Course Outcome

Course Outcome: Chemistry

Sem I
1. To understand periodic trends in S & P block elements.
2. To develop an ability to understand the concept of atomic structure of chemical bonding.
3. To understand basic concepts of thermodynamics & surface chemistry.
4. To understand the basic concepts of gaseous state & liquid state.

Sem II
1. To learn about basic concepts organic chemistry
2. To understand general properties of hydrocarbons & aromatic compounds.
3. To learn about thermodynamics parameters related to spontaneity of reactions.
4. To learn about structure & stability of nucleus & phase equilibrium.

Sem III
1. To develop an ability to Understand structure of molecular in terms of MO theory.
2. To understand about properties of d & f block element.
3. To understand orientation in aromatic compounds & mechanism of nucleophilic substitution reaction.
4. To learn about preparation and properties of different classes of organic compounds.

Sem IV
1. To learn about coordination chemistry and organometallic chemistry.
2. To understand concepts of oxidation- reduction and bioinorganic chemistry.
3. To learn about structure & stability of nucleus and phase equilibrium.
4. To understand concepts of electrochemistry and rotational Vibrational spectroscopy.

Sem V
1. To understand chemistry of Nitrogen based aliphatic, aromatic & heterocyclic compounds.
2. To learn about organometallic compounds and UV & IR spectroscopy.
3. To learn basic concepts of quantum chemistry and its application to MOT & VBT.
4. To understand solution chemistry, photochemistry, Raman spectroscopy and magnetic properties of substances.

Sem VI
1. To study properties of metal complexes with respect to CFT, thermodynamic and Kinetic aspects.
2. To study spectrophotometry, separation techniques and inorganic polymers.
3. To study NMR spectroscopy and biochemistry.

4. To study enolates and synthetic dyes, drugs & polymers.

M. Sc. Sem I
Paper I
1. To understand about shape , bonding and geometryusing VSEPR, CFT & MO theory.
2. To study stability & lability and reaction mechanism of transition metal complexes.
3. To study chemistry of boron hydrides.
4. To study metal-metal bonds w.r.t. halides, oxides, alkoxides and acetate clusters
Paper II
1. To learn about nature and bonding in organic molecules and reactive intermediates.
2. To study concept of stereochemistry in organic compounds.
3. To study thermodynamic & kinetic aspects in reaction mechanism along with mechanism of aliphatic nucleophilic substitution reactions.
4. To study mechanism of aromatic nucleophilic & electrophilic substitution and effect of structure on reactivity.
Paper III
1. To study basic laws of thermodynamics and relation between various thermodynamic parameters.
2. To study application of Gibb's phase rule for various equilibria.
3. To study adsorption isotherms and mass determination techniques of macromolecules.
4. To study advanced theories of chemical kinetics.
Paper IV
1. To study statistical methods for data validation.
2. To study different separation techniques.
3. To study volumetric and gravimetric analysis.
4. To study electrochemical methods of analysis.
Practical 1
1. To study preparation of inorganic complexes.
2. To study quantitative analysis by volumetric and gravimetric methods.
3. To study quantitative analysis by spectrophotometric method.
4. To study semi micro analysis of inorganic mixtures.
Practical II
1. To study thermodynamic parameters such as volume contraction, CMC, molecular mass, etc.
2. To study kinetics of various reactions.
3. To study conductometric titrations and ph determination potentiometrically.
4. To construct and study phase diagrams.
Seminar
To develop communication and presentation skills.
M. Sc . II

Paper I
1. To study electronic spectra and magnetic properties of transition metal complexes.
2. To study reaction mechanism of transition metal complexes.
3. To study chemistry of metal carbonyls.
4. To study chemistry of metal nitrosyls.

Paper II
1. To study rection mechanism of addition reaction of C-C & C-hetero atom multiple bonds.
2. To study mechanism of molecular rearrangement and elimination reactions.
3. To study free radical mechanism of different name reactions.
4. To study concept of green chemistry.

Paper III
1. To study basics of quantum mechanism and application of Schrodinger equation to simple system.
2. To study thermodynamics of ideal & non-ideal systems along with non-equilibrium thermodynamics.
3. To study concept of solid state chemistry.
4. To study concept of statistical thermodynamics and nuclear chemistry.

Paper IV
1. To study sampling, sample treatment, detection & quantification and stoichiometry.
2. To study modern chromatography techniques.
3. To study spectrophotometry, colorimetry and flame photometry.
4. To study electrochemical methods of analysis.

Practical I
1. To study separation and identification of binary mixtures.
2. To study purification of compound by different techniques.
3. To study single stage organic preparations.
4. To study two stage organic preparations.

Practical II
1. To study calibration of glassware.
2. To study volumetric and gravimetric analysis.
3. To study qualitative separation techniques.
4. To study electroanalytical techniques

Seminar
To develop communication and presentation skills.

M. Sc. III sem

Paper I
1. To study concepts of photochemistry and various photochemical reactions.
2. To study electrocyclic, cycloaddition and sigmatropic reactions.
3. To study and oxidation abd reduction reactions.
4. To learn about chemistry of P, S, Si and B compounds.

Paper II
1. To study chemistry of terpenoids and porphyrins.
2. To study classification, constitution of alkaloids and prostaglandins.

3. To study isolation, classification, constitution of steroids and plant pigments.
4. To study chemistry of biomolecules.

Paper III
1. To study nomenclature, classification of polymers and different types of polymerization.
2. To study different methods of molar mass determination.
3. To learn about different physical characteristics.
4. To study synthesis and application of commercial polymers.

Paper IV
1. To understand symmetry elements and operations and other aspects of group theory.
2. To study basic principle and application of Mass and Massbauer spectroscopy.
3. To study basic principle and application of rotational and ESR spectroscopy.
4. To study basic principle and application of IR and Raman spectroscopy.

Practical I
1. To study estimation of different functional groups in organic compounds.
2. To study estimation of vitamins, carbohydrates, etc.
3. To study isolation of organic compounds from natural sources.
4. To study separation and identification of ternary mixtures.

Practical II
1. To study synthesis of polymer by condensation polymerization
2. To study synthesis of polymer by bulk polymerization
3. To study synthesis of polymer by emulsion polymerization
4. To study characterization of polymer.

M. Sc. IV sem
Paper I
1. To study mechanism of name rections involving cabanion intermediate.
2. To study application of organometallic reagents and transition metals in organic synthesis.
3. To study stereochemistry of carbohydrates and protection & deprotection chemistry.
4. To study design of synthesis based on retrosynthetic approach.

Paper II
1. To study basics of enzyme chemistry and mechanism of enzyme action.
2. To understand main synthetic routs and reactivity of various hrterocyclic & bioactive compounds.
3. To study chemistry of nucleic acid, lipids and vitamins.
4. To study classification, structure and application of dyes and drugs.

Paper III
1. To study different type of polymerization.
2. To study different techniques of polymerization
3. To study characterization of polymers by spectral and thermal methods.

4. To study special applications of polymers.

Paper IV

5. To study basic principle and application of UV-Visible & photoelectron spectroscopy.
6. To study basic principle of NMR spectroscopy.
7. To study application of NMR, spectroscopy and structure determination of organic molecule by using different spectral methods.
8. To study basic principle and application diffraction techniques.

Practical I

1. To study quantitative estimation based on classical techniques.
2. To study quantitative estimation based on instrumental techniques.
3. To study two stage organic preparations.
4. To study three stage organic preparations.

Project

1. To survey literature for the topic of the project.
2. Learn to apply theoretical knowledge to solve the problem.
3. Learn to handle the instruments as per the requirement of project.
4. Learn to use ICT tools to prepare and present the project report effectively.

Department of BOTANY		
Class	**Course**	**Course Outcomes (On Completion of Course Students will be able to)**
B. Sc. Sem I	PAPER-I: Viruses, Prokaryotes & Algae PAPER-II Fungi, Lichen, Plant Pathology & Bryophyta	• Understand the diversity, morphology, structure, reproduction and life cycle of Viruses, Bacteria, Algae, Fungi and Bryophytes. • Understand the Economic Importance of Viruses, Bacteria, Algae, Fungi and Bryophytes. • Understand the scope and importance of Lichen and plant pathology. • Understand the handling of Compound microscope and temporary mount slide preparation
B. Sc. Sem II	PAPER-I: Pteridophyta & Gymnosperms PAPER-II Palaeobotany & Morphology of Angiosperms	• Understand the morphological diversity, economic importance and life cycles of Pteridophytes and Gymnosperm. • Know the scope of Paleobotany, types of fossils and geological time scale. • Understand the vegetative and reproductive characters of angiosperm plant body • Understand the temporary mount slide preparation of pteridophytic & Gymnosperm material as well morphological description of leaf & flower.
B. Sc. Sem III	PAPER-I Angiosperm Taxonomy PAPER-II Cell Biology, Plant Breeding& Evolution	• Understand the origin of Angiosperm, classification of angiosperm modern trends in Angiosperm taxonomy. • Understand the distinguishing features and economic importance of some Angiosperm families. • Understand Cell wall, Plasma membrane, other Plant Cell organelles,cell division and Chromosome structure. • Know about the techniques of plant breeding, importance of Bio-statistic • Understand the technique of plant description in technical language and semipermanent smash or smear preparation for cell division study.
B. Sc. Sem IV	PAPER-I Angiosperm Anatomy & Embryology PAPER-II Genetics & Molecular Biology	• Understand the various tissue types, typical primary and secondary internal structure of plant parts. • Understand microsporogenesis and megasporogenesis, double fertilization, endosperm and embryo types. • Learn the basics of genetics and molecular biology viz Mendelism, Structure of DNA, Mutation, genetic code, Gene expression etc

		· Learn temporary and permanent mount Slide preparation along with proving of Mendels laws using coloured beads.
B. Sc. Sem V	PAPER-I Biochemistry & Plant Physiology-I PAPER-II Plant Ecology I	· Understand the properties and roles of Carbohydrates, lipids and proteins along with basics of Enzymology
		· Understand the mechanisms of Plant physiology such as photosynthesis, Respiration, Plant water relation, Mineral nutrition, etc
		· Understand about the basics of Plant Ecology and phytogeography
		· Learn about the techniques useful in plant physiology and plant ecology
B. Sc. Sem VI	PAPER-I Plant Physiology- II& Biotechnology PAPER-II Plant Ecology- II, Techniques & Utilization of Plants.	· Understand the concepts of Plant Growth Regulators, plant movements, photoperiodism and plant defense.
		· Know about the basics of Plant Tissue Culture along with Concepts of Genetic Engineering including Agrobacterium mediated gene transfer etc.
		· Understand the concepts of pollution, adaptation, natural resources along with some biotechniques like SDS PAGE, SEM, TEM and Chromatography, other plant resources
		· Learn the working of Some instruments useful in Botany laboratory.
M. Sc. Sem I	Paper I: Microbiology, Algae and Fungi Paper II: Bryophytes & Pteridophytes Paper III: Paleobotany and Gymnosperms Paper IV: Cytology and Genetics	Have a comprehensive knowledge on diversity of plant kingdom with · focus on Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperms and Paleontology
		· Understand the salient features of classification, diversity and Life cycle of Microbes, Algae and Fungi, economic importance, evolution of Bryophytes, Pteridophytes and Gymnosperms.
		· Economic importance and special characteristics of the specified examples under each category.
		· Understand the classical and advanced concepts of Cytology and genetics.
		· Learn the skill on preparation of herbarium and microslides for identification

Course-Outcomes -PHYSICS

As per the R.T.M. Nagpur University syllabus our college is running three Year Degree Course comprising of six semesters.

Course-Outcomes of B. Sc . I : Sem I
Upon completion of this course students are able to :
1. Perform e experiment with skill & accuracy.
2. Know the vocabulary and concepts of physics as it applies to: Principles of Electric Fields,   Gauss's Law, Electric Potential, Capacitance and Dielectrics.
3. Describe the methodology of science and the relationship between observation and theory.
4. Experience and understand basic physical fundamentals and the key vocabulary to describe   them: kinematics, dynamics, work and energy, rotations, gravitation, heat and thermodynamics, fluids.

Course-Outcomes of B. Sc . I : Sem II
Upon completion of this course students are able to :
Participate in the methodology by performing laboratory exercises.
1. Know the Current and Resistance, Direct Current Circuits, Magnetic Fields, Sources of Magnetic Fields, Faraday's Law, Inductance, Alternating Current Circuits, and Electromagnetic Waves.
2. Solve mathematical problems involving electric and magnetic forces, fields, and various electro-magnetic devices and electric circuits.
3. Knows fundamental theories that explain the origin and evolution of the universe and planetary systems and properly use terminology that astronomers use to describe the properties of the stars and planets.
4. Apply principles of physics to astronomical objects.

Course-Outcomes of B. Sc . SEM III :
Upon completion of this course students are able to :
1. Express complex physical systems in a mathematical form that can be solved using methods taught in the course.
2. Experience the diverse applications of the wave equation.
3. Understand basic concepts and mathematical methods of solid state physics.
4. Practice problem solving by using selected problems in solid state physics.

Course-Outcomes of B. Sc . SEM-IV :
Upon completion of this course students are able to :
1. Explore important connections between theory, experiment, and current applications.
2. Develop a basis for future learning and work experience.
3. Develop an understanding of the principles of optics.
4. Develop problem solving methods that will include mathematical as well as numerical computations and solutions.

Course-Outcomes of B. Sc . SEM V :
Upon completion of this course students are able to :
1. Organize a presentation on the application of modern physics to modern technology.
2. Describe the relationship between modern physics and other disciplines such as nano-science & nano- technology, and in technology such as lasers and superconductors.

3. Develop and communicate analytical skills in subatomic physics.
4. Develop familiarity with nuclear and particle physics, facilitating informed decisions as students pursue research projects, internships, careers, and graduate study

Course-Outcomes of B. Sc . SEM VI :
Upon completion of this course students are able to :
1. Be able to use thermal and statistical principles in a wide range of applications.
2. Learn a variety of mathematical and computer techniques.
3. Learn the mathematical tools needed to solve quantum mechanics problems. This will include complex functions and Hilbert spaces, and the theory of operator algebra. Solutions of ordinary and partial differential equations that arise in quantum mechanics will also be studied.
4. Develop problem solving methods that will include mathematical as well as numerical computations and solutions.
5.

Course-Outcomes of M. Sc . Two Year Degree Course
M.Sc Sem 1
On completion of the course student will be able to
Mathematical physics
1. Employ conceptual understanding to make predictions, and then approach the problem mathematically.
2. Basic Skills necessary for the application of Mathematical Method in physics developed in students.
3. To solve ordinary second order differential equations important in the physical sciences
4. To solve physically relevant partial differential equations using standard method like Separation of variable , series expansion and integral Transform.

Complex Analysis and Numerical Method
1 . Demonstrate the ability to integrate knowledge and ideas of complex differentiation and integration in meaningful manner and use appropriate techniques to solve related problems.
2. Operate with complex numbers ,use the complex derivative functions ,analytic functions.
3. Demonstrate the knowledge of integration in complex plane.
4. To use the numerical methods in modern scientific computing.

Electronics
1. Demonstrate knowledge of basic Circuits such as filters ,signal generators, etc.
2. Analyze the characteristics of different electronic devices such as diodes, transistors ,etc and simple circuits like rectifier, amplifier ,etc.
3. Contrast and compare digital representation of information with the analog representation.
4. Solve mathematical Problems involving electric circuits.

Electrodynamics
1. Understand the origin of Maxwell's Equations in magnetic and Dielectric Media.

2. Gain confidence in their ability to apply mathematical methods to understand electromagnetic problems to real life situations.
3. Derive continuity conditions on electromagnetic fields at boundaries.
4. Obtain scalar and vector potential equations in presence of sources.

Practical I Sem I
1. Design power supply of any voltage using regulated IC.
2. Understand the operation of basic electronic components such as diodes , capacitor, LED ,etc.
3. Explain basic circuits concepts and responses
4. Understand the concept of alternatind current and direct current and their application in circuits and devices.

Practical II Sem I
1. Learn the concept of fundamentals of computer, Arithmetic and logic gates.
2. Digitalize one's ideas.
3. To code for any idea in C / C++ language.
4. To become good programmer .

Seminar
1. To Present confidently their views and thoughts in front of other.

M.Sc Sem II
On completion of the course student will be able to
Quantum physics I
1. Understand and explain the difference between quantum mechanics and classical mechanics.
2. Understand the idea of wavefunction.
3. Understand the uncertainity relation and apply it to real world.
4. Solve schrodinger euation for simple potential.

Stastical Physics
1. Understand how statistics of the microscopic world can be used to explain the thermal feature of macroscopic world.
2. Use thermal and statistical principles in a wide range of applications.
3. Define and discuss the concept of microstate and macrostate of model system.
4. Apply the fermidirac distribution to the calculation of thermal properties of metals.

Classical Physics
1. Have a deep understanding of Newton''s laws.
2. Understand the foundations of chaotic motion.
3. Demonstrate knowledge of the dynamics of system of particles .
4. To solve the equation of motion for complicated mechanical systems using the Lagrangian and Hamiltonian formulation.

Electrodynamics II
1. Derive electromagnetic wave solutions and propagation in dielectric and other media .
2. Understand the transport of energy and Poynting vector
3. Understand the term radiation zone and derive angular distribution of and power emitted by dipole.
4. Calculate reflection and transmission coefficients for waves at dielectric boundaries.

Practical I Sem II

On completion of this student will be understand

1. Understand the concept of simulation based on C++ Programme
2. Able to handel the thermocouple and understand there uses to determine the temperature.
3. Able to determine dielectric constant property of electrical insulating material.
4. Perform a different programs based on c++.

Practical II Sem II

1. Student will understand how the resistivity of semiconducting material is determined.
2. Able to calculate the specific heat of a material.
3. Understand the concept of hall effect and application of it.
4. Understand the concept of laser and study of diffraction of laser by usin thin wire or transmission grating.

Seminar
1. To Present confidently their views and thoughts in front of other.

M.sc sem III

Solid state physics

After completion of course students will be able to

1. Understand basic concepts and mathematical methods of solid state physics.
2. Practice problem solving by using selected problems in solid state physics.
3. To understand how the radiation interact with the matter.which is used to determined the quantification and identification of element.
4. To study of solid material result from their atomic scale properties on the basis of material science.

Material science I

1. Learn about the properties of material and application of properties of matter.

2. Able to understand how the physical properties of metals, ceramics polymers and composites are correlated with their internal structure.

3. Able to understand how processing of the materials affects their properties and performance.

4. Learn about how material processing,and the different states of the dynamical system.

Quantum mechanics II

1. Develop problem solving methods that will include mathematical as well as numerical computations and solutions.

2. Understand the nature at the smallest scales of energy levels of ato,s and subatomic particles.

3. Learn about the mathematical methods for finding an approximate solution to a problem , by starting from the exact solution of a related simpler problem.

4. Practice problem solving by different method to find the different energy states.

Nano science

1. Interaction of radiation with matter and the study of quantum mechanical behaviour of material.

2. Develop a skill to undertand the study of Synthesis and characteristic study of a material and how the nano material can form by using different synthesise method.

3. Learn about the properties of nano sized particle and how enhance their properties   for the application purpose.

4. Learn about the different characterization techniquies,to understion the different properties of material.

On completion of practical student will able
Practical I Sem III
- To study and construct different crystal structure.
- To determine Planck's constant and Rydberg constant.
- To Study of line spectra.
- Determine Dissociation Energy of Iodine Molecule by photography of the absorption band of Iodine in the visible region.

Practical II Sem III
- E/m of electron by Thomson's method.
- To find thermal conductivity various material.
- To find magnetoresistance using hall effect concept.
- To find the resistivity of various semiconducting materials

Seminar

1. To Present confidently their views and thoughts in front of other.

M.sc sem IV

Nuclear physics

1. Study of atomic nuclei and their constituents and interactions.

2. Develop and communicate analytical skills in subatomic physics.

3. Develop familiarity with nuclear and particle physics, facilitating informed decisions .

4. Acquire knowledge in the content areas of nuclear and particle physics, focusing on concepts that are commonly assessed on the physics subject GRE.

Solid state physics

1. Able to understand interaction forces and bonds,order and disorder.

2. Have a basic knowledge of crystal systems and spatial symmetries.

3. Able to understand the fundamental principle s of semiconductors, including pn-junction, and be able to estimate the charge carrier mobility and density.

4. Understand the basic models of magnetism and the importance of solid state physics in the modern society

Material science II

1. Ability to apply knowledge of mathematics,science, and engineering to solve problems related to material science .

2. Study of materials characterization techniques, including SEM, TEM,,HRTEM,NMR,X-Ray diffraction.

3. Understand the corrosion property of material.

4. Get the knowledge of different synthesis method for the preparation of material.

Experimental techniques

1. Deep study of electromagnetic radiation and synthesis of different types of counters. For the study of radiation.

2. Students able to understand the different thermal analytical techniques for the study of material.

3. Understand the application of different characterization techniques.

4. Have a basic knowledge of synthesis and application of different types of sensor used in daily life.

Practical I Sem IV

1. For the measurement of resistivity of a semiconductor by four probe method at two different temperatures and determination of band gap energy.
2. For the Measurement of Hall coefficient of given semiconductor: identification of type of semiconductor and estimation of charge carrier concentration.
3. To perform Random decay of nuclear disintegration using d
4. To determine dielectric constant.

Project

1. To perform snythesis of nanomaterials by sol-gel method.
2. To perform snythesis of nanomaterial by combustion method.
3. For Electrical characterization of nanostructured materials.
4. For Characterization of nanomaterials using SEM/TEM.
5. To design various electronic project using dealing with real life situation.

Seminar

1. To Present confidently their views and thoughts in front of other.

Class	Course	Course Outcomes
B.Sc Sem I	Non-Chordate-I	1. Helps to understand the phylogenetic importance of different phyla in evolution 2. Understand the economic importance of phylla
	Environmental Biology	1. To create Environment awareness which helps them to think about environmental conservation 2. It will help them to think over the serious issues such Global warming, Ozone depletion etc
B.Sc Sem II	Non-Chordate-II	1. To understandphylogeny ofNonChordateanimals. 2. Tostudytheexternalaswellasinternalcharactersofnon-chordates.
	Cell Biology	1. Knowledge of Cell structure and function helps in understanding the metabolic processes of cells. 2. Understanding the cell cycle and know the importance of various cells in body of organisms
B.Sc Sem III	Chordate-I	1. Helps in studying comparative anatomy of vertebrates dealing with the development of various systems. 2. To understand the basic concept about chordates
	Generics	1. It will give knowledge regarding Nature and Function of Genes. 2. Help to understand the processes of inheritance and Natural Selection
B.Sc Sem IV	Chordate-II	1. Ability to understand the Classification various classes of phylum Chordate e.g Reptiles, Aves and

Class	Course	Course Outcomes
		Mammals
		2. To study and understand the external as well as internal characters of various class.
	Molecular Biology and Immunology	1. It gives in-depth knowledge of biological processes at the sub cellular and molecular level.
		2. It Helps in understanding various line of defence and their potential use in vaccination.
B.Sc Sem V	General Mammalian Physiology	1. Helps them to have understanding about various physiological processes. 2. It will help to understand working of different organs such as Human heart, Kidney , Ovaries ,Testes etc
	Applied Zoology- I Economic Entomology and Aquaculture	1. Toawarethestudentsabouttheeconomicimportant fieldsofApiculture, Lac culture and Seri culture 2. Compulsory visit to the Api Culture and Lac Culture Industry gives more knowledge to the students.
B.Sc Sem VI	General Mammalian Physiology - II	1. Helps them to understand various reproductive systems along with use of various contraceptives. 2. Helps them to understand synthesis and role of various hormones and its effect on human health.
	Applied Zoology-II	1. Study of Microtechnique and Biotechnique helps in the development basic practical skills commonly used in biological sciences. 2. Basic of Bioinformatics and Biostatistics helps them to analyse the scientific data.

DEPARTMENTOFMATHEMATICS

Program Specific Outcome:
 UG
- learntosolveimproperintegrals.
- useofLinearequationsforsolvinganydifferentialequations
- understandvariousproblemsrelatedwithplanargraphs.
- UnderstandConceptsofMatricesandlinearequations.
- learnpropertiesofinverseLaplacetransforms

Class	Course	Course Outcomes
	Sem I	• Understandingofoperationsonmatrices
		• Understandingtheconceptofinverseofamarix
		• Matricesareusedinsolvinglinearequations.
		• Linearequationsarevitalforsolvinganydifferentialequatio

		ns
	Sem II	· Itisusedinalmostallbranchesofengineering.
		· Itisasciencethatdealswithrateofchange.
		· Applicationsofdifferentiationincludemeasuringvelocity, acceleration,etc.
		· ApplicationsofIntegrationincludeestimatingareas,volumes,etc.
	Sem III	· Understandingthechangeoforiginandchangeofscale.
		· Learnvariousformsofstraightlines.
		· Learnaboutvariousconicsections.
		· ItisusedinMechanicsandAstronomy.
	Sem IV:	· Itisusedtosolvebothordinaryandpartialdifferentialequations.
		· Applicationsareinallbranchesofengineering.
		· TolearnpropertiesofLaplacetransforms.
		· TolearnpropertiesofinverseLaplacetransforms.
	Sem V	· Tounderstandthenecessityofdifferentialequations
		· Tolearnaboutformingdifferentialequationsfromphysical situations
		· Toknowvarioustypesofdifferentialequations
		· Topracticemethodsofsolutionforvarioustypesofdifferentialequations.
	Sem VI	· Toknowaboutnumbersystem
		· Tolearndivisionalgorithmanditsapplication
		· Toknowaboutcongruenceclasses
		· TounderstandthefamousFermat¨stheorem.

Course Outcomes –Comp Sc

For BCA Course
Our graduates will have
 a) The necessary technical, scientific as well as basic managerial and financial procedures to analyze and solve real world problems within their work domain
 b) Clarity on both conceptual and application oriented skills in commerce, Finance & Accounting and IT Applications in Business context.
c) Improved communication and business management skills, especially in providing tech support.
 d) Awareness on ethics, values, sustainability and creativity aspects.
 e) The ability and the mind set to continuously update and innovate

For the BSc in Computer Science
State that degree holders can apply their knowledge and skills, as follows:
1 Understand the multiple levels of detail and abstraction
2 Recognize the context in which a computer system may function, including its interactions with people and the physical world.
 3 Able to communicate with, and learn from, experts from different domains throughout their careers 1
4 Possess a solid foundation that allows and encourages them to maintain relevant skills as the field evolves 1,
 5 To be able to manage their own career development and advancement
6 Manage their own learning and development, including managing time, priorities, and progress
 3Have developed interpersonal communication skills as part of their project experience
3 Work effectively both individually and as members of teams 3,
4 Make effective presentations to a wide range of audiences about technical problems and their solutions
4 Encompass an appreciation of the interplay between theory and practice

For MSc in Computer Science

MSc Sem I

 CO For Paper I (Discrete Mathematics)

1.Use flowcharts and pseudocode to represent Boolean conditions.
2.Apply the concept of nesting conditions to computer programs.

Difference between *permutation and combination* Different cases of permutation such as word formation Different cases of combination such as selection of a team Application of P and C to derive more formulae

CO For Paper II(Programming in Java)

Distinguish between Java Applications and Java Applets.

Write *applet* programs that can load images and play sound.

Explain the limitations of constructors in *applet* programs.

Applications and Applets Example : Passing Parameters to Applets

CO For Paper III(Digital Electronics and Microprocessor)

Flip Flop

Describe the action of a rising-edge-triggered D-type *flip-flop*. draw a timing diagram for a D type *flip-flop* used for data transfer and as a latch;. draw a *circuit* diagram showing how a D-type *flip-flop* can be set up to form a latch

8086 Microprocessor

To understand basic architecture of 16 bit and 32 bit *microprocessors*. 2. ... Write programs to run on*8086 microprocessor* based systems. 2. Design system using memory chips and peripheral chips for 16 bit *8086 microprocessor*

CO For Paper IV

The *objectives* of normalization beyond 1NF (first *normal form*) were stated as follows by Codd: To free the collection of relations from undesirable insertion, update and deletion dependencies;; To reduce the need for restructuring the collection of relations, as new types of data are introduced,

The Entity-Relationship(ER) modeling to develop a conceptual model of data. ❖ How to organize data required in an application as relations. ❖ The need for normalizing relations. ❖ The various *normal forms* and their relevance.

CO For Practical I

1.A practical exposure to what is learned and what is practiced in Discrete mathematics and Programming in Java.

2. It will give enough confidence to the learner to face and adapt to the changing trends and requirements of industry and academia.

CO For Practical II

1.A practical exposure to what is learned and what is practiced in Digital Electronics and Advanced in DBMS.

2.It will give enough confidence to the learner to face and adapt to the changing trends and requirements of industry and academia.

CO For Seminar

To enhance the communication and presentation skills of student.

MSc Sem II
CO For Paper V (VC++)
The students will be able to explain
1.The concepts of windows programming.
2.Write pseudo code for windows program.

CO For Paper VI (TOC &CC)
1. Define languages by abstract, recursive definitions and by regular expressions. Design a finite automaton to recognize a given regular language. Transform a language into regular expression or finite automaton or transition graph.
2. Define the phases of a typical compiler, including the front-- and back-- end.

CO For Paper VII (Computer Architecture and Organization)
1.A student should learn how to quantitatively evaluate different designs and organizations, and provide quantitative arguments in evaluating different designs.
 2.A student should be able to articulate design issues in the development of processor or other components that satisfy design requirements and objectives
CO For Paper VIII (Computer Graphics)

1.The fundamentals of the modern GPU programming pipeline; Essential mathematics in *computer graphics*; Colour and light representation and manipulation in graphics systems; Common data structures to represent and manipulate geometry.
2.Be able to distinguish the capabilities of different levels of graphics software and describe the appropriateness of each. • Be able to create images using a standard graphics API

CO For Seminar
To enhance the communication and presentation skills of student.
CO For Practical I
1.A practical exposure to what is learned and what is practiced in VC++ and TOC&CC.
2. It will give enough confidence to the learner to face and adapt to the changing trends and requirements of industry and academia.

CO For Practical II
1.A practical exposure to what is learned and what is practiced in CAO & CG.
2.It will give enough confidence to the learner to face and adapt to the changing trends and requirements of industry and academia.

MSc(Sem-III)
CO For Paper-IX(DCN)
ISDN

BROAD BAND COMMUNICATION *Course Objectives*: 1. To introduce to student concept of *ISDN*and BISDN. 2. To make student understand services and protocol of *ISDN* and BISDN 3. To introduce to student ATM and switching techniques. *Course Outcome*: Student will be able to 1. Explain the concept of *ISDN*,

Network security

Learning outcomes. After studying this course, student should be able to identify some of the factors driving the need for *network security*. identify and classify particular examples of attacks. define the terms vulnerability, threat and attack. identify physical points of vulnerability in simple networks.

CO For Paper-X(Software Engineering)

CMMI

CMM is a method to evaluate and measure the maturity of the software development process of an organizations. *CMM* measures the maturity of the software development process on a scale of 1 to 5

Software testing

Students who have completed this course would have learned

- Various test procesess and continuous quality improvement
- Types of errors and fault models
- Methods of test generation from requirements
- Behavior modeling using UML: Finite state machines (FSM)
- Test generation from FSM models
- Input space modeling using combinatorial designs
- Combinatorial test generation
- Test adequacy assessment using: control flow, data flow, and program mutations
- The use of various test tools
- Application of software testing techniques in commercial environments

CO For Paper-XI(Asp.net)

Page life cycle

When an *ASP.NET page* runs, the *page* goes through a *life cycle* of processing steps, including initialization, instantiating controls, restoring/maintaining state, running event handlers, & rendering. It's important to understand the *life cycle* so that you can write code at the right stage.

ADO.Net network security

After studying this course, you should be able to: identify some of the factors driving the need for *network security*. identify and classify particular examples of attacks. define the terms vulnerability, threat and attack. identify physical points of vulnerability in simple networks.

CO For Paper-XII(Operating System)

Operating Systems Design. *Operating System* Basics. Basic Concepts. Shells. Scheduling Algorithms for Multi-Tasking. Mutual Exclusion Principles. *System* Memory Management. Implementing File *Systems*. Competing *Operating Systems*.

MSc(Sem-IV)
CO For Paper-XIII(data mining)
Data Mining

Discover interesting patterns from large amounts of **data** to analyze and extract patterns to solve problems , make predictions of **outcomes**. Comprehend the roles that **data mining** plays in various fields and manipulate different **data mining** techniques.

OLAP

: To introduce the basic concepts of Data Warehouse and Data Mining techniques. Examine the types of the data to be mined and apply ... DataWarehouse: Basic Concepts, DataWarehouse Modeling: Data Cube and **OLAP**, DataWarehouse Design and Usage: A Business Analysis Framework for Data

CO For Paper-XIV(Artificial intelligence)

Heuristic Search

The bulk of the prior work has focussed on the former *objective* of guaranteeing that the search returns a near-optimal solution [2]. These approaches define a *heuristic function* as a dis- tance metric that estimates the cost-to-go value of a node

Games playing

Artificial intelligence in *games* is usually used for creating *player's* opponents. ... In addition to this, intelligence amplification is fully applicable to multi-*player games*. ..... Of *course*, a *learning* problem is described with attributes, and we can examine the conditional probabilities of *outcomes*

CO For *Paper-XV(Design and analysis of algorithm)*

Greedy algorithms

The student understands fundamental computer algorithms that can be organized in the following algorithmic paradigms: dynamic programming, linear programming, *greedy algorithms*, divide-and-conquer algorithms, graph algorithms, intelligent search algorithms, and --to a lesser degree--randomized algorithms

CO For Paper-XVI(Information technology)

Be able to apply knowledge of computing and mathematics appropriate to the discipline.

Be able to analyze a problem, and identify and define the computing requirements appropriate to its solution.

Be able to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

CO For Seminar

To enhance the communication and presentation skills of student.

CO For Practical

A practical exposure to what is learned and what is practiced. The strong foundation given in the core courses in different semesters will give enough confidence to the learner to face and adapt to the changing trends and requirements of industry and academia.

CO For Project

Implementation in semester – IV (which together has a weightage equivalent to almost two theory courses), the syllabus prepares a strong army of budding computer science researchers.

The syllabus designed on the firm believe that by focusing on student driven research on cutting edge and emerging trends with lots of practical experience will make the learning more interesting and stimulating.

1) Program Specific Outcome (PSos) Course Outcome (Cos) For B.Voc (Software Development)

Under the course of B.Voc (Software Development). Different Assessment Level of Student in Certificate, Diploma, Advanced Diploma and Degree Certificate of 4th,5th,6th and 7th Level of NASSCOM under Skill Development in the three year Degree program.

Sr. No.	NSQF Level	Semester	Job Role	Education Level
1	Level 4	Sem I	Junior Software Developer	Certificate
2	Level 5	Sem II	Web Developer	Diploma
3	Level 6	Sem III & IV	Master Trainer for Software Developer	Advance Diploma
4	Level 7	Sem V & VI	Software Developer	Degree

Different Job Role for Student and their advantage of assessment in Industry Job. After completion of Degree student can directly apply for job in the industry on the basis of assessment. B.voc student going to higher education like M.Voc , MBA and PGDM courses.

During their Academic Session of under graduation and post-graduation program they visited Industry of each and every semester related the syllabus of industry.

Program Specific Outcome (PSos) Course Outcome (Cos) For B.Voc

(Food Processing and Engineering)

Under the course of B.Voc **(Food Processing and Engineering)** Different Assessment Level of Student in Certificate, Diploma, Advanced Diploma and Degree Certificate of 4th,5th,6th and 7th Level of Food Industry Capacity & Skill Initiative (*FICSI*) under Skill Development in the three year Degree program.

Sr. No.	NSQF Level	Semester	Job Role	Education Level
1	Level 4	Sem I	Chemist	Certificate
2	Level 5	Sem II	Jam, Jelly technician	Diploma
3	Level 6	Sem III & IV	Baking technician and Dairy supervisor	Advance Diploma
4	Level 7	Sem V & VI	Milling Technician	Degree

Different Job Role for Student and their advantage of assessment in Industry Job. After completion of Degree student can directly apply for job in the industry on the basis of assessment. B. Voc student going to higher education like M. Voc , MBA and PGDM courses.

During their Academic Session of under graduation and post-graduation program they visited Industry of each and every semester related the syllabus of industry.