# B. Sc. Honours in Computer Science

Programme Specific Outcome (PSO)

By the end of the program UG in Computer Science, the student will be able to:

- To build the necessary skill set and analytical abilities for developing computer based.
- Solutions for real life problems.
- To help students build-up a successful career in Computer Science.
- Entrepreneurs who can innovate and develop software products.
- Apply knowledge of computing and mathematics appropriate to the discipline.
- Develop problem-solving abilities using computer.
- Design the application using programming languages.
- Ability to understand the principles and development methodologies of computer systems.
- To improve their performance in Entrance examination (like JEST, JECA, CUCET, UGC- NET, GATE, TIFR), as well as their general computing skills in higher studies.
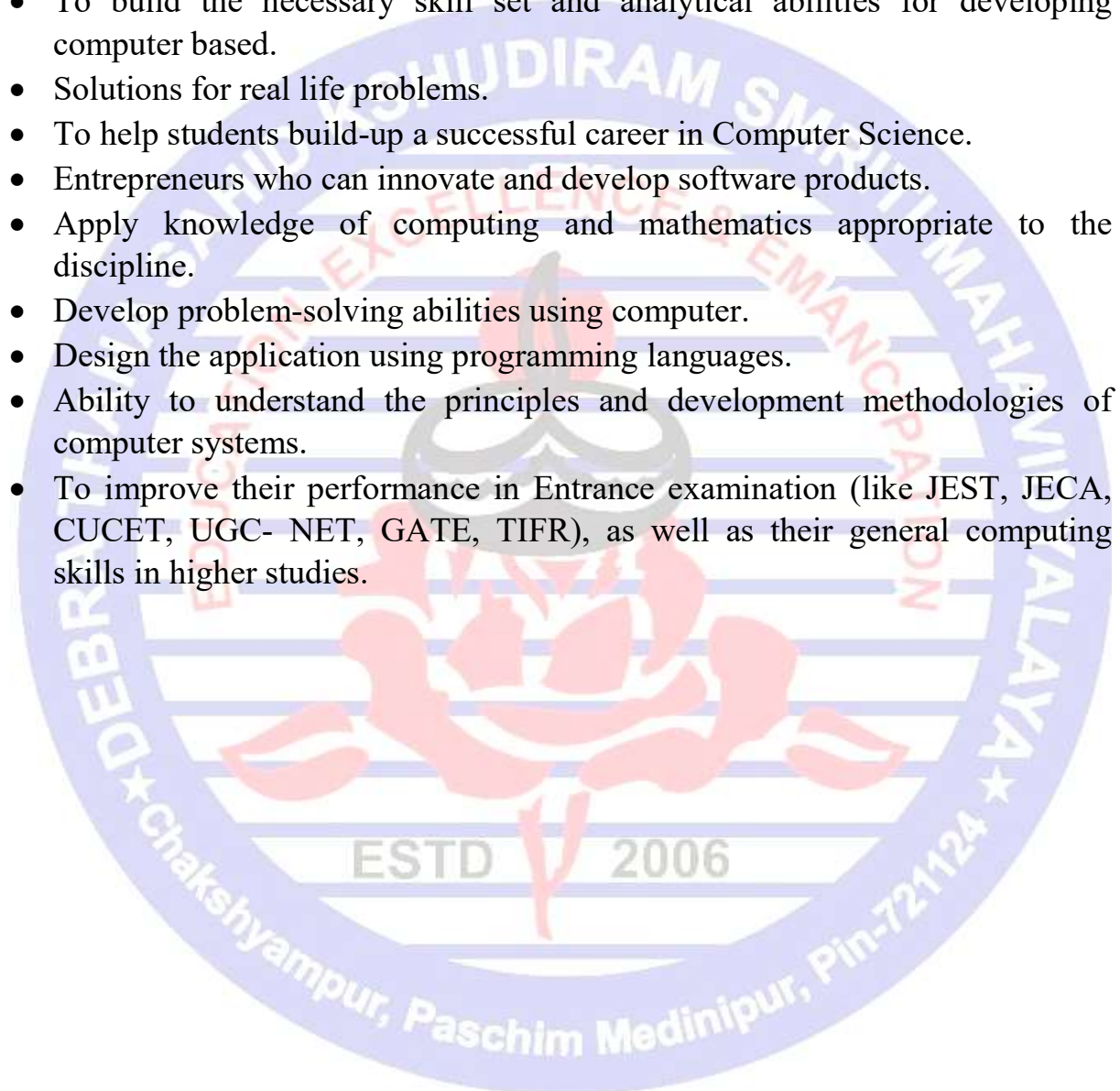
Course Outcome (CO)

COSHCC-01:ProgrammingFundamentalsusingC/C++ (Theory)
Outcomes:

Thecourseis designedforto providingknowledgeof C&C++.Students willbeable todevelop logicswhichwill help themto create programs,applications.

Afterthe completionofthiscourse,thestudentswillbeableto knowthefollowing:

- UnderstandbasicCandC++concepts.
- FundamentalsofClanguage&ControlStatements.
- LoopControlStructures &Arrays,Strings &Functions.
- Structure,Union,Pointers,Filehandling.
- FundamentalsofC++.
- Class&Object,OperatorOverloading.
- Inheritance&Polymorphism.
- Exceptionhandling&Templates
- Abilityto read, writeanddebugelementaryC andC++code
- Obtainworkingknowledgeofdatatypes,basicoperations,portabilityissues,standardprogramming

COSHCC-01:ProgrammingFundamentalsusingC/C++(Practical)
Outcomes: Studentswillabletoknowthefollowing:

- Understandthe conceptofdatatypes,loops,functions,array,pointers,string,structuresand files.
- Analyseproblems,errors andexceptions.
- Applyprogramming concepts to compile anddebugcprograms to find solutions.
- Understandthedifferencebetweenobjectorientedprogrammingandproceduraloriented programminglanguage.
- ProgramusingC++featuressuchas compositionofobjects,Operatoroverloading,inheritance,Polymorphism etc.
- Construct appropriate diagrams and textual descriptions to communicate the staticstructureand dynamicbehaviour ofan object oriented solution.

COSHCC-02:ComputerSystemArchitecture (Theory)

Outcomes: Studentswillabletoknowthefollowing

- Computerarchitecturehelpstounderstandthebasic conceptsandstructureofcomputers.
- Aftercompletionofthecourse,studentswilllearnthefollowing:
- Understandthetheoryandarchitectureofcentralprocessingunit.
- Analysesomeofthedesignissuesin termsofspeed,technology,cost,performance.

- DesignasimpleCPU withapplyingthetheoryconcepts.
- Useappropriatetoolstodesignverifyandtestthe CPU architecture.
- Learntheconceptsofparallelprocessing,pipeliningandinter-processor communication.
- •Understandthe architectureandfunctionalityof centralprocessingunit.
- •Exemplifyin a betterwaytheI/Oand memoryorganization.
- •Definedifferentnumbersystems,binaryaddition.

COSHCC-02: Computer System Architecture (Practical)
Outcomes:
- MinimizetheBooleanalgebraanddesignitusinglogic gates.
- Analyseanddesigncombinationalcircuit.
- Realizegivenfunctionusingcombinationalcircuit.
- Design anddevelopsequentialcircuits
- Studentswillabletounderstandthe organizationalconceptofaCPU anditscomponents.
- Studentswill ableto usethe concept of registers set,counters and manymemoryelementswith theapplication ofmemoryorganization.
- Studentswillabletolearntheconceptofaddressing,instructionsets,machinecycle,CPUto memoryfetching, bus organization etc.
- Studentswillabletolearnabouttheinstructionformatandinstructionmodule.
- Studentswillabletounderstand theoverallconceptofCPUand itsessentialcomponentsmainlyALU, Registers, CU and theirsub components.

GE-1(Interdisciplinaryforotherdepartment)

GE-1:ComputerFundamentals(Theory)
Outcomes:
- Understand basic concepts of computers.
- Understand the role of software and different types of software.
- Understanding hardware components and technology.
- Introduction to computer memory.
- Overview of Emerging Technologies.

GE-1:ComputerFundamentals(Practical)
Outcomes:
- Understand basic functioning of computer.
- Practical exercises based on MSOffice/ Open Office tools using document preparation and spreadsheet and handling packages.
- Practical exercises based on ExcelSheet.

COSHCC-03:ProgramminginJava(Theory)

Outcomes: Javaisthemostfamousplatform,whichisusedtodevelopseveralapplications for the systems as well as embedded devices like mobile, laptops, tablets and manymore. It is an object oriented programming language. There is huge scope for this

programminglanguage.
Aftercompletionofthe course, students willabletounderstandthefollowing:

- Ableto understandtheuseofOOPs concepts.
- Ableto solve real worldproblems usingOOP techniques.
- Ableto understand theuseof abstraction.
- AbletounderstandtheuseofPackagesandInterfacein java.
- Abletodevelopandunderstandexceptionhandling,multithreadedapplicationswithsynchronization.

COSHCC-03:ProgramminginJava (Practical)

Outcomes: Studentswillabletoknow thefollowing:

- ImplementObjectOrientedprogrammingconcept usingbasicsyntaxesofcontrolStructures,stringsandfunctionfordevelopingskillsoflogicbuildingactivity.
- Identify classes, objects, members of a class and the relationships among them needed forafindingthe solution to specificproblem.
- Demonstrateshowtoachievereusabilityusinginheritance, interfacesandpackagesanddescribesfasterapplication development can beachieved.
- Demonstrate understanding and use of different exception handling mechanisms andconceptofmultithreadingforrobustfaster andefficientapplication development.
- Identifyand describecommon abstractuserinterface components to designGUIinJavausingApplet&AWT alongwith response to events.

COSHCC-04:DiscreteStructures

Outcomes: Discrete structure helps to develop logical thinking and its application tocomputerscience.Thesubjectenhancesone'sabilitytoreasonandabilitytopresenta coherentandmathematicallyaccurate argument.Aftercompletionofthecourse,studentswilllearnthefollowing:

- Thebasicprinciples ofsets andoperations insets.
- Provebasicsetequalities.
- Applycountingprinciplesto determineprobabilities.
- Demonstrateanunderstandingofrelationsandgrowthoffunctionsandbeablet odeterminetheirproperties.
- Determinewhenafunctionis1-1and"onto".
- Demonstratedifferenttraversalmethodsfortrees andgraphs.
- ModelproblemsinComputerScienceusinggraphsandtrees
- Thefundamentalsofpropositionallogic.

GE-2(Interdisciplinaryforotherdepartment)

GE2:Introductionto Database System(Theory)
Outcomes: This course is intended to provide you with an understanding of the

currenttheoryand practiceof databasemanagement systems.To helpyou morefullyappreciatetheirnature,the courseprovides asolid technicaloverviewofdatabasemanagementsystems.

Aftercompletionofthecourse,studentswilllearnthefollowing:

- •Understandbasicdatabaseconcepts,includingthe structureand operationoftherelationaldata model.
- •Understandthe roleofadatabasemanagementsysteminan organization.
- •ConstructsimpleandmoderatelyadvanceddatabasequeriesusingStructuredQueryLanguage (SQL).
- • Understandandsuccessfully apply logicaldatabasedesignprinciples,includingE-Rdiagramsand databasenormalizationup to 3NF.
- • Design and implement a small database project using SQL.

GE 2: Database Management Systems (Practical)

Outcomes: Students will ableto learnthefollowing:

- • Creating DatabaseCreating a DatabaseCreatingaTable SpecifyingRelationalDataTypesSpecifyingConstraints CreatingIndexes.
- • Table and Record Handling INSERT statement using SELECT and INSERT together DELETE, UPDATE,TRUNCATE statements DROP , ALTER statements.
- • Retrieving Data from a Database by using SELECT statement and WHERE clause.

COSHCC-05:DataStructures (Theory)

Outcomes:

Data structure is used organize data in the computer system to perform itstask more efficiently. This course helps us to know the various types of abstract data such asqueue,stack, list etc.

Aftercompletionofthe course, students willabletounderstandthefollowing:

- • TheconceptofDynamic memorymanagement,datatypes,algorithms.
- • Basicdatastructuressuch asarrays,linkedlists, stacksandqueues.
- • Thehash functionand conceptsof collisionand it'sresolution methods.
- • Differentsortingtechniquelikemergesort, quicksort,binarysearch.
- • DevelopingRecursive Definition ofSimple Problemsand theirimplementation.
- • Solveprobleminvolvinggraphs,treesand heaps.

COSHCC-05:DataStructures(Practical)
Outcomes: Studentswillabletoknowthefollowing:

- • Implement basic data structures such as arrays and linked list.
- • Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths.
- • Implement various searching and sorting technique.
- • Programs to demonstrate the implementation of various operations on stack and queue.

COSHCC-06:Operating System(Theory)
Outcomes: After completionofthecourse,studentswilllearnthefollowing:

- Thebasicsofoperatingsystemslike kernel,shell,types and viewsofoperatingsystems.
- DescribethevariousCPUschedulingalgorithmsandremovedeadlocks.
- Explainvariousmemorymanagementtechniques andconcept ofthrashing.
- Usediskmanagementanddiskschedulingalgorithmsforbetterutilizationofexternal memory.
- Recognizefilesysteminterface, protectionandsecuritymechanisms.
- Explainthevariousfeatures ofOSlikeUNIX,Linux,windowsetc.
- Thebasicof cloudcomputingonLinuxsystem.
- Policymechanism,Authentication,Internal accessAuthorization.

COSHCC-06:OperatingSystem(Practical)
Outcomes:
- Demonstratetheinstallationprocessofvariousoperatingsystems.
- ImplementvirtualizationbyinstallingVirtualMachinesoftware.
- ApplyUNIX/LINUXoperatingsystem commands.
- Implementvarioustype ofschedulingalgorithms.
- Implementationsofvarioussystemcalls.
- UnderstanddifferentUNIX/LINUXshellscriptsandexecutevariousshellprograms.

COSHCC-07:ComputerNetworks(Theory)
Course outcome: This course is intended to provide you with an understanding of differentcomponentsofcomputernetworks,variousprotocols,moderntechnologiesandtheirapplications.Thecourse provides asolid technicaloverview of computernetworks.
Afterthe completionofthiscourse,studentsshouldbeabletounderstandthefollowing:
- IdentifyandusevariousnetworkingcomponentsUnderstanddifferenttransmission mediaand design cablesforestablishing anetwork.
- Describethefunctions of eachlayer inOSIand TCP/IPmodel.
- ExplainthefunctionsofApplicationlayerandPresentationlayerparadigmsandProtocols.
- DescribetheSessionlayerdesignissuesandTransportlayerservices.
- ClassifytheroutingprotocolsandanalysehowtoassigntheIPaddressesforthegivennetwork.
- Describethefunctionsof datalinklayerandexplainthe protocols.
- Explainthetypesoftransmissionmediawithrealtimeapplications
- Implementanytopologyusingnetworkdevices.
- UnderstandtheTCP/IP configurationforWindowsandLinux.
- Implementdevicesharingon network.
- Learnthemajorsoftwareandhardwaretechnologiesusedoncomputernetworks.

COSHCC-07:ComputerNetworks (Practical)
Outcomes:
- Identify and use various networking components Understand different transmissionmediaand design cablesforestablishing anetwork.
- SimulateCyclicRedundancyCheck (CRC)errordetectionalgorithm fornoisychannel.

- Simulate and implement stop and wait protocol for noisy channel.
- Simulate and implement go back n sliding window protocol.
- Simulate and implement selective repeat sliding window protocol.
- Simulate and implement distance vector routing algorithm.
- Simulate and implement Dijkstra's algorithm for shortest path routing.
- Understand the TCP/IP configuration for Windows and Linux.
- Learn the major software and hardware technologies used on computer networks.

SEC-1: Android Programming (Theory)
Outcomes:

With this course, a new application created for devices running the Android operating system. Student will learn the following:

- Describe Android platform, Architecture and features.
- Design User Interface and develop activity for Android App.
- Use Intent, Broadcast receivers and Internet services in Android App.
- Design and implement Database Application and Content providers.
- Use multimedia, camera and Location based services in Android App.
- Discuss various security issues in Android platform

SEC-1: Android Programming (Programming)
Outcomes:

- Experiment on Integrated Development Environment for Android Application Development.
- Design and Implement User Interfaces and Layouts of Android App.
- Use Intents for activity and broadcasting data in Android App.
- Design and Implement Database Application and Content Providers.5.Experiment with Camera and Location Based service.
- Develop Android App with Security features.

GE-3 (Interdisciplinary for other department)

GE-3T: Introduction to C and C++ Programming

Outcomes: The course is designed for to providing knowledge of C & C++. Students will be able to develop logics which will help them to create programs, applications.
After the completion of this course, the students will be able to know the following:

- Understand basic C and C++ concepts.
- Fundamentals of C language & Control Statements.
- Loop Control Structures & Arrays, Strings & Functions.
- Structure, Union, Pointers, File handling.
- Fundamentals of C++.
- Class & Object, Operator Overloading.
- Inheritance & Polymorphism.
- Exception handling & Templates
- Ability to read, write and debug elementary C and C++ code

- Obtainworkingknowledgeofdatatypes,basicoperations,portabilityissues,standardprogramming

GE-3P: Introduction to C and C++ Programming Lab.
Outcomes: Studentswillabletoknowthefollowing:

- Understandthe conceptofdatatypes,loops,functions,array,pointers,string,structuresand files.
- Analyseproblems,errors andexceptions.
- Applyprogramming concepts to compile anddebugcprograms to find solutions.
- Understandthedifferencebetweenobjectorientedprogrammingandproceduraloriented programminglanguage.
- ProgramusingC++featuressuchas compositionofobjects,Operatoroverloading,inheritance,Polymorphism etc.
- Construct appropriate diagrams and textual descriptions to communicate the staticstructureand dynamicbehaviour ofan object oriented solution.

COSHCC-08:DesignandAnalysisofAlgorithms(Theory)
Outcomes: Students willabletounderstandthefollowing
- Basicproperties of an algorithm.
- Differenttechniquetoimplementalgorithmandassociatedoperations

- Computetime and spacecomplexity
- Thoroughlyknowledgeaboutiterativetechnique,dynamicprogramming,greedymethod,searching.
- Differentsortingtechniqueusingdivideandconquermethodlikemergesort,quicksort,binarysearch.
- Differentnon-linear algorithm likedecisiontree andred black trees.
- Differentgraph algorithmimplementationlikeDFS,BFS,MST

COSHCC-08:DesignandAnalysisofAlgorithms Lab(Practical)
Experimentsshould includebut notlimited tobutsomeconditionsofinput
- Implementationofsortinglikeinsertion,merge,heap, quick,radixsortwith numberofcomparisons
- ImplementationofbalancedRed-Blacktreeswith insertion,deletion,searchingfor anumberand report colournodecontainingthis number.
- Implementationofproceduretodetermine LCSof twogiven sequences.
- ImplementationofgraphtraversaltechniqueBFS, DFS,MST

COSHCC-09:SoftwareEngineering(Theory)
CourseOutcome: After completionforthecourse,studentswilllearnaboutimplementationofsoftwareits characteristicsandits risk managementand maintenance.
- Evolutionofasoftware,softwarecrisis,it'slayeredarchitecture,frameworkandprocess module

- Needsofasoftwareandtherequirementanalysis andmodellingSRS
- Software project planning and management of different criteria of software. Calculateriskidentification
- Designing of software architecture and mapping of data flow diagram and qualitymanagementofsoftware.
- Differenttestingstrategylikeblack boxtestingand white boxtesting
- Maintenanceof software.
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COSHCC-09:SoftwareEngineering(Practical)

Outcomes:

After completionstudentswilllearnhowtodevelopsoftwareinrealworld.They will learn how to implement practically using language independent software and itsmaintenance also.

- KnowledgeofbasicSWengineeringmethodsandpractices,andtheirappropriateapplication.
- DescribesoftwareengineeringlayeredtechnologyandProcessframework.
- Ageneralunderstandingofsoftwareprocessmodelssuchasthewaterfallandevolutionarymodels.
- Understandingof softwarerequirements and theSRS documents.
- Understandingoftheroleofprojectmanagementincludingplanning,scheduling,risk management,etc.
- Describedatamodels,objectmodels,contextmodelsandbehavioralmodels.
- Understandingofdifferentsoftwarearchitectural styles.
- Understandingof implementationissuessuch asmodularityandcodingstandards.
- Understanding of approaches to verification and validation including static analysis, andreviews.Understandingofsoftwaretestingapproachessuchasunittestingandintegrationtesting.
- Describesoftwaremeasurementandsoftwarerisks.
- Understandingofsoftwareevolutionandrelated issuessuchasversionmanagement.
- Understandingon qualitycontrol andhowtoensuregood qualitysoftware.

COSHCC-10:DatabaseManagementSystems(Theory)

Course outcome: This course is intended to provide you with an understanding of the currenttheory and practice of database management systems.To help you more fully appreciate theirnature,thecourseprovidesasolidtechnicaloverviewofdatabasemanagementsystems, using a current database product as a case study.In addition to technical concerns, more general issuesare emphasized.These include data independence, integrity, security, recovery, performance,databasedesign principles, anddatabaseadministration.

Atthecompletion ofthis course,students shouldbeabletodo thefollowing:

- Understandtheroleofadatabase managementsystem inanorganization.
- Understandbasicdatabaseconcepts,includingthestructureandoperationoftherelationaldatamodel.
- ConstructsimpleandmoderatelyadvanceddatabasequeriesusingStructuredQuery Language (SQL).
- Understand and successfully apply logical database design principles, including E-Rdiagramsand databasenormalization up to BCNF.
- DesignandimplementasmalldatabaseprojectusingSQL.
- Understandtheconceptofadatabasetransactionandrelateddatabasefacilities,includ

ing concurrency control, journaling, backup and recovery, and data object lockingandprotocols.

COSHCC-10:DatabaseManagementSystems(Practical)
Student will able to know StructuredQuery Language (SQL):

- o CreatingaDat
  abaseCreatin
  gaTable
  SpecifyingRelationalDataT
  ypesSpecifyingConstraints
  CreatingIndexes

- o TableandRecordHan
  dlingINSERTstateme
  nt
  Using SELECT and INSERT
  togetherDELETE,UPDATE,TRUNCA
  TEstatementsDROP,ALTER statements

3. RetrievingDatafromaData
   baseTheSELECT
   statement
   Usingthe WHERE clause
   UsingLogicalOperatorsintheWHEREclause
   UsingIN,BETWEEN,LIKE,ORDERBY,GROUPBYandHAVINGClause
   Using Aggregate
   FunctionsCombiningTabl
   esUsingJOINSSubqueries

4. DatabaseManag
   ementCreating
   Views

Creating Column AliasesCreating Database UsersUsingGRANTandREVOKE

    Cursors in Oracle PL/ SQL
    WritingOraclePL/ SQL StoredProcedures

SEC2:HTMLPROGRAMMING(Theory)
Outcomes:
Student will learn HTML is the standard markup language for Web pages.WithHTMLyoucan createyourown Website.

- • Useknowledgeof HTMLand CSScodeandanHTMLeditortocreate
  personaland/orbusinesswebsites followingcurrent professional
  and/orindustrystandards.

- • Usecriticalthinkingskillstodesignandcreatewebsites.
- • Useastand-alone FTPprogramto uploadfilestoawebserver.

SEC2:HTMLPROGRAMMING(Programming)
Outcomes:
- • Completionofamulti-page website

- Useknowledgeof HTMLand CSScodeandanHTMLeditortocreate personaland/orbusinesswebsitesfollowingcurrent professional and/orindustrystandards.
- Usecriticalthinkingskillstodesignandcreatewebsites.
- Useastand-alone FTPprogramto uploadfilestoawebserver.

GE-3(Interdisciplinaryforotherdepartment)

GE-4T: Programming in Python

Outcomes: Thecourseis designedforto providingknowledgeof Python.Students willbeable todevelop logicswhichwill help themto create programs,applications.
Afterthe completionofthiscourse,thestudentswillbeableto knowthefollowing:

- Understandbasic planning of the computer program.
- Fundamentalsof Pythonlanguage.
- LoopControlStructures,Functions.
- Basic syntax of Python language.
- Iterations and Recursion.
- Lists,Strings, Dictionary.
- Object oriented programming using python.
- Searching and sorting.
- Abilityto read, writeanddebugprograms.

GE-3P: Programming in Python Lab.
Outcomes: Studentswillabletoknowthefollowing:

- Understandthe conceptofdatatypes,loops,functions,lists,string.
- Analyseproblems,errors andexceptions.
- Applyprogramming concepts to compile anddebugpythonprograms to find solutions.
- Understandthevarious objectorientedprogramming.

COSHCC-11:Advanced Java(Theory)
Outcomes:
Javaisthemostfamousplatform,whichisusedtodevelopseveral applications.

Aftercompletingthiscoursethe studentmust demonstratetheknowledgeandabilityto:
- Ableto understandtheuseofOOPs concepts.
- Ableto solve real worldproblems usingOOP techniques.
- Ableto understand theuseof abstraction.
- AbletounderstandtheuseofPackagesandInterfacein java.
- Abletodevelopandunderstandexceptionhandling,multithreadedapplicationswithsynchronization.
- Ableto understandthe useof CollectionFramework.
- Ableto designGUIbasedapplications and developapplets forweb applications.

COSHCC-11AdvancedJava(Practical)

- After learning concepts of advance java students are able to make a website which can beconnectedto the server.
- After learning advance java students can ableServlet Context, Servlet Config,DeploymentDescriptor,RequestandResponse,CRUDOperationwithServlet
- By learning advance java student can move their carrier to different levels as most of therealtimeapplications(Servlet,JSP,EJB,JPA,JSF….etc) aredeveloped usingconceptsofadvancejava.
- ShortcomingsofServlet:SolutioninJSP,JSPScriptingElements,JSPLifeCycle
- After learning advance java student will be able to work with web servers and apps

COSHCC-12:TheoryofComputation(Theory)

Outcomes:

Course should provide a formal connection between algorithmic problemsolvingandthetheoryoflanguagesandautomataanddevelopthemintoamathematical(a ndless magical) view towards algorithmic design and in general computation itself. The courseshouldinadditionclarify the practicalview towards theapplicationsof these ideasinthetheoreticalcomputerscience.After completingthe course, thestudent willbeable to:

- Model,compareandanalysedifferentcomputationalmodelsusingcombinatorial methods.
- Applyrigorouslyformalmathematicalmethodstoprovepropertiesoflanguages,gr ammarsandautomata.
- Constructalgorithmsfordifferentproblemsandargueformallyaboutcorrectnesso ndifferentrestricted machinemodelsofcomputation.
- Identifylimitationsofsomecomputationalmodelsandpossiblemethodsofproving them.
- Haveanoverviewofhowthetheoreticalstudyinthiscourseisapplicabletoandengin eeringapplicationlikedesigningthecompilers.

DSE-1:Operationalresearch (Theory)
Outcomes:
- Studentwilllearn tosolvereal worldproblem.
- Studentscanusetheiranalytical skillsandcreativity
- Studentscanlearnmethodologyit'slimitationand applications
- Simplexmethod,Linear programmingproblemandtwophasemethodalsotheywilllearn.
- Dualityandit'sdefinitionand strategyofdualsimplexmethodalsohaveintroduced here.

DSE-1:OperationalResearch(Practical)
Outcomes:
- UsingMATLABoranyother softwaretheycan developerlinear programmingproblem.
- Simplex methodalsotheywilllearn.
- Studentwillbeableto solveM-Charnes method
- Twophasemethod also theywill solve.
- Basedon problemdual simplexmethodalso theywilllearn.

DSE-2:MachineLearning(Theory)

Outcomes:

Man machine interaction is necessary. Machine learning is a subfield ofartificialintelligence(AI).The goalofmachine learninggenerallyis tounderstandthestructureof data and fit that data into models that can be understood and utilized by people. Althoughmachine learning is a field within computer science, it differs from traditional computationalapproaches. In traditional computing, algorithms are sets of explicitly programmed instructionsusedbycomputers to calculateor problem solve

- Studentwilllearntheconceptofmachinelearning,differencebetweenAIand Machinelearningand it's steps and it's application.

- Different types of learning technique has been introduced here like supervised,unsupervised,reinforcementmethod.Statistical,bayes theorem,andnaivebayesclassifier theywill learn.

- Someprogrammingcode hasbeenintroducedintheoreticalpaper.

    o Classification of data using linear regression with one and multiple variable and logisticregression they will learn. Also here introducedfeature reduction and selection and theirdifference

- Regularization,overfittingproblem applicationofregularizationit'sbiasandvariancealsotheywill learn.

- Basicneuralnetworkhasbeenintroducedsinglelayer,multi-layer,backpropagationalgorithmtheywill learn

DSE2:MachineLearning(Practical)

Outcomes:

Based on theory here students may use MATLAB/R/Python software todevelop some limited number of exercise based on the availability of dataset* provided by thesyllabus.

- Studentcanperformbasicarithmeticoperationlikeaddition,multiplicationetcandso melogical operation AND, OR, NOT likeoperation
- Creationofarrayusingsomeconditions andalso somematrixoperation
- Creationofdataandusingthatdatacreate plot/chart,subplot
- Implementationoflinear regressionusinghousedatasetandpredictthevalueofhouseaftertrainingthe data
- Implementlogisticregressionbasedsomedataset.
- Neuralnetworkbackpropagation algorithmtheywillimplement usingthehelp ofinternet
    o Allprogram ofmachine learningwill becompleted basedon freedatasetavailabilityoninternet.

COSHCC-13:ArtificialIntelligence(Theory)

Outcomes: Studentswill able to:

- Demonstrateknowledgeofthebuildingblocksof AIaspresentedintermsofintelligentagents.
- Analyzeandformalizetheproblemasastatespace,graph,designheuristicsandselectamongstdifferent searchorgame basedtechniques to solve them.
- DevelopintelligentalgorithmsforconstraintsatisfactionproblemsandalsodesignintelligentsystemsforGame Playing
- Attainthecapabilitytorepresentvariousreallifeproblemdomainsusinglogicbasedtechniquesand usethis to perform inferenceor planning.
- Formulateandsolveproblemswithuncertaininformationusing Bayesianapproaches.
- ApplyconceptNaturalLanguageprocessingtoproblemsleadingtounderstandingofcognitive computing.

COSHCC-13: Artificial Intelligence (Practical)

Outcomes: Artificial Intelligence Program using PROLOG .

Students will able to WritethefollowingprogramsusingPROLOG:
- Solveaprogramto solve8-queens problem.
- Solveanyproblem usingdepthfirstsearch.
- Solve anyproblem usingbest first search.
- Solve8-puzzle problemusingbest firstsearch.
- SolveRobot(traversal)problemusingmeansEndAnalysis.
- SolveTravelingSalesmanproblem.

COSHCC-14:ComputerGraphics(Theory)
Outcomes:

Students will ableto learn:
- Tointroducetheuseofthecomponents ofagraphicssystem andbecome familiar withbuildingapproachofgraphicssystemcomponentsand algorithmsrelatedwith them.
- Tolearnthebasicprinciplesof3-dimensionalcomputer graphics.
- Providean understandingofhow to scanconvert thebasicgeometrical primitives, howtotransformtheshapes to fit them as perthe picturedefinition.
- Provideanunderstandingofmappingfrom aworldcoordinatestodevice coordinates,clipping,and projections.
- Tobeableto discusstheapplication ofcomputer graphicsconcepts inthedevelopmentofcomputer games, informationvisualization, and businessapplications.

COSHCC-14:ComputerGraphics(Practical)
Outcomes:

- Studentwilllearnlibrarybasedcommandtodraw someobjectlike bus,rectangleUsingDDA,Bresenhamlinedrawing,Bresenhamcircledrawing,midpointcircledrawingalgorithm student can improvetheirknowledge.
- Drawingellipse will enhancetheirpower usingprevious knowledge.
- Somefillingprogrammeofobjectisintroducedhere.
- UsingCohen and Sutherlandclippingstudents areable to clipsomeobject.
- Applying2Doperationliketranslation,rotation,reflectionandalsosome3Doperationwilllearn.

DSE-3DigitalImageprocessing (Theory)
Outcomes:

Students willbeable to:

- Rememberthefundamentalconceptsofimageprocessing.
- ExplaindifferentImageenhancementtechniques.
- Understandandreviewimagetransforms.
- Analysethebasicalgorithmsusedforimageprocessing&imagecompressionwithmorphologicalimageprocessing.
- ContrastImageSegmentationandRepresentation6.Design&SynthesizeColourimageprocessingand its real world applications.

DSE-3DigitalImageprocessing(Practical)
Outcomes:
TounderstandbetterimageprocessingusingMATLABorSCILABitisnecessaryto implement hands on experience.

- Displaydigital image, resize,convert colour.
- Someimageprocessingprogramslikenegativeimage,contraststretchingetc.
- ImagelogicaloperationslikeAND,OR,EX-OR,NEToperation
- Imagegeometricoperation
- Imagenoisemodels andremove noiseusingspatialfilters
- SomefrequencydomainfilteringlikeFFT,IFFT operation.

DSE-4Projectwork/Dissertation
Outcomes:
- Project will be assigned to students under the supervision of internal facultymembers.

- Thestudentswillprepareaprojectreportinconsultationwiththesupervisorallottedby the department committee which will be presented by the student in front of faculty membersofcollegeandafter successful presentationtheywill presentsameprojecttothe University.