

SRI SARADA NIKETAN COLLEGE FOR WOMEN

Amaravathipudur, Karaikudi – 630 301

(Affiliated to Alagappa University)

[Accredited with “B” Grade by NAAC]

[Recognized under 2(f) & 12(B) of the UGC Act 1956]

**Program Outcomes, Specific Outcomes
and Course Outcomes**

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

PROGRAMME OUTCOMES : B. Sc. Computer Science

After successful completion of three year degree program in Computer Science a student should be able to

- To develop problem solving abilities using a computer
- To build the necessary skill set and analytical abilities for developing computer based solutions for real life problems.
- To imbibe quality software development practices.
- To create awareness about process and product standards
- To train students in professional skills related to Software Industry. PO-6 To prepare necessary knowledge base for research and development in Computer Science
- To help students build-up a successful career in Computer Science

PROGRAMME SPECIFIC OUTCOMES : B. Sc. Computer Science

- Demonstrate understanding of the principles and working of the hardware and software aspects of computer systems.
- Design, implements, test, and evaluate a computer system, component, or algorithm to meet desired needs and to solve a computational problem.
- To Enhance skills and adapt new computing technologies for attaining professional excellence and carrying research.

COURSE OUTCOME

Computer Network

- Understand different types of networks, various topologies and application of networks.
- Understand types of addresses, data communication.
- Understand the concept of networking models, protocols, functionality of each layer.
- Learn basic networking hardware and tools.

Internet Programming

- Learn Core-PHP, Server Side Scripting Language
- Learn PHP-Database handling.

Programming in Java

- To learn Object Oriented Programming language
- To handle abnormal termination of a program using exception handling
- To create flat files
- To design User Interface using Swing and AWT

Operating System

- To understand design issues related to process management and various related algorithms
- To understand design issues related to memory management and various related algorithms
- To understand design issues related to File management and various related algorithms

LabCourse: Programming in Java

- To understand design issues related to process management and various related algorithms
- To understand design issues related to memory management and various related algorithms
- To understand design issues related to File management and various related algorithms

PROGRAM OUTCOMES: M.Sc.Computer Science & Information Technology

After successful completion of two year degree program in Computer Science a student should be able to;

- Able to developed the necessary learning skills and independence for further studies
- Can initiate and lead projects within the scientific field and be responsible for the work of individuals and groups
- Can communicate scientific information, challenges and findings to scholars as well as to general audience
- Are capable of presenting and describing scientific issues and research findings in a foreign language
- .Can make decisions in an independent, professional manner and support them
- Can decide which analytical methods and complex theories are applicable
- Can communicate statistical information.

Program Specific Outcomes

- Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity.
- Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.

PROGRAMME OUTCOMES: B. Sc. PHYSICS

After successful completion of three year degree program in physics a student should be able to;

- Demonstrate, solve and an understanding of major concepts in all disciplines of physics.
- .Solve the problem and also think methodically, independently and draw a logical conclusion.
- Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Physics experiments

Programme Specific Outcomes

- Gain the knowledge of Physics through theory and practical's.
- Understand good laboratory practices and safety.

Course Outcomes B. Sc Physics:

Solid State Physics

- Know the principles of structures determination by diffraction.
- To understand the principles and techniques of X-rays diffraction.
- Know the fundamental principles of semiconductors and be able to estimate the charge carrier mobility and density

Atomic and Molecular Physics

- To know the Rutherford Experiment of atom. CO-2. To understand molecular spectra of atom.
- To study the Raman spectra. CO-4. To study the Zeeman Effect.
- To understand the Quantum Numbers.

Nuclear Physics

- Know the properties of nucleus likes binding energy, magnetic dipole moment and electric quadruple moment
- To understand the concept of radioactivity and decays law CO-3. To study achievement of Nuclear Models of Physics and its limitations
- To give an extended knowledge about nuclear reactions such as nuclear fission and fusion
- To understand the basic concept of Particle Physics

Elements of Materials Science

- To study the Mechanical, Electrical and Thermal Properties of material.
- Discuss the type of Phase Diagrams.
- Know the solid solution and types of solid solution.
- Understanding the Point Defect, Line Defect with example. CO-5. Study the Diffusion Mechanism.
- Know the difference between Elastic and Plastic Deformation. CO-7. To understand the Polymer Vulcanization of rubber.
- Know the AX-type crystal structure – eg. NaCl, ZnS etc.

Electronics

- Know the special purpose Diode.
- To study the Transistor Amplifier.
- To understand the FET, JFET, MOSFET.
- To study the Operational Amplifier and their types.
- To know the Timer IC- 555 and its classification.
- To study the Regulated Power supply.
- To understand the Sequential Logic Circuits.

PROGRAMME OUTCOMES: B. Sc. Mathematics

After successful completion of three year degree program in physics a student should be able to

- Think in a critical manner.
- Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.
- Formulate and develop mathematical arguments in a logical manner.
- Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses.
- Understand, formulate and use quantitative models arising in social science, business and other contexts.

Course Outcome of B. Sc. Mathematics

Course Outcome of Analytical Geometry 3D and Vector Calculus

Students will able to

- Describe the various forms of equation of a plane, straight line, Sphere, Cone and Cylinder.
- Find the angle between planes, Bisector planes, Perpendicular distance from a point to a plane, Image of a line on a plane, Intersection of two lines
- Define coplanar lines and illustrate
- Compute the angle between a line and a plane, length of perpendicular from a point to a line
- Define skew lines
- Calculate the Shortest distance between two skew lines
- Find and interpret the gradient curl, divergence for a function at a given point.
- Interpret line, surface and volume integrals
- Evaluate integrals by using Green's Theorem, Stokes theorem, Gauss's Theorem

Course Outcome of Theory of Equation, Theory of Numbers and Inequalities

Students will able to

- Describe the relation between roots and coefficients
- Find the sum of the power of the roots of an equation using Newton's Method.
- Transform the equation through roots multiplied by a given number, increase the roots, decrease the roots, removal of terms
- Solve the reciprocal equations.
- Analyse the location and describe the nature of the roots of an equation.
- Obtain integral roots of an equation by using Newton's Method.
- Compute a real root of an equation by Horner's method.
- Illustrate the Division and Euclidean Algorithm
- Describe the properties of prime numbers
- Show that every positive integer can be expressed as product of prime power in unique way
- Write a formula for the number of positive integers less than n that are relatively prime to n
- Define congruences and describe the properties of congruences
- Find the Sum, product of all the divisors of N .
- Find the smallest number with N divisors.
- Solve the system of linear congruences.
- State Chinese Remainder Theorem, Fermat's and Wilson's theorem.

Course Outcome of Complex Analysis

Students will able to

- Compute sums, products, quotients, conjugate, modulus, and argument of complex numbers.
- Calculate exponentials and integral powers of complex numbers.
- Write equation of straight line, circle in complex form
- Define reflection points, concyclic points, inverse points
- Understand the significance of differentiability for complex functions and be familiar

with the Cauchy-Riemann equations.

- Determine whether a given function is analytic.
- Define Bilinear transformation, cross ratio, fixed point.
- Write the bilinear transformation which maps real line to real line, unit circle to unit circle, real line to unit circle.
- Find parametrizations of curves, and compute complex line integrals directly.
- Use Cauchy's integral theorem and formula to compute line integrals.
- Represent functions as Taylor, power and Laurent series.
 - Classify singularities and poles.
- Find residues and evaluate complex integrals, real integrals using the residue theorem.

Course Outcome of **Modern Analysis**

Students will able to

- Define countable, uncountable sets
- Write Holders and Minkowski inequality
- Define and recognize the concept of metric spaces, open sets, closed sets, limit points, interior point.
- Define and Illustrate the concept of completeness
- Determine the continuity of a function at a point and on a set.
- Differentiate the concept of continuity and uniform continuity
- Define connectedness
- Describe the connected subset of \mathbb{R} .
- Define compactness
- Characterize the concept of compactness in metric space.
- Construct rigorous mathematical proofs of basic results in modern analysis

Course Outcome of **Statics**

Students will able to

- Define Resultant, Component of a Force, Coplanar forces, like and unlike parallel forces, Moment of a force and Couple with examples.
- Prove the Parallelogram of Forces, Triangle of Forces, Converse of the Triangle of Forces, Polygon of Forces, Lami's Theorem, Varignon's theorem of moments.
- Find the resultant of coplanar couples, equilibrium of couples and the equation to the line of action of the resultant.
- Discuss Friction, Forces of Friction, Cone of Friction, Angle of Friction and Laws of friction.
- Define catenary and obtain the equation to the common catenary.
- Find the tension at any point and discuss the geometrical properties of a catenary.

Course Outcome of **Dynamics** Students will able to

- Define Projectile, impulse, impact and laws of impact.
- Prove that the path of a projectile is a parabola.
- Find the direct and oblique impact of smooth elastic spheres.
- Define Simple Harmonic Motion and find its Geometrical representation.
- Find the Composition of Simple Harmonic Motion and the differential equation of a central orbit.
 - Find the law of force if the orbit is given and vice versa.

Course Outcome of **Linear Algebra**

Students will able to

- Define Vector Space, Quotient space Direct sum, linear span and linear independence, basis and inner product.
- Discuss the linear transformations, rank, nullity.
- Find the characteristic equation, eigen values and eigen vectors of a matrix.
- Prove Cayley- Hamilton theorem, Schwartz inequality, Gramschmidt orthogonalisation process.
- Solve the system of simultaneous linear equations.

Course Outcome of **Numerical Analysis**

Students will be able to

- Define Basic concepts of operators Δ, E, ∇
- Find the difference of polynomial
- Solve problems using Newton forward formula and Newton backward formula.
- Derive Gauss's formula and Stirling formula using Newton forward formula and Newton backward formula.
- Find maxima and minima for differential difference equation
- Derive Simpson's $1/3, 3/8$ rules using trapezoidal rule
- Find the solution of the first order and second order equation with constant coefficient
- Find the summation of series finite difference techniques
- Find the solution of ordinary differential equation of first by Euler, Taylor and Runge-Kutta methods

Course Outcome of **Operations Research**

Students will be able to

- Define nature and feature of Operations Research
- Find the replacement period of equipment that fails suddenly/gradually
- Define EOQ
- Find inventory decisions costs using deterministic inventory problems with no shortages /with shortages
- Find EOQ problems with price breaks
- Define CPM and PERT
- Define basic components of Network and find critical path
- Define queue characteristics, transient and steady state
- Define Kendall notations solution of queue models $(M/M/1):(\infty/FIFO)$, $(M/M/1):(N/FIFO)$
- Define Two persons sum games, maximin-minimax principle, saddle points.
- Find graphical solution of $2 \times n$ and $m \times 2$ games
- Find general solution of $m \times n$ rectangular games

Course Outcome of **Mathematical Statistics**

Students will be able to

- Define probability density function, probability distribution
- Derive mathematical expectation, binomial, poisson, normal distribution
- Solve the problems of large samples and small samples
- Discuss the moment generating functions, chi-square distribution
- Compute the analysis of variance, one way and two way classifications, Latin square design

Course Outcome of **Sequence and Series**

Students will able to

- Define different types of sequence.
- Discuss the behaviour of the geometric sequence.
- Prove properties of convergent and divergent sequence.
- Verify the given sequence in convergent and divergent by using behaviour of Monotonic sequence.
- Prove Cauchy's first limit theorem, Cesaro's theorem, Cauchy's Second limit theorem.
- Explain subsequences and upper and lower limits of a sequence.
- Give examples for convergence, divergence and oscillating series.
- Discuss the behaviour of the geometric series.
- Prove theorems on different test of convergence and divergence of a series of positive terms.
- Verify the given series is convergent or divergent by using different test.

Course Outcome of **Differential equations and its applications**

Students will able to

- Extract the solution of differential equations of the first order and of the first degree by variables separable, Homogeneous and Non-Homogeneous methods.
- Find a solution of differential equations of the first order and of a degree higher than the first by using methods of solvable for p , x and y .
- Compute all the solutions of second and higher order linear differential equations with constant coefficients, linear equations with variable coefficients.
- Solve simultaneous linear equations with constant coefficients and total differential equations.
- Form partial differential equations.
- Find the solution of First order partial differential equations for some standard types.
- Use inverse Laplace transform to return familiar functions
- Apply Laplace transform to solve second order linear differential equation and simultaneous linear differential equations.

Course Outcome of **Graph Theory**

Students will able to

- Describe the origin of Graph Theory.
- Illustrate different types of graph theory.
- Explain independent sets and covering sets and some basic theorems.
- Discuss degree sequences and operations on graphs.
- Explain connectedness and components and some theorems.
- Characterize tree.
- Derive some properties of planarity and Euler's formula.
- Find chromatic number and chromatic polynomials for graphs.
- Prove Five colour theorem.
- Explain basic properties of directed graphs.

Course Outcome of **Linear Programming** Students will able to

- Define basic feasible solutions, Slack and Surplus variable.
- Explain simplex method.
- Demonstrate Big-M method
- Illustrate two phase method
- Prove dual of the dual is primal.
- Interpret dual simplex method.
- Define transportation problem.
- Find a basic feasible solution to the transportation problem by using North west corner rule, Vogel's approximation method.
- Apply Modi method to solve transportation problem.
- Illustrate Assignment problem and Travelling salesman problem.

Course Outcome of **Ancillary mathematics I**

Students will be able to

- Define characteristic equation of matrices and illustrate.
- State Cayley Hamilton Theorem
- Compute inverse of a matrix using Cayley – Hamilton Theorem.
- Find Eigen values and Eigen vectors of a given matrix.
- Solve equations of the first order but of higher degree solvable by dy/dx , y , x .
- Compute complementary function and particular integral of the type e^{ax} , $\cos ax$, $\sin ax$.
- Derive expression for $\sin^n\theta$, $\cos^n\theta$ and $\tan^n\theta$, $\sin^n\theta$, $\cos^n\theta$
- Expand $\sin\theta$, $\cos\theta$, $\tan\theta$ in powers of θ
- Define hyperbolic and inverse hyperbolic functions

Course Outcome of **Ancillary Mathematics –II**

Students will be able to

- Define Moments, Skewness and Kurtosis.
- Fit a straight line, Parabola for the given data.
- Calculate the correlation coefficient for the given data.
- Compute Rank correlation for the given data.
- Find intermediate values by using Newton's forward and backward formula and Lagrange's formula.
- Apply Laplace transform to solve differential equations
- Obtain Fourier series expansions for the given functions.
- Compute Cosine and Sine series expansions for the given functions.

Course Outcome of **Statistics**

Students will be able to

- Define Moments Skewness and Kurtosis.
- Fit a straight line.
- Calculate the correlation coefficient for the given data.
- Compute Rank correlation for the given data.
- Define attributes, consistency of data, independence of data.
- Find index numbers for the given data.
- Define Probability, Conditional probability.
- Derive Baye's theorem.

Course Outcome of **Modern Algebra**

Students will be able to

- Define subgroup, center, Normalizer of a subgroup.
- Find cycles and transpositions of a given permutations.
- Prove Lagrange's theorem, Euler's theorem and Fermat's theorem
- Define cyclic groups .
- Prove a group has no proper subgroup if it is cyclic group of prime order.
- Define normal subgroups, quotient groups and index of a subgroup.
- Define homomorphism, kernel of a homomorphism, isomorphism.

- Prove Cayley's theorem , the fundamental theorem of homomorphism for groups
- Define rings , zero divisors of a ring , integral domain , field and prove theorems

DEPARTMENT OF BIOCHEMISTRY

PROGRAMME: B.Sc. BIOCHEMISTRY

PROGRAMME OUTCOMES

- The students will be able to demonstrate an understanding of fundamental biochemical principles such as the structure and functions of biomolecules and metabolic pathways.
- The students will be able to demonstrate the structure and functions of various organs of human body.
- The students will be able to demonstrate practical skills in handling biological specimens, analysis and their safe disposal.

PROGRAMME SPECIFIC OUTCOMES

- After completion of the program the students are well poised to pursue careers in academic and industry in the areas of pharmaceutical and biotechnology.
- Health care professionals for services in the fields of clinical biochemistry, laboratory management, hospital and community services.

PROGRAMME: B.A. ENGLISH

PROGRAMME OUTCOMES

- Glimpse of English Language Education in India during the later part of 18th century.
- Understanding the works of social reformists who have stirred the population on the topic
like women's emancipation.
- Creating rational approach among the student to solve the social problems caused industrialization and the urbanization.
- Creating awareness of the past history of all the sections of the society.

PROGRAMME SPECIFIC OUTCOMES

- Understanding the unique importance of English that has played a crucial role in building the modern India.
- Students understand the different social contexts and individuals which in turn helps him to create the team spirit of working.
- Students understand the real meaning and value of intellectual discipline.

DEPARTMENT OF BUSINESS ADMINISTRATION

PROGRAMME: B.B.A.

PROGRAMME OUTCOMES

- To provide adequate basic understanding about Management Education among the students.
- To evaluate different business problems using analytical and creative and integrative abilities.
- To develop and implement functional and general management skills to make strategic decisions in real era.
- To build and demonstrate Leadership, Teamwork and Social skills.
- To communicate effectively in different contexts.
- To facilitate the students to go for professional courses such as MBA.
- To inculcate entrepreneurship skill.

PROGRAMME SPECIFIC OUTCOMES

- Students will acquire and demonstrate analytical and problem solving skills Students will be able to identify characteristics and role of leaders & managers Students will acquire communication skills needed to analyze business situation in a clear, concise and coherent manner.
- Students will develop internal thinking abilities and foundations of ethical principles.
- and analyze the social, political and economic environment of business organisation.
- Recognize the need to adapt business practices to the opportunities and challenges of an evolving global environment.
- Students will be able to demonstrate progressive learning of various functional areas of Management such as Purchasing, Production, Marketing, Advertising, Finance, Human Resources.
- Students will learn relevant accounting career skills (Financial Accounting, Cost Accounting and Management Accounting) apply knowledge to their future careers in business.
- Improve their computer literacy, their basic understanding of operative system and working knowledge of accounting software (Tally) commonly used in business.
- Determine the organisational behaviour and its conflict.
- Understand the National & International trade procedures and documentations.
- Understand the rapid changes of financial services including banking and insurance sectors.
- Acquire the ability to engage in independent and lifelong learning in advanced areas of Management.

DEPARTMENT OF COMMERCE (COMPUTER APPLICATIONS)

PROGRAMME: B.Com. (COMPUTER APPLICATIONS)

PROGRAMME OUTCOMES

- Students undergoing three years Bachelor in Commerce (Computer Applications) Programme would acquire thorough knowledge of Commerce subjects along with basic computer skills required to flourish in their career.
- Programme includes various accounting courses, enables the students to gain theoretical knowledge and improves problem solving ability of the students.
- Business oriented applications like Ms-Office, Tally, DBMS, Web Technology will enable the students to start their own Small Scale software business.
- Courses of this programme provide an opportunity to undergo Professional Courses like MBA, CA, ICWA, ICS etc., and also ensures bright future in the IT fields, Software, Banks, Companies, BPOs and KPOs.
- Courses of this programme enable the students to design solutions for economic problems and design software, processes to meet the specifications with consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PROGRAMME SPECIFIC OUTCOMES

- This Programme curriculum will make the students become efficient in office automation with computers and computer software applications.
- This Programme will make the students get placed in software application jobs in the areas of Trade, Commerce, Business, Banking and Insurance etc.
- This course facilitates the students to go for professional courses like MBA, CA, ICWA, LLB etc.,
- The students will have an opportunity to get hands-on work experience through internship in Corporate Sector.

DEPARTMENT OF COMMERCE

PROGRAMME: B.Com. (COMMERCE)

PROGRAMME OUTCOMES

- Endow students with the holistic and contemporary knowledge of Business & Commerce through a fair mix of theory & practical courses
- Curriculum also focuses on imparting Life Skills and Ability Enhancement, developing socially responsible citizens capable of managing challenges in Business & Society fulfilling college's Mission

PROGRAMME SPECIFIC OUTCOMES

- Able to occupy diverse positions and strive productively towards achieving group goals in an organisation
- Capable of venturing into business as entrepreneurs and businessmen, converting their gained skills and knowledge to establish, organize, manage and develop a business effectively and efficiently
- Competent enough to occupy various professional positions by synthesizing the learned knowledge and acquired practices

DEPARTMENT OF TAMIL

PROGRAMME: B.A Tamil

PROGRAMME OUTCOMES

- To explain letters, words and grammar in the tamil language.
- To understand the history and culture.
- To explain ethnic word difference between valimikum, valimika places and in sentence making
- To sentence making.
- To learn about journalism.
- To learn about the specialty of short stories.

PROGRAMME SPECIFIC OUTCOMES

- The student will review the type and format of writing
- Remember the life style of sangam period
- Understand the heroic spirit of ancient tamil kings
- Able to evaluate the social status of women and understand divine aspects
- Be able to live life pleasing oneself and others
- Be able to compare world literature, general literature and National literature