DEPARTMENT OF SCIENCE

COURSE: BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY (BSc IT)

PROGRAM OUTCOME (POs)

A Bachelor of Science in Information Technology (BSc IT) program typically preparesstudents for careers in the information technology field. The program covers a broad range oftopics related to the design, development, and management of computer-based informationsystems.Program outcomes of a BSc IT program include:

PO1. Technical skills: Students should develop strong technical skills in areas such asprogramming languages, database design, networking, cybersecurity, and softwaredevelopment.

PO2. Problem-solving skills: Students should be able to analyze complex problems anddevelop solutions using information technology tools and techniques.

PO3. Communication skills: Students should be able to communicate effectively withcolleagues and stakeholders, both verbally and in writing.

PO4. Teamwork and collaboration: Students should learn to work effectively in teamsand collaborate with others to develop and implement information technologysolutions.

PO5. Ethical and professional conduct: Students should be aware of ethical issues ininformation technology and demonstrate professional conduct in their work.

PO6. Lifelong learning: Students should have a strong foundation in informationtechnology that will enable them to adapt to new technologies and continue learningthroughout their careers.Overall, a BSc IT program aims to prepare students to be competent, skilled, and ethicalprofessionals in the field of information technology.

Yashwantrao Chavan College of Arts, Commerce & Science
Koperkhairane NAVI MUMBAI
(Permitted by Govt. of Maharashtra, Affiliated to University of Mumbai)

DEPARTMENT OF SCIENCE

COURSE: BACHELOR OF SCINCE IN INFORMATION TECHNOLOGY (BSc IT)

Program Specific Outcome (PSOs)

PSO1 Graduates will have a strong foundation in information technology concepts and technologies, including programming languages, databases, networks, and systems development.

PSO2 Analyzing complex problems and developing effective solutions using information technology tools and methodologies.

PSO3 Attain proficiency in programming languages and software development practices, enabling them to design and create software applications.

DEPARTMENT OF SCIENCE

COURSE: BACHELOR OF SCINCE IN INFORMATION TECHNOLOGY (BSc IT)

COURSE OUTCOME (COs)

FYIT SEMESTERI

USIT101ImperativeProgramming

CO1. Applythefundamentalconceptsofprogrammingtowritesimpleprogramsin C.
CO2. Understandthehistoryandevolutionofprogramminglanguagesandmodels.
CO3. Synthesizeprogramming logicusingpseudocodeandflowchartsymbolstodevelopprograms.
CO4. Evaluateprogramlogictoidentifyandfixerrorsandbugs.
CO5. Createefficientandeffectiveprogramsbyapplyingprogrammingconceptsandtechniques.
CO6. Understandtheprogramdevelopmentcycleandtheimportanceofdebuggingandtesting.
CO7. Applyconditionalstatementsandloopstodecisionmakingwithinaprogram.
CO8. Understandtheuseandimplementationofarraysandstringsinprogramming.
CO9. Evaluateprogramstructureanddesigntoensurereadability,maintainabilityand scalability.
CO10. Createandusefunctionsandpointerstomodularizeandoptimizeprogramcode.

USIT102DigitalElectronics

CO1. Itisdesignedforcomputer studentswhohavelimitedornopreviousexposuretopythondatastructure.
CO2. Tolearndifferentarchitectureandorganizationofmemorysystems.
CO3. After studying this subject student will understand actual practical process, organization andcontrolunit.
CO4.
Itwillhelpthestudenttounderstandhowdigitalandanalogsystem,deviceandcomponentsworkonnum bersystemprinciples.
CO5. Itwillhelpthestudentstounderstandofdigitalsystemandoperationsofadigitalcomputer.

USIT103OperatingSystems

CO1. The fundamental concepts and principles of operating systems, including their functions,components,anddesignprinciples.
CO2. Howoperating systemsmanageresources,includingmemory,filesystems,input/outputdevices,andprocessors.
CO3. The variousschedulingalgorithmsusedbyoperating systems,andhowtoevaluatetheirperformance.
CO4. How to implement and debug basic operating system components, such as device drivers,memorymanagement,andprocess scheduling.
CO5. How to design and implement multi-threaded and multi-process applications that usesynchronizationand communication mechanismsprovidedbytheoperatingsystem.
CO6.
Howtoapplyprinciplesofoperatingsystemstosolvepracticalproblemsinfieldssuchascomputerscience, engineering,andscience

USIT104DiscreteMathematics

CO1. To understand the concepts of mathematical logic for analyzing propositions via truth tablesandprovingtheorems.

CO2. Apply sets for analyze & solving applied problems, and apply the properties of setoperationsalgebraically.

CO3.
Helptounderstandthepurposeofmathematicalinductionistobeabletoproveanequationworksforallnatura lnumbersandhelp how tofindtherecursiveformula ofa sequence.

CO4. Understandtherelationsonsetsandtheir properties.

CO5. To investigatefunctionsasrelationsandtheirpropertiesandEvaluatefunctionsasrelationsandtheirproperties.

CO6. Tounderstandthebasicconceptsofgraphs,digraphs,andtrees.

USIT105CommunicationSkills

CO1. ApplytheSevenCs ofEffectiveCommunicationintheirwrittenandoralcommunication.

CO2. To understand the nature and scope of communication, including non-verbal and cross-culturalcommunication.

CO3.
Synthesizeeffectivebusinessmessagesanddocuments,includingcorrespondence,reports,proposals,instru ctions,andresumes.

CO4. Evaluate and improve their oral communication skills, including effective listening,public speaking,andinterpersonalcommunication.

CO5. Createanddelivereffectivepresentations,includingplanning,executing,andimpressingtheaudience withvisualaidsandeffective use of font,color,andlayout.

CO6. Collaborate effectively in group discussions, team presentations, and business meetingsandconferences.

CO7.
Understandandaddressspecificcommunicationneedsacrossfunctionalareas,includingcorporatecommuni cation,persuasivestrategies,andethicsinbusinesscommunication.

FYITSEMESTER- II

USIT201ObjectOrientedProgramming

CO1. Understand the key principles of object-oriented programming (OOP) and how they canbe appliedinC++.

CO2. Identify the advantages of using OOP, including code reusability, maintainability&scalability.

CO3. Utilize C++ data types, operators, and control structures to develop simple programs.4.Useobject-orientedconceptssuchasclasses,objects, and encapsulationtodesignmorecomplexprogram.

CO4.
CreateconstructorsanddestructorsinC++andunderstandtheirroleinobjectinstantiationanddestruction.

CO5. ImplementinheritanceandpolymorphisminC++programstofacilitatecodereuseandextensibility.

CO6. Understand andapplyadvancedC++featuressuchastemplates,exceptions,andstreams.

CO7. Debug and test object-oriented programs effectively to ensure high code quality.

CO8. Understandthe basicsoffilehandlinginC++andhowtoread and writedatatofiles.

CO9. Developeffectivecoding habits andpracticesthatadhere toobject-orientedprogrammingprinciples andbestpractices.

USIT202MicroprocessorArchitecture

CO1. Thiscoursehelpsthestudentstounderstand theconceptofhardwareprogrammingofmicroprocessor.

CO2. Studentswilllearndifferentinterfacingofinputoutputdevices.

CO3 Thiscoursehelpsthestudentstoperformtestingandtroubleshootinginputoutputinterfacingcircuits.

CO4. Students will learn the complete model of microprocessor 8085 and assembly languageprogramming.

CO5. To learn microprocessor software-based software development system, operating system andprogrammingtools relatedto8085.

USIT203WebProgramming

CO1. Students will understand the principles of web programming, including web developmentframeworks,HTML,CSS, andJavaScript.

CO2. Studentswillbeabletocreateanddesignwebpagesusing HTMLandCSS,includingunderstandingweblayout,typography,andresponsivedesign.

CO3. Students will be able to write JavaScript code to enhance the functionality of web pages,includinginteractivity,userinputvalidation,anddynamic contentcreation.

CO4. Studentswilllearnhowtousewebdevelopmentframeworkssuchas React,Angular,orVue.js tocreate scalableandmaintainable webapplications.

CO5. Studentswillunderstandhowtouseserver-sidetechnologiessuchasPHP,Node.js,orASP.NETtodevelopdynamic webapplications.

USIT204NumericalandStatisticalMethods

CO1. Tounderstandandsolvereallifeproblemsontheconceptsofnumericalanalysisandstatistics.

CO2. Applyvariousmethodsofevaluatealgebraic/transcendentalequationsandsystemofsimultaneousequations.

CO3. Tounderstandtheareasappliedinnumericalinterpolation,differentiation,integrationanddifferentialequationsandmethodoffindingsolutions.

CO4. Toapplytheprobabilitytheoryandsolvetheproblems.

CO5. To learn what probability is by predicting the outcome of planned experiments, and playingracinggames.

CO6. Weneedtounderstandhowtocalculatethevalueoftheregressioncoefficientandleastsquares

CO7. Regressionlinegivenpartsoftheformula.

CO8. TounderstandhowtofindoptimalsolutionusingLPP.

USIT205GreenComputing

CO1. LearnerwillabletounderstandwhatisGreenComputingandwhataredifferenttechniquestoreducetheuseof electricity.

CO2.

Theywillabletounderstandthelessusageofenergyforproducing,using,anddisposingofproducts,whichtranslatesintolowercarbondioxideemissions.

CO3. TheywillabletocalculatetheCarbon footprintoforganization.

CO4. DefineGreenIT anditssignificanceinthemodernera.

CO5. Understand the principles of sustainable computing and the role of IT in achievingsustainabilitygoals.

CO6. Describe the energy consumption of computing systems and evaluate the environmentalimpactofcomputing.

CO7. Analyzethebenefitsanddrawbacksofvirtualization, cloudcomputing, and greendatacenters.

CO8. Identify and assess various strategies for reducing the environmental impact ofcomputingsystems,suchaspowermanagement,recycling,andgreenprocurement.

CO9. Design and implement eco-friendly computing systems, and evaluate their effectivenessinreducingenergyconsumptionandenvironmental impact.

CO10. Applythe principles ofgreenITinthedevelopmentofsoftware,includingtheuse ofeco-designandsustainableprogrammingpractices.Evaluate the legal and ethical implications of green IT, including privacy, data security,andcompliancewithenvironmentalregulation.

SYITSEMESTERIII

USIT301PythonProgramming

CO1.
Studentswillbeabletounderstandthebasicconceptsofprogrammingsuchasvariables,datatypes,controlstructures,functions,andobjects.

CO2. StudentswillbeabletousePythonlibrariestosolveproblemsrelatedtodataanalysis,data visualization,scientific computing,andmachinelearning.

CO3.
StudentswilllearnhowtousePythontomanipulatedata,includingreadingandwritingdatatofiles,processing datainmemory,andcleaningandtransformingdata.

CO4. Students will understand the principles of object-oriented programming and be able towrite Pythonprograms usingclasses,objects,andinheritance.

CO5.
StudentswilllearnhowtousePythontobuildwebapplications,includingusingwebframeworkssuchasFlask orDjango.

CO6.
StudentswillbeabletousePythontoworkwithdatabases,includingconnectingtodatabases,queryingdata,and modifyingdata.

USIT302DataStructures

CO1. Understanding the fundamental concepts of data structures: Students will learn the basicconcepts of data structures such as arrays, linked lists, stacks, queues, trees, graphs, andtheirproperties.

CO2. Ability to analyze algorithms: Students will be able to analyze the time and spacecomplexityofvariousalgorithmsandselectappropriatedatastructurestooptimizetheirperformance.

CO3. Ability to implement data structures: Students will be able to implement various

datastructuresusingprogramminglanguages suchasC,C++,Java,orPython.

CO4.

Abilitytosolveproblemsusingdatastructures:Studentswillbeabletouseappropriatedatastructurestosolve various problemssuchassearching,sorting,andgraphalgorithms.

CO5. Ability to design and implement complex data structures: Students will be able to designandimplementcomplexdatastructuressuchashashtables,B-trees, andpriorityqueues.

USIT303ComputerNetworks

CO1. Anunderstandingofthebasicsofcomputernetworking,includingtheOSIandTCP/IPmodels.

CO2. Knowledge of different network topologies and architectures, including LAN, WAN, andMAN.

CO3. FamiliaritywithnetworkprotocolssuchasEthernet,TCP/IP,HTTP,SMTP,andFTP.

CO4. The ability to design and configure networks, including subnetting and addressingschemes.

CO5. An understanding of network security concepts, including authentication, authorization,andencryption.

CO6. An understanding of wireless networking technologies such as Wi-Fi, Bluetooth, andcellularnetworks.

CO7. Knowledgeofnetworkmanagementandmonitoringtools.

CO8. An understanding of emerging networking technologies such as Software-DefinedNetworking(SDN)andNetworkFunctions Virtualization(NFV).

CO8. Theabilitytotroubleshootnetworkissuesusingvariousdiagnostictools.

CO9.

Theabilitytoworkcollaborativelyinateamtodesign,implement,andmaintainanetworkinfrastructure.

USIT304DatabaseManagementSystems

CO1. Uponcompletionofthiscourse,studentsshouldbeableto:

CO2. Understand the fundamental concepts of database management systems, including datamodeling,databasedesign,andrelationaldatabases.

CO3. DesignandimplementdatabaseschemasandtablesusingSQL, andperformvariousSQLoperations suchasselecting,inserting,updating,anddeletingdata.

CO4. Understand and apply the principles of normalization to ensure data integrity and eliminatedataredundancyindatabasedesign.

CO5. Develop an understanding of data storage and retrieval techniques, including indexing, sorting,andhashing.

CO6.

Understandtheprinciplesofdatabasesecurity,includingaccesscontrol,authentication,andauthorization,an dimplementtheminadatabaseenvironment.

CO7. Analyze and evaluate the performance of database queries and transactions, and optimize themtoimprovesystemperformance.

USIT305AppliedMathematics

CO1. We need to under stand howMatricesareextensivelyusedinsolvingthesimultaneoussystemofequations.

CO2.
Toevaluatetheoperationswithcomplexnumbersandsolvequadraticequationswithcomplexnumbers.

CO3. To enable the students to study the Laplace Transforms, properties of Laplace Transform,inverse Laplace Transform and some applications to solve the differential equations and integralequations.

CO4.
Tounderstandtheprimarypurposeofthedifferentialequationisthestudyofsolutionsthatsatisfytheequations andtheproperties ofthesolutions.

CO5. To understand Multiple integrals are evaluating double integrals for three dimensions. They aretool for adding up infinitely many infinitesimal quantities associated with points in a three-dimensionalregion.

CO6. WeneedtounderstandBetaandgammaarethetwomostpopularfunctionswhichisusedtosolve problemsinmathematics.

SYIT Semester

IVUSIT401Core Java

CO1. UnderstandthefeaturesofJavaprogramminglanguageandapplythemtowritebasic programs.

CO2. Apply object-oriented programming concepts like inheritance, polymorphism, and encapsulationtodesignanddeveloprobustsoftware systems.

CO3. Evaluatetheimportanceofexception handlinginJavaandcreatecustomexceptionstohandleerrors.

CO4.
Synthesizetheconceptsofmultithreading,synchronization,andwait/notifymethodstodevelopconcurrentapplications.

CO5. CreateI/O streamstoreadandwritedatafrom/tofilesandserializeobjectsforstorageandretrieval.

CO6. UnderstandthebasicsofnetworkinginJavaandcreateclient-server communicationprogramsusingsockets.

CO7. Apply the concept of wrapper classes to convert primitive data types into objects and viceversa.

CO8. EvaluatetheCollectionFrameworkandits interfaceslikeList,Set,andMaptodevelopefficientdatastructures.

CO9. Synthesizetheconceptofinnerclassesandapplythemtowritenestedandanonymousclasses.

CO10. CreateuserinterfacesusingAWTcomponents,layouts,andeventhandling mechanisms.

USIT402IntroductiontoEmbeddedSystems

CO1. Understandthebasicsofembeddedsystemsandtheirapplicationsinvariousfields.

CO2. Designanddevelopembeddedsystemsusingvarioushardwareandsoftwaretools.

CO3. Developanunderstandingofthearchitecture, programming, andinterfacingofmicrocontrollers.

CO4. Analyze and evaluate the performance of embedded systems using appropriate techniquesandtools.

CO5. DevelopskillsinprogramminglanguagessuchasCandAssemblyformicrocontrollers.
CO6. Gainknowledgeofreal-timeoperatingsystems,taskscheduling,andsynchronization.
CO7. Designanddevelopsimpleembeddedsystemsforvariousapplicationssuchasrobotics,automation,andcontrolsystems.
CO8. Developskillsindebugging,testing,andoptimizingembeddedsystems.
CO9. Develop skills in designing and developing communication protocols for embeddedsystems.
CO10. Gainanunderstandingofthesecurityandsafetyissuesinembeddedsystemsandthetechniques usedtomitigatethem.

USIT403ComputerOrientedStatisticalTechniques

CO1. To understand measuring of Central Tendency. To present a brief picture of data: It helps ingiving a briefdescriptionofthemainfeatureoftheentire data&Objectiveofmeasuresofdispersiontojudge thereliabilityofmeasures ofcentraltendency.
CO2. To understand the basics of statistical computing and data analysis and How to use R foranalyticalprogramming.
CO3. Toevaluatevariousaspectsofadistribution,suchasitscentraltendency,skewness,andkurtosis.
CO4. Toapplytheprobabilitytheoryandsolvetheproblems
CO5. Tohaveknowledgeinprobabilitydistributionsandtestingofhypothesis.
CO6. Weneedtounderstandhowtocalculatethevalueoftheregressioncoefficientandleastsquares regressionlinegivenpartsoftheformula.
CO7. Toobtaintheoptimumresults,i.e.,themaximuminformationaboutthecharacteristicsofPopulation.

USIT404SoftwareEngineering

CO1. Understand the fundamental concepts of software engineering, including softwaredevelopmentprocesses,softwarerequirements,and software design.
CO2. Develop an understanding of software development methodologies, includingWaterfall,Agile,andDevOps, andunderstandtheadvantagesanddisadvantagesofeach.
CO3. Understand the principles of software project management, including projectplanning, estimation, and tracking, and develop skills in managing softwaredevelopmentprojects.

USIT405ComputerGraphicsAnd Animation

CO1. Learner willabletounderstandcomputer-aidedengineeringanddesign,inwhichobjectsare drawnandanalyzedincomputerprograms.
CO2. Understanding the fundamental concepts of CG including image representation, rastergraphics,vectorgraphics,2D and3Dtransformations.
CO3. ProficiencyinusingvariouscomputergraphicstoolsandsoftwarepackagessuchasPhotoshop, AutodeskMaya,Blenderetc.
CO4. Ability to design and implement applications using programming languages such as C,C++ andJava.
CO5. Learnerswillbeabletounderstandthedifferentfileformats.
CO6. Learnerswillabletounderstandtheconceptof2Dand3D.
CO7. Theywillbeabletounderstandthetechniquesinanimation.
CO8. Theywilllearnaboutthedifferenttypesofinputanddisplaydevices.

TYITSemesterV

USIT501SoftwareProject Management

CO1. Understandtheprinciplesandconceptsofsoftwareprojectmanagementandtheirapplicationsinthesoftware developmentprocess.

CO2. Develop an understanding of the different software development life cycle models,projectplanning,andmanagementprocesses.

CO3. Understandtheimportanceofrequirementsgatheringandanalysis,andthetechniquesusedintheseprocesses.

CO4. Developskillsincreatingproject plans,schedules,andbudgets,andestimatingresourcesandcosts.

CO5. Gainknowledgeofriskmanagementandmitigationtechniques,andtheimportanceofqualityassuranceandcontrolinsoftwaredevelopment.

CO6. Understand the different team structures, roles, and responsibilities in softwaredevelopmentprojects,andthetechniquesusedinteammanagementandcommunication.

CO7. Developskillsinprojectmonitoringandcontrol,includingtrackingprogress,identifyingissues,andimplementingcorrectiveactions.

CO8. Gain an understanding of the principles of software metrics and their applications inprojectmanagement.

CO9. Developskillsinmanagingprojectstakeholders,includingcommunication,negotiation,andconflict resolution.

CO10. Understand the importance of project documentation and reporting, and the techniquesusedintheseprocesses.

USIT502Internet OfThings

CO1. Understand the fundamental concepts of Internet of Things (IoT) and their applications invariousdomains.

CO2. Develop an understanding of the IoT architecture, including the physical layer,communicationlayer,andapplicationlayer.

CO3. UnderstandthedifferentcommunicationprotocolsusedinIoT,includingWi-Fi,Bluetooth,Zigbee,andLoRaWAN.

CO4. DevelopskillsinprogramminglanguagessuchasPythonandJavaScriptforIoTdevices.

CO5. GainknowledgeofvarioussensorsandactuatorsusedinIoTandtheirinterfacingtechniques.

CO6. Developanunderstandingofcloudcomputinganditsapplications inIoT, includingdatastorage, processing,andanalysis.

CO6. Understand the importance of data privacy and security in IoT and the techniques used toensure them.

CO7. DevelopskillsindesigninganddevelopingIoTsystemsforvariousapplicationssuchassmarthomes,healthcare,andagriculture.

CO8.

Gainanunderstandingoftheethicalandsocialimplicationsof IoT,includingprivacy,security,andenvironmentalimpact.

USIT503AdvancedWebProgramming

CO1. Understandtheadvancedconceptsofwebprogramming,includingwebarchitecture,webservices,andwebapplicationframeworks.

CO2. Develop an understanding of the principles of web security, including authentication,authorization,andencryption.

CO3. Developskillsinserver-sideprogramminglanguagessuchasPHPandNode.js, andwebapplicationframeworks suchas Laravel,Express,andDjango.

CO4. Understandthedifferentdatabasemanagementsystemsusedinwebapplications,includingMySQL, MongoDB,andPostgreSQL.

CO5. DevelopskillsinfrontendwebdevelopmentusingHTML,CSS,andJavaScript,andfrontendframeworkssuchas ReactandVue.js.

CO6. Understandtheimportanceofwebaccessibilityandthetechniquesusedtoensureit.

CO7. Develop skills in designing and developing responsive and mobile-friendly webapplications.

CO8. Understand the importance of web analytics and the techniques used to measure andanalyze webapplicationperformance.

CO9. Gain knowledge of the latest trends and technologies in web programming, includingProgressiveWebApplications(PWA),Single-PageApplications(SPA),andServerlessComputing.

CO10. Develop skills in project management, including planning, execution, monitoring, andcontrolofwebdevelopmentprojects.

USIT504LinuxsystemAdministration

CO1. Understandtheadvancedconceptsofwebprogramming,includingwebarchitecture,webservices, andwebapplicationframeworks.

CO2. Develop an understanding of the principles of web security, including authentication,authorization,andencryption.

CO3. Developskillsinserver-sideprogramminglanguagessuchasPHPandNode.js,andwebapplicationframeworks suchas Laravel,Express,andDjango.

CO4. Understandthedifferentdatabasemanagementsystemsusedinwebapplications,includingMySQL, MongoDB,andPostgreSQL.

CO5. DevelopskillsinfrontendwebdevelopmentusingHTML,CSS,andJavaScript,andfrontendframeworkssuchas ReactandVue.js.

CO6. Understandtheimportanceofwebaccessibilityandthetechniquesusedtoensureit.

CO7. Develop skills in designing and developing responsive and mobile-friendly webapplications.

CO8. Understandtheimportanceofwebanalyticsandthetechniquesusedtomeasureandanalyze webapplicationperformance.

CO9. Gain knowledge of the latest trends and technologies in web programming, includingProgressiveWebApplications(PWA),Single-PageApplications(SPA),andServerlessComputing.

USIT505EnterpriseJava

CO1. Understanding of Java EE architecture: Students should be able to understand thearchitectureandcomponentsofJavaEE,includingServlets,JSPs,EJBs,andHibernate.

CO2. Ability to develop web applications: Students should be able to develop web applicationsusing Servlets, JSPs, and EJBs, including the ability to design and implement effectiveuserinterfaces,data models,andbusinesslogic.

CO3. Knowledge of database connectivity: Students should be able to connect toandmanipulatedatabasesusingHibernate,includingtheabilitytoperformCRUD(Create,Read,Update,Delete)operations andretrievedatausingqueries.

CO4. Knowledge of JSON: Students should be familiar with JSON (JavaScript ObjectNotation)andunderstandhowtouseittotransferdatabetweentheclientandserverinwebapplications.

CO5. Familiarity with development tools: Students should be familiar with development toolscommonly used in the industry, such as Eclipse or NetBeans, and understand how to usethemtodevelopanddebugJavaEEapplications.

CO6. Critical thinking and problem-solving: Students should be able to apply critical thinkingand problem-solving skills to identify and troubleshoot issues in Java EE applications,including performanceissues,securityvulnerabilities,anderrorsincode.

CO7. Knowledgeofbestpractices:StudentsshouldbefamiliarwithbestpracticesforJavaEEdevelopment, includingcodingstandards, designpatterns, andtestingmethodologies.

TYITSemesterVI

USIT601SoftwareQualityAssurance

CO1. Understand the fundamental concepts of software quality assurance, including softwaretesting,softwaremetrics,andqualitycontrol.

CO2. Designandimplementtestcasesandtestplans,andperformvarioustypesoftestingsuchasunittesting, integrationtesting,systemtesting,andacceptancetesting.

CO3. Understandandapplydifferentsoftwaretestingtechniques,suchaswhite-boxtesting,black-boxtesting,andgray-boxtesting.

CO4. Analyzeandevaluatesoftwaremetrics,suchasdefectdensity,codecoverage, andcode complexity,andusethemtoassessthequalityofsoftware.

CO5. Understand the principles of quality control, including continuous integration, versioncontrol,and bugtracking,andapplythemina softwaredevelopmentenvironment.

CO6. Understand the role of software quality assurance in software development, includingqualitystandards,qualitycontrolprocesses,andqualityimprovementmodels.

USIT602SecurityinComputing

CO1. Studentswillbeabletoapplyfundamentalprinciplesofcomputersecurity,includingconfidentiality, integrity,andavailability,toreal-worldscenarios.

CO2. Studentswillunderstanddifferenttypesofthreatsandattacks,andevaluatetheireffectivenessagainst

differentsecuritymechanisms.

CO3. Studentswillbeabletoevaluatetheeffectivenessofcommonsecuritymeasuresinprotectingcomputer systemsagainstattacks.

CO4. Studentswillcreateeffectivesolutionstomitigatecommonvulnerabilities incomputersystems,includingbufferoverflows,SQLinjection,andcross-sitescripting(XSS).

CO5. Studentswill beabletoapplycryptographictechniques,includingencryption,decryption,anddigitalsignatures,toprotectdata.

CO6. Studentswillevaluatetheeffectivenessofnetworksecuritymechanisms,including firewalls,intrusiondetectionandpreventionsystems,andvirtualprivatenetworks(VPNs)

USIT603businessIntelligence

CO1. An understanding of the basics of business intelligence, including data warehousing,data mining,anddata visualization.

CO2. Knowledgeofvariousdatasources,includingtransactionaldatabases,datawarehouses,andbigdata platforms.

CO3. Familiarity with different data modeling techniques such as dimensional modelingandentity-relationshipmodeling.

CO4. Theabilitytodesignanddevelop datawarehousesusingETL(Extract,Transform,Load)tools.

CO5. Knowledgeofvariousdataminingtechniquessuchasclustering,associationrulemining,anddecisiontrees.

CO6. Anunderstandingofdatavisualizationtoolsandtechniquesforcreatinginteractive dashboards andreports.An understanding of business analytics, including descriptive, predictive, andprescriptive analytics.

USIT604PrinciplesofGeographicInformationsystems

CO1. UnderstandthefundamentalprinciplesofGeographicInformationSystems(GIS)andtheirapplicationsinvariousfields.

CO2. Use GIS software to create, manage, manipulate, analyze and visualize spatialdata.

CO3. Develop a thorough understanding of spatial data models and projections, and theabilitytotransformdatabetweencoordinatesystems.

CO4. Understandtheconceptofmetadataandhowtocreateandmanageit.

CO5. Beabletoselectappropriatedatasources,acquireandevaluatespatialdata, andprepare dataforanalysis.

CO6. Developanunderstandingofspatialanalysistechniques,suchas spatialqueries,overlayanalysis,andnetworkanalysis.

CO7. Gainproficiencyincreatingcartographicrepresentationsandvisualizationsofspatialdata,includingthematicmapsand3Dvisualizations.

CO8. Understand the role of GIS in decision-making, and how to use GIS to supportdecision-makingprocesses.

USIT605 CyberLaws

CO1. Understandthebasicconceptsandprinciplesofcyberlawanditsimportanceinthedigitalage.

CO2. Identifyandanalyzethevariouslegalissuesrelatedto cybercrime,cybersecurity,cyberprivacy,andcyberethics.

CO3. Develop an understanding of the legal framework governing electronic transactions,contracts, anddigitalsignatures.

CO4. Understandthelegalprovisionsfordataprotectionandprivacy,includingtheGeneralDataProtectionRegulation(GDPR).

CO5. Analyze the impact of intellectual property laws on the digital world, including copyright,trademark,andpatentlaws.

CO6. Understandthelegalprovisionsfor cybercrimeandcyber security,including theComputerFraudandAbuseAct(CFAA)andtheCybersecurityInformationSharingAct(CISA).

CO7. Developanunderstandingoftheinternationallegalframeworkfor cyberlaw,includingtheCouncilofEuropeConventiononCybercrime.

CO8. Developtheabilitytoevaluateandanalyzelegalcasesrelatedtocyberlaw.

Yashwantrao Chavan College of Arts, Commerce & Science

Koparkhairane NAVI MUMBAI

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