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NAAC ACCREDITED
THANJAVUR- 613 403 - TAMIL NADU

Program Outcomes and Course outcomes of

DepartmentofMathematics

Programmeoffered:

S.No	ProgrammeName	POandCO
1.	B.ScMathematics	Yes
2.	M.ScMathematics	Yes

B.ScMathematics-2022

PROGRAMMEOUTCOMES	
PO1	Tounderstandandapplytheknowledgeofmathematicalsciencetosolvereallife problems
PO2	Todesignthemethodologysuitabletothe problemonhand.
PO3	To analyze and interpret solution outputs and generate new ideas based on theoutputs.
PO4	Tolead,workinteamandgivepriorityto thesuccessofthe aimoftheteam.
PO5	Torecognizeandlearntheimportanceoflife-longlearning.
PROGRAMSPECIFICOUTCOME	
PSO1	Tothinkinacriticalmanner.
PSO2	To know when there is a need for information, to be able to identify, locate,Evaluate,andeffectivelyusethatinformationfortheissueorproblemathand.
PSO3	Toformulateanddevelopmathematicalarguments inalogicalmanner.
PSO4	Toacquiregoodknowledgeandunderstandinginadvancedareasofmathematicsand statistics,chosenby thestudentfromthegiven courses.
PSO5	Tounderstand,formulate andusequantitativemodelsarisinginsocial science,Businessand othercontexts.

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Course outcomes (Cos)-

2022B.Sc.,Mathematics

S.No	Semester	CourseCode/Name	CourseOutcome
CO1	I	Basic Mathematics –I (DifferentialCalculusand VectorDifferentiation)	➢ Tomanipulate,andsolveproblemsusing,successivedifferentiation&vectoroperators; ➢ TocalculateMaxima&Minimaforfunctions of two variables and Lagrangemultipliermethod ➢ Tosolvecurvature,evolutes,asymptotesandenvelopesinsimplecases ➢ Tocalculategradient,divergenceandcurlvectorsinR3.
CO2.	I	Basic Mathematics – II(Trigonometry,AnalyticalGeometry3Dand Calculus)	➢ Tomanipulatetheexpansionsofbasic trigonometricfunctions ➢ To calculate summation of trigonometricseries andGregory'sseries ➢ Understandtheconceptofanalyticalgeometryandbeabletousepropertiesofspheres,coneandcylinderinrealcases. ➢ Tomanipulate,andsolveproblemsusing,integralcalculus
CO3.		Allied- I- Paper - IProgrammingInC	➢ ToDesignCProgramsforproblems. ➢ ToWriteandexecuteCprogramsforsimpleapplications
CO4.		ProgrammingInC LAB	➢ Programming in C Lab provides the methodology for the planning and execution for any scientific enquiry, which has been accepted as a valid tool in this content. In this course Quadratic Equation, Sum of Series (Sine, Cosine, ex), Fibonacci Numbers using recursive

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			functions, Sorting of given names in alphabtical order, Matrix Operations (Addition, Subtraction, Multiplication --- use functions) would be taught.
CO5	II	**Core -IV Integral and Differential Equations**	➢ The derivative is the measure of the rate of change of a function whereas integral is the measure of the area under the curve. ➢ The derivative explains the function at a specific point while the integral accumulates the discrete values of a function over a range of values.
CO6.	II	**Allied- I- Sequence and series**	➢ Useanddefinethevocabularyassociatedwithcomputer technology. ➢ Identifythecomponentsofcomputersystems andstatetheir function. ➢ Differentiatebetweenthevariousoperatingsystemsandapplicationprograms that are available for personalcomputers. ➢ Understandtherelationshipbetweencomputerhardware andsoftware. ➢ Identifycomputertoolsthatmaybe appliedtoassistwithvariouscommon applications
CO7.		**Allied-II-Web Programming**	➢ give you a general understanding of how a computer works ➢ introduce you to assembly-level programming ➢ prepare you for future courses. .
CO8.		**Web Programming Lab**	➢ . To create a fully functional website with mvc architecture ➢ To develop an online book store ➢ To provide an understanding of the language translation peculiarities by designing a complete translator for a mini language

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CO9.	III	**Core– VNumberTheory**	➢ Solveproblemsinelementarynumber theory ➢ Apply elementary number theory tocryptography ➢ Develop a deeper conceptualunderstandingofthetheoreticalbasis of numbertheoryandcryptography ➢ Define and interpret the concepts ofdivisibility,congruence,greatestcommon divisor,prime,andprime-factorization.
CO10.	III	**Core– VINumericalAnalysis**	Solvingproblemsinalgebraicandtranscendedequations ➢ Understandaboutfinitedifferences ➢ Studentsdevelopandanalyzenumericaltechniques ➢ ApplyingVarious numericalmethodstosolvetheordinary differentialequations ➢ StudentsgetstheResearchinquiryandanalytical thinkingabilities.
CO11.	III	**Allied –II –Paper –I – MathematicalStatistics I**	➢ Studentsgetsthemethodologyfortheplanningandexecutionforanyscientificenquiry ➢ Students learning statistical techniques andstatistical data ➢ Understandtheconceptofrandomvariables ➢ Understandtheconceptofcentrallimittheorem fori.i.drandom variables. ➢ A knowledge of constructions and uses offixed andchain based index numbers
CO12	III	**MathematicalStatistics LAB**	➢ Studentslearningstatisticaltechniquesandstatistical data ➢ Understoodtheconceptofcorrelationandregression ➢ A knowledge of test of significance based onparametric and non– parametrictest ➢ Studentsgetsthemethodologyfortheplanningandexecutionforanyscientificenquiry

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CO13	IV	Core – VIIIOperationsResearch	➢ StudentsusingORtechniques inbusinesstoolsfor decision making ➢ StudentsdevelopPERTandCPMnetworksand finding theshortest path ➢ Understand the concept of sequencingproblemsand gametheory ➢ Studentsgetstheknowledgeaboutinventorytheory.
CO14	IV	Core–IXImage processing	➢ To introduce basic concepts and engineering approaches applicable to image processing and develop a further study foundation ➢ To provode some mathematical techniques for studying several fundamental questions in image processing:;;su;ch as how to restore a degraded image and how to segment it into meaningful regions.
CO15	IV	Allied –II – Paper – III– MathematicalStatisticsII	➢ learnedstatisticaltechniquesandstatisticaldata ➢ Understood the concept of variousdistributions ➢ Aknowledgeoftestofsignificancebasedonparametric and non–parametrictest ➢ Design/developmentofsolutions ➢ Understoodtheconceptofsamplingtheory
CO16.	IV	MathematicalStatisticsII Lab	➢ Statistics provides the methodology for the planning and execution for anyscientificenquiry,which has been accepted as a valid tool in this content. ➢ In this course, chi-square distribution ,sampling distributions and analysis of variance would be taught.
CO17	V	Core-X-ModernAlgebra	➢ KnowledgeandunderstandaboutAlgebraic structureslikeGroups,Rings,Vectorspaces ➢ UnderstoodaboutMorphisms ➢ SkillnessinLineardep.,in-dep.andbasesproblems

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CO18.	V	**Core –XI-RealAnalysis**	➢ KnowledgeaboutConnectedness,completenessandcompactness ➢ UnderstandingtheRiemannintegrals,fundamentaltheoremof calculus ➢ AnalysestheproblemandfindingthesolutionAn ability to construct free-bodydiagramsandtocalculatethereactionsnecessarytoensurestaticequilibrium. ➢ Anunderstandingoftheanalysisofcouplesandfriction
CO19.	V	**CO15.Core–XII–Statics**	➢ Anabilitytoconstructfree-bodydiagrams and to calculate the reactionsnecessaryto ensurestaticequilibrium. ➢ Anunderstandingoftheanalysisofcouples andfriction
CO20.	V	**Core-XIII-ProgramminginC++**	➢ Abletounderstandanddesignthesolutiontoaproblemusingobject-orientedprogrammingconcepts. ➢ Able to reuse the code with extensibleClass types, User-defined operators andfunctionOverloading ➢ Understandfunctionsandparameterpassing. ➢ Understandobject-orienteddesignandprogramming ➢ Understand dynamic memory allocationandpointers

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CO21.	V	Elective Paper – IFuzzyAnalysis	➢ Beable to get the knowledge and understand Classical Sets vs Fuzzy Sets(FS)– Types ofFS–OperationsonFS ➢ BeabletogettheknowledgeandunderstandZadeh'sExtensionPrinciple ➢ BeabletogettheknowledgeandunderstandFuzzyRelations–FuzzyRelationalEquations–PossibilityTheory : ➢ BeabletogettheknowledgeandunderstandFuzzyMeasures.Fuzzyrelationequationsbasedonsup-icompositions-fuzzyrelationequationsbasedon w¡compositions.
CO22.	V	ElectivePaper-II-Formal LanguagesandAutomataTheory	➢ Designthepushdownautomata. ➢ Comprehendthehierarchyofproblemsarisinginthe computersciences. ➢ TheStudentwillgetanideafordesigningCompilerDesign. ➢ Thestudentswillgetknowledgeaboutregularexpressionsandcomputabilitytheory ➢ Acquire a fundamental understanding ofthecoreconceptsinautomatatheoryandformallanguages. ➢ Anabilitytodesigngrammarsandautomata(recognizers)fordifferentlanguageclasses. ➢ Anabilitytoidentifyformallanguageclasses and prove language membershipproperties. ➢ Anabilitytoproveanddisprovetheorems establishing key properties offormal languagesandautomata.
CO23.	VI	Core–XIV-ComplexAnalysis	➢ Represent complex numbersalgebraicallyandgeometrically, ➢ Define and analyze limits and continuityforcomplexfunctionsaswellasconsequencesofcontinuity,

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			➢ Apply the concept and consequences ofanalyticityandtheCauchy-Riemannequationsandofresultsonharmonica ndentirefunctionsincludingthefundamental theoremofalgebra, ➢ Analyzesequencesandseriesofanalyticfu nctionsandtypesofconvergence, ➢ Evaluate complex contour integralsdirectly and by the fundamental theorem,apply the Cauchy integral theorem in itsvarious versions, and the Cauchy integralformula,and ➢ RepresentfunctionsasTaylor,powerandL aurentseries,classifysingularities and poles, find residues andevaluatecomplexintegralsusingtheresidue theorem.
CO24	VI	**Core–XVDynamics**	➢ Aknowledgeofinternalforcesandmoments inmembers. ➢ Anabilitytocalculatecentroidsandmoments ofinertia. ➢ Aknowledgeofkinematicandkineticanalysesa ndenergyandmomentummethodsforparticlesa ndsystemsofparticles. ➢ Aknowledgeofkinematicandkineticanalysesa ndenergyandmomentummethodsforrigidbodi es.
CO25	VI	**Core-XVIDiscrete Mathematics**	➢ Studentswhosuccessfullycompletethecoursew illdemonstrate thefollowing ➢ outcomes bytests,homework,andwritten reports:

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			➢ AknowledgeofRelationsandfunctions ➢ A knowledge of logical reasoning is usedinmathematicstoprovetheorems,incomputerscience toverifythecorrectnessofprogramsandtoprovetheorems in physical science to draw theconclusions.. ➢ AnabilitytofindthesolutionsofRecurrence relations. ➢ Aknowledgeoftostudyonorderingrelations.
CO26	VI	**Elective PaperGraphTheory –II**	➢ KnowledgeinGraphTheory ➢ UnderstandingthepropertiesofGraphTheory ➢ po Understanding the concept ofKuratowski'sgraph ➢ UnderstandingMatrixrepresentationofgraphs
CO27	VI	**ElectivePaper II Quantitative Aptitude**	➢ Havingsuccessfullycompletedthismodule, you will be able todemonstrateknowledgeand ➢ Theconceptofmathematicalmodelling. ➢ Themathematicaldescriptionsofsomerealsystems. ➢ Correctmethodologywhendevelopingmathematicalmodels. ➢ Skillinapplications ➢ Designinganddevelopingthesolutions

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B.Sc., Curriculum Mapping
Programme Educational Objectives vs Programme Outcome

PO PEO	PO1	PO2	PO3	PO4	PO5
PEO1	*	*		*	
PEO2		*		*	
PEO3		*			
PEO4					*

B.Sc. Curriculum Mapping

Programme Outcome vs Courses Outcome

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	*	*	*	*	*
CO2	*	*	*	*	*
CO3	*	*	*	*	*
CO4	*	*	*	*	*
CO5	*	*	*	*	*
CO6	*	*	*	*	*
CO7				*	*
CO8	*	*	*	*	*
CO9				*	*
CO10	*	*	*	*	*
CO11			*	*	*
CO12	*	*	*	*	*
CO13	*	*	*	*	*
CO14	*	*	*	*	*
CO15	*	*	*	*	*
CO16			*	*	*
CO17	*	*	*	*	*
CO18	*	*	*	*	*
CO19			*	*	*
CO20	*	*	*	*	*
CO21	*	*	*	*	*
CO22	*	*	*	*	*
CO23	*				
CO24					
CO25	*				
CO26					
CO27					

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M.ScMathematics-2020

PROGRAMMEOUTCOMES	
PO1	➢ Toapplytheknowledgeofmathematicalsciencetosolvereallife problems.
PO2	➢ Todesignthemethodologysuitabletotheproblemencountered.
PO3	➢ Toanalyseandinterpretsolutionsandgeneratenewideasbased ontheoutputs.
PO4	➢ Toinculcateresearchabilityinthemathematicalscience.
PO5	➢ Tolead,workinteamandgivepriority tothesuccessofteam.
PROGRAMSPECIFICOUTCOME	
PSO1	➢ Todevelopproblem-solvingskillsandapplythemindependentlyto problemsinpureandappliedmathematics.
PSO2	➢ Toassimilatecomplexmathematicalideasandarguments.
PSO3	➢ Toimproveyourownlearningandperformance
PSO4	➢ Todevelopabstractmathematicalthinking.

Course outcomes (Cos)-

2020M.ScMathematics

S.No	Semester	CourseCode/Name	CourseOutcome
CO1	I	**Algebra**	➢ UnderstandtheconceptofGroupTheory,RingTheory. ➢ Knowledge of LinearTransformations. ➢ AnunderstandingoftheanalysisofFields. ➢ Research . inquiry and analyticalthinkingabilities. ➢ Simplify algebraic expressions toanalyzefunctionsandgraphs. ➢ Creategraphsusingkeyfeatures. ➢ Simplify algebraic expressions toanalyzefunctionsandgraphs.
CO2	I	**RealAnalysis**	➢ KnowthemotionoftheRiemann-Stieltjesintegral; prove elementaryproperties of the Riemann integral andtheFundamentalTheoremofCalculus .

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			➢ Describe the Infinite series andInfiniteProducts,Sequencesoffunctions. ➢ An understanding of MultivariableDifferential Calculus and ImplicitFunctionsandExtremumproblem. ➢ Describefundamentalpropertiesofthereal numbers that lead to the formaldevelopmentof realanalysis ➢ Comprehend rigorous argumentsdevelopingthetheoryunderpinningrealanalysis ➢ Demonstrateanunderstandingoflimitsand how they are used in sequences,series,differentiationandintegration ➢ Cconstruct rigorous mathematicalproofsofbasicresultsinrealanalysis;
CO3	I	**Ordinary DifferentialEquations**	➢ Uponcompletingthiscoursestudentsshouldbeableto: ➢ Solve first order equations,systems of periodic coefficientsandusethesemethodstosolveapplied problems. ➢ AknowledgeofSturm-LiouvilleProblem. ➢ Understandingaboutthestabilityofstationarysolutions. ➢ Student will be able to solve firstorderdifferentialequationsutilizing the standard techniques forseparable, exact, linear,homogeneous,orBernoullicases. ➢ Student will be able to find thecomplete solution of anonhomogeneous differentialequationasalinearcombinationofthe complementary function and aparticularsolution. ➢ Studentwillbeintroducedtothe

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			complete solution of anonhomogeneous differentialequationwithconstantcoefficientsby the method of undeterminedcoefficients. ➢ Student will be able to find thecomplete solution of a differentialequationwithconstantcoefficientsbyvariationofparameters.
CO4	I	**ProgrammingInC++**	➢ ToknowtheproperlinesofC++,Encapsulation, Inheritance andPolymorphism. ➢ Toexplainthevariousdatatypes,operationsandfunctionsofC++. ➢ To know the concept ofconstructorsanddestructors. ➢ : To explain the concept ofinheritances,typesofinheritanceandpolymorphism,virtual Functions. ➢ Toexplainthetypesofstreams,format and format of input andoutputoperations. ➢ ToKnowntheproceduralandobject oriented paradigmwithconceptsofstreams,classes,functions,dataand objects.
CO5	I	**ClassicalDynamics**	Studentswhosuccessfullycompletethe course will demonstrate thefollowing outcomes by tests, homework, andwritten reports: A knowledge of mechanical systems ,virtual workEnergyandMomentum. Understanding the concept andApplicationsLagrange'sEquation.

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			➢ Have a deep understanding of themathematicalfoundationsofquantummechanics ➢ Be able to solve the Schr¨odingerequationusingvariousapproximationmethods ➢ Have a basic understanding ofrelativistic effects in quantummechanics
CO6	I	**FluidDynamics**	➢ A knowledge of TwoDimensionalandconformalmapping. ➢ Aknowledgeofsolvingproblemsinviscousflow-steady viscousflow ➢ Identifyhowpropertiesoffluidschange withtemperatureandtheiraffecton pressureand fluidflow. ➢ Describefluidpressureandits measurement. ➢ Define the relationship between pressureandelevationasitrelatestomanometers,barometers and other pressure measuringdevices. ➢ Calculateforces onaplanesubmergedinastaticfluid. ➢ Calculatebuoyancyonabodysubmergedina staticfluid. ➢ Use the general energy equation tocalculatechangesinfluidflowforcircular andnon-circularpipesforin-compressiblefluids.
CO7	I	**ResearchLed seminar**	➢ Know the emerging areas inresearch
CO8	II	**ComplexAnalysis**	➢ On completion of this unitsuccessfulstudentswillbeableto: ➢ Understand the significance ofharmonicfunctions,Reimannzeta function.

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			➢ Aknowledgeofperiodicfunctions.thewcierstrass ➢ Abilitiesinconformalmapping ➢ Studentsshouldbeabletoanalyzefunctions of a complex variableusing series expansions, using lineintegrals, using geometry, andusingpartialdifferentialequations ➢ Toexplainthemajortheoremsthatdistinguish complex analysis fromreal analysis ➢ Applycomplexanalysistocomputegeometric mappings and realintegrals.
CO9	II	**MeasureTheoryandIntegration**	➢ Tointroducetheconceptsof measure and integral with respect to a measure, ➢ Toshowtheirbasicproperties. ➢ To provide a basis for further studiesin Analysis, Probability,andDynamicalSystems. ➢ Identify,describe,andapplyemergingtechnologies in teaching and learningenvironments ➢ Demonstrateknowledge,attitudes,andskills ofdigitalageworkandlearning ➢ Plan, design, and assess effectivelearningenvironmentsandexperiences ➢ Implement curriculum methods andstrategies that use technology tomaximize student learning ➢ Develop technology-enabledassessmentandevaluationstrategies
CO10	II	MathematicalMethods	Oncompletionofthisunit

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			successfulstudentswillbeableto: Understand the significance ofCalculus of Variations. FourierTransformsandHenkelTransform. Aknowledgeoflinearintegralequations and Method ofsuccessiveapproximations. Stillnessintransformationformonefunctioninto anotherfunction Students will be able tocommunicate both orally andverbally about music of all genresandstylesinaclearandarticulatemanner (comprehension). Students will be able to analyzeandinterprettextswithinawrittencontext Studentswillbeabletojudgethereasonableness of obtainedsolutions Students will be able to evaluatetheoryandcritiqueresearchwithinthediscipline
CO11	II	**GraphTheory**	KnowledgeinGraphTheory Understanding the properties ofGraphTheory Understanding the concept ofKuratowski'sgraph UnderstandingMatrixrepresentationofgraphs
CO12	II	**Mathematical Probability**	Knowledge and understandingunderstandtheplaceofprobabilitytheory knowledge in cognitiveprocess,describethebasic probabilitytheoryandmathematicalstatistics concepts; Special abilitiesandskills. Calculatetheprobabilitiesofevents

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			withanappropriatechoiceofthemethodofcalculation; Befamiliarwiththetypes ofrandomvariables, be able write them,calculate their numericalcharacteristics; Evaluatenumericalcharacteristicsofthe sample and interpret themeanings of the parameters ofpopulation. Formulate and test hypotheses,drawtheappropriateconclusions. Understandimpotentdistribution
CO13	II	MathematicalModeling	Havingsuccessfullycompletedthismodule, you will be able todemonstrate knowledge andunderstandingof: Theconceptofmathematicalmodeling. Themathematicaldescriptionsofsomerealsystems. Correct methodology whendevelopingmathematicalmodels. Skillinapplications Designinganddevelopingthesolutions.
CO14	II	ResearchMethodology	Tofamiliarizeparticipantswithbasicof research and the researchprocess. Havebasicknowledgeonqualitativeresearch techniques Have adequate knowledge onmeasurement&scalingtechniquesas well as the quantitative dataanalysis Students gets the methodology fortheplanningandexecutionforanyscientific enquiry
CO15	II	Participation inBoundedResearch	Dotheallottedworkinresearch Learntodoreview ofliterature
CO16	III	Topology	Upon successful completion of thiscourse, the student will be able to:(Knowledgebased)distinguishamongopen andclosed setsondifferent topologicalspaces; knowthetwofundamentaltopologies:

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			discreteandindiscretetopologies. Identify precisely when a collection ofsubsets of a given set equipped with atopologyformsatopological space; Understandwhentwotopologicalspacesare homeomorphic; Identify the conceptsofdistancebetween two sets; connectedness,denseness,compactnessandseparationaxioms. explainthenotionofmetricspace usetheopenballonmetricspaces,construct the metric topology and defineopen-closedsets ofthespace.
CO17	III	StochasticProcesses	On successful completion of the course,studentsshouldbeableto: Explain fundamentals of probabilitytheory, random variables and randomprocesses. Understand the mathematical conceptsrelated to probability theory and randomprocesses Understand the characterization ofrandomprocessesandtheirproperties. Formulate and solve the engineeringproblemsinvolvingrandomprocesses. Analyze the given probabilistic modeloftheproblem. Makeprecisestatementsaboutrandomprocesses. Usecomputationaltechniquestogeneratesimulation results.
CO18	III	Advanced NumericalAnalysis	Solve an algebraic or transcendentalequationusinganappropriatenumericalmethod. Solveadifferentialequationusinganappropriate numericalmethod. Evaluateaderivativeatavalueusinganappropriatenumericalmethod. Solve a linear system of equationsusinganappropriatenumericalmethod. Calculate a definite integral using anappropriatenumerical method. Skill in finding the roots of the givenequation

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CO19	III	**Cryptography**	➢ Analyzekeyagreementalgorithmsto identifytheirweaknesses. ➢ Describetheethicalissuesrelatedtothemis useofcomputersecurity. ➢ Developcodetoimplementacryptographi c algorithm or write ananalysisreportonanyexistingsecurity product. ➢ .Cryptographic Algorithms Symmetric Encryption and MessageConfidentiality Public-KeyCryptographyandMessageAuthentic ation ➢ NetworkSecurityInternetSecurityProtoc olsandStandardsInternetAuthentication Applications WirelessNetwork Security ➢ SoftwareSecurityandTrustedSystems
CO20	III	**Alegebraic Coding Theory**	➢ Upon completion of this course,studentsshould beableto: ➢ Definechannelcapacitiesandpropertiesus ingShannon's Theorems. ➢ Construct efficient codes for data onimperfectcommunicationchannels . ➢ Generalize the discrete concepts tocontinuous signals on continuouschannels. ➢ Define and illustrate main concepts andprovefundamentaltheoremsconcerni ngerror-correcting codes given in thecourse; ➢ calculate the parameters of given codesand their dual codes using standardmatrixandpolynomial operations; ➢ encode and decode information byapplyingalgorithmsassociatedwit hwell-knowncodes; ➢ comparetheerror-detecting/correctingfacilities of given codes for a givenbinary symmetric channel;

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CO21	III	Writingforthemedia	➢ Knowtheintricacies ofMedia
CO22		ApplicableMathematicalTechniques	➢ Students using OR techniques inbusinesstoolsfordecision making ➢ StudentsdevelopAssignmentprobleman d Replacementproblems ➢ Understandtheconceptofdecisionanalysi sand game theory ➢ Studentsgetstheknowledgeaboutinterpo lation
CO23	III	BiomedicalInstrumentation	➢ Tofamiliarizestudentswithvariousmedic al equipments and their technicalaspects ➢ Tointroducestudentstothemeasurements involvedinsomemedical equipment. ➢ Abilitytounderstanddiagnosisandtherap y relatedequipments ➢ Understanding the problem and abilitytoidentifythenecessityofanequip menttoaspecificproblem
CO24	III	**GreenChemistry**	➢ Tounderstandtheenvironmentalstatusan d evolution. ➢ ToknowaboutthePollutionanditsprevent ion measures. ➢ Tofamiliarizethegreenchemistry. ➢ To learn about the bio-catalyticreactions. ➢ Tounderstandaboutthevitaminsandantio biotics
CO25	III	**InternetandWeb Design**	➢ Acquire knowledge about functionalitiesofInternet ➢ Acquire knowledge aboutfunctionalitiesofw orld wideweb ➢ Explore markup languages features andcreateinteractivewebpagesusingthe m ➢ LearnanddesignClientsidevalidation

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			usingscriptinglanguages ➢ AcquireknowledgeaboutOpensourceJavaScript libraries ➢ AbletodesignfrontendwebpageandconnectectotheBack enddatabases.
CO26	III	**InsuranceServices**	➢ Learnt the principles of Insurance andthefunctionsofLifeandgeneralinsurancesand theIRDA
CO27	III	**Counselling Psychology**	Learncounsellinganditsprocess
CO28	III	**HerbalMedicine**	➢ Developindividualised goalandplanforwellness ➢ Gatherinformationaboutpastandcurrent healthstatus ➢ Createcomprehensiveassessmentofhealth inputs
CO29	III	**Societal Project (ScaffoldResearch)**	➢ Describetheinter-linkageofinstitutionsandtheireffectsonindividuals. ➢ Explainhowsocialchangefactorsaffectsocialstructuresandindividuals. ➢ Describehowcultureandsocialstructurevaryacrosstimeandplaceand with whateffect. ➢ Identifyexamplesofspecificsocialpolicy implicationsusingreasoningabout social structuraleffects.
CO30	IV	**FunctionalAnalysis**	➢ Upon successful completion of thiscourse, the student will be able to:(Knowledgebased)distinguishamong open andclosed setson different topologicalspaces; ➢ know the two fundamental topologies:discreteand indiscretetopologies. ➢ Identify precisely when a collection ofsubsets of a given set equipped with atopologyformsatopological space; ➢ Understand when two topologicalspacesare homeomorphic; ➢ Identify the concepts of distancebetweentwosets;connectedness, denseness,compactnessandseparation

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			axioms. ➢ Researchinquiryandanalyticalthinkingabilities.
CO31	IV	**VisualProgramming**	➢ Studentscodevisualprogramsbyusing Visual Basic workenvironment. ➢ Distinguishandcomposeeventsandmethods. ➢ Distinguishandcomposeeventsandmethods. ➢ Recognizeandarrangecontrolstructures. ➢ Understanddevelopmentofapplications. ➢ Understandtheuseofvarioussystem libraries.
CO32	IV	**NumberTheory**	➢ Solveproblemsinelementarynumber theory ➢ Applyelementarynumbertheorytocryptography ➢ Develop a deeper conceptualunderstandingofthetheoreticalbasis of number theory anderyptography ➢ Researchinquiryandanalyticalthinkingabilities. ➢ findquotientsandremaindersfrominteger division ➢ applyEuclid'salgorithmandbackwardssubstitution ➢ understand the definitions ofcongruences,residueclassesandleast residues ➢ determinemultiplicativeinverses,modulo n and use to solve linearcongruences.
CO33	IV	**Combinatiorial. Mathematics**	➢ Apply Diverse Counting StrategiesToSolveVariedProblemsInvolvingStrings, Combinations,Distributions,AndPartitions, ➢ Write And Analyze Combinatorial,Algebraic, Inductive, And FormalProofsOfCombinatoricIdentities, ➢ RecognizePropertiesOfGraphsSuch As Distinctive Circuits OrTrees. ➢ WillBecomeFamiliarWith

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			Fundamental CombinatorialStructuresThatNaturally AppearInVarious Other Fields OfMathematics And ComputerScience. ➢ They Will Learn How To Use TheseStructures To RepresentMathematical And AppliedQuestions. And They Will BecomeComfortableWithTheCombinatorialTools Commonly Used To AnalyzeSuchStructures. ➢ apply mathematical concepts andprinciplestoperformnumericalandsymbolicomputations. ➢ use technology appropriately toinvestigateandsolvemathematicaland statistical problems. iii. writeclear andprecise proofs.
CO34	IV	DesignandAnalysisofAlgorithms	➢ Argue the correctness of algorithmsusinginductiveproofsandinvariants. ➢ Analyze worst-case running times ofalgorithmsusingasymptoticanalysis. ➢ Students will be able to design andconduct experiments to addressquestionsgermanetothediscipline. ➢ Students will be able to design andadminister surveys that addressquestionsappropriatetothediscipline. ➢ Students will be able to conductinterviews and focus groups thataddress questions relevant to thediscipline. ➢ Students will be able to design andexecute research plans using the majormethodologiesofthe discipline(experiments, surveys, qualitativetechniques,etc.)toanswerdisciplinaryspecificquestions. ➢ onesentenceinlengththatclearly statesthe behaviors that students should beable to demonstrate.
CO35	IV	Project	➢ Doresearchandprepareproject

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M.Sc Curriculum Mapping

Programme Educational Objectives vs Programme Outcome

Programme Outcome-PO / Programme Educational Objectives-PEO	PO1	PO2	PO3	PO4	PO5
PEO1	*				*
PEO2		*	*	*	*
PEO3	*	*	*	*	*
PEO4	*		*	*	*
PEO5	*		*	*	*

M.Sc Curriculum Mapping

Programme Outcome vs Course Outcome

Programme Outcome-PO / Course Outcome-CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1				*	*		
CO2	*		*	*	*	*	
CO3	*	*	*	*	*	*	
CO4	*	*	*	*	*	*	
CO5	*	*	*	*	*	*	
CO6	*	*	*	*	*	*	
CO7					*		*
CO8	*	*	*	*	*	*	
CO9	*	*	*	*	*	*	
CO10	*		*	*	*	*	
CO11	*	*	*	*	*	*	
CO12	*	*	*	*	*	*	
CO13				*	*	*	*
CO14				*	*	*	
CO15				*	*	*	*
CO16	*	*	*	*	*	*	
CO17			*	*	*	*	
CO18	*	*	*	*	*	*	
CO19	*	*	*	*	*	*	
CO20				*	*	*	*
CO21	*	*	*	*	*	*	
CO22	*	*	*	*	*	*	
CO23	*	*	*	*	*	*	
CO24	*	*	*	*	*	*	
CO25	*	*	*	*	*	*	
CO26	*	*	*	*	*	*	*
CO27	*	*	*	*	*	*	

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CO28	*	*	*	*	*	*	
CO29				*	*	*	*
CO30				*	*	*	
CO31				*	*	*	*
CO32	*	*	*	*	*	*	
CO33			*	*	*	*	
CO34	*	*	*	*	*	*	

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