ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

M.TECH IN COMPUTERSCIENCEANDENGINEERING

COURSESTRUCTURE&SYLLABUS

SEMESTER– I

S.No.	Course codes	CourseName	Category	Hoursper			Credits
				L	T	P	
1.	23HPC5801	AdvancedDataStructuresandAlgorithms	PC	3	0	0	3
2.	23HPC5802	AdvancedComputer Networks	PC	3	0	0	3
3.	23HPE5801 23HPE5802 23HPE5803	**ProgramElectiveCourse -I** MachineLearning ObjectOrientedSoftwareEngineeringD igitalImage&VideoProcessing	PE	3	0	0	3
4.	23HPE5804 23HPE5805 23HPE5806	**ProgramElectiveCourse-II** Data ScienceDesign Patterns InformationSecurity	PE	3	0	0	3
5.	23HPC5803	AdvancedDataStructuresandAlgorithmsLab	PC	0	0	4	2
6.	23HPC5804	AdvancedComputer NetworksLab	PC	0	0	4	2
7.	23HMC001	ResearchMethodologyandIPR	MC	2	0	0	2
8.	23HAC001 23HAC002 23HAC003	**AuditCourse– I** EnglishforResearchpaperwritingDi sasterManagement Sanskritfor TechnicalKnowledge	AC	2	0	0	0
Total							**18**

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

SEMESTER–II

S.No.	Course codes	CourseName	Category	Hoursperweek			Credits
				L	T	P	
1.	23HPC5805	AdvancedOperatingSystems	PC	3	0	0	3
2.	23HPC5806	InternetofThings	PC	3	0	0	3
3.	23HPE5807 23HPE5808 23HPE5809	**ProgramElective Course–III** Deep Learning Service Oriented ArchitectureComputerVision	PE	3	0	0	3
4.	23HPE5810 23HPE5811 23HPE5812	**Program Elective Course - IV**Data Visualization TechniquesDistributedSystems PrivacyPreservingDataPublishing	PE	3	0	0	3
5.	23HPC5807	AdvancedOperatingSystemsLab	PC	0	0	4	2
6.	23HPC5808	InternetofThingsLab	PC	0	0	4	2
7.	23HPR001	Technicalseminar	PR	0	0	4	2
8.	23HAC004 23HAC005 23HAC006	**AuditCourse– II** PedagogyStudies StressManagementforYogaPersonality DevelopmentthroughLifeEnlightenment Skills	AC	2	0	0	0
Total							**18**

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	ADVANCED DATA STRUCTURES ANDALGORITHMS (CommontoM.TechCSE,CN,SE,AI& ML)	L	T	P	C
23HPC5801		3	0	0	3
	Semester	I			

CourseObjectives:

- Tounderstandconceptsofdictionaries andhashtables.
- Toimplementlistsandtrees.
- Toanalyzeusageof Btrees,Splaytreesand2-3trees.
- Tounderstandtheimportanceoftextprocessingandcomputational Geometry.

CourseOutcomes (CO): Studentwillbeableto

- Understandtheimplementationofsymboltableusinghashingtechniques
- Applyadvancedabstractdatatype(ADT)anddatastructures insolvingrealworld
- problem
- Effectivelycombinethefundamentaldatastructuresandalgorithmictechniquesin
- buildingasolutiontoagivenproblem
- Developalgorithmsfor textprocessingapplications

UNIT-I LectureHrs:

Dictionaries:Definition,DictionaryAbstractDataType,ImplementationofDictionaries,Hashing:Reviewof Hashing,HashFunction,CollisionResolutionTechniquesinHashing,SeparateChaining, OpenAddressing,LinearProbing,QuadraticProbing,DoubleHashing,Rehashing,ExtendibleHashing.

UNIT-II LectureHrs:

Skip Lists : Need for Randomizing Data Structures and Algorithms, Search and Update Operations onSkip Lists, Probabilistic Analysis of Skip Lists, Deterministic Skip Lists, Trees: Binary Search Trees(BST),AVLTrees, RedBlackTrees:HeightofaRedBlackTree, RedBlackTreesBottom-Up Insertion,Top-DownRedBlackTrees,Top-DownDeletioninRedBlackTrees,AnalysisofOperations.

UNIT-III LectureHrs:

2-3Trees,Advantageof2-3treesoverBinarySearchTrees,SearchandUpdateOperationson2-3Trees,AnalysisofOperations,B-Trees: AdvantageofB-treesoverBSTs,HeightofB-Tree,Searchand UpdateOperationson2-3Trees,AnalysisofOperations,SplayTrees:Splaying,SearchandUpdateOperationsonSplayTrees,Amortized Analysisof Splaying.

UNIT-IV LectureHrs:

Text Processing: Sting Operations, Brute-Force Pattern Matching, The Boyer-Moore Algorithm, TheKnuth-Morris-Pratt Algorithm, Standard Tries, Compressed Tries, Suffix Tries, TheHuffman CodingAlgorithm,TheLongestCommonSubsequenceProblem(LCS),ApplyingDynamicProgrammingto theLCS Problem

UNIT-V LectureHrs:

ComputationalGeometry:OneDimensionalRangeSearching,TwoDimensionalRangeSearching,Constructing aPriority Search Tree,Searching aPriority SearchTree,Priority RangeTrees,Quadtrees, k-DTrees.

Textbooks:

1. MarkAllenWeiss, DataStructuresandAlgorithmAnalysisinC++,secondEdition,Pearson, 2004.
2. T.H.Cormen,C.E.Leiserson,R.L.Rivest,IntroductiontoAlgorithms,ThirdEditionPrenticeHall,2009

Referencebooks:

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	ADVANCEDCOMPUTERNETWORKS	L	T	P	C
23HPC5802		3	0	0	3
	Semester	I			

CourseObjectives:

Theobjectiveofthiscourseis tobuildasolidfoundationincomputernetworks conceptsand design

- Tounderstandcomputer networkarchitectures, protocols,andinterfaces.
- TheOSIreferencemodelandtheInternetarchitecturenetworkapplications.
- Thecoursewillexposestudents totheconceptsoftraditionalas wellasmodern day
- computernetworks-wirelessandmobile,multimedia-based.
- Students completingthis coursewillunderstandthekeyconcepts andpracticesemployed
- inmoderncomputernetworking

CourseOutcomes (CO): Studentwillbeableto

- Analysecomputernetworkarchitecturesand estimatequalityofservice
- Designapplication-levelprotocolsfor emergingnetworks
- AnalyseTCPandUDPtrafficindatanetworks
- Designandanalysemediumaccessmethods,routingalgorithmsandIPv6protocolfordatanetworks
- AnalyzeData CenterNetworksandOpticalNetworks

UNIT-I LectureHrs:

Network Architecture, Performance: Bandwidth and Latency, High Speed Networks, Network-Centric View,Error Detection, Reliable Transmission, Ethernet and Multiple Access Networks, Overlay Networks: RoutingOverlays,Peer-to-PeerNetworksandContentDistributionNetworks,Client-ServerNetworks,Delay-TolerantNetworks,

UNIT-II LectureHrs:

Switching: Circuit-Switched Networks, Datagram Networks, Virtual-Circuit Networks, Message-SwitchedNetworks, Asynchronous Transfer Mode: Evolution, Benefits, Concepts, Exploring Broadband IntegratedServicesDigitalNetwork,LayerandAdaptationLayer,IPv4:AddressSpace,Notations,Classful,Classless, NetworkAddressTranslation,Datagram

UNIT-III LectureHrs:

FragmentationandChecksumIPv6Addresses:Structure,AddressSpace,PacketFormatandExtension Headers,ICMP,IGMP,ARP,RARP,CongestionControlandResourceAllocation:Problem,Issues,Queuing,TCPCongestionControl,Congestion-AvoidanceMechanismsandQuality ofService,

UNIT-IV LectureHrs:

Internetworking: Intra-Domain and Inter-Domain Routings, Unicast Routing Protocols: RIP, OSPF and BGP,MulticastRoutingProtocols:DVMRP,PIM-DM,PIM-SM,CBT,MSDPandMOSPF,SpanningTreeAlgorithm, Optical Networking: SONET/SDH Standards, Traffic Engineering: Requirement, Traffic Sizing,Characteristics,Protocols,TimeandDelayConsiderations,Connectivity,Availability,Reliabilityand MaintainabilityandThroughput.

UNIT-V LectureHrs:

MultimediaOverInternet: Transmission,IPMulticasting and VoIP,Domain Name System:Name Space,DomainNameSpace,Distribution,Domains,ResolutionsandDynamicDomainNameSystem,SNMP, Security:IPSec, SSL/TLS,PGPandFirewalls,DatacenterDesignandInterconnectionNetworks.

Textbooks:

1. LarryL.PetersonandBruceS. Davie, ComputerNetworks:ASystemApproach, FifthEdition,MorganKaufmann,Elsevier,2012.
2. Behrouz A. Forouzan,DataCommunicationsandNetworking,McGrawHill, FifthEdition, 2017.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

3. Chwan-Hwa(John)Wu,J.DavidIrwin,IntroductiontoComputerNetworksandCyberSecurity,CRCpress,Taylor&FrancisGroup,2014
4. AndrewS.Tanenbaum, DavidJ. Wetherall, Computer Networks,Pearson, 5thEdition,2014.

ReferenceBooks:

1.SatishJainAdvancedComputerNetworking:ConceptsandApplications

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	MACHINELEARNING (CommontoM.TechCSE,SE,AI& ML)	L	T	P	C
23HPE5801		3	0	0	3
	Semester	I			

CourseObjectives:

- Tounderstandvariouskeyparadigmsformachinelearningapproaches.
- Tofamiliarizewiththemathematicalandstatisticaltechniquesusedinmachinelearning.
- Tounderstanddifferentiateamongvariousmachinelearningtechniques.

CourseOutcomes (CO): Studentwillbeableto

- Toformulateamachinelearningproblem
- Select anappropriatepatternanalysistoolforanalysingdatainagivenfeaturespace.
- Applypatternrecognitionandmachinelearningtechniquessuchasclassificationandfeatureselectiontopracticalapplicationsanddetectpatternsinthe data.

UNIT-I — LectureHrs:

Introduction:Definitions,DatasetsforMachineLearning,DifferentParadigmsofMachineLearning,DataNormalization, Hypothesis Evaluation, VC-Dimensions and Distribution, Bias-VarianceTradeoff, Regression

UNIT-II — LectureHrs:

BayesDecisionTheory:Bayesdecisionrule,Minimumerrorrateclassification,Normaldensityanddiscriminantfunctions.
ParameterEstimation:MaximumLikelihoodandBayesianParameterEstimation

UNIT-III — LectureHrs:

DiscriminativeMethods:Distance-basedmethods,LinearDiscriminantFunctions,DecisionTree,RandomDecisionForestandBoosting
FeatureSelectionandDimensionalityReduction:PCA,LDA,ICA,SFFS,SBFS

UNIT-IV — LectureHrs:

Learningfromunclassifieddata.Clustering. HierarchicalAgglomerativeClustering. k-meanspartitionalclustering.Expectationmaximization(EM)forsoftclustering.Semi-supervisedlearningwithEMusing labelledandunlabelleddata.

UNIT-V — LectureHrs:

KernelMachines:KernelTricks,SVMs(primalanddualforms),K-SVR,K-PCA(6Lectures)Artificial NeuralNetworks:MLP,Backprop,andRBF-Net

Textbooks:

1. Shalev-Shwartz,S.,Ben-David,S.,(2014),UnderstandingMachineLearning:FromTheorytoAlgorithms,Cambridge UniversityPress
2. R. O. Duda,P.E.Hart,D. G.Stork(2000),PatternClassification,Wiley-Blackwell, 2ndEdition.

ReferenceBooks:

1. MachineLearningMethodsintheEnvironmentalSciences,NeuralNetworks,WilliamWHsieh,CambridgeUnivPress.
2. Richardo. Duda,PeterE. HartandDavidG. Stork, patternclassification, JohnWiley&SonsInc.,2001
3. ChrisBishop, NeuralNetworksforPatternRecognition, OxfordUniversityPress, 1995

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	OBJECT ORIENTED SOFTWAREENGINEERING	L	T	P	C
23HPE5802		3	0	0	3
	Semester	I			

CourseObjectives:

- Tolearnandunderstandvarious O-Oconcepts along withtheirapplicabilitycontexts.
- Givena problem,identifydomainobjects,their properties,andrelationshipsamongthem.
- Howtoidentifyandmodel/representdomainconstraintsontheobjectsand(or)ontheirrelationships
- Tolearnvariousmodellingtechniquestomodeldifferentperspectivesofobject-orientedsoftwaredesign(UML)

CourseOutcomes (CO): Studentwillbeableto

- Discussaboutsoftwaredevelopmentprocessmodels
- Identifythecontemporaryissuesanddiscussaboutcodingstandards
- Recognizetheknowledgeabout testingmethodsandcomparisonofvarious testingtechniques.
- Usetheconceptandstandardsofqualityandgettingknowledgeaboutsoftwarequalityassurancegroup.

UNIT-I LectureHrs:

Introduction to Software Engineering - Software Development process models – AgileDevelopment - Project& Process-Projectmanagement-Process&Projectmetrics-ObjectOriented concepts,Principles&Methodologies.

UNIT -II LectureHrs:

Software Requirements Specification, Software prototyping - Software project planning - Scope - Resources - Software Estimation -Empirical Estimation Models– Planning - RiskManagement- Software ProjectScheduling-ObjectOrientedEstimation&Scheduling.

UNIT-III LectureHrs:

Analysis Modelling - Data Modelling - Functional Modelling& Information Flow - BehaviouralModelling-Structured Analysis - Object Oriented Analysis - Domain Analysis-Object orientedAnalysis process - ObjectRelationshipModel- ObjectBehaviourModel,DesignmodellingwithUML.

UNIT-IV LectureHrs:

DesignConcepts&Principles-DesignProcess-DesignConcepts-ModularDesign-DesignEffectiveModularity-IntroductiontoSoftwareArchitecture -DataDesign -TransformMapping -TransactionMapping -Object OrientedDesign-Systemdesignprocess-Objectdesignprocess-DesignPatterns.

UNIT-V LectureHrs:

Top - Down, Bottom-Up, object oriented product Implementation & Integration. SoftwareTesting methods-White Box,BasisPath-Control Structure - Black Box- UnitTesting - Integration testing - Validation &Systemtesting-TestingTools–SoftwareMaintenance &Reengineering.

Textbooks:

1. FairleyR,"SoftwareEngineeringConcepts",secondedition,TataMcGrawHill,NewDelhi, 2003.
2. JaloteP,"AnIntegratedApproachtoSoftwareEngineering",thirdedition,NarosaPublishers,NewDelhi,2013.

ReferenceBooks:

1. GradyBooch,JamesRumbaugh,IvarJacobson-"theUnifiedModelingLanguageUserGuide"-AddisonWesley,1999.
2. AliBahrami,"ObjectOrientedSystemsDevelopment"1stEdition,TheMcGraw-HillCompany,1999

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	DIGITALIMAGEANDVIDEOPROCESSING	L	T	P	C
23HPE5803		3	0	0	3
	Semester	I			

CourseObjectives:

- Tostudytheimagefundamentals and mathematicaltransformsnecessaryforimageProcessing.
- Tostudytheimageenhancement techniques
- Tostudyimagerestorationprocedures.
- Tostudytheimagecompressionprocedures.

CourseOutcomes (CO): Studentwillbeableto

- Reviewthefundamentalconcepts ofadigitalimage processingsystem.
- Analyseimagesinthefrequencydomainusing varioustransforms.
- Evaluatethetechniquesforimageenhancement andimagerestoration.
- Categorizevariouscompressiontechniques

UNIT-I LectureHrs:

Introduction, Image sampling, Quantization, Resolution, Image file formats, Elements of image processingsystem,Applications of Digital image processing.Introduction,Need fortransform,imagetransforms,Fouriertransform,2DDiscreteFouriertransformanditstransforms,Importanceofphase,Walsh transform,
Hadamard transform, Haar transform, slant transform Discrete cosine transform, KL transform, singularvaluedecomposition,Radontransform,comparisonofdifferentimagetransforms

UNIT-II LectureHrs:

Spatial domain methods: Histogram processing, Fundamentals of Spatial filtering, Smoothing spatialfilters, Sharpening spatial filters. Frequency domain methods: Basics of filtering in frequency domain,image smoothing,imagesharpening,Selectivefiltering.
Introduction to Image restoration, Image degradation, Types of image blur, Classification of imagerestorationtechniques,Imagerestoration model,LinearandNonlinearimage restoration techniques,Blindde-convolution.

UNIT-III LectureHrs:

Image Segmentation: Introduction to image segmentation, Point, Line and Edge Detection, Region basedsegmentation., Classification of segmentation techniques, Region approach to image segmentation, clusteringtechniques, Image segmentation based on thresholding, Edge based segmentation, Edge detection and
linking,Houghtransform,ActivecontourImageCompression:Introduction,Needforimagecompression,Redundancy in images, Classification of redundancy in images, image compression scheme, Classification ofimage compression schemes,Fundamentalsofinformation theory,Run length coding,Shannon–Fanocoding,Huffmancoding,Arithmeticcoding,Predictivecoding,Transformedbasedcompression,Image compressionstandard,Wavelet-basedimagecompression,JPEGStandards.

UNIT-IV LectureHrs:

BasicStepsofVideoProcessing:AnalogVideo,DigitalVideo.Time-VaryingImageFormationmodels:Three-DimensionalMotionModels,GeometricImageFormation,PhotometricImageFormation,Samplingof Videosignals,Filteringoperations.

UNIT-V LectureHrs:

2-DMotionEstimation:Opticalflow,GeneralMethodologies,PixelBasedMotionEstimation,BlockMatchingAlgorithm,Mesh based Motion Estimation,GlobalMotion Estimation,Region based MotionEstimation,Multiresolutionmotionestimation,Waveformbasedcoding,Blockbasedtransformcoding, Predictivecoding, Applicationof motionestimationinVideocoding.

Textbooks:

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

1. DigitalImageProcessing–GonzalezeandWoods,3rdEd., Pearson.
2. VideoProcessingandCommunication– YaoWang,JoemOstermannandYa–quinZhang.1stEd.,PHInt.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

ReferenceBooks:
1.S.Jayaraman,S.EsakkirajanandT.VeeraKumar,"DigitalImageprocessing,TataMcGrawHillpublishers,2009

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	DATASCIENCE	L	T	P	C
23HPE5804		3	0	0	3
	Semester	I			

CourseObjectives:

- Provideyou withtheknowledgeand expertisetobecomeaproficientdatascientist.
- Demonstrateanunderstandingofstatistics and machinelearningconcepts thatarevitalfor
- datascience;
- ProducePythoncodetostatisticallyanalyseadataset;
- Criticallyevaluatedatavisualizationsbasedontheirdesignanduseforcommunicating
- storiesfromdata;

CourseOutcomes (CO): Studentwillbeableto

- Explainhowdataiscollected,managedandstoredfordatascience;
- Understandthekeyconceptsindatascience,includingtheirreal-worldapplicationsandthe
- toolkitusedbydatascientists;
- ImplementdatacollectionandmanagementscriptsusingMongoDB

UNIT-I		LectureHrs:

Introductiontocoreconceptsandtechnologies:Introduction,Terminology,datascienceprocess,datasciencetoolkit,Typesofdata,Exampleapplications.

UNIT-II		LectureHrs:

Datacollectionandmanagement:Introduction,Sourcesofdata,DatacollectionandAPIs,Exploringandfixingdata,Data storageandmanagement,Usingmultiple datasources

UNIT-III		LectureHrs:

Data analysis:Introduction,Terminologyandconcepts,Introductiontostatistics,Centraltendenciesanddistributions,Variance,Distributionpropertiesandarithmetic,Samples/CLT,Basicmachinelearningalgorithms,Linear regression,SVM,NaiveBayes

UNIT-IV		LectureHrs:

Datavisualization:Introduction,Typesofdatavisualisation,Dataforvisualisation:Datatypes,Data encodings,Retinalvariables,Mappingvariablestoencodings,Visualencodings

UNIT-V		LectureHrs:

Applicationsof Data Science, Technologies for visualisation, Bokeh (Python) Recent trends in various datacollection and analysis techniques, various visualization techniques, application development methods of usedindatascience

Textbooks:

1. CathyO'NeilandRachelSchutt.DoingDataScience,Straight TalkFromTheFrontline.O'Reilly.
2. JureLeskovek,AnandRajaramanandJeffreyUllman.MiningofMassiveDatasets.v2.1,Cambridge UniversityPress

ReferenceBooks:

1. KevinP.Murphy.MachineLearning:AProbabilisticPerspective. MITPress, 2013.
2. FosterProvost andTomFawcett.DataScienceforBusiness:WhatYouNeedtoKnowaboutDataMiningandData-analytic Thinking.O'Reilly,2013.
3. TrevorHastie, RobertTibshiraniandJeromeFriedman. ElementsofStatisticalLearning, SecondEdition.Springer,2009.
4. AvrimBlum, JohnHopcroftandRavindranKannan. FoundationsofDataScience.2018.
5. MohammedJ.ZakiandWagnerMieraJr. DataMiningandAnalysis:FundamentalConceptsandAlgorithms.Cambridge UniversityPress,2014.
6. JiaweiHan, MichelineKamber andJianPei.Data Mining:ConceptsandTechniques,ThirdEdition.MorganKaufmann,2011.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	DESIGNPATTERNS (CommontoM.TechCSE, CN,SE)	L	T	P	C
23HPE5805		3	0	0	3
	Semester	I			

CourseObjectives:

- UnderstandtheconceptofDesignpatterns anditsimportance.
- Understandthebehaviouralknowledgeoftheproblemandsolutions.
- RelatetheCreational,Structural,behaviouralDesignpatterns.
- Applythesuitabledesignpatternstorefinethebasic designforgivencontext

CourseOutcomes (CO): Studentwillbeableto

- Identifytheappropriatedesignpatterns tosolveobjectoriented designproblems.
- Developdesignsolutionsusingcreationalpatterns.
- Applystructuralpatterns tosolvedesignproblems.
- Constructdesignsolutions byusingbehavioralpatterns.

UNIT-I		LectureHrs:

Introduction:WhatIs aDesignPattern?,DesignPatternsinSmalltalkMVC,DescribingDesignPatterns,The CatalogofDesignPatterns,OrganizingtheCatalog,HowDesignPatternsSolveDesignProblems,HowtoSelectaDesign Pattern,HowtoUseaDesignPattern.

UNIT-II		LectureHrs:

ACaseStudy:DesigningaDocumentEditor:DesignProblems,DocumentStructure,Formatting,EmbellishingtheUser Interface,SupportingMultipleLook-and-FeelStandards,SupportingMultipleWindow Systems,UserOperationsSpellingCheckingandHyphenation, Summary.

UNIT-III		LectureHrs:

CreationalPatterns:AbstractFactory,Builder,FactoryMethod,Prototype,Singleton,Discussionof CreationalPatterns.StructuralPatternPart-I:Adapter,Bridge,Composite.

UNIT-IV		LectureHrs:

StructuralPatternPart-II:Decorator,Façade,Flyweight,Proxy.BehaviouralPatternsPart-I:ChainofResponsibility,Command,Interpreter,Iterator.

UNIT-V		LectureHrs:

BehavioralPatternsPart-II:Mediator,Memento,Observer,State,Strategy,TemplateMethod,Visitor, DiscussionofBehavioralPatterns.

Textbooks:

1.DesignPatterns ByErichGamma,PearsonEducation

ReferenceBooks:

1. ErichGamma , RichardHelm,RalphJohnson, JohnVlissides,GradyBoochDesignPatterns:ElementsofReusableObject-OrientedSoftware

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	INFORMATIONSECURITY	L	T	P	C
23HPE5806		3	0	0	3
	Semester	I			

CourseObjectives:

- Tounderstandbasics ofCryptographyandNetworkSecurity.
- Tobeabletosecureamessageoverinsecurechannelbyvariousmeans.
- Tolearnabouthowto maintaintheConfidentiality,IntegrityandAvailabilityofaData
- Tounderstandvariousprotocolsfornetworksecuritytoprotectagainst thethreatsinthenetworks.

CourseOutcomes (CO): Studentwillbeableto

- Providesecurityofthedataoverthenetwork.
- Doresearchintheemergingareasofcryptographyandnetworksecurity.
- Implementvariousnetworkingprotocols.
- Protectanynetworkfromthethreatsintheworld

UNIT-I LectureHrs:

SecurityAttacks(Interruption,Interception,ModificationandFabrication),SecurityServices(Confidentiality,Authentication,Integrity,Non-repudiation,accessControlandAvailability)andMechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow & formatstringvulnerabilities,TCPsessionhijacking,ARPattacks,routetablemodification,UDPhijacking,and man-in-the-middleattacks.

UNIT-II LectureHrs:

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation,locationofencryptiondevices,keydistributionApproachesofMessageAuthentication,SecureHashFunctionsandHMAC.

UNIT-III LectureHrs:

Publickeycryptographyprinciples,publickeycryptographyalgorithms,digitalsignatures,digitalCertificates,CertificateAuthorityandkeymanagementKerberos,X.509DirectoryAuthenticationService.

UNIT-IV LectureHrs:

Emailprivacy:PrettyGoodPrivacy(PGP)andS/MIME.IPSecurityOverview,IPSecurityArchitecture,Authentication Header,EncapsulatingSecurityPayload,CombiningSecurityAssociationsandKey Management.

UNIT-V LectureHrs:

WebSecurityRequirements,SecureSocketLayer(SSL)andTransportLayerSecurity(TLS),SecureElectronic Transaction (SET).Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders,Virusesandrelatedthreats.

Textbooks:

1. NetworkSecurityEssentials(ApplicationsandStandards)byWilliamStallingsPearsonEducation.
2. HackProofingyournetworkbyRyanRussell,DanKaminsky,RainForestPuppy,JoeGrand,David Ahmad,HalFlynnIdoDubrawsky,SteveW.ManzuikandRyanPermeh,wileyDreamtech,
3. CryptographyandnetworkSecurity, Thirdedition, Stallings,PHI/Pearson

ReferenceBooks:

1. NetworkSecurityandCryptography‖,BernardMenezes,CengageLearning.
2. CryptographyandSecurity‖,C.K.Shymala,N.HariniandDr.T.R.Padmanabhan,Wiley -India.
3. AppliedCryptography, BruceSchiener, 2ndedition, JohnWiley& Sons.
4. CryptographyandNetworkSecurity‖,AtulKahate,TMH.
5. IntroductiontoCryptography‖,Buchmann,Springer.
6. NumberTheoryintheSpiritof Ramanujan‖,Bruce C.Berndt,UniversityPress
7. IntroductiontoAnalyticNumberTheory‖,TomM.Apostol,UniversityPress

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	ADVANCED DATA STRUCTURES ANDALGORITHMSLAB (CommontoM.TechCSE,CN,SE,AI& ML)	L	T	P	C
23HPC5803		0	0	4	2
	Semester	I			

CourseObjectives:

- Implementlinear andnonlineardatastructures.
- Analyzevariousalgorithmsbasedontheirtimecomplexity.
- Chooseappropriatedatastructureandalgorithmdesign methodforaspecificapplication.
- Identifysuitabledatastructuretosolvevariouscomputingproblems.

CourseOutcomes(CO):

- Implementdivideandconquertechniques tosolveagivenproblem.
- Implementhashing techniqueslike linearprobing,quadratic probing,random probing anddoublehashing/rehashing.
- PerformStackoperationstoconvertinfixexpressionintopostfixexpressionandevaluatethepostfix expression.
- DifferentiategraphtraversaltechniquesLikeDepthFirstSearch,BreadthFirstSearch.Identifyshort estpathtootherverticesusingvariousalgorithms.

List ofExperiments:

- ToimplementfunctionsofDictionaryusingHashing(divisionmethod,Multiplicationmethod,Uni versalhashing).
- Toperformvariousoperationsi.e.,insertionsanddeletionsonAVLtrees.
- Toperformvariousoperationsi.e.,insertions anddeletionson2-3trees.
- Toimplementoperationsonbinaryheap.
- Toimplementoperationsongraphs
- ToimplementDepthFirstSearchforagraph non-recursively.
- ToimplementBreadthFirstSearchforagraphnon-recursively.
- ToimplementPrim's algorithmtogenerateamin-costspanningtree.
- Toimplement Krushkal's algorithmtogenerateamin-cost spanningtree.
- ToimplementDijkstra'salgorithmtofindshortestpathinthegraph.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	ADVANCEDCOMPUTERNETWORKSLAB	L	T	P	C
23HPC5804		0	0	4	2
	Semester	I			

CourseObjectives:

- Aimstoprovideadvancedbackgroundonrelevantcomputernetworkingtopicstohaveacomprehensiveanddeepknowledge incomputernetworks

CourseOutcomes(CO):

Developprogramsforclient-serverapplications
Performpacket sniffingandanalyzepackets innetwork traffic.Implementerrordetectingandcorrectingcodes
Implementnetworksecurityalgorithms

List ofExperiments:

1. Implementationofclientserverprogramsfordifferentnetworkapplications
2. StudyandanalysisofthenetworkusingWiresharknetworkprotocolanalyser
3. Implementationoftopologygenerationfornetworksimulation
4. Implementationofqueuingmanagement
5. ImplementationofMAC-layerprotocols
6. Implementationofroutingprotocols
7. Implementationoftransport-layerprotocols
8. Implementationofnetworksecuritymechanisms

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	RESEARCHMETHODOLOGYANDIPR	L	T	P	C
23HMC001	(CommontoM.TechCSE,CN,SE,AI& ML)	2	0	0	2
	Semester	I			

CourseObjectives:

- Identifyanappropriateresearchproblemintheirinterestingdomain.
- Understandethicalissuesunderstandthe Preparationofaresearchprojectthesisreport.
- UnderstandthePreparationofaresearchproject thesisreport
- Understandthelawofpatent andcopyrights.
- Understandthe Adequateknowledge onIPR

CourseOutcomes (CO): Studentwillbeableto

- Analyzeresearchrelatedinformation
- Followresearchethics
- Understand that today's world is controlled by Computer, Information Technology, buttomorrowworldwillberuledbyideas,concept,andcreativity.
- Understanding that when IPR would take such important place in growth of individuals &nation, it isneedless to emphasis the need of information about Intellectual Property Right to be promoted amongstudentsingeneral&engineeringinparticular.
- Understand thatIPRprotection providesan incentive toinventorsforfurtherresearchwork andinvestment in R & D, which leads to creation of new and better products, and in turn brings about,economicgrowthandsocialbenefits.

UNIT-I LectureHrs:

Meaningofresearchproblem,Sourcesofresearch problem,CriteriaCharacteristicsofagoodresearchproblem,Errorsinselectingaresearchproblem,scope,andobjectives ofresearchproblem.Approachesof investigationofsolutionsforresearchproblem,datacollection,analysis,interpretation,Necessaryinstrumentations

UNIT-II LectureHrs:

Effectiveliteraturestudiesapproaches,analysisPlagiarism,Researchethics,Effectivetechnicalwriting,howto write report, PaperDeveloping aResearch Proposal, Formatof research proposal,a presentation andassessmentbya reviewcommittee.

UNIT-III LectureHrs:

Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development:technologicalresearch,innovation,patenting,development.InternationalScenario:Internationalcoope ration onIntellectualProperty.Procedureforgrantsofpatents,PatentingunderPCT.

UNIT-IV LectureHrs:

PatentRights: ScopeofPatentRights.Licensingandtransferoftechnology.Patentinformationanddatabases.GeographicalIndication s.

UNIT-V

NewDevelopmentsinIPR:AdministrationofPatentSystem.NewdevelopmentsinIPR;IPRofBiologicalSystems,Com puterSoftwareetc.TraditionalknowledgeCaseStudies,IPRandIITs.

Textbooks:

1. StuartMelvilleandWayneGoddard,"Researchmethodology:anintroductionforscience&engineeringst udents'"
2. WayneGoddardandStuartMelville,"ResearchMethodology:AnIntroduction"

ReferenceBooks:

1. RanjitKumar, 2ndEdition, "ResearchMethodology:AStepbyStepGuideforbeginners"
2. Halbert,"ResistingIntellectualProperty", Taylor &FrancisLtd,2007.
3. Mayall, "IndustrialDesign", McGrawHill, 1992.
4. Niebel,"ProductDesign", McGrawHill,1974.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

5. Asimov, "IntroductiontoDesign",PrenticeHall,1962.
6. RobertP.Merges, PeterS.Menell,MarkA. Lemley,"IntellectualPropertyinNewTechnologicalAge",2016.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	ADVANCEDOPERATINGSYSTEMS	L	T	P	C
23HPC5805		3	0	0	3
	Semester	II			

CourseObjectives:

- Tobeabletoreadandunderstandsample opensourceprogramsandheaderfiles.
- Systemcallswhichexplorenetworkingandsecurity Applications..
- Toacquiretheknowledgeintheimplementationofinterprocesscommunication.

CourseOutcomes (CO): Studentwillbeableto

- Toexplainthefunctionalityofalargesoftwaresystembyreadingitssource.
- Toreviseanyalgorithmpresentinasystem.
- Inter processcommunicationmechanism
- Androidmobilesinner processsystem

UNIT-I LectureHrs:

Basic Operating System Concepts - Overview of Unix File System - Files - Links - Types - Inodes - AccessRights - System Calls - Overview of Unix Kernels -Model - Implementation - Reentrant Kernels - AddressSpace-Synchronization-InterprocessCommunication-ProcessManagement-MemoryManagement-DeviceDrivers.

UNIT-II LectureHrs:

Processes,LightweightProcesses,andThreads-ProcessDescriptor-State-IdentifyingaProcess-Relationshipsamongprocesses-Organization-ResourceLimits-CreatingProcesses-System Calls-Kernel Threads -DestroyingProcesses-Termination-Removal.

UNIT-III LectureHrs:

The Virtual File System (VFS) - Role - File Model -System Calls - Data Structures - Super Block, Inode, File,dentry Objects - dentry Cache - Files Associated with a Process - Filesystem Types - Special Files systems –FilesystemTypeRegistration–FilesystemHandling-Namespaces-Mounting–Unmounting-Implementationof VFSSystemCalls.

UNIT-IV LectureHrs:

WindowsOperatingsystem-versions,Conceptsandtools,Windowsinternals,SystemArchitecture,Requirements and design goals, Operating system model, Architecture overview. Key system components.Systemmechanisms-Trapdispatching,objectmanager,Synchronization,Systemworkerthreads,Windows globalflags, Localproceduralcalls,Kerneleventtracing.

UNIT-V LectureHrs:

what is android, basic building blocks – activities, services, broadcast receivers & content, ui components-views & notifications, components for communication -intents & intent filters, android api levels launchingemulatoreditingemulatorsettingsemulatorshortcuts logcatusage,Applications ofAndroid.

Textbooks:

1. DanielP.BovetandMarcoCesati,"UnderstandingtheLinuxKernel",3rdEdition,O'ReillyPublications,2005.
2. HaroldAbelson,GeraldJaySussmanandJulieSussman,—StructureandInterpretationofComputerPrograms‖,SecondEdition,UniversitiesPress,2013.

ReferenceBooks:

1.MarkE.RussinovichandDavidA.Solomon,MicrosoftWindowsInternals,4thEdition,MicrosoftPress,2004.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	INTERNETOFTHINGS	L	T	P	C
23HPC5806		3	0	0	3
	Semester	II			

CourseObjectives:

Introducethefundamentalconcepts ofIoT andphysicalcomputing
- Exposethestudenttoavarietyofembeddedboards andIoTPlatforms
- Createabasicunderstandingofthecommunicationprotocolsin IoTcommunications.
- Familiarizethestudentwithapplicationprograminterfaces forIoT.
- Enablestudentstocreatesimple IoTapplications.

CourseOutcomes (CO): Studentwillbeableto
- ChoosethesensorsandactuatorsforanIoTapplication
- Selectprotocolsfor aspecificIoTapplication
- Utilizethecloudplatformand APIs forIoTapplications
- Experimentwithembeddedboardsfor creatingIoTprototypes
- DesignasolutionforagivenIoTapplication
- Establishastartup

UNIT-I — LectureHrs:

OverviewofIoT:
TheInternetofThings:AnOverview,TheFlavoroftheInternetofThings,The"Internet"of"Things",TheTechnologyoftheInternetof Things,EnchantedObjects, WhoisMakingtheInternetofThings?
DesignPrinciplesforConnectedDevices:CalmandAmbientTechnology,Privacy,WebThinkingforConnectedDevices,Affordances.
Prototyping: Sketching, Familiarity, Costs Vs Ease of Prototyping, Prototypes and Production, Open source VsClosesource,Tappingintothecommunity.

UNIT-II — LectureHrs:

EmbeddedDevices:
Electronics,EmbeddedComputingBasics,Arduino,RaspberryPi,Mobilephonesandtablets,PlugComputing:Always-onInternetof Things

UNIT-III — LectureHrs:

CommunicationintheIoT:
InternetCommunications:AnOverview,IPAddresses,MACAddresses,TCPandUDPPorts,ApplicationLayerProtocols
PrototypingOnlineComponents:
GettingStartedwithanAPI,WritingaNewAPI, Real-TimeReactions,OtherProtocolsProtocol

UNIT-IV — LectureHrs:

BusinessModels:Ashorthistoryofbusinessmodels,Thebusinessmodelcanvas,Whoisthebusinessmodelfor,Models,FundinganInternetof Thingsstartup,LeanStartups.
Manufacturing:What areyou producing,Designingkits,Designingprintedcircuit boards.

UNIT-V — LectureHrs:

Manufacturingcontinued:Manufacturingprintedcircuitboards,Mass-producingthecaseandotherfixtures,Certification,Costs, Scalingupsoftware.
Ethics:CharacterizingtheInternetofThings, Privacy,Control,Environment,Solutions

Textbooks:

1.AdrianMcEwen,HakimCassimally-DesigningtheInternetofThings,WileyPublications,2012

ReferenceBooks:

1. HaiderRaadFundamentals ofIoTandWearableTechnologyDesign,WileyPublications2020.
2. KashishAraShakil,SamiyaKhan,InternetofThings(IoT)ConceptsandApplications,SpringerPublications2020.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	DEEPLEARNING	L	T	P	C
23HPE5807		3	0	0	3
	Semester	II			

CourseObjectives:

- Topresentthemathematical,statisticalandcomputationalchallengesofbuildingneuralnetworks.
- Toteachthe conceptsofdeeplearning.
- Tointroducedimensionalityreductiontechniques.
- Toenablethestudentstoknowdeeplearningtechniquestosupportreal-timeapplications.
- Toexplain thecasestudiesofdeeplearningtechniques.

CourseOutcomes(CO): Student willbeableto

- Identifythedeeplearningalgorithms whicharemoreappropriateforvarioustypesof learning tasksinvariousdomains.
- Implement deeplearningalgorithmsandsolvereal-worldproblems.

UNIT-I		Lecture Hrs:

Introduction:Introductiontomachinelearning-Linearmodels(SVMsandPerceptron's,logisticregression)-IntrotoNeuralNets:Whatashallownetworkcomputes-Traininganetwork:loss functions,backpropagationandstochasticgradientdescent-Neuralnetworksasuniversalfunctionapproximates.

UNIT-II		Lecture Hrs:

DeepNetworks:HistoryofDeepLearning-AProbabilisticTheoryofDeepLearning-Backpropagationandregularization,batchnormalization-VCDimensionandNeuralNets-DeepVsShallowNetworksConvolutionalNetworks-GenerativeAdversarialNetworks(GAN),Semi-supervisedLearning.

UNIT-III		Lecture Hrs:

Dimensionality Reduction: Linear (PCA, LDA) and manifolds, metric learning - Auto encoders anddimensionality reduction in networks - Introduction to Convnet - Architectures – AlexNet, VGG,Inception, ResNet - Training a Convnet: weights initialization, batch normalization, hyper parameteroptimization.

UNIT-IV		Lecture Hrs:

Optimization and Generalization: Optimization in deep learning– Non-convex optimization for deepnetworks- Stochastic Optimization Generalization in neural networks- Spatial Transformer Networks-Recurrent networks, LSTM - Recurrent Neural Network Language Models- Word-Level RNNs &DeepReinforcementLearning-Computational&ArtificialNeuroscience.

UNIT-V		Lecture Hrs:

CaseStudyandApplications:Imagenet-Detection-AudioWaveNet-NaturalLanguageProcessing Word2Vec-JointDetection Bioinformatics-FaceRecognition-SceneUnderstanding-GatheringImage Captions.

Textbooks:

1. DeepLearning", IanGoodfellow, YoshuaBengio,AaronCourville, MIT Press2016.

ReferenceBooks:

1."NeuralNetworksandDeepLearningATextBook",CharuCAggarwal,SpringerInternational PublishingAG,PartofSpringerNature2018.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	SERVICEORIENTEDARCHITECTURE	L	T	P	C
23HPE5808		3	0	0	3
	Semester	II			

CourseObjectives:

- UnderstandSOAand evolutionofSOA.
- Understandwebservicesandprimitive,contemporarySOA.
- Understandvariousservicelayers.
- Understandservice-orientedanalysis anddesignbased onguidelines.

CourseOutcomes (CO): Studentwillbeableto

- ComprehendtheneedforSOAandits systematicevolution
- ApplySOAtechnologiesto enterprisedomain
- DesignandanalysevariousSOApatternsandtechniques
- Compareandevaluatebeststrategiesandpractices ofSOA

UNIT-I — LectureHrs:

IntroducingSOA:FundamentalSOA,CommonCharacteristicsofContemporarySOA,CommonTangibleBenefitsof SOA,CommonPitfallsof AdoptingSOA.
TheEvolution ofSOA:AnSOATimeline,TheContinuingEvolutionofSOA,TheRoots ofSOA.

UNIT-II — LectureHrs:

Web Services and Primitive SOA: The Web Services Frame Work, Services, Service Descriptions, Messaging.Web Services and Contemporary SOA (Part I-Activity management and Composition): Message ExchangePatterns,ServiceActivity,Coordination,AtomicTransactions,Orchestration,andChoreography.
Web Services and Contemporary SOA (Part-II-Advanced Messaging, Metadata and Security): Addressing,ReliableMessaging,Correlation,Policies,Metadataexchange,Security.

UNIT-III — LectureHrs:

PrinciplesofService-Orientation:Service–OrientationandtheEnterprise,AnatomyofSOA,CommonPrinciples of Service–Orientation, Interrelation between Principles of Service- Orientation, Service OrientationandObjectOrientation,NativeWebServices SupportforPrinciplesofService-Orientation.
Service Layers: Service-Orientation and Contemporary SOA, Service Layer abstraction, Application ServiceLayer, Business Service Layer, Orchestration Service Layer, Agnostic Services, Service Layer ConfigurationScenarios.

UNIT-IV — LectureHrs:

SOA Delivery Strategies: SOA Delivery Lifecycle Phases, The Top-Down Strategy, The Bottom-up Strategy,TheAgileStrategy.
Service OrientedAnalysis(Part I-Introduction): Introduction to Service OrientedAnalysis,Benefitsof aBusinessCentric SOA,DerivingBusinessServices.
Service OrientedAnalysis(Part-II-Service Modelling): Service Modelling,Service Modelling Guidelines,ClassifyingServiceModelLogic,ContrastingServiceModellingApproaches.
Service Oriented Design (Part I-Introduction): Introduction to Service-Oriented Design, WSDL Related XMLSchemaLanguageBasics,WSDLLanguageBasics,ServiceInterfaceDesignTools.
Service Oriented Design (Part II-SOA Composition Guidelines): SOA Composing Steps, Considerations forChoosing Service Layers, Considerations for Positioning Core SOA Standards, Considerations for ChoosingSOAExtensions.

UNIT-V — LectureHrs:

Service Oriented Design (Part III- Service Design): Service Design Overview, Entity- Centric Business ServiceDesign,ApplicationServiceDesign,Task-CentricBusinessServiceDesign,ServiceDesignGuidelines.
ServiceOrientedDesign(PartIV-BusinessProcessDesign):WS-BPELLanguageBasics,WS-CoordinationOverview,ServiceOrientedBusinessProcessDesign.

Textbooks:

1.Service-Oriented Architecture-Concepts, Technology,and Design,ThomasErl, Pearson Education,2006.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

2.UnderstandingSOAwithWebServices,EricNewcomer,GregLomow, PearsonEducation,2005.
ReferenceBooks:
1.ThomasErl;ServiceOrientedArchitectureConceptsTechnology&Design,PearsonEducationLimited;2015,ISBN-13:9788131714904. 2 Guido Schmutz, Peter Welkenbach, Daniel Liebhart; Service Oriented Architecture AnIntegrationBlueprint;ShroffPublishers & Distributors;2010,ISBN-13:9789350231081

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	COMPUTER VISION	L	T	P	C
23HPE5809	(CommontoM.TechCSE,AI& ML)	3	0	0	3
	Semester	II			

CourseObjectives:

- Befamiliarwithboththetheoreticalandpracticalaspects ofcomputing withimages.
- Havedescribedthefoundationofimageformation,measurement, andanalysis.
- Understandthegeometricrelationshipsbetween2Dimagesandthe3Dworld.
- Graspthepr inciplesofstate-of-the-artdeepneuralnetworks

CourseOutcomes (CO): Studentwillbeableto

- Developthepracticalskillsnecessarytobuildcomputervisionapplications.
- Tohavegainedexposuretoobjectandscenerecognitionandcategorizationfromimages

UNIT-I		LectureHrs:
Overview,computer imagingsystems, lenses,Imageformationandsensing,Imageanalysis,pre-processingandBinaryimageanalysis		
UNIT-II		LectureHrs:
Edgedetection,Edgedetectionperformance,Houghtransform,corner detection		
UNIT-III		LectureHrs:
Segmentation,Morphologicalfiltering,Fouriertransform		
UNIT-IV		LectureHrs:
Featureextraction,shape,histogram,colour,spectral,texture,usingCVIPtools,Featureanalysis,featurevectors,distance/similaritymeasures,datapre-processing		
UNIT-V		LectureHrs:
PatternAnalysis: Clustering:K-Means,K-Medoids,MixtureofGaussians,Classification:DiscriminantFunction,Supervised,Un-supervised,Semisupervised Classifiers:Bayes,KNN,ANNmodels;DimensionalityReduction:PCA,LDA,ICA,andNon-parametricmethods		

Textbooks:

1.ComputerVision:AlgorithmsandApplicationsbyRichardSzeliski.

ReferenceBooks:

1. DeepLearning,byGoodfellow,Bengio,andCourville.
2. DictionaryofComputerVisionandImageProcessing,byFisheret al.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	DATAVISUALIZATIONTECHNIQUES	L	T	P	C
23HPE5810		3	0	0	3
	Semester	II			

CourseObjectives:

- Todevelopskillstobothdesignandcritiquevisualizations.
- Tointroducevisualperceptionand coreskillsfor visualanalysis.
- Tounderstandvisualizationfortime-seriesanalysis.
- Tounderstandvisualizationforrankinganalysis.
- Tounderstandvisualizationfordeviationanalysis..

CourseOutcomes(CO): Studentwillbeableto

- Explainprinciplesofvisualperception
- Applycoreskills forvisualanalysis
- Applyvisualizationtechniques forvariousdataanalysistasks
- Designinformationdashboard

UNIT-I — Lecture Hrs:

Information visualization – effective data analysis – traits of meaningful data – visual perception – making abstract data visible – building blocks of information visualization – analytical interaction – analyticalnavigation–optimalquantitativescales–referencelinesandregions–trellisesandcrosstabs – multiple concurrent views – focus and context– details on demand – over-plotting reduction – analyticalpatterns–patternexamples.

UNIT-II — Lecture Hrs:

Distributionanalysis–describingdistributions–distributionpatterns–distributiondisplays–distribution analysisbestpractices–correlation analysis–describingcorrelations–correlation patterns –correlationdisplays–correlationanalysistechniquesandbestpractices–multivariateanalysis– multivariatepatterns–multivariatedisplays–multivariateanalysistechniquesandbestpractices.

UNIT-III — Lecture Hrs:

Informationdashboard–Introduction–dashboarddesignissuesandassessmentofneeds– Considerationsfordesigningdashboard-visualperception–Achievingeloquence.

UNIT-IV — Lecture Hrs:

AdvantagesofGraphics_LibraryofGraphs–DesigningBulletGraphs–DesigningSparklines– DashboardDisplayMedia–CriticalDesignPractices–Puttingitalltogether- Unveilingthedashboard.

UNIT-V — Lecture Hrs:

PlottingGeospatialData:IntroductiontoGeoplotlib,DesignPrinciplesofGeoplotlib,GeospatialVisualizations, Plotting Geospatial Data on a Map Web-Based Visualizations: Concepts of Bokeh,Interfaces-Plotting and Model Interfaces, Output, Bokeh Server, Presentation, Integrating– HTMLDocumentandBokehApplications

Textbooks:

1. BenFry,"Visualizingdata:Exploringandexplainingdatawiththeprocessingenvironment",O'Reilly,2008.
2. Mario Dobler,TimGrobmann,"DataVisualizationwithPython",O'Reilly,FirstEdition,2019

ReferenceBooks:

1.StephenFew,"Informationdashboarddesign:Displayingdataforat-a-glancemonitoring",secondedition,Analytics Press,2013.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	**DISTRIBUTEDSYSTEMS**	**L**	**T**	**P**	**C**
23HPE5811		**3**	**0**	**0**	**3**
	Semester	**II**			

CourseObjectives:

To introduce the fundamental concepts and issues of managing large volume of shared data in a parallel and distributed environment, and to provide insight into related research problems

CourseOutcomes (CO): Student will be able to

- Design trends in distributed systems.
- Apply network virtualization.
- Apply remote method invocation and objects

UNIT-I — LectureHrs:

Distributed data processing; What is a DDBS; Advantages and disadvantages of DDBS; Problem areas; Overview of database and computer network concepts
DISTRIBUTED DATABASE MANAGEMENT SYSTEM ARCHITECTURE Transparencies in a distributed DBMS; Distributed DBMS architecture; Global directory issues

UNIT-II — LectureHrs:

DISTRIBUTED DATABASE DESIGN
Alternative design strategies; Distributed design issues; Fragmentation; Data Allocation
SEMANTICS DATA CONTROL
View management; Data security; Semantic Integrity Control
QUERY PROCESSING ISSUES
Objectives of query processing; Characterization of query processors; Layers of query processing; Query decomposition; Localization of distributed data

UNIT-III — LectureHrs:

Factors governing query optimization; Centralized query optimization; Ordering of fragment queries; Distributed query optimization algorithms
TRANSACTION MANAGEMENT
The transaction concept; Goals of transaction management; Characteristics of transactions; Taxonomy of transaction models
CONCURRENCY CONTROL
Concurrency control in centralized database systems; Concurrency control in DDBSs; Distributed concurrency control algorithms; Deadlock management

UNIT-IV — LectureHrs:

Reliability issues in DDBSs; Types of failures; Reliability techniques; Commit protocols; Recovery protocols

UNIT-V — LectureHrs:

PARALLEL DATABASE SYSTEMS
Parallel architectures; parallel query processing and optimization; load balancing
ADVANCED TOPICS
Mobile Databases, Distributed Object Management, Multi-databases

Textbooks:

1. Principles of Distributed Database Systems, M.T. Ozsu and P. Valduriez, Prentice-Hall, 1991.

ReferenceBooks:

1. Distributed Database Systems, D. Bell and J. Grimson, Addison-Wesley, 1992.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	PRIVACY PRESERVINGDATAPUBLISHING	L	T	P	C
23HPE5812		3	0	0	3
	Semester	II			

CourseObjectives:

- Willbeabletodecide,givenanapplication,ifitshouldbe formulatedas adataprivacyproblem.Ifyes, the students will be able to formally define the problem and state what properties can beguaranteedbyapplyingdifferentialprivacy.
- Willhaveunderstandingofhow(andwhy)randomness (oruncertainty)providesprivacyprotection.
- Will be able to analyse real-world privacy problems, identify which privacy-preserving methods areappropriate,andimplementtheprivatealgorithmsincode.
- Willbeabletoevaluateandcompareprivacy-preservingalgorithms.

CourseOutcomes (CO): Student willbeableto

- Applyanonymizationmethodsfor sensitivedata protection
- Applystate-of-arttechniquesfordataprivacyprotection
- Designprivacypreservingalgorithmsforreal-worldapplications
- Identifysecurityandprivacyissues inOLAPsystems
- ApplyinformationmetricsforMaximizingthepreservationofinformationintheanonymizationprocess

UNIT-I		LectureHrs:

Fundamentalsofdefining privacy and developingefficientalgorithmsforenforcing privacy,challengesindevelopingprivacypreservingalgorithms inreal-worldapplications,privacyissues,privacy models,

UNIT-II		LectureHrs:

Anonymizationoperations,informationmetrics,Anonymizationmethodsforthetransactiondata,trajectorydata,social networksdata,andtextualdata,Collaborative Anonymization,

UNIT-III		LectureHrs:

Accesscontrolofoutsourced data,UseofFragmentation and Encryption to ProtectDataPrivacy,Security andPrivacyinOLAPsystems.

UNIT-IV		LectureHrs:

ExtendedDatapublishingScenarios,AnonymizationforDataMining,publishingsocialsciencedata,

UNIT-V		LectureHrs:

Continuoususeractivitymonitoring(likeinsearchlogs,locationtraces,energymonitoring),socialnetworks,recommendationenginesandtargetedadvertising.

Textbooks:

1.BenjaminC.M.Fung,KeWang,AdaWai-CheeFuandPhilipS.Yu,IntroductiontoPrivacyPreserving Data Publishing: Concepts and Techniques, 1st Edition, Chapman & Hall/CRC,2010.

ReferenceBooks:

1.Bee-ChungChen,DanielKifer,AshwinMachanavajjhala,KristenLeFevrePrivacy-PreservingDataPublishing,NowPublishersInc,2009.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	ADVANCEDOPERATINGSYSTEMSLAB	L	T	P	C
23HPC5807		0	0	4	2
	Semester	II			

CourseObjectives:

- TostudyLinuxmemorymanagementdatastructuresandalgorithms.
- Toacquiretheknowledgeintheimplementationofinterprocess communication.
- Tounderstandhowprogramexecutionhappensin Linux.

CourseOutcomes(CO):

- Toreviseanyalgorithmpresentinasystem.
- Todesignanewalgorithmtoreplaceanexistingone.
- Toappropriatelymodifyandusethedatastructuresofthelinuxkernelforadifferentsoftwaresystem

List ofExperiments:

1. Writeprogramsusingthefollowingsystem callsofUNIXoperatingsystem:40fork,exec,getpid,exit,wait,close,stat,opendir,readdir
2. WriteprogramsusingtheI/OsystemcallsofUNIXoperatingsystem(open, read,write,etc)
3. WriteCprogramstosimulateUNIXcommandslikels,grep, etc.
4. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chartfor FCFS and SJF. For each of the scheduling policies, compute and print the average waiting timeandaverageturnaroundtime.(2sessions)
5. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chartfor Priority and Round robin. For each of the scheduling policies, compute and print the averagewaitingtime andaverageturnaroundtime.(2sessions)
6. DevelopingApplication using InterProcesscommunication (using sharedmemory,pipesormessagequeues)
7. ImplementtheProducer–Consumerproblemusingsemaphores(usingUNIXsystemcalls).

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	INTERNETOFTHINGSLAB	L	T	P	C
23HPC5808		0	0	4	2
	Semester	II			

CourseObjectives:

- ThemainobjectiveIOTapplicationsistoknowthedifferentrealtimesensorsusedto measurethedifferentelectricalparametersandtocontrolthedifferentdevicesfromanywherethrough IOT.

CourseOutcomes(CO):

- Thestudentswillbethoroughaboutthetechnologybehindthe IoTandassociatedtechnologies
- Thestudentswillbeabletousethe IoTtechnologiesin practicaldomains ofsociety
- Thestudentswillbeabletogainknowledgeaboutthestateoftheartmethodologiesin IoTapplicationd omains.

List ofExperiments:

1. ExerciseonEclipse IoTProject.
2. ExperimentsonfewEclipse IoTProjects.
3. AnyExperimentonarchitectureof Iot Toolkit.
4. ExerciseonsmartobjectAPIGatewayservicereferenceimplementationin IoTToolkit.
5. ExperimentonHTTP-to-CoAPsemantic mappingProxyin IoTToolkit.
6. Experiment onGatewayasaservicedeployment in IoTToolkit.
7. Experimentonapplicationframeworkandembeddedsoftwareagentsfor IoTToolkit

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)
(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

AUDITC OURSE-I

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	ENGLISHFORRESEARCH PAPERWRITING	L	T	P	C
23HAC001		2	0	0	0
	Semester	I			

CourseObjectives: This coursewillenablestudents:

- Understandtheessentialsofwritingskillsandtheirlevelofreadability
- Learnabout whattowritein eachsection
- Ensurequalitativepresentationwithlinguisticaccuracy

CourseOutcomes (CO): Studentwillbeableto

- Understandthesignificanceofwritingskills andthelevelofreadability
- Analyzeandwritetitle,abstract,different sectionsinresearchpaper
- Developtheskillsneededwhilewritingaresearchpaper

UNIT-I		LectureHrs:10

1OverviewofaResearchPaper-PlanningandPreparation-WordOrder-UsefulPhrases-BreakingupLongSentences-StructuringParagraphsandSentences-BeingConciseandRemovingRedundancy
-AvoidingAmbiguity

UNIT-II		LectureHrs:10

EssentialComponentsofaResearchPaper-Abstracts-BuildingHypothesis-ResearchProblem-HighlightFindings- HedgingandCriticizing,ParaphrasingandPlagiarism,Cauterization

UNIT-III		LectureHrs:10

IntroducingReviewoftheLiterature–Methodology-AnalysisoftheData-Findings-Discussion-Conclusions-Recommendations.

UNIT-IV		LectureHrs:9

KeyskillsneededforwritingaTitle,Abstract,andIntroduction

UNIT-V		LectureHrs:9

AppropriatelanguagetoformulateMethodology,incorporateResults,putforthArgumentsanddrawConclusions

SuggestedReading

1. Goldbort R (2006)WritingforScience,YaleUniversityPress (availableonGoogleBooks)ModelCurriculumofEngineering&TechnologyPG Courses[Volume-I]
2. DayR(2006)HowtoWriteandPublishaScientificPaper,CambridgeUniversityPress
3. HighmanN(1998),HandbookofWritingfortheMathematicalSciences,SIAM.High man'sbook
4. AdrianWallwork,EnglishforWritingResearchPapers,SpringerNewYorkDordrecht HeidelbergLondon,2011

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	DISASTERMANAGEMENT	L	T	P	C
23HAC002		2	0	0	0
	Semester	I			

CourseObjectives: This coursewillenablestudents:

- Learntodemonstratecriticalunderstandingofkeyconceptsindisasterriskreductionandhumanitarianresponse.
- Critically evaluate disaster risk reduction and humanitarian response policy and practice fromMultipleperspectives.
- Developanunderstandingofstandardsofhumanitarianresponseandpracticalrelevanceinspecifictypesofdisastersandconflictsituations
- Criticallyunderstandthestrengthsandweaknessesofdisastermanagementapproaches,planningandprogrammingindifferentcountries,particularlytheirhomecountryorthecountriestheyworkin

UNIT-I

Introduction: Disaster:Definition,FactorsandSignificance;DifferenceBetweenHazardandDisaster;NaturalandManmadeDisasters:Difference,Nature,TypesandMagnitude.

DisasterProneAreasinIndia:
StudyofSeismicZones;AreasPronetoFloodsandDroughts,LandslidesandAvalanches;AreasPronetoCyclonicandCoastalHazardswithSpecialReferencetoTsunami;Post-DisasterDiseasesand Epidemics

UNIT-II

RepercussionsofDisastersandHazards:
Economic Damage, Loss of Human and Animal Life, Destruction of Ecosystem. Natural Disasters:Earthquakes,Volcanisms,Cyclones,Tsunamis,Floods,DroughtsandFamines,LandslidesandAvalanches,Man-madedisaster:NuclearReactorMeltdown,IndustrialAccidents,OilSlicksandSpills,Outbreaksof DiseaseandEpidemics,WarandConflicts.

UNIT-III

DisasterPreparednessandManagement:
Preparedness:MonitoringofPhenomenaTriggeringADisasterorHazard;EvaluationofRisk:Application of Remote Sensing,Datafrom Meteorological andOtherAgencies,MediaReports:GovernmentalandCommunityPreparedness.

UNIT-IV

RiskAssessmentDisasterRisk:
ConceptandElements,DisasterRiskReduction,GlobalandNationalDisasterRiskSituation.TechniquesofRiskAssessment,GlobalCo-OperationinRiskAssessmentand Warning, People's ParticipationinRiskAssessment.StrategiesforSurvival.

UNIT-V

DisasterMitigation:
Meaning,ConceptandStrategiesofDisasterMitigation,EmergingTrendsInMitigation.Structural MitigationandNon-StructuralMitigation, Programs ofDisasterMitigationinIndia.

SuggestedReading

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

1. R.Nishith,SinghAK,"DisasterManagementinIndia:Perspectives,issuesandstrategies
2. "'New Royal bookCompany..Sahni,PardeepEt.Al.(Eds.),"DisasterMitigationExperiencesAndReflections",PrenticeHallOfIndia,NewDelhi.
3. GoelS.L.,DisasterAdministrationAndManagementTextAndCaseStudies",Deep&Deep PublicationPvt.Ltd.,NewDelhi

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	SANSKRITFORTECHNICALKNOWLEDGE	L	T	P	C
23HAC003		2	0	0	0
	Semester	I			

CourseObjectives: This coursewillenablestudents:

- Toget aworkingknowledgeinillustrious Sanskrit,thescientificlanguageintheworld
- LearningofSanskrittoimprove brainfunctioning
- LearningofSanskrittodevelopthelogicinmathematics,science&othersubjects enhancing thememorypower
- TheengineeringscholarsequippedwithSanskritwillbeabletoexplore thehuge
- Knowledgefromancientliterature

CourseOutcomes (CO): Studentwillbeableto

- UnderstandingbasicSanskritlanguage
- AncientSanskritliteratureaboutscience&technologycanbeunderstood
- Beingalogicallanguagewill helptodeveloplogicinstudents

UNIT-I

AlphabetsinSanskrit,

UNIT-II

Past/Present/FutureTense,SimpleSentences

UNIT-III

Order,Introductionofroots

UNIT-IV

TechnicalinformationaboutSanskritLiterature

UNIT-V

TechnicalconceptsofEngineering-Electrical,Mechanical,Architecture,Mathematics

SuggestedReading

1."Abhyaspustakam"–Dr.Vishwas,Sanskrit-BhartiPublication,NewDelhi
2."TeachYourselfSanskrit"PrathamaDeeksha-VempatiKutumbshastri,RashtriyaSanskritSansthanam,NewDelhiPublication
3."India'sGloriousScientificTradition"SureshSoni,Oceanbooks(P)Ltd.,NewDelhi

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)
(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

AUDITC OURSE-II

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	PEDAGOGYSTUDIES	L	T	P	C
23HAC004		2	0	0	0
	Semester	II			

CourseObjectives: This coursewillenablestudents:

- Reviewexistingevidenceonthereviewtopictoinformprogrammedesignandpolicy makingundertakenbytheDfID,otheragenciesandresearchers.
- Identifycriticalevidencegapstoguidethedevelopment.

CourseOutcomes (CO): Student willbeableto

Studentswillbeabletounderstand:

- Whatpedagogicalpracticesarebeingusedbyteachersinformalandinformalclassrooms in developingcountries?
- What is theevidenceontheeffectiveness ofthesepedagogicalpractices,inwhatconditions,andwithwhatpopulationoflearners ?
- Howcanteachereducation(curriculumandpracticum)andtheschoolcurriculumand guidancematerialsbestsupporteffectivepedagogy?

UNIT-I

Introduction and Methodology: Aims and rationale, Policy back ground, Conceptual frame work andterminologyTheoriesoflearning,Curriculum,Teachereducation.Conceptualframework,Researchquestions.OverviewofmethodologyandSearching.

UNIT-II

Thematicoverview: Pedagogicalpracticesarebeingusedbyteachersinformaland informal classroomsindevelopingcountries.Curriculum,Teachereducation.

UNIT-III

Evidence on theeffectivenessofpedagogicalpractices,Methodologyfortheindepthstage:quality assessmentof included studies. How can teacher education (curriculumandpracticum) andthescho curriculum andguidancematerialsbestsupport effectivepedagogy?Theoryofchange. Strengthandnatureofthbodyofevidence for effective pedagogical practices. Pedagogic theory and pedagogical approaches. Teachers'attitudesandbeliefsandPedagogicstrategies.

UNIT-IV

Professional development: alignment with classroom practices and follow-up support, Peer support,Support from the headteacherandthecommunity.Curriculumandassessment,Barrierstolearning:limitedresourcesand large classsizes

UNIT-V

Researchgapsandfuturedirections: Researchdesign,Contexts,Pedagogy,Teachereducation, Curriculumandassessment,Disseminationandresearchimpact.

SuggestedReading

1. AckersJ,HardmanF(2001)ClassroominteractioninKenyanprimaryschools,Compare, 31(2):245-261.
2. AgrawalM(2004)Curricularreforminschools:Theimportanceofevaluation,Journalof

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

3. CurriculumStudies,36(3):361-379.
4. AkyeampongK(2003)TeachertraininginGhana -doesitcount?Multi-siteteachereducationresearchproject(MUSTER)countryreport1.London:DFID.
5. AkyeampongK,LussierK,PryorJ,WestbrookJ (2013)Improvingteachingandlearningofbasicmaths and reading in Africa: Does teacherpreparationcount?International Journal EducationalDevelopment,33 (3): 272–282.
6. AlexanderRJ(2001)Cultureandpedagogy:Internationalcomparisons inprimaryeducation.OxfordandBoston:Blackwell.
   ChavanM(2003)ReadIndia:Amassscale,rapid, 'learningtoread'campaign.
7. www.pratham.org/images/resource%20working%20paper%202.pdf.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA (AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode		L	T	P	C
23HAC005	STRESSMANAGEMENTBYYOGA	2	0	0	0
	Semester	II			

CourseObjectives: This coursewillenablestudents:

- Toachieve overallhealthofbodyandmind
- Toovercomestres

CourseOutcomes (CO): Studentwillbeableto

- Develop healthy mind inahealthybodythusimprovingsocialhealthalso
- Improveefficiency

UNIT-I		
DefinitionsofEightpartsofyog.(Ashtanga)		
UNIT-II		
YamandNiyam.		
UNIT-III		
Do`sandDon't'sinlife. i) Ahinsa,satya,astheya,bramhacharyaandaparigrahaii)Sh aucha,santosh,tapa,swadhyay,ishwarpranidhan		
UNIT-IV		
AsanandPranayam		
UNIT-V		
i)Variousyogposesandtheirbenefitsformind&bodyii)Regularizationofbre athingtechniquesanditseffects-Typesofpranayam		

SuggestedReading

1.'YogicAsanasforGroupTarining-Part-I": JanardanSwamiYogabhyasiMandal, Nagpur2."RajayogaorconqueringtheInternalNature"bySwami Vivekananda,AdvaitaAshrama(PublicationDepartment),Kolkata

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.

CourseCode	PERSONALITY DEVELOPMENT THROUGHLIFEENLIGHTENMENTSKILLS	L	T	P	C
23HAC006		2	0	0	0
	Semester	II			

CourseObjectives: This coursewillenablestudents:

- Tolearntoachievethe highestgoalhappily
- Tobecomeapersonwithstablemind,pleasingpersonalityanddetermination
- Toawakenwisdominstudents

CourseOutcomes (CO): Studentwillbeableto

- StudyofShrimad-Bhagwad-Geetawillhelpthestudentindevelopinghispersonalityand achievethehighestgoalinlife
- Thepersonwhohasstudied Geetawillleadthe nationandmankindtopeaceandprosperity
- Study ofNeetishatakamwillhelp indevelopingversatilepersonalityofstudents

UNIT-I

Neetisatakam-
HolisticdevelopmentofpersonalityVerses-19,20,21,22(wisdom)
Verses-29,31,32(pride&heroism)
Verses-26,28,63,65(virtue)

UNIT-II

Neetisatakam-
HolisticdevelopmentofpersonalityVerses-52,53,59(dont's)
Verses-71,73,75,78(do's)

UNIT-III

Approachtodaytodayworkandduties.
ShrimadBhagwadGeeta:Chapter2-Verses41,47,48,Chapter3-Verses13,21,27,35,Chapter6-Verses5,13,17,23,35,
Chapter18-Verses45,46,48.

UNIT-IV

Statementsofbasicknowledge.
ShrimadBhagwadGeeta:Chapter2-Verses 56,62,68Chapter12-Verses13,14,15,16,17,18
PersonalityofRolemodel.ShrimadBhagwadGeeta:

UNIT-V

Chapter2-Verses 17,Chapter3-Verses36,37,42,Chapter4-Verses18,38,39
Chapter18–Verses37,38,63

SuggestedReading

1. "SrimadBhagavadGita"bySwamiSwarupanandaAdvaitaAshram(PublicationDepartment), Kolkata
2. Bhartrihari'sThreeSatakam(Niti-sringar-vairagya)byP.Gopinath,RashtriyaSanskrit Sansthanam,NewDelhi.

ANNAMACHARYAINSTITUTEOFTECHNOLOGYANDSCIENCES:KADAPA
(AUTONOMOUS)

(Approvedby AICTE, New Delhi & Affiliated to JNTUA, Anantapuramu)
Accredited by NAAC with 'A' grade , Bangalore.