PARVATIBAICHOWGULECOLLEGEOFARTSANDSCIENCE (AUTONOMOUS)
DEPARTMENTOFCOMPUTER SCIENCE
POSTGRADUATEDIPLOMAINCOMPUTERAPPLICATIONS

Tobeoffered from:(2022-2023)

ProgrammeSpecificOutcomes(PSO) forPGDCA:

PSO1: Acquireproblem-solvingskills,especiallytheabilitytoanalyze,designandimplement solutions.

PSO2: DemonstratetechnicalskillsTo beemployedinacompetitivePositionintheITfield related sectors.

PSO3: StartanEntrepreneurialventure.

PSO4: Work in different fields like content development, Multimedia, Website designing, Networking,Banking industry,Academicsetc.andabilitytopursuehighereducationandengage in independent life-long learning.

POSTGRADUATEDIPLOMA INCOMPUTERAPPLICATIONS (PGDCA)
TobeImplementedfrom2022-2023

SemesterI(20 credits)

CourseCode	Course Type	CourseName	Credits	Contact(credit/week)	
				L	**P**
PGD-CA.C.1	Core	ProblemSolvingandIntroduction to Programming	4	3	1
PGD-CA.C.2	Core	WebDesign	4	3	1
PGD-CA.C.3	Core	DatabaseManagementSystems	4	3	1
	Elective	ElectiveCourseI	4	3	1
	Elective	ElectiveCourseII	4	3	1

SemesterII(20credits)

CourseCode	Course Type	CourseName	Credits	Contact(credit/week)	
				L	**P**
PGD-CA.C.4	Core	FundamentalsofComputer SystemandNetworks	4	3	1
PGD-CA.C.5	Core	SoftwareEngineering	4	3	1
	Elective	ElectiveCourseIII	4	3	1
	Elective	ElectiveCourseIV	4	3	1
	Elective	ElectiveCourseV	4	3	1

L–Lectures ---> 1Lecture-HourDuration

P–Practicals--->1Practical-2Hours Duration

List ofElectiveCourses

PGD-CA.E.1. Multimedia

PGD-CA.E.2.E-Learning

PGD-CA.E.3. HCI

PGD-CA.E.4.E-commerce

PGD-CA.E.5. Digitalmarketing

PGD-CA.E.6. NetworkAdministration

PGD-CA.E.7. Software Testing

PGD- CA.E.8. Server Side Programming

PGD-CA.E.9...Data Structures

PGD-CA.E.10. OfficeAutomationTools

PGD-CA.E.11. AssessmentandEvaluationforLearning

PGD-CA.E.12. InstructionalDesign

PGD-CA.E.13. Content Management System

PGD-CA.E.14. WebDevelopmentwithFLASK

PGD-CA.E.15. Accounting

CourseTitle:ProblemSolvingandIntroductiontoProgramming
Course Code: PGD-CA.C.1
Marks:75
Credits:3
Duration:45Hrs

PrerequisiteCourses:Nil

CourseObjectives:

- To understand the concept of basic computer algorithm and flowchart and use the algorithm for various problem solving.
- Toimplementalgorithmsusinga highlevelprogramminglanguage.
- Tounderstandbasicprinciplesofprogramming–examplePython.
- TounderstandtheconceptofObjectOrientedProgramming

CourseOutcomes:

Attheendofthecoursestudentswillbeableto:

CO1: Explain problem solving strategies.
CO2: Draw a flowchart for a given problem.
CO3: Writeanalgorithmforagivenproblem.
CO4: Implementsortingandsearchingalgorithms.
CO5: Recognizeandincorporateprogrammingelementssuchasloops,decisionmaking,functions,string,list,tuple, dictionary and files in to applications that solve real world problems.
CO6: Developproblem-solvingandprogrammingskillsusingtheOOPconcept.

SYLLABUS:

UNITI: [15HRS]

Introduction to Computer Problem Solving : Algorithms, Flowchart, The Problem-Solving Aspect, General problem-solvingstrategies,Top-DownDesign,ImplementationofAlgorithms,EfficiencyofAlgorithms,Recursive algorithms.

BasicAlgorithms :Exchangingthevalues, Summationofa setofnumbers, factorialcomputation,generationofthe Fibonacci series, reversing the digits of an integer, base conversion.

IntroductiontoPython

Motivation,programmingparadigms,WhatPythoncando,Python'stechnicalstrength,Pythoninterpreter,Program execution, Execution model variations, How to run programs.

BasicSyntax

VariableandDataTypes, Operator,ConditionalStatements -if,if- else,Nestedif-else.Looping–For,While,Nested loops. Control Statements – Break, Continue, Pass.

UNITII [15HRS]

StringManipulation
AccessingStrings,BasicOperations,Stringslices,FunctionandMethods.

Lists
Introduction,Accessinglist,Operations,Workingwithlists,FunctionandMethods.

Tuple
Introduction,Accessingtuples,Operations,Working,FunctionsandMethods.

Dictionaries
Introduction,Accessingvaluesindictionaries,Workingwithdictionaries,Properties,Functions.

Functions
Definingafunction,Callingafunction,Typesoffunctions,FunctionArguments,Anonymousfunctions,Globaland local variables.

Modules
Importingmodule.Mathmodule.Randommodule.Packages.Composition.

Input-Output

Printingonscreen,Readingdatafromkeyboard,Openingandclosingfile,Readingandwritingfiles, Functions.

ExceptionHandling
Exception.ExceptionHandling-Exceptclause,Try?finallyclause.UserDefinedExceptions.

UNITIII [15HRS]

PrinciplesofOOP
ProgrammingParadigms,Basicconcepts,OOP:majorprinciples -encapsulation,abstraction,inheritance,polymorphism. Benefits of OOP, Applications of OOP.

ObjectsandClasses
Basicsofobjectsandclassesinpython,Constructors,Visibilitymodifiers,Methodsandobjects,pythonbuilt-infunctions.

InheritanceandPolymorphism
Inheritanceinpython,superandsubclass,Overriding,Polymorphism,Dynamicbinding,Castingobjects,Abstractclass, Interface in python.

REFERENCES:

MANDATORY:

1. MarkLutz,LearningPython,O'ReillyMedia,ThirdEdition,2008
2. DromeyR.G., Howtosolveit bycomputer, PrenticeHallofIndia, 2ndEdition, 2004.3.Alex Martelli,Python – A Nutshell, O'Reilly Media, Second Edition, 2006
4. WesMcKinney,PythonforDataAnalysis,O'ReillyMedia,2012

5. Phillips,Dusty.Python3ObjectOrientedProgramming.UnitedKingdom, PacktPub.,2010.

WEB BASED:

1. https://www.w3schools.comhttp://www.w3schools.com/
2. https://www.tutorialspoint.comhttp://www.tutorialspoint.com/http://www.tutorialspoint.com/
3. https://www.javatpoint.comhttp://www.javatpoint.com/
4. https://www.geeksforgeeks.orghttps://www.geeksforgeeks.org/
5. https://www.guru99.comhttp://www.guru99.com/

Practicals:ProblemSolvingandIntroductiontoProgramming Credit: 01
Marks:25
Duration:30Hrs

ListofExperiments usingPythonLanguage:

1) Writeapythonprogramtocomputegivenformula.
2) Writeapythonprogramtoimplement ifelsestatement.
3) Writeapythonprogramtoimplementnestedifelsestatement.
4) Implementfor andwhileloopinpython.
5) Writea stringmanipulationinpython.
6) Writeaprogramtoimplementlistinpython.
7) Writeapythonprogramtoimplement tuple.
8) Writeapythonprogramtoimplement dictionary.
9) Writepythonprogramtoimplement function.
10) Writeapythonprogramtoimplementexceptionhandling.
11) ImplementClassesandInstanceinpython.
12) ImplementInheritanceinpython.
13) ImplementPolymorphism,abstractclassesandinterfacesinpython.[3P]

CourseTitle:WebDesign

CourseCode:PGD-CA.C.2
Marks: 75
Credits:3Duration:45Hrs

PrerequisiteCourses: Nil

Course Objective:

Todevelop a highdegree ofcompetenceasawebdesigner.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: DesignContentforawebapplication.
CO2: StylecontentsoastoprovideaneffectiveUserInterface.
CO3: ProvidefordynamismintheUserInterfacetoenhanceusability.
CO4: Developastaticwebapplication.

SYLLABUS:

UnitI: TheInternetandContent Development [20HRS]

Computer Networks: LAN, MAN, WAN, etc.,Layout (Ring, bus, star, etc.),IPaddress: public, private,static, dynamic, Internetprotocolsandservices:http,https,FTP,SMTP,Telnet,DNS,DHCP,Intranet&Extranet,InternetInfrastructure, Search Engines, Web Browser, Web server.

BasicHTML:Introduction, importance, Basic:HTMLTag, HEADERTag,METATag,TITLETag, BODYTag,Text Formatting:PRETag,FONTTag,entities,Image:IMGtag,imagemaps,Hyperlinks:Anchortag,Lists:UnorderedLists, Ordered Lists, Definition Lists, Table tags: TABLE, TR and TD Tags, Cell Spacing and Cell Padding, Colspan and Rowspan. End user Interaction: FORM and INPUT Tag, Text Box, Radio Button ,Checkbox, SELECT Tag and Pull DownLists,TEXTAREA,Hidden,SubmitandReset,SpecialTages:COLGROUP,THREAD,TBODY,TFOOT,blank, self, parent, top, IFRAME,LABEL, Attribute for <SELECT>.

HTML5: The <canvas> element for 2D drawing, The <video> and <audio> elements for media playback, Support for localstorage,New content-specific elements, like <article>, <footer>,<header>, <nav>,<section>,New formcontrols, like calendar, date, time, email, url, search.

UNITII:StylingUI [15HRS]

CSS: Introduction to CSS, Advantages, Types of style sheets: Inline, Internal, External, Multiple Style sheets and Cascadingorder,Groupingornesting,Syntax,IDandClass,Pseudo-class,Pseudo-element,CSSunitsofmeasurement, Colors.

New featuresinCSS3:Selectors,BoxModel,BackgroundsandBorders,ImageValuesandReplacedContent,Text Effects, 2D/3D Transformations, Animations, Multiple Column Layout, User Interface.

UNITIII:DynamicUI **[10HRS]**

Client sidescripting:IntroductiontoJavascript,HTMLDOM,CoreJavascript, formvalidations.

REFERENCES:

MANDATORY:

1. DTEditorialServices,WebTechnologies, BlackBook,2018,DreamTech

WEB BASED:

1. https://www.w3schools.com
2. https://www.tutorialspoint.com/html/index.htm
3. https://www.tutorialspoint.com/css/index.htm
4. https://www.tutorialspoint.com/javascript/index.htm
5. https://www.udemy.com/courses/development/web-development/

Practicals:WebDesign
Credit: 1
Marks: 25
Duration:30Hrs

HTML: [2P]

1. Text formats.
2. Imageformats.
3. HyperlinkandListings
4. Tableformats
5. Forms

CascadingStyleSheet: [2P]

1. Internal and External style implementations2.CreatingDynamicpages using CSS.

Javascript: [4P]

1. Implementing functionsinjavascript(alert();confirm();prompt( ))
2. FormValidationsusingJavascript
3. CreatingDynamicpagesusingJava script.
4. HTML5:

Websitedesignusing HTML5. [4P]

- Implementationofcanvas.
- EmbeddingAudio andVideoinaWebpage.
- Implementationofadditional formcontrols.

CourseTitle:DatabaseManagement
Systems Course Code: PGD-CA.C.5
Marks: 75
Credits:3
Duration: 45 Hrs

PrerequisiteCourses: Nil

Course Objectives:

- Toprovidebasicknowledgeofadatabasemanagementsystem. To
- understand the importance of ER diagrams.
- ToformulatequeriesinRelationAlgebraandSQLforDatabaseManipulations. Develop
- database systems using RDBMS.

Course outcome:

At theend ofthe coursestudentswillbeable to:

CO1: Explain database concepts and the need for the same.
CO2: Identifydifferententitiesandrelationshipbetweenthem.
CO3: Represent the given system diagrammatically using ER diagram.
CO4: ConvertanERdiagramtoaschemaandeffectivelyrepresentitusingappropriateRDBMS.
CO5: FormulatequeriesinRelationalAlgebra,SQLtomanipulatethe database.
CO6: Analyzetheschematoseeifthey fulfillNormalizationcriterion

SYLLABUS:

UNITI [15HRS]

Overviewofdatabasemanagement: Data,information,database,databasemanagementsystem;Managing data; File systems versus a DBMS, advantages of a DBMS; Data abstraction, instances and schemas, data models;Data manipulation language, data definitionlanguage;Architecture ofa DBMS;Users ofa DBMS, database administrator.

Databasedesign: Designphases–conceptualdesign, logicaldesign, physicaldesign;ERmodel–entities, attributes, and relationships, mapping cardinalities, keys; ER diagrams – strong entities, weak entities, generalization, specialization, aggregation; Converting ER diagram to relational schemas.

UNITII [15HRS]

Relationalmodel: Relation,propertiesofrelationalmodel;Entities, integrityconstraints,referentialintegrity constraints; Relational algebra – select, project, cross product, set operations, rename operation;

Functionaldependencyandnormalization: Atomicdomain,nestedrelation;Key,superkey,primary key, candidate key; Functionaldependency, axioms, closure of a set of attributes, closure of a set of

functionaldependencies.

UNITIII **[15HRS]**

SQL: BasicstructureofSQLquery–Create,select, where, from, renameoperation;Setoperations;Aggregate functions; Group by, having clauses; Nested queries; Views; Insert, delete, update.

Introductiontotransactions: Transactionconcept,Transactionstate,ACIDproperties,Concurrent Transactions, Serializability.

MANDATORY:

1. ASilberschatz,HFKorth,S Sudarshan,Databasesystemconcepts,McGraw-Hill,sixthEdition.

SUPPLEMENTARY:

1. Ramakrishan,JGehrke,"Database managementsystems",McGraw-Hill,3rdedition.
2. RElmasri,S BNavathe,"FundamentalsofdatabaseSystems",PearsonEducation,5thEdition.

WEBBASED:

1. https://www.tutorialspoint.com/dbms
2. https://beginnersbook.com/2015/04/dbms-tutorial/
3. https://www.guru99.com/dbms
4. https://www.javatpoint.com/dbms
5. https://www.allabout-engineering.com/database-management-system-by-rajiv-chopra/

Practicals:DatabaseManagement
Systems Credit: 1
Marks: 25
Duration:30Hrs

List of Practical

1. ERdiagram.(1P)
2. ERdiagramwithspecialization/generalizationandaggregation.(1P)
3. ConvertingERDintoSchema. (2P)
4. 4SQL (2P)
5. NestedQueries (2P)
6. Normalization(2P)
7. ReportWriting(1P)
8. Miniproject(4P)

SEMESTER-II

CourseTitle:FundamentalsofComputerSystemandNetworks
Course Code: PGD-CA.C.4
Marks: 75
Credits:3
Duration:45Hrs

PrerequisiteCourses: Nil

Course Objectives:

- Tounderstandbasicconceptsofoperating system.
- Tounderstand thelayered architectureofcomputernetworks.
- Tounderstandvarioustransmissionmediaused fornetworking.
- Tounderstandworkingofvariousprotocols indifferentlayers.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: EnumerateindetailthefunctionofComputer and Operating system.

CO2: ExplainthefundamentalsofComputerNetwork;TransmissionMedia;NetworkDevicesandProtocols

CO3: Analyzeand interpretvariousNetwork;TransportandApplicationLayer protocols.

CO4: Setupand configurewired andwireless networks.

SYLLABUS:

UNIT I: Introduction to Computer and Operating System: [10HRS]
Processor – Different types, Memory- Different types, I/O Modules, System bus – Different types, Interconnections, Storage Devices and its types, Storage hierarchy.

IntroductiontoOperatingsystem-Functions,Tasks.
Different types of Operating systems..
RelationshipbetweenKernel,OperatingsystemsandHardware.
Boot process of a computer.

UNIT II : Basics of Computer Networks, Transmission Media and Data communication Components and Ethernet [15HRS]

Basics of Computer Networks**:** Networking of Computer - Advantages and disadvantages of computer networking. Types of Networks- LAN, MAN, WAN, Wireless; Network Topology – Star, Ring, Bus, Tree, Complete, Irregular; Reference Models- The OSI reference model, the TCP/IP reference model. Telephone System: Structure of telephone system, the local loops, trunks; Switching - Circuit switching, message switching, Packet Switching.

Transmission Media **:** Transmission media- Magnetic media, twisted pair, co-axial cable (baseband and broadband), fiber optics principle, transmission oflight through fiber, fiber cables, fiber optics network, comparisonoffiberopticandcopperwire.WirelessTransmission(Theelectromagneticspectrum,Radio Transmission, Microwave Transmission, Infrared).

DataCommunicationComponents:Modem,Repeaters,Hubs,Bridges,Switches,Routers,Gateways.Multiple Access Protocols, CSMA Protocols, Collision-Free Protocols.802.3 Frame Header, Ethernet .Switched Ethernet, Fast Ethernet, Gigabit Ethernet.

UNIT III : Network Layer, Transport Layer and Application layer [20HRS]

NetworkLayer:IPAddressclass,NetworkandHostAddressing,Subnet,SubnetMask.TCP/IPProtocolSuite, Services, Static vs Dynamic address, IP Protocol Header, Address resolution Protocol (ARP), ReverseAddressResolutionProtocol(RARP),Internet ControlMessageProtocol(ICMP).TransportLayer: User Datagram Protocol (UDP), UDP Header, Transmission Control Protocol (TCP), Segment Header, Connection Establishment and Release.

ApplicationLayer:Telnet (TerminalNetwork),HTTP,FileTransferProtocol(FTP),SimpleMailTransfer Protocol (SMTP).

REFERENCES:

MANDATORY:

1. Silberchatz,A., Galvin,, &Gagne.(2008).OperatingSystemConcepts(8thed.).Wileypublication.
2. BehrouzA.ForouzanB.(2017)DatacommunicationandNetworking(5thed.).McGrawHill Education 3.Tanenbaum A., W.(2010) Computer Networks (5th ed.) . Pearson
4.KuroseJ,K.(2017)ComputerNetworking–ATop-DownApproach(6thed.)PearsonEducation,

WEBBASED:

1. https://www.youtube.com/watch?v=tj7f244tubM
2. https://www.youtube.com/watch?v=vFypCugyFoM
3. https://www.tutorialspoint.com/data_communication_computer_network/index.htm
4. https://www.cisco.com›training-events›netacad›course_catalog›docs
5. https://www.tutorialspoint.com/operating_system/index.htm

SlidesforthebookBehrouzA.Forouzan,"DatacommunicationandNetworking",TataMcGraw – Hill,2011, 4th Edition : http://www.mhhe.com/engcs/compsci/forouzan/dcn/index.mhtml

Practicals:FundamentalsofComputerSystemandNetworks Credit: 1
Marks: 25
Duration:30Hrs

1. InstallingOSanddriversandDOScommands.**(2P)**
2. Cablecolorcodeand crimping,Demonstrationofstructuredcabling.**(1 P)**
3. Settingupofnetwork(TCP/IPconfiguration).(**2P)**
4. Sharingresources(files,printeretc.)**(1P)**
5. StudyofNetworkCommands.**(2P)**
6. Settingupofwirelessnetwork.(AdHocand Infrastructuremode)**(1 P)**
7. StudyofWiresharkTool.**(2P)**
8. Networksimulatortool.**(2P)**

CourseTitle:SoftwareEngineering
Course Code: PGD-CA.C.3
Marks: 75
Credits:3
Duration:45Hrs

PrerequisiteCourses:Nil

Course Objectives:

- ToUnderstandthevarioussoftwaredevelopmentmethodologiesandestimationofsoftwareprojects.
- Toanalyzeand designsoftwareprojects.
- Tostudythevarious phasesofaS/WDevelopmentProject.

Course Outcomes:
At theend ofthe coursestudentswillbeable to:

CO1: UnderstandthevariousSoftwareDevelopmentMethodologies.
CO2: ApplyEstimationtechniquestolive projects.
CO3: AnalyzeSoftware Projects.
CO4: DesignSoftwareProjects.

SYLLABUS:

UNITI: **[15HRS]**

SOFTWAREPROCESS:

Characteristics of software process. Software Development Processes and Methodologies: waterfall, prototyping, iterative, spiral, unified process. Benefits of iterative and incremental approach with emphasis on Unified process, CASE Tools ,Agile methodologies.

PROJECTMANAGEMENT:

Planning a Software Project – Cost estimation, Project Scheduling, Software configuration management plans, Quality Assurance plans, Project Monitoring plans and Risk Management. Techniques such as Interviewing , Requirement Workshop, brainstorming, prototyping. Characteristics of SRS.

UNITII: **[15HRS]**

OOADandUML:

OOAD: Definition; object oriented analysis; object oriented design and modeling; Assigning responsibilities.

UML:MainUMLdiagrams–Classdiagram,sequencediagram,activitydiagram,usecasediagram. Use case model – use case diagram , use case descriptions, use case realization using sequence and activity diagrams.Supplementaryrequirements.Advancedusecasemodelfeatures.Requirements:Functionaland non-functional System Design : Class diagram, sequence diagram, activity diagram, state chart diagram, deployment diagram. Brief introduction to other UML diagrams.

SOFTWAREARCHITECTUREPATTERNS:

Major Architectural Styles (patterns) like Layered Architecture, Pipe and Filter, Shared (Central) Data Store,Event Driven, Model-View-Controller (MVC), "Distributed & Emerging" Service Oriented Architecture

(SOA)andElementaryGRASPPatterns.

UNITIII: **[15HRS]**

HUMANCOMPUTER INTERACTION:

HCI Definition; User categories,Interface Design-Internal & External Interface design,userinterface design, Interface design guidelines.

CODING:Codingstyles,standards,peerreviews, checklist.

TESTING: TestingFundamental,Functional Testing,Structural Testing,TestingObject-OrientedPrograms, Testing Process and Metrics.

DOCUMENTATIONandMAINTENANCE:NeedforSoftwareDocumentation.Typesofdocumentation Need for Maintenance; Types of Maintenance.

REENGINEERING:BusinessProcessReengineering,SoftwareReengineering,ReverseReengineering Restructuring, Forward Engineering, The Economics of Reengineering.

REFERENCES:

MANDATORY:

1. PressmanR., (2017),SoftwareEngineering:APractitioners Approach, 6thedition:McGrawHill
2. LarmanC.,(2015)ApplyingUMLandpatterns, 3rdEdition:AddisonWesley.

SUPPLEMENTARY:

1. JaloteP.,(2010)AnIntegratedApproachtoSoftwareEngineering,3rdEdition:NarosaPublishing House.
2. SommervilleI.,(2015)SoftwareEngineering,10thEdition:AdisonWesley.
3. FowlerM.,(2003)UMLDistilled,3rdEdition:AddisonWesley.

WEBBASED:

1. https://www.tutorialspoint.com/software_engineering
2. https://www.w3schools.in/sdlc-tutorial
3. https://www.geeksforgeeks.org/software-engineering
4. https://www.javatpoint.com/software-engineering-tutorial
5. https://engineering.futureuniversity.com/BOOKS%20FOR%20IT/Software-Engineering-9th-Edition-by-Ian-Sommerville.pdf

Practicals:SoftwareEngineering

Credit : 1 Marks : 25
Duration:30Hrs

ListofsuggestedPRACTICALS: For
a given project/case study

1)RequirementsGatheringTechniques [2P]
2)GanttChart [2P]
3) USECasediagramand UseCasedescriptionsfortheUse Cases [3P]
4)ClassDiagram [2P]
5)Sequence Diagram [2P]
6)ActivityDiagram [2P]
7) StateChart Diagram [2P]

ELECTIVES

Course Title: Multimedia
CourseCode:PGD-CA.E.1.
Marks: 75
Credits:3
Duration:45Hrs

Prerequisite Courses: Nil

CourseObjectives:

- TolearnthebasicMultimediaconcepts
- Todevelopskillsandcompetenciestodesigngraphicalimages.
- TodevelopskillstoCaptureandEditAudioandVideo,usingSoftwaretools.
- TobuildaMultimediaproduct.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: UnderstandtheconceptofMultimedia–Teammembersandtheir roles.

CO2: Identifyand describethefunctionofthegeneralskillsetsinthemultimediaindustry.

CO3: Classifyand realizethetypesofAuthoring toolsandtheirfunctions.

CO4: Identifybasiccomponentsofamultimediaproject.
CO5: Analyse therequirements of Multimedia product.
CO6: Assemble and deliver multimedia projects

SYLLABUS:

UNITI: MultimediaandArchitecture: [15HRS]
Introduction: Overviewofmultimedia,Multimediabuildingblocks,Digitalrepresentation,Interactiontechniques and devices, Stages of a Multimedia Project: Planning and Costing, Designing and Producing, Testing and Delivering. TheMultimediateamandtheir roles: Project Manager, Writer, Video specialist, Audio specialist and Multimedia programmer.

Multimedia architecture: Introduction to multimedia architectures, User interfaces, Windows multimedia support,WindowsAPIforMultimedia,MultimediaDatabaseSystems,Mediastreaming,Multimediaauthoring tools, Multimedia OS.

UNITII:BuildingBlocksI: [15HRS]

Text:Visualrepresentationoftext,Digitalrepresentationoftext,Textfileformats:TXT,DOC,RTF,PDF,ODT Conversion to and from of various text formats, Hypermedia and Hypertext.

Image: Basic Image fundamentals, Importance of graphics in multimedia, Vector and Raster graphics, image capturing methods – scanner, digitalcamera and its types, etc. various attributes ofImages – size, color, depth, resolution, etc,Imagedatatypes, image file formats(BMP, JPEG,GIF, TIFF, PNG,DIB,EPS, CIF,PEX,PIC), their features and limitations, graphic file formats conversions.

Sound: Sound and it Attributes, Mono V/s Stereo sound, Sound channels, Sound and its effect in multimedia, AnalogV/sDigitalsound,Basicsofdigitalsound-Sampling,Frequency,SoundDepth,CreationofDigitalAudio files– recording&editing.Overviewofvarioussoundfile formatsonPC –WAV,VOC,AVI,MP3,MP4,Ogg, Verbose etc. Digital audio vs MIDI and MIDI File format, CD and DVD formats.

UNITIII: BuildingBlocksII: [15HRS]

Animation: Basicsofanimation, Principleanduseofanimationin multimedia, Effect ofresolutions, pixeldepth, Images size on quality and storage. Overview of 2-D and 3-D animation techniques and software. Animation on the Web – features and limitations, creating simple animations for the Web. Animation file formats.

Video: Analog and DigitalVideo, Video onPC.Introductionto graphicsacceleratorcards, Video Broadcast Standards-NTSC,PAL,SECAM,HDTV.Introductiontovideocapturing,Media&Instrument –Videodisk, DVCAM, Camcorder.

RecordingFormatslikeS-VHAVideo,Component(YUV),ComponentDigital,CompositeDigital,andVideo Hardware Resolutions.

VideoTipslikeshootingplatforms,Lighting,ChromaKeyorBlueScreen.

DataCompression: Typesofcompression:Lossy&Lossless,Symmetrical&Asymmetrical,Intraframe& Interframe, Hybrid.

Assembling and delivering a project: The four primary navigational structures used in multimedia like linear, hierarchical, non-linear and composite.

REFERENCES:

MANDATORY:

1. VaughanTay,(2011),Multimedia:MakingitWork,(8thEd),TataMcGraw-Hill.

SUPPLEMENTARY:

1. PrabhatK.Andleigh/KiranThakrar,(2015),MultimediaSystemsDesign,(1stEd),PearsonEducationIndia.
2. JeffcoateJudith,(2006),MultimediainPractice,TechnologyandApplications,(1stEd)PrenticeHallIndia.

WEBBASED:

1. https://www.tutorialspoint.com/multimedia/multimedia_introduction.htm
2. https://www.gimp.org
3. https://www.audacityteam.org/
4. https://www.topwin-movie-maker.com/tutorials.html
5. https://www.minitool.com/moviemaker/use-movie-maker.html
6. https://www.coursepath.com/powerpoint-as-e-learning-authoring-tool
7. https://elearningindustry.com/powerpoint-as-an-authoring-tool

Practicals:MultimediaCredit:1 Marks: 25

Duration:30Hrs

MultimediaSoftwareToolslikeGIMP,Audacity, WindowsMovieMaker,Blender. iMovie(thenumbersin brackets indicate number of practical's):

1. ImageHandling:Croppinganimage,adjusting imagesize, increasingthesizeoftheworkcanvas,savingan image. [**2P]**

2. Layers: Adding layers, dragging and pasting selections on to layers, dragging layers between files, viewing and hiding layers, Editing layers, rotating selections, scaling an object, preserving layers transparency, moving and copying layers, duplicating layers, deleting layers, merging layers, using adjustment layers. **[2P]**

3. Channels and Masks: Channelpalette, showing and hiding channels, splitting channels in to separate image, merging channels, creating a quick mask, editing masks using quick mask mode. **[1P]**

4. PaintingandEditing:Brushespalette,brushshape,creatinganddeletingbrushes,creatingcustombrushes, setting brush options, saving, loading and appending brushes, Options palette**[2P]**

5. Opacity,pressure,orexposure,paint fade-outrate,makingselections,usingselectiontools,adjusting selections, softening the edges ofa selection, hiding a selectionborder, moving and copying selections, extending and reducing selections, pasting and deleting selections.**[2P]**

6. Recording Sound using Sound Recorder (Capture), Sound capture through sound editing software, Sound editing,Noisecorrection,Effectenhancement;VoiceRecognition;Importingaudioandsavingaudiofrom Audio CD. Sound Quality types: CD Quality, Radio Quality, Telephone Quality. **[2P]**

7. Video:Recordvideo fromvideo capturedevices,webcams,screencaptureorevenstreamingvideo and Video Editing.

[2P]

8. Mini Project/Problem Statement/Case Study (integrating the above experiments) like E-Book Design, Product Design. **[2P]**

Course Title: E-Learning
CourseCode:PGD-CA.E.2.
Marks : 75
Credits : 3
Duration:45
Hours

PrerequisiteCourses: Nil

Course Objective:

- ThiscourseisanintroductiontoICT(InformationCommunicationsTechnology)ineducation.
- It aims at exploring the InstructionalDesignprinciples, developing and applying the various concepts of Instructional Design skills learnt wrt E-Learning and develop E-content in various application areas related to ICT and Education.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: Explainthe working ofanE-learningmodule.
CO2: ExplainthevariousInstructionalDesignPrinciples.
CO3: Develop own course material and upload it using an appropriate LMS.
CO4: EvaluateandapplyappropriateAssessmenttechniquestotheE-content. **CO5:**
Differentiate between Summative and Formative assessment.
CO6: WriteLearningandCourseobjectives.

SYLLABUS

UNIT I: Introduction & Course Development **[20HRS]**
Scope and form of E-learning, Role of an E-learning project, Phases in an E-learning project. Instructional Design, The process of Designing Instruction, Developing Materials.(Storyboarding ,Content Integration, and SCORM Compliance).Working with L.M.S. (Learning Management System)-Installation and use of the administrator, teacher and student interface. Course Definition, Registration and upload, tracking of results).

UNIT II: E-learning & Pedagogical Approaches **[15HRS]**
TheBehaviorist Schooloflearning and its implicationsonE-learning, TheCognitiveSchoolofLearningand its Implication on E-learning, The Constructivist School of Learning and its implications on E-learning. Bloom's TaxonomyofEducationalObjectives, Types ofLearning Objectives. Content Analysis (Types- Facts, concepts, process, procedure, principles).The Teaching of concepts, procedure, principles, understanding. Enabling a motivated Learning Environment.

UNIT III: E-learning Strategies & Assessment Design **[10HRS]**

E-LEARNING STRATEGIES:
Simulation,Drill,InteractiveLearning,ProblemSolving, Tutorials.

ASSESSMENT DESIGN:

Onlineformativeandsummativeassessment,RubricsforAssessment-AnalyticandHolisticRubrics,Rubricsfor Assessment, Security and Authentication.

REFERENCES:

MANDATORY:

1. ShellyCashmanGunter.(2011).TeachersDiscoveringComputers:IntegratingTechnologyinthe Classroom,(7th ed.).Wadsworth Publishing Co Inc.

SUPPLEMENTARY:

1. Smith,P.L.&Ragan,T.J.(2008).Instructionaldesign(4rthed.).NewYork:JohnWiley&Sons. ISBN:0471393533
2. M.D.Roblyer,AaronH.Doering(2018).IntegratingEducationalTechnologyintoTeaching:Student Value Edition (8th ed.). Publisher: Pearson ISBN-10: 013289680X, ISBN-13:978-0132896801.
3. Dick,W.,Carey,L.,&Carey,J.O.(2014).Thesystematicdesignofinstruction(8thed.).Boston:Allynand Bacon.
4. Wiggins,G.P.,&McTighe,J.(2005).Understandingbydesign(2nded.).Assn. forSupervision& Curriculum Development;
5. Alexandria,VA:AssociationforSupervisionandCurriculumDevelopment.
6. Christensen,C.M.,Horn,M.B.,&Johnson,C.W.(2016).Disruptingclass:Howdisruptive innovation will change the way the world learns(2nd ed.). New York: McGraw- Hill.

WEBBASED:

1. https://www.udemy.com/course/instructional-design-for-elearning/
2. https://nptel.ac.in/courses/127101013/
3. https://nptel.ac.in/courses/121105010/
4. Betterlearning(Bloom'sTaxonomy):https://www.plesyoutube.com/watchv=0flnAoX9QEw
5. https://nptel.ac.in/content/storage2/nptel_data3/html/mhrd/ict/text/121106012/lec13.pdf

Practicals:E-Learning
Credit: 01
Marks: 25
Duration:30Hrs

ListofsuggestedPRACTICALSusinganyMultimediaSoftware(thenumbersinbracketsindicatenumberof practicals):

(1) Installing,CreatingandRunningacompletecourseusingLMS **[3P]**
CourseAdministration:CreationandusingResourcesandPlanning Activities
CaseStudy:Createacompletecourseandworkonalltheresourcesandactivities. Also Thevariousgrade book options etc.

(2) CreatingStoryboards(usingMovieMaker/PPTorsimilarFOSS) **[1P]**

(3) ConstructaMindMap(usingFreemindoranyother FOSS) [**1P]**

(4) Preparea10-minuteVideotutorialonsomesystem(e.g. howto searchforfree images inGoogle) using screen cast. Example tool that can be used: screencast-o-matic). [**2P]**

(5) Studya virtualworldsystemlikeWhyville,andmakea 10slide presentation(usingPPTorFOSSonit). **[2P]**

(6) Createa fullytagged10-questionQBona topicandloadontoMoodle. **[2P]**

(7) BuildacourseusingWISE **[2P]**

(8) DesignRubrics(for agivenscenario) **[2P]**

CourseTitle:HumanComputerInterface
Course Code: PGD-CA.E.3.
Marks: 75
Credits:3
Duration:45Hours

PrerequisiteCourses:Nil

Course Objectives:

- Tostudythedifferent aspectsofhumancomputerinteractionandthecomputerinterfacedesign concepts.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: Understandtheintricaciesofhumaninteractionwithacomputer System.
CO2: Understandtheprinciplesofgoodscreendesignandlayoutsand requirements.
CO3: Understandthedifferent navigationschemesonwindows-based interface;learnthedifferenttypesof selection devices and components of a window-based interface.
CO4: Classifyhumanusersbasedontheir abilities,personalities.
CO5: Designingprototypes.Evaluatethedesignofuserinterfaces. Comparetheinterfacesdifferent products.

SYLLABUS:

UNITI: [10HRS]

Introductionto HumanComputerInteraction

Human-Computer Interaction, Evaluating Designs, The Birth ofHCI. Importance ofuser Interface, Importance of good design, Benefits of good design, principles & heuristics of good design.
Importanceof:Humancharacteristics,Humanconsideration,Humaninteractionspeeds,Understandingbusiness functions. User centered design- Need-finding: Participant Observation, Interviewing, AdditionalNeed finding, contextual inquiry & persona.

[20HRS]

RapidPrototypingandGraphicalInterfaceDesign
RapidPrototyping:Storyboarding.PaperPrototypingandMockup,VideoPrototyping,CreatingandComparing Alternatives.
DirectManipulation.MentalModels.Heuristics(guidelines)fordesign.

Graphical Interface Design: Graphical user interface, standards such as Microsoft windows HCI guidelines, Windows: Navigation schemes selection of window; Selection of devices based and screen-based controls, Components, Text and messages, Icons, Multimedia, Colors., controls, help & error messages design.

UNITIII: **[15HRS]**

HeuristicEvaluationandVisualization

Webuser interfacedesign–JessyJamesGarettefive layersofuserexperience.

Heuristic Evaluation: Heuristic Evaluation — Why and How?

Visualization,Amountofinformation,Focusandemphasis,Presentationinformationsimplyand meaningfully, Information retrieval on web, Statistical graphics.

REFERENCES:

MANDATORY:

1. Alan.C, Robert.R.AboutFace2.0:TheEssentialsofInteractionDesign,Wiley(3rd ed.).Wiley.
2. Alan.D,Janet.F, GregoryD.andRussell,B. Human-ComputerInteraction,(3rd ed.).PrenticeHall.

SUPPLEMENTARY:

1. Ben.S,Catherine.P.DesigningtheUserInterface:StrategiesforEffectiveHuman-Computer interaction(5th ed.). Pearson.
2. Donald.A.N. TheDesignofEverydayThings(3rd ed.).BasicBooks.

WEBBASED:

1. http://hcibib.org/
2. https://www.tutorialspoint.com/human_computer_interface/index.htm
3. https://www.academia.edu/4955516/Wiley_The_Essential_Guide_to_User_Interface_Design_3rd_Edition_Apr_2007?auto=download
4. https://www.slideshare.net/busaco/hci-2015-110-humancomputer-interaction-overview?qid=1c116f30-ec87-4eb4-a375-49b2bbe65d75&v=&b=&from_search=2
5. https://arl.human.cornell.edu/879Readings/Interaction%20Design%20-%20Beyond%20Human-Computer%20Interaction.pdf

Practicals:HumanComputerInterface
Credit: 1
Marks: 25
Duration:30Hours

Suggestedlistofpractical(Numbersinbracketsindicatenumberofpractical's)

1. PaperPrototypingusingtemplates (**1P)**
2. Conductingsurveyinterviewandsummarizingtheresult(**1P)**
3. Persona-conductingcontextualinterviewanddevelopingpersona(**1P)**
4. GUIdesign-formdesign,menudesign,help,errormessages(**2P)**
5. WebUIdesign- pages, navigation,controls, Pagesubmission–Asynchronous**(2P)**
6. Report designs(2P)
7. Visualizationandinfographics**(1P)**
8. Heuristicevaluation**(2P)**
9. Storyboarding(**1P)**

Course Title: E-Commerce

CourseCode:PGD-CA.E.4

Marks: 75
Credits: 3
Duration:45Hrs

PrerequisitesCourses: Nil

Course Objectives:

- To learn the working ofE-Commerce website and the various background processes involved to study the activities associated with e-commerce like buying, selling and payment, understand the various technologiesused ine-commercewebsitesandsecuritymechanismsinvolved ine-commercewebsites.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: Explain the various E-Commerce Strategies.
CO2: ExplaintheworkingofanE-CommerceWebsite.
CO3: Evaluate the various Payment Mechanisms.
CO4: Designand DevelopanE-CommerceWebsite.
CO5: RecognizeanddiscussglobalE-commerceissues.
CO6: AnalyzetheimpactofE-commerceonbusinessmodels.

UNIT I: Introduction to Electronic Commerce, Value Chain, Business Strategy & Electronic Data Interchange [10HRS]

The Scope of Electronic Commerce, Definition of Electronic Commerce, Electronic Commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce, Electronic Commerce in Perspective.

The Value Chain: SupplyChains, Porter's Value Chain Model, Inter OrganizationalValue Chains Competitive Advantage, Porter'sModel, First Mover Advantage, Sustainable Competitive, Competitive Advantage using e-commerce

BusinessStrategy:

MichaelPorter's5force,analysis.EDI:EDIDefinition, EDITechnology, EDIStandards,EDICommunications.

Unit2:Electronicpaymentsystems&E-business[20HRS]

Overview of the electronic payment technology; limitations of traditional payment instruments; Electronic or Digital Cash-Properties of Electronic Cash, Digital Cash inaction; Electronic Checks-benefits of electronic checks, electronic checks in action, Net Check: A Prototype Electronic

Check System; Online Credit Card-Based Systems- types of credit card payments, Secure Electronic Transactions(SET);Other Emerging Financial Instruments: POS (Point of Sale), E-Cash, Net Banking, Credit/DebitCardsandElectronicBenefitsandSecurityIssues;CaseStudiesofthevariousmodesofelectronic payment of various types of websites.
E-business: EDI Application in business, E- Commerce Law, Forms of Agreement, Govt. policies and Agenda; CaseStudyofInternetbookshops,Grocerysupplies,softwaresuppliesandsupport,electronicnewspapers,Internet banking, Virtual auctions, online, share dealing; Business to Legal issues: Risks involved; Paper Document vs. Electronic document, Authentication of Electronic document, Laws, Legal issues for Internet Commerce: Trademarks and Domain names, Copyright, Jurisdiction issues, Service provider liability, Enforceable online contract.

UNIT III: Firewalls and Transaction Security & M-Commerce [15HRS]
FirewallsandNetworkSecurity:Typesoffirewalls, FirewallSecurityPolicies, EmergingFirewallManagement Issues;TransactionSecurity: Types ofOnline Transactions, Requirements for TransactionSecurity; Encryption and Transaction Security: Secret-Key encryption, Public-Key Encryption, Implementation and Management Issues;DigitalCertificate;SecurityThreatstoECommerce,VirtualOrganization,BusinessTransactionsonWeb, EGovernanceandEDI.CONSUMERE-COMMERCE:Consumertradetransaction,Internet,PageontheWeb, M-COMMERCE: Basic concepts and applications, difference with E-Commerce, benefits of integration with ERPs.

REFERENCES:

MANDATORY:
1. DavidWhiteley.(2014).E-CommerceStrategyTechnologiesand Applications.TataMcGraw Hill

SUPPLEMENTARY:
1. RaviKalakotaandAndrewB. Whinston.(2014).ElectronicCommerceAManager'sGuide.PearsonEducation.
2. KamleshKBajajandDebjaniNag.(2005).E-CommerceTheCuttingEdgeofBusiness(2nded.). Tata McGraw Hill.

WEBBASED:
1)https://nptel.ac.in/content/storage2/courses/106108103/pdf/PPTs/mod13.pdf2)
http://assets.vmou.ac.in/MCA23.pdf
3) https://www.tutorialspoint.com/e_commerce/e_commerce_tutorial.pdf
4) http://164.100.133.129:81/econtent/Uploads/Session%206%20-%20e-Business%20and%20e-commerce.pdf
5) https://www.tutorialspoint.com/mobile_marketing/m_commerce.htm
6) https://www.tutorialspoint.com/internet_technologies/firewall_security.htm

Practicals:E-COMMERCE
Credit: 01
Marks: 25
Duration:30Hrs

Listofsuggestedpractical's(thenumbersinbracketsindicatenumberofpractical's):

ECOMMERCEPLATFORMS: (10P)

WORDPRESS: Primarilydesigned for creating blogsbutcanbeusedtocreateonlinestorebyaddingappropriate themes & plugins. Basic Programming Knowledge in PHP may be required in later stages.
(http://www.wordpress.comhttp://www.wordpress.com/).

WIX: Wixisadrag&dropwebsitebuilderwhichcanalso beusedto buildanecommercewebsitewithoutany programming experience. (http://www.wix.comhttp://www.wix.com/).

SHOPIFY: Made speciallyto createonline stores, addproducts, categories &handle payments allwithout Any Programming knowledge required. (http://www.shopify.comhttp://www.shopify.com/).

BLOGGER:Similarto WordPressbut ablogging serviceprovided bygooglewhichagaincanbecustomizedto create an online store. (http://www.blogger.comhttp://www.blogger.com/).

TOOLSUSEDTOFACILITATEECOMMERCE (5P)

GOOGLE ANAYLITICS: Present in most ecommerce platforms and can be integrated in almost any application, giving the owner insights ofthe customer base visiting the website. Can also be fine- tuned to give more detailed analysis like how many visits actually got converted into leads etc. (https://www.google.co.in/analyticshttp://www.google.co.in/analytics).

MAIL CHIMP: A service to send emails to customers. Useful in marketing.(http://www.mailchimp.comhttp://www.mailchimp.com/).

ZENDESK: Zendeskisusedtosetupasupportcentrefor yourapplicationusers.Userscanopenaticketandget their issues resolved. Useful in issue tracking and management. (https://www.zendesk.com/http://www.zendesk.com/).

APPOINTLET:AService integratedwithgooglecalendarandhelpsmanageallappointments.Usefulin applications where an appointment is required. (https://www.appointlet.com/http://www.appointlet.com/).

UNBOUNCE: Usedto createlandingpages foranapplication. Agoodlandingpagesometimesdefineswhethera user will visit the site or turn away. (http://www.unbounce.com/).

CourseTitle:DigitalMarketing
Course Code: PGD-CA.E.5
Marks: 75
Credits:3
Duration:45Hours

PrerequisiteCourse: ClientSideTechnologies

Course Objectives:

- TobuildOptimizedandAccessible WebsitesfortheSearchEngines.
- TostudyvariousonlineMarketingStrategies.
- Analyzeand researchInternetto improvethequalityandmarketabilityoftheWebsites.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: Optimizethewebsiteforvarioussearchengines.
CO2: Marketttheproducts/services/facilitiesusingSearchEngine**,** Social Media and Email.
CO3: AnalyzetheWebforimprovingthemarketingstrategy.
CO4: UnderstandtheconceptofMarketingAutomation.
CO5: UsevarioussoftwaretoolstoimplementDigitalMarketing.

UNITI:SearchEngineOptimizationandMarketing (SEO&SEM) [15HRS]

SEO: Introduction to Online Search; Function of Search Engines Google Page Rank; Introduction to Search Engine Optimization; Building Accessible Site; Keyword Research and Optimization; Link Building Strategies; Useful Tools for SEO; The Past, Present and Future of SEO.
SEM: Introduction to Internet and Search Engine Marketing; Google Adwords; Adwords Account Structure; Navigating in Google Ad words; Working with Keywords; Creating Ads in Google Adwords; CreatingandManagingyourFirst AdCampaign;AdwordsReportingandAccount PerformanceReports.

UNIT II: Social Media and Email Marketing (SMM & EM) [15HRS]

SMM: Introduction to the World of SMM; Why Social Media?; Getting Started with Social Media; BuildingRelationshipsviaFacebook,Twitter,LinkedIn,YouTube;HandlingPositiveandNegative Comments; Social Media Content Base Creation.
EM: ImportanceofEmailmarketing;EmailMarketingSoftware's;SubscriberList;EmailMarketingCampaign; Newsletters; Measuring the results.

UNITIII: WEBAnalyticsandMarketingAutomation [15HRS]

Web Analytics and Intelligence Tools; Basic Metrics Demystified; Introduction to Google Analytics;Goals and ActionableInsights;DataManagement;SocialMedia Analytics;SocialMediaGoalsandKPIs;Toolsfor Social Media Analytics.
MarketingAutomation: IntroductiontoMarketingAutomation;AdvantagesofusingMarketing Automation Software; Issues with Marketing Automation.

REFERENCES:

MANDATORY:

1. DamianRyan,(2014),UnderstandingDigitalMarketing:MarketingStrategiesforEngagingtheDigital Generation, (3rd ed.), Kogan Page Publisher.

SUPPLEMENTARY:

1. CalvinJonesandDamianRyan, (2013),TheBestDigitalMarketingCampaigns inthe World,(1sted.), Kogan Page Publications.
2. NickSmith, (2013),SuccessfulSEOandSearchMarketinginaWeek,(1sted.),TeachYourselfPublisher.
3. LeeOdden,(2012),Optimize:Howto AttractandEngageMoreCustomersbyIntegratingSEO,Social Media, and Content Marketing, (1st ed.), Wiley Publishing.
4. AvinashKaushik, (2013),WebAnalytics2.0:TheArtofOnline Accountability&ScienceofCustomer Centricity (Sybex), (2nd ed.), Wiley Publishing.

WEBBASED:

1. https://www.tutorialspoint.com/digital_marketing/index.htm
2. www.iab.net/resources/ad_revenue.asp
3. www.searchenginestrategies.com/sew/winter06/index.html
4. https://developers.google.com/products/www.freewebsubmission.com
5. https://www.semrush.com/analytics/seomagic/lists
6. https://neilpatel.com/ubersuggest/https://adwords.google.com/home
7. https://hootsuite.com/
8. www.googleanalytics.com

Practicals:DigitalMarketing
Credit: 1
Marks: 25
Duration:30Hours

1. UsingSearchEngineOptimizationtools(likegoogle&bingsearchconsole,hubspot,webceo,google page speed) **(3P)**
2. UsingSearchEngineMarketingtools(likegoogle adwords,googleadwordscertifications,search, display, remarketing formats, face book marketing, linkedin advertising) **(2P)**
3. UsingSocialMediaMarketingtools(likehootsuite,buffer,sprout social,klear,twitonomy, socialmention, Googlealerts, mention) **(2P)**
4. UsingEmailMarketingtools(like mailchimp,campaignmonitor,mailgun,mandrill,phplist,amazonses **(1P)**
5. Using WebAnalyticstools(likegoogleanalytics,compete.com,crazyegg,facebookinsights,twitter insights) **(2P)**

CourseTitle:NetworkAdministration
Course Code: PGD-CA.E.6
Marks: 75
Credits: 3
Duration:45Hrs

PrerequisiteCourses: Nil

Course Objective:

- Tobeabletounderstandtheworkingprinciplesofnetworkandsetting upofnetwork.
- Configuring networkandadministrationofnetwork.

Course outcomes:

At theendofthecourse studentswillbeableto:

CO1: Understandthebasicworkingofreference modelofcommunicationto provideendto endservicesfor the various applications.
CO2: Analyzethevarious behaviorofnetworkprotocolsusingthenetworking tools.
CO3: UnderstandthebasicsofIP.
CO4: Designthe basiccomputernetworkandmaintainthe network.
CO5: Createandmanageusersand groups.
CO6: Configureroutersandbasicnetworkapplication.

SYLLABUS:

UNITI.Introduction: [15HRS]

BasicsofTCP/IP,IPaddress(IPv4andIPv6),Internet Architecture,peerto peerandclientservernetworks, subnetting,supernetting , and basic Network commands.

UNITII.Administration &Routing: [15HRS]

Administration - Managing users and Groups, adding/removing software/hardware, display settings, folder options,settingupmailclient,Devicemanager,Resourcesharing.BasicDatarecoveryconcepts:DiskRepair tools, recovering files and directories, correcting errors reported by Scandisk.

Routing-Overviewofrouting,staticanddynamicrouting,addinganddeletingstaticroutes,routing protocols, RIP, OSPF and IGP.

UNITIII. ApplicationLayer,VLAN&Firewall: [15HRS]

Application - DHCP (Dynamic host controlprotocol): Overview of DHCP , DHCP protocol, features ofDHCP, Monitoring and troubleshooting, using DHCP in non routed and routed network. DNS (DomainName Service): Overview of DNS protocol, DNS name space, Zone of authorityand name resolutions,featuresofDNSserver,Reverse lookup,Placement ofDNSserver,InstallationandConfiguringof DNS server and client.

WWW:Architecturaloverview:serversideandclientsidetechnology.Mailserver:Electronicmail, architecture and services, user agent, message transfer, Final delivery

VLAN-Introduction,basicsofVLAN,usesofLANs,workingprinciple,typesofVLANs, frame processing

Firewall- Overviewoffirewall, typesoffirewall, workingprinciplesoffirewall,filters.

REFERENCES:

1. CraigHunt,"TCP/IPNetworkAdministration",O'Reilly;3rdedition,2002

SUPPLEMENTARY:

1. Manpages oflinux
2. AndrewS.Tanenbaum,Computer Networks,PrenticeHallofIndia,4thEdition,2002.

WEBBASED:

1. https://support.microsoft.com/en-in/help/15089/windows-change-tcp-ip-settings
2. TCP/IPGuide,CharlesM.Kozierok,AvailableOnline- http://www.tcpipguide.com/
3. https://www.tutorialspoint.com/The-TCP-IP-Reference-Model
4. https://www.computernetworkingnotes.com/rhce-study-guide/how-to-configure-dns-server-in- linux.html
5. https://www.geeksforgeeks.org/virtual-lan-vlan/

Practicals:NetworkAdministration
Credit: 1
Marks: 25
Duration:30Hours

AMiniProject[incorporateatleast6belowfeatures]/[ANY6practical's]

1. Managingusers:creating/Deletinggroups,users,settingpasswords,settingpermissionstogroupsandusers, Device Manager. **[2P]**
2. Settingupclient server network. **[2P]**
3. ConfiguringTelnetandftpserver
4. Remotedesktop connection.
5. Router configuration.
6. DHCPServerConfiguration
7. WebServerInstallation.
8. DNSserver Configuration
9. VLANconfiguration
10. FIREWALL

CourseTitle:SoftwareTesting
Course Code: PGD-CA.E.7.
Marks: 75
Credits: 3
Duration:45Hrs

Prerequisitecourses: IntroductiontoProgramming

Course Objectives:

- Tounderstand thefundamentalconceptsinsoftwaretesting
- Tostudythevarioussoftwaretesting strategies
- To learnhowto designtest casesand executethem.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: Understandthedifferentsoftwaretestingstrategies.
CO2: Applytestingstrategiestolive projects.
CO3: Designtestcases.
CO4: Executetestcasesusingsoftwaretesting tools.

SYLLABUS:

UNITI: [15HRS]

Softwaretestingprinciples - SoftwareTesting- Needfortesting, Psychologyoftesting, Testingeconomics, SDLC and Testing, Verification & Validation. Quality Assurance, Quality Control Testing strategies and types - White boxtestingtechniques-Statementcoverage,BranchCoverage,Conditioncoverage,Decision/Conditioncoverage, Multiple condition coverage, Dataflow coverage, Automated code coverage analysis, Inspections, Walk throughs CodeReviewBlackboxtestingtechniques-Boundaryvalueanalysis,Robustnesstesting,Equivalencepartitioning, Syntaxtesting, Finite statetesting, Levels oftesting, Unit, Integrationand SystemTesting, CompatibilityTesting, Domain Testing, Adhoc Testing ,Use of Requirement, Traceability Matrix.

UNITII: [20HRS]

Integration Testing Waterfall - Top-down ,Bottom up ,Big bang, Sandwich System and Performance Testing - Typesofsystemtesting,Functionaland non-functionaltesting AcceptanceTesting,Settingentryand exit criteria for phases and typical product release scenarios ,Basic factors governing performance testing, Methodology for performance testing, Tools for performance testing.

Regression Testing - Purpose ,Timing, Choice of tests ,Smoke tests ,Best practices Internationalization and Localization testing - Preliminary concepts ,Ad Hoc Testing, Pair testing, Extreme testing, Agile testing, Exploratorytesting,Defectseeding.UsabilityTesting-Factorsinusabilitytesting,Aesthetictesting,Accessibility testing, Tools for usability testing.

Testingobjectorientedsoftware-DefinitionsandChallengedifferencesfromtestingnon-OOSoftware,Classtesting strategies Class Modality, State-based Testing, Message Sequence Specification.

UNITIII: [10HRS]

People and organizational issues intesting - Commonpeople issuesand myths intesting, Providing career paths in testing, Organizational structures for testing teams, Geographically Distributed testing teams and success factors.

TestManagementandAutomation-TestPlanning,TestManagement,TestProcess,TestReporting,TestAutomation ,Factors to consider in automation, Challenges in test automation, Test Metrics, Product Metrics, Process Metrics, Progress Metrics. Use of metrics in ascertaining product release.

REFERENCES:

MANDATORY:

1. SrinivasanD.,GopalaswamyR.;(2009)SoftwareTesting-PrinciplesandPractices,4thEdition:Pearson Publication.

SUPPLEMENTARY:

1. JaloteP.,(2010)AnIntegratedApproachtoSoftwareEngineering, 3rdEdition:NarosaPublishingHouse
2. PressmanR.,(2017),SoftwareEngineering:APractitionersApproach,6thEdition:McGraw Hill Publication

WEBBASED:

1. https://www.guru99.com
2. https://www.softwaretestinghelp.com/practical-software-testing-new-free-ebook-download/
3. https://www.softwaretestinggenius.com/download/staqtpsn.pdf
4. https://www.softwaretestingclass.com/wp-content/uploads/2016/06/Beginner-Guide-To-Software-Testing.pdf
5. https://malenezi.github.io/malenezi/SE401/Books/Software-Testing-A-Craftsman-s-Approach-Fourth-Edition-Paul-C-Jorgensen.pdf

Practicals:Software Testing Credit: 01
Marks: 25
Duration:30Hours

1. PlanningTestCases
2. GeneratingTestCases/TestSuite
3. EnhancingTests
4. DebuggingTests
5. RunningTests
6. AnalyzingResults
7. ReportingDefects

CourseTitle:ServerSideProgramming
Course Code: PGD- CA. E. 8
Marks: 75
Credits:3
Duration:45Hrs

PrerequisiteCourses: ClientSideTechnologies

Course Objective:

- Togiveanunderstandingthewebsoftwaredevelopment:howitisdifferent,issuesinvolvedinit.

Course Outcomes:

Attheendofthecoursestudentsshouldbeableto:

CO1:Gethands-onprogrammingexperienceusingopen-sourcesoftware,PHPandMySQLto build professional-quality, database-driven websites.
CO2: Developtheskillstobuild interactivewebsiteswithauthenticationandsecuritybyintegratingPHPwith HTML and CSS.
CO3: Apply basic and advanced object-oriented programming techniques, use libraries, frameworks and advanced database connectivity techniques, and integrate PHP with other web technologies to build secure e-commerce applications.
CO4: Customize an application to meet the specific needs of a client use case as would be done in areal-world application.

SYLLABUS

UNITI **[15HRS]**

PrinciplesofOOP:

OOP:majorprinciples-encapsulation,abstraction,inheritance,polymorphism.BenefitsofOOP,ApplicationOf OOP.

WebTechnologies:

IntroductiontoWebtechnology,WebpagesandBrowsing,Dynamic WebPages,Javascript,Dynamicweb document technologies- PHP, JSP, ASP, Active web pages and Active Web technologies.

Tags,EscapingfromHTML, Types:

Resources,NULL,Callbacks,Typejuggling.

Variables:

Basics,Predefined variablesandScope,Constants:Syntax,Magicconstants,Expressions.

UNITII **[15HRS]**

Operators,Controlstructures,Functions,Predefinedexceptions. Security:

Introduction, General considerations, Installed as CGI binary, Installed as an Apache module, FilesystemSecurity,DatabaseSecurity,ErrorReporting,UsingRegisterGlobal,UserSubmittedData, Hiding PHP.

UNITIII **[15HRS]**

Features:

HTTPauthentication withPHP,Cookies,Sessions,Handlingfileuploads,Connectionhandling,Persistent Database Connections, **DT race** Dynamic Tracing.

Ajax:

Requestobjectscreation,forwardingtherequest,acceptingresponseobjectanddisplayonwebpage.

REFERENCES:

MANDATORY:

1. StevenHolzner, ―PHP:TheCompleteReference,TataMcgraw Hill.
2. TimothyBoronczyk,MartinE.Psinas,―PHPandMYSQL:Create -Modify–Reuse‖,Wiley IndiaPrivate Limited.
3. TimConverse,―PHP5andMySQLBible, WileyIndiaPrivate Limited.
4. MeloniJ.C.,―TeachyourselfPHP,MySQLandApacheallinone‖,Pearson Education. 5.Stephen J. Schrader, ―AJAX, imported edition.

WEBBASED:

1. http://in1.php.net/manual/en/index.phpforPHPv5.5and above
2. https://www.w3schools.com/php/
3. https://www.tutorialspoint.com/php/index.htm
4. https://www.javatpoint.com/php-tutorial
5. https://www.phptpoint.com/php-tutorial/
6. https://www.guru99.com/php-tutorials.html7.https://www.geeksforgeeks.org/php/

Practicals:ServerSideProgramming
Credit: 1
Marks:25
Duration:30Hours

Suggestedlistofpractical(Numbersinbracketsindicatenumberofpractical's)

1.Creatingdynamicwebpageswith PHP	(3P)
2.Authentication,Cookies,Sessionmanagement	(1P)
3.Error handling	(1P)
4.Databaseconnectivity	(3P)
5.UsingframeworklikeCodeIgniter	(1P)
6.Ajaximplementation	(1P)
7.Fileuploading	(1P)
8.Uploadingandimagestoandfromserver	(1P)

CourseTitle:Data Structures

CourseCode:PGD-CA.E.9

Marks : 75

Credits:3

Duration:45Hrs.

PrerequisiteCourses:ProblemSolvingandIntroductiontoProgramming

Course Objectives:

- Tounderstanddifferent methodsoforganizingdataandefficientlyimplement different data structures.

Course outcome:

At theendofthecourse studentswillbeableto:

CO1:Definerelevantstandardalgorithms forvariousdatastructures.Learnvariousapplicationsofdata structures.
CO2: Implementationofdatastructures.
CO3: Usevariousdatastructuresforsortingand searching.
CO4: AnalyzeandcomparealgorithmsforefficiencyusingBig-O notation.
CO5: Formulatenewsolutionsforprogrammingproblems.

SYLLABUS:

UNITI **[15HRS]**

Introductiontodatastructures:

Concept,Datatype,Dataobject,ADT,NeedofDataStructure,Types ofDataStructure.

Algorithmanalysis:

Algorithm–definition,characteristics,Spacecomplexity,timecomplexity,Asymptoticnotation(BigO).

LinkedList:

Introductionto List,ImplementationofList –static&dynamicrepresentation,TypesofLinkedList,Operations onList, ApplicationsofLinkedList,polynomialmanipulation, Generalizedlinkedlist–concept&representation.

Stacks:

Introduction,Representation-static&dynamic,Operations

UNITII **[15HRS]**

StackApplications:

Application-infixtopostfix&prefix,postfixevaluation,Simulatingrecursionusingstack.

Queues:

Introduction,Representation-static&dynamic,Operations,Circularqueue,priorityqueue(withimplementation), Concept of doubly ended queue.

Trees:

Concept&Terminologies,Binarytree, binarysearchtree,Representation–static&dynamic,Operations onBST –create,Insert,delete,traversals(preorder, inorder, postorder), counting leaf, non-leaf&totalnodes, non recursive in order traversal, Expression Tree. Introduction to AVL Trees.

UNITIII **[15HRS]**

M-WaySearchTrees:Introduction,BTree,B+Tree.

SearchingandSorting:

Useofvariousdatastructuresforsearchingandsorting,selectionsort,mergesort,quicksort,heapsortand hashing.

Graph:

Concept &terminologies,GraphRepresentation–Adjacencymatrix,adjacencylist,Traversals –BFS& DFS, Application of BFS, DFS – Shortest path, Backtracking.

REFERENCES:

MANDATORY:

1. DataStructuresandAlgorithmsinPythonRobertoTamassia,MichaelH.GoldwasserMichaelT.Goodrich, Wiley Student Edition

SUPPLEMENTARY:

1. HorowitzEllis,SahniSartaj,FundamentalsofDataStructuresinC,UniversityPress,2nd Edition,2008.
2. MichaelT.Goodrich,RobertoTamassia,DataStructuresandalgorithmsinJava,JohnWiley&sonsinc.,5th Edition,International Student version.
3. LangsamYedidyah,AugensteinJ.Moshe,TenenbaumM.Aaron,DataStructuresusingCand C++,Pearson Education, Second Edition ,2009
4. GilbegRichard,ForouzanBehrouz,DataStructures:APseudocodeApproachwithC++, CengageLearning, Second Edition

WEBBASED:

1. https://www.tutorialspoint.com/python_data_structure/python_data_structure_introduction.htm
2. https://runestone.academy/runestone/books/published/pythonds/index.html
3. https://www.w3schools.in/data-structures-tutorial
4. https://www.datacamp.com/community/tutorials/data-structures-python
5. https://www.programiz.com/dsa
6. https://www.geeksforgeeks.org/data-structures/
7. https://www.javatpoint.com/data-structure-tutorial

Practical:DataStructures
Credit: 1
Marks: 25
Duration:30Hours

ProgramsusingaProgrammingLanguagethatcoversthefollowing concepts:

1. Stack:Static/Dynamicstackimplementation.
2. Stack:infixtopostfix.

Stack:EvaluationofPostfixexpression.

3. Queues:StaticandDynamicQueueImplementation

Queues:Circularqueue4.List:
SinglyLinkedList,5.List:
DoublyLinkedList6.List:
CircularLinkedList

7. LinkedList:Polynomialaddition
8. Trees:BinarySearchTree:create, add, delete,displaynodes.
9. Trees:BSTtraversal.
10. Graph:RepresentationofGraphs,GraphTraversals.

Graph: DFS, BFS

Course Title: Office AutomationToolsCourseCode:PGD-CA.E.10.
Marks: 75
Credits:3
Duration:45Hrs

Prerequisites
Course: Nil Course
Objectives:

- Toexplorethefeaturesofafewautomationtoolsusedinofficework.
- Studyandimplementthefeaturesofspreadsheets,LATEXandImage/Graphicdesigntools.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: UnderstandbasicSpreadsheetfeatures.
CO2: Workwithdifferentworksheets.
CO3: Analyzethedatausingvariousgraphs.
CO4: Analyzedatausing variousspreadsheet featuressuchaslookuptables,Pivottables,andother statistical features.
CO5: UsedifferentfeaturesofDTP software.
CO6: DevelopadesktopPublishingApplicationusinggivensoftware.

SYLLABUS:

UNITI: Spreadsheets: **[15HRS]**

SpreadSheet&itsApplications,Spreadsheet addressing -Rows,Columns&Cells,ReferringCells&Selecting Cells – Shortcut Keys. Entering & Deleting Data- Entering data filling. Find, Search & replace, Inserting Data, Insert Cells, Column, rows & sheets, Symbols, Data from external files, Frames, Clipart, Pictures, Files etc, Inserting Functions, Manual breaks, Setting Formula - finding total in a column or row.

Mathematical operations: (Addition, Subtraction, Multiplication, Division, Exponentiation), Using other Formulae. Formatting Spreadsheets- Labeling columns&rows,Formatting- Cell, row,column &Working with sheets–Sorting,Filtering,Validation,Consolidation,andSubtotal.UsingTools–Errorchecking,SpellChecks, Formula Auditing, Creating & Using Templates, Pivot Tables, Tracking Changes, Security, Customization.

UNITII:Presentation SoftwareandADOBEInDesign **[15HRS]**

Introduction & area of use; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & it'sdifferentviews;Inserting,DeletingandCopyingofSlides;WorkingwithNotes,Handouts,Columns&Lists; Adding Graphics, Sounds and Movies to a Slide; Working with Objects; Designing &Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options.

AdobeInDesign: Introduction,IntroducingtheWorkspace,GettingtoKnowInDesign, settingupaDocument

and WorkingwithPages;LearningalltheprimaryTools:WorkingwithFrames,Importingand linkingGraphics, introduction to master pages, Importing and Editing text, Working with typography; Constructing a publication: setting up pages, using master pages, creating and adjusting layouts for newspapers, brochures etc., numbering pages.

UNITIII: CorelDraw:- Graphicdesign:- **[15HRS]**

Introduction: IntroductiontoCorelDraw,FeaturesofCorelDrawCorelDrawInterface, learningabout Raster and Vector Graphics.
BasicDrawingSkills:SelectingandManipulatingObjects,DrawingandShapingObjects,ArrangingObjects, learning about raster and vector graphics.
MasteringDifferentTools:UsingText andColor,WorkingwithColorPalette,TextSpecialText Effects,alignand distribute, transformation tools, Shaping etc.
ApplyingSpecialEffects:LearningBlendingoptions,Distortion,ContourEffects,Envelopeeffect,
Transparency Power Clip.
WorkingwithImages:Workingwithimages,applyingspecialeffects,editingbitmap.
Saving,Exportingandprinting:DifferentSavingoptions,exportingyourdesignsintodifferentformatsfor printing, Creating layouts and finalizing content for printing.

REFERENCES:

MANDATORY:

1. MarkMoore,(2015),MasteringExcel:BuildingDashboards,(1stEd.),CreateSpace Independent Publishing Platform.
2. R.Shamms, Mortier&RickWallacl(1997), PageMaker-Complete, (Ed.)Techmedia.
3. DineshMaidasani, (2008),StraighttothePoint–MSOffice2003, (1st Ed.),FirewallPublications.

SUPPLEMENTARY:

1. RameshBangia,(2017),LearningPageMaker7,(Ed),KhannaBookPublishingCoPvtLtd.
2. MichaelS.Toot,(2017),MasterVisuallyMicrosoftOffice2003,(Ed),VisualPublishers.
3. Mansfield,(2017),MasteringWORD6 forWindows,(Ed),BPB
4. Townsend,(2017), MasteringEXCEL4forWindows,(Ed),BPB

WEBBASED:

1. https://www.guru99.com/excel-tutorials.html
2. https://learn.corel.com/tutorials/how-to-use-the-objects-docker-in-coreldraw/
3. https://www.tutorialspoint.com/adobe_indesign_cc/index.htm4.https://www.coreldraw.com/en/pages/tutorials/?topNav=en
5. https://www.latex-tutorial.com/tutorials/6.https://www.youtube.com/watch?v=SoDv0qhyysQ–Latex tutorials

Practicals:OfficeAutomationTools
Credit: 01
Marks: 25
Duration: 30Hours

Listofpractical(AnyTen):

PART-I **(6P)**

1. **Usingformulasand functions:**

To prepare a Worksheet showing the monthly sales of a company in different branch, offices (Showing TotalSales, Average Sales).Prepare a Statement for preparing Result of 10 students in 5 subjects(usingformulatoget Distinction,IClass,IIClassandFailunderResult columnagainst each student).

Operating onthesheets:

Finding,deletingandaddingrecords,formattingcolumns,rowheight,merging,splitting columns etc. Connecting the Worksheets and enter the data.

CreatingaChart:

Tocreateachartforcomparingthemonthlysalesofacompanyindifferentbranchoffices.

Usingthedataconsolidatecommand:

To use the data consolidate command to calculate the total amount budgeted for all departments(wages,travelandentertainment,officesuppliesandso on)orto calculatethe average amount budgeted for – say, department office expenses.

2 SortingData, FilteringDataandcreationofPivottables.

3.Workingonpresentation(anyopensource presentationsoftware suchasimpressor equivalent).

PART-II

CorelDraw/PageMaker **(9P)**

1. Introduction
2. BasicDrawingSkills
3. UsingTextandColor
4. WorkingwithObjects
5. Addingspecialeffects
6. Creatingoutput
7. Layout andlayers
8. Stylesand templates
9. AdvancedEffects.

CourseTitle:AssessmentandEvaluationforLearning Course
Code: PGD-CA.E.11.
Marks: 75
Credits:3
Duration:45Hours

PrerequisiteCourses:Nil

Course Objectives:

- Tomakestudentsawareofthe importanceofevaluation. Theywillknowhowtodesigneffective evaluation methods.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: Understand theprocessofevaluation.
CO2: Developtheskillinpreparing,administeringand interpretingtheachievementtest.
CO3: Understand and usedifferent techniquesand toolsofevaluation forlearning.
CO4: Comprehendtheprocessofassessmentforlearning
CO5: Developskills necessarytocomputebasicstatisticalmeasurestoassessthelearning.

SYLLABUS:

UNITI: ProcessofEvaluation **[15HRS]**
Measurement, Assessment and Evaluation in Education – Concept & Relationship.
Taxonomyofinstructionalobjectives(RevisedBloom'sTaxonomyandR.H.Dave)and its importance.Principles of Evaluation.
Educationalobjectivesandlearning outcomes.
Criteriaforselectionofgoodlearningexperiencesand Types.
Relationshipbetweeneducationalobjectives,learningexperiences,contentandevaluation.

UNITII: ToolsandTechniquesofEvaluation **[15HRS]**
Characteristicsofmeasuringtools:Validity,Reliability,Objectivity,Usability, Adequacyand Discrimination Power (Concepts and Factors Affecting them).
EvaluationTechniquesand Tools:
a) ObservationTechnique:RatingScaleand Checklist
b) SelfReportingTechnique:Interviewand Questionnaire
c) ProjectiveTechnique:Thematic ApperceptionTest(TAT)andSentenceCompletionTest
d) SociometricTechnique:SociogramandGuess Who?
QuantitativeToolsofEvaluation
a) Constructionofachievementtest withspecialreferencetoContentarea,ObjectivesandTypesof Questions (Blue Print).
b) DiagnosticTest.
c) PerformanceTest:JigsawandPuzzle.
d) OralTestandPracticalTest.

UNITIII: AssessmentforLearning&InterpretingTest Scores **[15HRS]**
Significanceofassessmentforlearning:Selfassessmentandpeer
assessment Records used in Assessment:

a) Profiles:Meaning,Stepsinvolvedandcriteriafordevelopingandmaintainingacomprehensive
learner profile.
b) Evaluationrubric:Meaning,ConstructionandUses.
c) Cumulativerecords:Meaning,Significance.

EthicalPrinciplesofAssessment:ExaminationReforms
a. ContinuousandComprehensiveEvaluation(CCE).
b. ChoiceBasedCreditSystem(CBCS).
c. OpenBookExamination.

Feedback in Assessment
a) ImportanceofFeedbackin learning.
b) TypesofFeedback:Constructivefeedback, OralandWritten,Individual&Group.

Statisticalmeasuresto interpretthetest scores(Meaning,Characteristics,andUses:Conceptsonly).Measuresof Central Tendency : Mean, Median, Mode.
MeasuresofVariability:QuartileDeviation,StandardDeviation.
Percentile and Percentile Rank.
Co-efficientofcorrelationbySpearman'sRankDifferencemethod.
Standard Scores: Z and T (Concept Only).
Graphicalrepresentationofdata

REFERENCES:

MANDATORY:

1. AssessmentandEvaluationforLearningDandekar,W.N.(2007).EvaluationinSchools,
Pune: ShreevidyAprakashan.
2. Measurement evaluationandassessmentineducationpaperback–2016ByBipinAsthana(author).

SUPPLEMENTARY:

1.Garrett,H.E.(2008).Statistics inPsychologyandEducation. Delhi:SurjeetPublication.2.Patel,
R.N.(2011).EducationalEvaluationTheoryandPractice.Mumbai:HimalayaPublishing House
Pvt. Ltd.
3. Rani,P.(2004).EducationalMeasurement andEvaluation.NewDelhi:DiscoveryPublishers.

Practicals:AssessmentandEvaluationfor
Learning Credit: 1
Marks: 25
Duration:30Hours

1. DevelopinganachievementtestwithitsBluePrint
2. DevelopinganachievementtestwithitsAnswerKeyandMarksDistribution.
3. DevelopinganachievementtestwithitsBluePrint, AnswerKeyandMarksDistribution.
4. DevelopingaPortfolio
5. DevelopingaProfile,DevelopingaPortfolio&ProfilePreparationofanEvaluationRubric
6. PreparationofanEvaluationRubric
7. DesigningQuestionnaire&InterviewScheduleonagiventopic
8. DesigningQuestionnaire&InterviewScheduleonagiventopic
9. EvaluationofavailableUnittestandreformationofthesame.
10. EvaluationofavailableUnittestandreformationofthesame.
11. PreparinganyfourevaluationtoolsforFormativeAssessment.
12. InterpretingTestScores(Dataentryand calculationviaspreadsheets)
13. InterpretingTestScores(Visual)

CourseTitle:InstructionalDesign Course

Code: PGD-CA.E.12.

Marks:75

Credits:3Duration:

45Hours

PrerequisiteCourses:

NilCourse Objectives:

- Providesthebasicknowledgeandapplicationoftheskillsandtechniquesrequired fortheprocessof addressing learning settings.
- Focusoninstructionalsystemsdesignand instructionalstrategiesatthecurricularandtheclassroom level.
- Providethebackgroundandskillsneededtoprepareanduseawiderangeofeffective instructional materials.
- Distinguishbasicadvantagesanddisadvantagesofthemaininstructionalmediaandmaterials.
- Providepracticetoassureeffectivepreparationandtheuseofinstructionalmaterials.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: Provide rationales for using a systematic approach to instructional design.
CO2: Identifyandsummarizethestepsand methodsofthe instructionaldesignprocess. **CO3:**
Function independently and cooperatively in team work.
CO4: Compareandcontrastvariousinstructionaldesignperspectives.
CO5: Demonstratevariousinstructionaldesigncompetencies.

SYLLABUS:

UNITI: [15HRS]

- InstructionalandMaterialDesign:HistoricalPerspective.
- InstructionalDesign:Meaning,
- ConceptandPrincipleInstructionalDesignProcess-steps
- SystemApproachtoInstructionalDesign
- TheoriesonInstructionalDesign
- InformationProcessing

- ComponentsofInstructionalDesign
- InstructionalObjectives&InstructionalDesign,
- LearningandTeachingStylesinInstructionalDesign
- InstructionalMethod,StrategyandModels
- ModesofInstructionalDesign
- ComputerAssistedInstruction
- PrinciplesandCharacteristicsofInstructionalandMaterialDesign
- LearningMaterialDesign:DesigningandDevelopment
- Designinge- Contentand Materials

UNITII: **[15HRS]**

- LearningEnvironment– Design.
- ContentStructuring.
- NicetiesofLanguageWriting&WritingStyle.
- WritingStyles.
- Communication.
- ComputerMediatedCommunication.
- Hand-held Technologies.
- Communicationtoolsfore–Learning.
- ClassManagement andInstructionalDesign.
- AssessmentandAssessment Practices.
- FeedbackandInstructionalDesign.
- Planninga Design.
- e- LearningandInstructionalDesign.
- Approachesandcomponentsofe–learning.
- Typesofe-Learning :SynchronousandAsynchronous.

UNITIII: **[15HRS]**

- PedagogicalDesign fore-Learning,
- Interactivee-Lesson&InteractiveMultimediaininstructionaldesign

- ModelsofInstructionalDesign,
- Designand developmentofCourseorunit
- TeachingasDesign:HistoricalPerspective,
- InterpretingteachingasDesign,
- PedagogicalDesignCapacity
- InstructionalDesignforHumanitiesandScienceTeaching,
- Ethicalissues inInstructionalDesign
- TeacherVsTechnology

REFERENCES:

MANDATORY:

1. InstructionalDesignfore_learning:Essentialguidetocreatingsuccessfulelearningcours es(Marina Arshavskiy).
2. ISDFromtheGround Up:ANo-NonsenseApproachtoInstructionalDesign(ChuckHodell).

Practicals:InstructionalDesign
Credit: 1 Marks: 25
Duration:30Hours

DevelopProfessional&OrganizationalProfile[2P]

InformationfortheProfessionalProfilemustbecollectedviaface-to-face,email, orphoneinterview.

- Clearlydescribetheprofessional'seducationalbackground/path
- Clearlydescribetheprofessional'scareerpathandexperience
- Clearlydescribetheprofessional'scurrentjobdescription
- Detailtheprofessional'sindividualandteamdutiesand responsibilities
- Offertheprofessional'sadviceregardingacareerininstructionaldesign

Information for the Organizational Profile must be collected via face-to-face, email, or phone interview. The organization profile requires attending and/or participating in a meeting, conference, or workshop (live, via webcast, etc.).

- Clearlydescribetheorganization'sgoal, purpose,and/or mission
- Clearlydescribetheorganization'starget audience
- Describea typicalmeetingofthe organization
- List anyrelevantpublicationsandconferences
- Listsbenefitsof membership

DevelopaDesignDocument [5P]

(TheDesignDocumentexplainstheapproachanddetailstheplantodevelopingaprototypeofaninstructionalmodule. Thepurposeofthisactivityistohavestudentsdemonstratetheunderstandingofkey

conceptsininstructionaldesignandapplicationtodevelopinginstructionalmodules).

PrototypeInstructionalModule [6P]

Develop a prototype of an instructional modulefrom audience analysis to formative evaluation. Thestudent will apply the instructional design process (from audience analysis to formative evaluation) tothe prototype. The team will design and develop the segment of the prototype based on information (regardingaudience,contentarea,instructionalapproach,etc.)statedintheDesignDocument.Teamscan useanyappropriatemedium(computer,paper,web,video,audio,etc.)toconstructanddeliverthe prototype.

Conduct PeerReviews [2P]

Eachstudent willbeaskedto provideconstructive,evaluative feedbacktoothergroupsat specificpoints in the instructional design process as dictated by the class schedule each of the following assignments: instructional goal, needs assessment plan, objectives, instructional approach, and evaluation plan.

CourseTitle:ContentManagementSystem
Course Code:PGD-CA.E.13.
Marks: 75
Credits:3

PrerequisiteCourse:Nil

Course Objectives:

- Useand managedifferentcontentmanagementsystem.
- Designanddeploywebsitesdeveloped usingacontentmanagementsystem.

Course Outcomes:

At theend ofthe coursestudentswillbeable to:

CO1: Installandmaintaincontent managementsystems.
CO2: Developwebsiteusingdifferent contentmanagement systems.
CO3: Makeuseofpluginstoadd morefunctionality.
CO4: Createusersand managethem.

UNITI: [15HRS]

Wordpress

WordPress dashboard, Types of users, WordPress settings panel, Permalinks and RSS feeds, Creating and managingposts,Settinguppostcategories,Creatingandmanagingpages,Managingcomments,Installingand updatingplugins,CustomizingWordPressthemes,WordPress themeoptions,WordPress Security/backup /domaintransfers,MigrationFromDifferentPlatforms, OptimizationofWordPressWebsite,SEOPlugin.

Woocommerce

Introductionto Woo commerc, Woo commerce installation, Creating product:Creating your product- General data, Inventory data, Shipping data, Attributes, Advanced data, Grouped products, Virtual products, Downloadable products, External/Affiliate products, Setting up categories ,tags, and product images.

UNITII **[15HRS]**

Jumla

Joomla GlobalConfiguration, Article Manager, Archive Manager, Front page Manager, SectionManager, Category Manager, Media Manager, Menu Manager, Component Manager, Content Manager, Extensions Manager, Module Manager, PluginManager, TemplateManager, UnderstandingtheconceptofJoomlaPositions, Changingthelayout structure by changing the module position, Understanding Basic Joomla Template, Customizing Joomla Template, Building Custom Joomla Template, Understanding templateDetails.xml File, Creating templateDetails.xml.
File using tmpl _builder, Linking CSS, Linking Javascript, Understanding include, Displaying content in XHTML, Creating template, installationpackage, Creating CustomForms, Changing theFormappearanceusing CSS.

UNITIII: **[15HRS]**

Drupal

Drupal Overview, Drupal Site Building, Introduction to Drush, Setting a New Site Title and Logo, Adding MoreUsers,AssigningRolesandPermissionstoSiteUsers,CreatingaBlog,WorkingwithBlocks, Working withViews,ChangingYourSite'sTheme,InstallingNewAdd-onModules,WorkingwiththeDrupalDocroot

Moodle

Course categories – an overview, Creating courses, Course requests, Managing courses in bulk, Forms of enrolment, User profiles, Standard user actions, Manual accounts, User Authentication, Assigning roles, roles Capabilities, Customizing your front page, The Moodle editor, Module plugins.

REFERENCE

MANDATORY:

1. Douglass, R.T.,Little, M.,&Smith, J. W.(2006).BuildingonlinecommunitieswithDrupal, phpBB, and WordPress.Apress.

SUPPLEMENTARY:

1. Ravensbergen,R.(2015).BuildingE-CommerceSolutionswithWooCommerce.Packt Publishing Ltd.
2. Barnett,J.(2015).Drupal8for AbsoluteBeginners.Apress.
3. Buchner,A.(2016).Moodle3administration.PacktPublishing Ltd.

WEBREFERENCES:

1. https://www.tutorialspoint.com/wordpress/index.htm

2. https://docs.moodle.org/22/en/Moodle_video_tutorials
3. https://www.tutorialspoint.com/drupal/index.htm
4. https://www.tutorialspoint.com/joomla/index.htm
5. https://www.researchgate.net/publication/321128263_Content_Management_System_CMS_application_of_Joomla_to_website_development_in_Libraries_and_Information_Centers

Practical: LabContentManagementSystem
Marks:25
Credits:03

- Installingandcreatingawordpresswebsite[1P]
- Installingthemesandworkingwithawordpresseditor [1P]
- Plugins-ContactformandSEO[1P]
- Creatingablogwebsiteusingwordpress[1P]
- Installingwoocommerceplugin, addproductstothesite[1P]
- Customizingproductsbysettingtheproductattributes[1P]
- Developanecommercewebsite[2P]
- Installingdrupaland building awebsiteusing atemplate[1P]
- Usermanagement[1P]
- Developwebsiteusingdrupal[1P]
- Installingmoodleandsettingupthehomepage
[1P]12.Managing courses in moodle [1P]
- Usermanagementinmoodle[1P]
- Creatingawebsiteusing moodle [1P]

PaperTitle:WebDevelopmentwithFLASK Paper
Code : PGD-CA.E.14.
Marks:75
Credits: 3

CoursePrerequisites: Introductiontoprogramming
ObjectOriented Programming

Course Objectives:

- Todevelopskillstobuilddynamicwebapplication, ensuringsecurityandscalability.
- Trainstudentsto deploywebapplicationsandconfigurethesame foradevelopment andproduction environment.

Course Outcome:

At theend ofthe coursestudentswillbeable to:

CO1: Understandthebasicofserverclient architectureonhowrequestaremade,handlingthose requests and providing an appropriate response.
CO2: Understandhowtoscaleawebapplication.
CO3: Secureawebapplication fromCSRF,Sqlinjectionand XSS.
CO4: Handledependenciesmanagement acrossmultiplewebapplicationusingpythonvirtual environment.
CO5: Configureawebapplicationfordevelopmentand production.
CO6: Create,build anddeploywebapplication.

Syllabus:-

UNITI **[15HRS]**

Introduction toWebDevelopment:
Client-Serverarchitecture,Requests:GET,POST.WebaddressesandURL,DynamicWebsites,StaticWebsites, Database Servers and Web Servers. MVC and MVT.
IntroductiontoFlask.FlaskandOtherwebframeworks.Introductiontopythonmodulesandpip.Pythonvenv Module ,Installing modules using pip, dependency management.

ConfigurationandDeployment
Flask configuration basic , Built in Configuration Values: SECRET_KEY, SESSION_COOKIE_PATH, LOGGER_NAME, APPLICATION_ROOT Development /Productionconfiguration, Configuration Best Practices. Deployment on Apache HTTP server.

Jinja2.
IntroductiontoJinja,JinjaSetup,StandardContext,StandardFilters,Controlling Autoescaping.Registering Filters, Context Processors.

UNITII **[15HRS]**

Building aMinimalApplication:
Routing, Startingaflaskserver, URLbuilding, RenderingTemplates, Debugging, Accessingrequestdata,HTML methods:GETPOST,CookiesSessionsHandling.RedirectingandErrors.MessageFlashing.Logging.Building a salable project structure.

FLASKWTFormsandFLASKSQLAlchemy (ORM):
WTForrms Introduction, Creating Forms, Validating Forms , Securing Forms, File Uploads, CSRF protection.
SQL Alchemy setup and installation, Creating database using Sql Alchemy, Simple Relationship, Onetomanyandmanytomanyrelationship,Insertingrecords,Deletingrecords,EditingRecords,Querying Records

UNITIII **[15HRS]**

FlaskSecurity

Sessionbasedauthentication,Rolemanagement ,Passwordhashing,BasicHTTPauthenticationTokenbased authentication,Tokenbasedaccount activation,Tokenbasedpasswordrecovery/resetting, Userregistration, Login tracking , JSON/Ajax Support

FlaskAdmin:

GettingStartedAuthorization&Permissions,CustomizingBuilt-inViewsAddingYourOwnViewsWorking With the Built-in Templates .

REFERENCES:

MANDATORY:

1.MiquelGrinberg,"FlaskWebDevelopment",O'REILLY

SUPPLEMENTARY:

1.GarethDwyer"FlaskByExample", PacktPublishing Limited

Lab:WebDevelopmentwithFLASK
Credits : 1
Marks: 25

1) Creatingabasic application.
2) Workingwiththerequestsandjinja.
3) FormcreatingandvalidationwithWTForms.
4) CreatinganadminpanelwithFLASKAdmin.
5) CustomizingFLASKadminpanel.Connectingdatabase throughSQL Alchemy.
6) Insert/Update/Delete/Querydata using SQL Alchemy.
7) SecuringyourapplicationwithFLASKSecurity.
8) Creatingascalableprojectstructure.
9) BuildyourownAPI(REST API).
10) DeployingandConfiguringFLASK.

CourseTitle:AccountingforNon-AccountantsCourse Code:

PGD-CA.E.15.

Marks: 100
Credits:4
Duration:60Hours

Pre-RequisiteCourse:Nil

Course Objectives:

- Thekeyobjectiveofthiscourseisto providethestudentsanexposuretotheaccountingdisciplineand help them to understand the language of accounting.

Course Outcome:
At theend ofthe coursestudentswillbeable to:

CO1: IdentifytheconceptofFinancial,CostandManagementaccounting.

CO2: Developtheunderstandingandskillstoprepare Accountsofcorporateandbankingsector.
CO3: Understandcompany'sfinalaccounts.
CO4: Recordtransactionsandprepare financialstatements forabusinessentityandpreparecost sheetsforthe same.
CO5: Examinethemeaningofmaterialcontrolwithpricingmethods.
CO6: Understand theknow-howand conceptofmarginalcosting withpracticalproblems.

SYLLABUS

UnitI:TheAccountingProcess: [15HRS]
Theoretical Framework of Accounting; Generally Accepted Accounting Principles, Concepts and Conventions;CapitalandRevenuetransactions:capitalandrevenueexpenditures, capitalandrevenue receipts; Measurement,
ValuationandAccountingestimates;Doubleentrysystem, Booksofprimeentry, SubsidiaryBooks;Recordingof Cash andBanktransactions;PreparationofLedgerAccounts;PreparationofTrialBalance: interpretationandusefulness; Rectification of Errors; Opening entries, Transfer entries, Adjustment entries, Closing entries.

UnitII:IssuesinAccounting: [15HRS]
Creating new ledgers/Company; Reconciliation Statements and Accounting for Depreciation: definition and causes of depreciation ,need for depreciation , methods of calculating the amount of depreciation, straight linemethod,diminishingbalancemethod;BankReconciliationStatement;Receivables/Payables Reconciliation Statement; Stock Reconciliation Statement.

UnitIII:PreparationofFinalAccounts: [15HRS]
Profit making concern: (for sole proprietorship concern and partnership firmonly): Preparation of Trading Account,Profit &LossAccount andBalanceSheet;Accountingtreatmentofbaddebts;reserve forbadand doubtful debts; provision
for discount on debtors and provision for discount on creditors; Not-for-Profit making concern: Preparation ofReceiptsandPaymentsAccount;PreparationofIncomeandExpenditureAccount;PreparationofBalance Sheet.

Unit IV: Fundamentals of Cost and Management Accounting: [15HRS]
CostandManagementAccounting:GenerallyAcceptedCostAccountingPrinciples;AccountingforMaterial cost (including Accounting of Inventory: LIFO, FIFO, Weighted, Average Cost Methods); Accounting for Labour costs, Direct Expenses and Overheads; Preparation of Cost Statements: Cost Data collection, Cost Sheet formats; Preparation of Cost Sheets (historical cost sheets and estimated cost sheets).
MarginalCostingandBreak-evenanalysis;basicknowledge;ApplicationofMarginalCostingfor decision-making.

*Practicalcomponenttobetaughtusingaccounting software

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2. T.S.Reddy&A.Murthy(2011),FinancialAccounting,MarghamPublications, Sixth Revision Edition
3. P.C.Tulsian(2003),FinancialAccounting, TataMCGrawHillLtd
4. ManoshDutta(2010),"CostAccounting', DorlingKindersley(India)Pvt. Ltd

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2. Singal,Santosh(2012),AccountingandFinancialAnalysis,InternationalBook
House, New Delhi.
3. M.C.Shukla,T.S.Grewal,Dr.M.P.Gupta(2010)CostAccounting,S.Chand&CompanyLtd.

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5. https://cleartax.in/s/cost-accounting
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