Marks
External Assessment-60Marks

SECTION-A

Forms ofBusinessOrganizations andOwnership:Sole Proprietorship, Partnership, JointStock Company, Public&Private undertakings, Government Companies.
Management: Meaning &Definition of Management,Nature, Scopeandits various functions.

SECTION-B

Planning: Nature and purpose, types, steps in planningprocess.
DecisionMaking: Strategic, tactical and Operational decision, decision makingprocess, rationalityin decision making.
Organizing: Nature, importance, the organizingprocess, organizational objectives, formal and informal Organization, organization chart
SpanofManagement:Factors determiningeffective span

Section- C

Departmentation: Definition,Departmentation byfunction, byterritory, product/servicecustomergroup, Management byobjectives (MBO).

Authority: Delegation ofAuthority, Decentralization v/sCentralization.

Staffing: Definition, Manpower Management, factorsaffectingstaffing, Recruitment and Selection, Performance Appraisal,ImportanceofTraining.

SECTION-D

Motivation: Theories ofMotivation, Hierarchyofneeds theory, TheoryofX andTheoryof Y. **Leadership**: Styles, Theories ofLeadership, TraitApproachand situational approach, Managerial Grid. **Controlling**: Meaning &nature, Steps in Controlling,Essentials of Effective Control Systems.

SuggestedBooks:

1. Essentials of Management, Koontz, Tenth Edition
2. Principles &Practices ofManagement,L.M.Prasad, Third edition
3. Management, Y.K. Bhushan, Fourth Edition
4. An Executive's Encyclopedia ofManagement Practices, Prof. ParagDiwan

Computer Graphics BSBC 602

Objective: Theobjectiveof thestudyis to let students understand basics ofcomputergraphics, Input/outputprimitive and basic transformations, which can be applied onobjects ofgraphics.

Expected Outcome: Practical applications of graphics, Program development and basic animations withoutusinggraphical softwares.

Instructions forPaper-Setter

The question paperwillconsistoffivesectionsA,B,C,DandE. SectionA,B,CandDwill havetwo questions from therespectivesections of thesyllabus and will carry10 marks each. Section E willhave10 shortanswertypeconceptualquestions,whichwillcovertheentiresyllabusuniformly andwillcarry 20 marks in all.

Instructions forCandidates

CandidatesarerequiredtoattemptonequestioneachfromSectionsA,B,CandDofthequestionpaper and the entireSection E.

Useof non-programmablescientific calculator is allowed.

Internal Assessment-40Marks
External Assessment-60Marks

SECTION-A

Introduction to Active and PassiveGraphics, Applications of Computer Graphics.
Inputdevices:lightpens,Graphic tablets,Joysticks,Trackball,Data Glove,Digitizers,Image scanner, Graphs and Types of Graphs.

Video DisplayDevices-- Refresh Cathode Ray Tube, Raster Scan displays, Random Scan displays, ArchitectureofRasterandRandomScanMonitors,ColorCRT-monitorsand Colorgenerating techniques (Shadow Mask, Beam Penetration) , Direct View Storage Tube, Flat-Panel Displays; 3-D Viewing Devices, Raster Scan Systems, Random Scan Systems,Graphicsmonitors and workstations, ColorModels (RGBand CMY),Lookup Table.

SECTION-B

ProcessandneedofScanConversion,ScanconversionalgorithmsforLine,CircleandEllipse,effectof scanconversion,Bresenham'salgorithmsforlineandcirclealongwiththeirderivations,MidpointCircle Algorithm,Area fillingtechniques, flood fill techniques, charactergeneration.

SECTION-C

2-DimensionalGraphics:Cartesian andneedof Homogeneous co-ordinate system,Geometric transformations(Translation, Scaling,Rotation,Reflection,Shearing),Two-dimensionalviewing transformationandclipping (line,polygonandtext),CohenSutherland, SutherlandHodgemanandLiang Barskyalgorithm for clipping.

SECTION-D

Introduction to 3-dimensional Graphics:GeometricTransformations (Translation, Scaling, Rotation, Reflection,Shearing),Mathematicsof Projections(parallel& perspective).Introductionto3-Dviewing transformations and clipping.

SuggestedBooks:

1. D. Hearn and M.P. Baker, "Computer Graphics", PHINewDelhi; Second Edition, 1995
2. J.D. Foley, A.V.Dam,"Introduction to Computer Graphics", S.K. Feiner, J.F. Hughes, Addison-WesleyPublishing Company, R.L. Phillips. N.Y.; Second Edition, 1994.
3. R.A. Plastockand G. Kalley,"Computer Graphics",Second Edition,McGraw Hill, 1986.

COMPUTERNETWORKS

BSBC603

Objective: Thiscourseprovidesanin-depthdiscussionof computer networks.Itincludesa detailed discussionofthedifferentNetworkModels.Conceptsthathaveadirecteffectontheefficiency ofa network (e.g.collision and broadcast domains, topology) are also discussed.

ExpectedOutcome: Towards the end of the course, students areexpectedto /able to:

- Befamiliar with the different NetworkModels.
- Understand different network technologies
- Understand theeffects ofusingdifferent networkingtopologies
- Beupdatedwithdifferentadvancednetworktechnologiesthatcanbeusedtoconnectdifferent networks
- Befamiliar with varioushardwareand softwarethat can help protect thenetwork

Instructions for Paper-Setter

The question paperwillconsistoffivesectionsA,B,C,DandE. SectionA,B,CandDwill havetwo questions from therespectivesections of thesyllabus and will carry10 marks each. Section E willhave10 shortanswertypeconceptualquestions,whichwillcovertheentiresyllabusuniformly andwillcarry 20 marks in all.

Instructions forCandidates

Candidatesare requiredtoattemptone question eachfromSectionsA,B,CandDof thequestionpaper and the entireSection E.

Useof non-programmablescientificcalculator is allowed.

Internal Assessment-40Marks

External Assessment-60Marks

SECTION-A

Datacommunicationsconcepts: Digitalandanalog transmissions-Modem,parallelandserial, synchronousandasynchronous,Modesofcommunication:Simplex,half duplex,fullduplex, Conceptof multiplexing, De-multiplexing.

Types ofNetworks:LAN, MAN, WAN

NetworkTopologies: Bus, Star, Ring, Mesh, Tree, Hybrid

CommunicationChannels:Wiredtransmissions: Telephonelines,leasedlines,switchline,coaxial cables-baseband, broadband, optical fiber transmission.

SECTION-B

WirelessTransmission:(StandardsandSpecification)Microwavetransmission,Infraredtransmission, Laser transmission, Radio transmission and Satellite transmission and BlueTooth, FrequencySpectrum.

CommunicationSwitching Techniques: CircuitSwitching, MessageSwitching, Packet Switching.

NetworkReferenceModels:OSIReferenceModel,TCP/IPReferenceModel,ComparisonofOSIand TCP/IP ReferenceModels.

SECTION-C

DataLinkLayerDesignIssues: ServicesprovidedtotheNetworkLayer,Framing,ErrorControl(error detection and correction code),Flow Control, DataLinkLayer in theInternet (SLIP, PPP).

Types ofMultiplexing:FDM, TDM, CDMA

SECTION-D

MACsublayer: CSMA/CD/CA,IEEEstandards(IEEE802.3 Ethernet, GigabitEthernet,IEEE802.4 Token Bus,IEEE 802.5Token Ring)

TheNetworkLayer: DesignIssues,RoutingAlgorithms:OptimalityPrinciple,ShortestPathRouting, Congestion Control Policies, Concept ofInternetworking.

SuggestedBooks:

1. Computer Networks, Tanenbaum, Andrew, Fifth Edition, PHI
2. Data Communication and Networking, BehrouzA. Forouzan,Fourth Edition
3. Computer Today, S.K.Basandra,First Edition,Galgotia
4. Data Communication System, Black, Ulysse, Third Edition, PHI
5. Data and Computer Communications, Stalling, Ninth Edition, PHI

BSBC604InformationSecurity

SectionA:

Information Security Concepts : Information Security Overview: Background and Current Scenario, Principles ofSecurity- Information Classification, Policy Framework, Role based Security in an organization, Components of Information Systems, Balancing Information Security andAccess, Approaches toinformation Security Implementation, Security Systems DevelopmentLifeCycle.

SectionB:

Security Threats and Vulnerabilities: Overview of Threats and Vulnerabilities-Intruders, MaliciousSoftware,Virusesand related Threats,DesktopSecurity,Emailsecurity:PGPand S/MIME,WebSecurity:Webauthentication,SSLandSET,DatabaseSecurity. Firewalls-Overview,DesignprinciplesandTypes.

SectionC:

SecurityManagement andLaws:Introduction toSecurityManagement, AccessControland IntrusionDetection,OverviewofIdentificationandAuthorization, IntrusionDetectionSystems andIntrusionPreventionSystems,SecurityProceduresandGuidelines,BusinessEthicsand BestPractices, Security Assurance, Security Laws, IPR,International Security Standards, SecurityAudit,SSE-CMM/COBITetc.

SectionD:

Cryptography:ConceptsandTechniques,SymmetricandAsymmetricKey Cryptography, Steganography, SymmetricKeyCiphers-DES,AES(StructureandAnalysis).AsymmetricKey Ciphers-PrinciplesofPublicKeycryptosystems,RSAAlgorithmandits Analysis.Digital Signatures.

SuggestedBooks

1)IntroductiontoInformationSecurityandCyberLawsPaperback-bySuryaPrakashTripathi (Author),RitendraGoel(Author),PraveenKumarShukla(Author)

2)PrinciplesofInformationSecurity.Paperback-byWhitman(Author)

3)CryptographyandInformationSecurityPaperback–byPachghareV.K.(Author)

SOFTWARE LAB-VII(Computer Graphics)

BSBC605

Internal Assessment-60Marks
External Assessment-40Marks

Implement theFollowing Algorithms using C/C++:-

Useof basicfunctions ofgraphic available in C++like circle, putpixel, rectangle, arc, ellipse, floodfill, setcolor etc.

Useof basic primitive functions to show some animations.

Line DrawingAlgorithm likeDirect method, DDA and Bresenham's linealgorithms.

Drawa circleusingpolynomial, trigonometrymethod and Bresenham'sAlgorithm.

Drawan ellipse using Bresenham's Algorithm.

To movea character alongcircle.

To show 2DClippingand Windowing.

PROJECT WORK-II

BSBC606

Continuation to Project Work-Istarted in V semester (CodeGeneration, system testing,Installation and Operations&maintenance)

Internal Assessment-120 Marks

External Assessment-80Marks

Tools forProject Work-II

Frontend	**VB or.NET(EitherVB .Net or ASP.Net)orJava**
Reports	**Crystal Reports**
Backend	**SqlServerorOracle**

Note: Thebreak upofmarks for the external practical will beas under

Viva Voce	**20 marks**
Systemdevelopment	**60 marks**