2.6.1 PSOs and COs 2023 Onwards

Programme Specific Outcomes and Course Outcomes

Department	Programme Specific Outcomes
B.Sc. (Physics with Computer Applications)	**PSO1: Disciplinary Knowledge**: Understand the fundamental principles, concepts, and theories related to physics and computer science. Also, exhibit proficiency in performing experiments in the laboratory.
	PSO2: Critical Thinking & Problem Solving: Analyse complex problems, evaluate information, synthesize information, apply theoretical concepts to practical situations, identify assumptions and biases, make informed decisions and communicate effectively. Employ theoretical concepts and critical reasoning ability with physical, mathematical and technical skills to solve problems, acquire data, analyze their physical significance and explore new design possibilities.
	PSO3:Analytical & Scientific Reasoning: Apply scientific methods, collect and analyse data, test hypotheses, evaluate evidence, apply statistical techniques and use computational models.
	PSO4: Research related skills: Formulate research questions, conduct literature reviews, design and execute research studies, communicate research findings and collaborate in research projects.
	PSO5: Self-directed & Lifelong Learning: Set learning goals, manage their own learning, reflect on their learning, adapt to new contexts, seek out new knowledge, collaborate with others and to continuously improve their skills and knowledge, through ongoing learning and professional development, and contribute to the growth and development of their field.

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in

Programme Name: B.Sc. (Physics with Computer Applications)	Programme Code: UGPY004
Subject Code and Subject Name	**Course Outcomes**
I Year - I Semester	

Subject Code and Subject Name	Course Outcomes
100L1A **General Tamil–I**	**CO1:** சங்க இலக்கியத்தில் காணப்பெறும் வாழ்வியல் சிந்தனைகளைஅறிந்துகொள்வர்
	CO2: அற இலக்கியம் மற்றும் தமிழ் காப்பியங்களின்வழி வாழ்வியல் சிந்தனைகளைப் பெறுவர்
	CO3: பக்தி இலக்கியங்களைக் கற்பதன் மூலம் பக்திநெறியினையும், பகுத்தறிவு இலக்கியங்களைக் கற்பதன்வழி நல்லிணக்கத்தையும் தெரிந்து பின்பற்றுவர்
	CO4: மொழியறிவோடு சிந்தனைத் திறனைப் பெறுவார்
	CO5: மொழிப்பயிற்சிக்குத் தேவையான இலக்கணங்களைக் கற்பர்
100L1G **Sanskrit–I**	**CO1:** Understand the basic Sanskrit sentence structure
	CO2: To provide the glimpses of the rich Sanskrit literary tradition through reading the literary composition.
	CO3: Explain the language of this Mahakavya which is highly elaborate and polished with continual play upon words and variety of meters
	CO4: Analyse and interpret expressions of cause, effect, purpose, and opposition in Sanskrit
	CO5: Evaluate grammatical nature of verses
100L1Z **General English – I**	**CO1:** Acquire self awareness and positive thinking required in various life situations
	CO2: Acquire the attribute of empathy
	CO3: Acquire creative and critical thinking abilities
	CO4: Learn basic grammar
	CO5: Development and integrate the use of four language skills - LSRW (Listening, Speaking, Reading and Writing)
138C1A **Properties of Matter and Sound**	**CO1:** Relate elastic behaviour in terms of three moduli of elasticity and working of torsion pendulum
	CO2: Understand and appreciate the concept of bending of beams and analyze the expression, quantify and understand nature of materials

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in

	CO3: Explain the surface tension and viscosity of fluid and support the interesting phenomena associated with liquid surface, soap films provide an analogue solution to many engineering problems
	CO4: Analyze simple harmonic motions mathematically and apply them. Understand the concept of resonance and use it to evaluate the frequency of vibration
	CO5: Justify the importance of constructing buildings with good acoustics after understanding the concept of acoustics. Able to apply their knowledge of ultrasonics in real life, especially in medical field and assimilate different methods of production of ultrasonic waves
138C1B Electronics	**CO1:** Discuss the fundamental concepts involved with gates, standard representation of logic functions and arithmetic circuits. Apply De-Morgan's theorem, minimization techniques to solve and design circuits
	CO2: Understand the construction and working of various Flip-Flops and appreciate their application
	CO3: Know the principles and applications of transistors and types of transistor biasing and amplifiers
	CO4: Discuss the role of negative and positive feedback amplifiers. Explain the Constructional features, basic theory of operation and I-V characteristics of various semiconductor devices
	CO5: Classify various memory devices and their functions
138E1A Mathematics – I	**CO1:** Understand the concepts of Summation of Seri
	CO2: Understand the concepts of Cayley–Hamilton Theorem and inverse matrices
	CO3: Understand the concepts of finite differences
	CO4: Understand the knowledge about expansions, hyperbolic and inverse hyperbolic functions
	CO5: Understand the concept of Leibnitz theorem and functions of two variables
138S0A Physics for Everyday Life	**CO1:** Know where all physics principles have been put to use in daily life and appreciate the concepts with a better understanding
	CO2: Know about Indian scientists who have made significant contributions to Physics
138B1A Introductory Physics	**CO1:** Apply concept of vectors to understand concepts of physics and solve problems
	CO2: Explain the theory of error analysis and estimate the percentage of errors in the experimental values
	CO3: Demonstrate the use of mechanical, electrical and electronic instruments required for performing experiments in this course
	CO4: Differentiate the various number systems in use and do the numerical conversion

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in

	CO5: Justify the need for various semiconductor devices and understand their characteristics and working
100L1M Advanced Tamil – I	**CO1:** சமகால இலக்கியங்களின் நோக்குகள் – போக்குகள் குறித்து மாணவர்கள் அறிந்து கொள்வர்
	CO2: நாட்டுப்புற மக்களின் வாழ்வியல், அறிவாற்றல், இன்றைய நிலை ஆகியவை குறித்து சிந்திப்பர்
	CO3: தங்கள் கற்பனை வளத்தை மாணவர்கள் பெருக்கிக் கொள்வர்
	CO4: மொழியில் பிழைகள் நேராவண்ணம் எழுதக் கற்றுக்கொள்வதோடு, திறனாய்வு செய்யும் ஆற்றல்பெறுவர்
	CO5: திரைப்படம், சின்னத்திரை, தொலைக்காட்சி உள்ளிட்ட ஊடகங்களில் பாடல், இசை, எழுத்து எனப் பல்வேறு வேலைவாய்ப்புகள் பெறுவர்

I Year - II Semester	
100L2A Tamil – II	**CO1:** சிற்றிலக்கியங்களின்வழி இலக்கியச் சுவையினையும் பண்பாட்டு அறிவினையும் பெறுவர்
	CO2: புதுக்கவிதை வரலாற்றினை அறிந்துகொள்வர்
	CO3: திராவிட இயக்க இலக்கியங்களைக் கற்பதன் மூலம் மொழிஉணர்வு, இனஉணர்வு, சமத்துவம் சார்ந்த சிந்தனைகளைப் பெறுவர்
	CO4: தமிழ்மொழியைப் பிழையின்றி எழுதவும், புதிய கலைச்சொற்களை உருவாக்கவும் அறிந்துகொள்வர்
	CO5: போட்டித் தேர்வுகளில் வெற்றி பெறுவதற்குத் தமிழ்ப்பாடத்தினைப் பயன்கொள்ளும் வகையில் பயிற்சி பெறுவர்
100L2G Sanskrit – II	**CO1:** Understand and apply grammatical concepts in drafting sentences and paragraphs
	CO2: Apply the rules and regulations in handling usage of Lrtlakara and AsmadSabdah, practice exercises and identify errors
	CO3: Form an idea of the aesthetic expressions that make Sanskrit composition get the position of pride in world literature
	CO4: Demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesis in Sanskrit
	CO5: Appreciate the art of employment of Alankaras in a prose form of poetry
100L2Z English – II	**CO1:** Realize the importance of resilience
	CO2: Become good decision-makers
	CO3: Imbibe problem-solving skills
	CO4: Use tenses appropriately
	CO5: Use English effectively at the work place

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in

138C2A **Heat, Thermo dynamics and Statistical Physics**	**CO1:** Focuses to relate the laws of thermodynamics, entropy in everyday life
	CO2: Explore the knowledge of statistical mechanics and its relation
138C21 **Physics Core Practical-I**	**CO1:** Apply various physics concepts to understand Properties of Matter, set up experimentation to verify theories, quantify and analyse, able to do error analysis and correlate results.
	CO2: To perform basic experiments on characteristics of electronic devices and then get into the applications such as amplifiers, oscillators, counters and multivibrators.
138E2A **Mathematics – II**	**CO1:** To gain some knowledge in Integral Calculus and Differential Equations
	CO2: Learn the basic concepts in Laplace Transforms and Vector Calculus
938SEC2 **Astrophysics**	**CO1:** Intends to introduce principles of astrophysics describing the science of formation and evolution of stars and interpretation of various heavenly phenomena.
	CO2: Provides an understanding of the physical nature of celestial bodies along with the instrumentation and techniques used in astronomical research.
938SEC3 **Physics of Medical Instruments**	**CO1:** Exposes to instruments like ECG, EEG, EMG, medical imaging, diagnostic specialties, operation theater and its safety which will kindle interest to specialize in instrument servicing
100S2B **Advanced Tamil – II**	**CO1:** உரைநடை இலக்கியத்தின் பெருமைகளை உணர்ந்து, அதனை அன்றாட வாழ்வில் பயன்படுத்தும் திறன்பெறுவர்.
	CO2: பண்டைத்தமிழ் இலக்கியங்கள் காட்டும் சமூக, பண்பாட்டு, வாழ்வியல் முறைகளை அறிந்துகொள்வர்.
	CO3: காப்பியக் கட்டமைப்புகளை இன்றைய புதினம், திரைப்படங்கள் ஆகியவற்றுடன் ஒப்பிட்டுக்காணும் அறிவைப்பெறுவர்.
	CO4: தமிழ் இலக்கிய மரபினையும், மாற்றங்களையும் ஆய்ந்து உணரும் ஆற்றல் பெறுவர்.
	CO5: மொழிபெயர்ப்புத் திறன் பெறுவதோடு, அன்றாட வாழ்வின் தேவைகளான பல்வகை அலுவலகக் கடிதங்கள் எழுதும் திறன் பெறுவர்.
II Year - III Semester	
200L3A **Tamil – III**	**CO1:** தமிழக வரலாற்றை அறிந்து கொள்வர்
	CO2: தமிழரின் வாழ்வியல் தொன்மையை அறிவர்
	CO3: தமிழரின் பண்பாட்டு கூறுகளை அறிந்து கொள்வர்
	CO4: பிற பண்பாட்டுத் தாக்கம் மற்றும் அணுகு முறைகளை அறிவர்
	CO5: மொழிப்பெயர்ச்சிக்குத் தேவையான இலக்கணங்களைக் கற்பர்

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in

200L3G **Sanskrit–III**	**CO1:** Be familiar with the style of the great Sanskrit Dramatist Bhasa
	CO2: Be able to appreciate the aesthetical, social, political, cultural, etc., values expressed in prescribed composition
	CO3: Understand the structural patterns of Sanskrit dramatic composition
	CO4: Develop the finer and minor nuances of Nataka form of drama
	CO5: Analyze the literary texts
200L3Z **English – III**	**CO1:** Listen actively
	CO2: Develop interpersonal relationship skills
	CO3: Acquire self-confidence to cope with stress
	CO4: Master grammar skills
	CO5: Carry out business communication effectively
238C3A **General Mechanics and Classical Mechanics**	**CO1:** Understand the Newton's Law of motion, general theory of relativity, Kepler's laws and realize the basic principles behind planetary motion
	CO2: Acquire the knowledge on the conservation laws
	CO3: Apply conservation law and calculate energy of various systems. Understand and differentiate conservative and non-conservative forces
	CO4: Gain knowledge on rigid body dynamics and solve problems based on this concept
	CO5: Understand the importance of Lagrangian system of mechanics
238C31 **Physics Core Practical-II**	**CO1:** Gain the knowledge in the concepts of heat and sound waves, resonance, calculate frequency of a.c. mains
	CO2: Verified theories, quantified and analysed, done error analysis and correlate results
238E3A **Programming Techniques Using C**	**CO1:** Outline the fundamental concepts of computers, programming languages and Problem-solving Techniques using C
	CO2: Demonstrate the programming methodology
	CO3: Identify suitable programming constructs for problem solving
	CO4: Select the appropriate data representation, control structures, functions and concepts based on the problem requirement
	CO5: Solve simple, mathematical and logical problems in 'C'
938SEC4 **Home Electrical Installation**	**CO1:** To get the knowledge on electrical instruments, installations and domestic wiring techniques with safety precautions and servicing
938SEC5 **Physics of Music**	**CO1:** To apprise and train students on the role of Physics in music and get the knowledge on the musical notes and instruments

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in

II Year - IV Semester	
200L4A **Tamil–IV**	**CO1:** தாய்மொழி வழியாக அறிவியல்பற்றிச் சிந்திக்கும்திறன் பெற்றிருப்பர்
	CO2: அறிவியல் கலைச்சொல்லாக்கம் பற்றிய விதிகள், நுணுக்கங்களைத் தெரிந்திருப்பர்
	CO3: அறிவியல் தமிழ் வளர்ச்சியில் மொழிபெயர்ப்பின் பங்கு குறித்து அறிந்திருப்பர்
	CO4: மொழியறிவோடு சிந்தனைத் திறனைப் பெறுவர்
	CO5: மொழிப்பெயர்ச்சிக்குத் தேவையான இலக்கணங்களைக் கற்பர்
200L4G **Sanskrit–IV**	**CO1:** Apply the usage of compound words
	CO2: Differentiate the Alankaras
	CO3: Translate the prose passages prescribed
	CO4: Identify and apply different grammatical tenses of "Mahabharata" related translation
	CO5: Analyze and critically assess the literary texts
200L4Z **English – IV**	**CO1:** Determine their own goals
	CO2: Identify the value of integrity
	CO3: Deal with emotions
	CO4: Frame grammatically correct sentences
	CO5: Write cohesive reports
238C4A **Optics and Spectroscopy**	**CO1:** Outline the basics of optics and concepts associated with lenses, prisms, eyepieces. Differentiate the resolving power of different optical instruments, and articulate their technological applications
	CO2: Discuss the principle of superposition of waves, use these ideas to understand the wave nature of light through working of interferometer
	CO3: Extend the knowledge about nature of light through diffraction techniques, apply mathematical principles to analyse the optical instruments
	CO4: Interpret basic formulation of polarization and gain knowledge about polarimeter, appraise its usage in industries
	CO5: Relate the principles of optics to various fields of IR, Raman and UV spectroscopy and understand their instrumentation and application in industries
238C41 **Physics Core Practical -III**	**CO1:** Demonstrate various optical phenomena, discover the working of optical instruments, apply and interpret the results.
238E4A **Java Programming**	**CO1:** Outline the basic terminologies of OOP, programming language techniques
	CO2: Solve problems using basic constructs, mechanisms, techniques and technologies of Java

	CO3: Analyse and explain the behavior of simple programs involving different techniques such as Inheritance, Interfaces and Exception Handling
	CO4: Assess various problem-solving strategies involved in Java
	CO5: Design Java programs using suitable OOP concepts and techniques for any given concept
938SEC6 **Electronic Devices**	**CO1:** Providing an overview of the principles, operation and applications of special diodes. Introducing transistor and transistor biasing
	CO2: Providing an overview of the principles, operation and applications of special devices
	CO3: Providing an overview of amplifiers, oscillators and their applications in different electronic fields
	CO4: To acquire knowledge about Boolean algebra, logic circuits, designing counters and the basic concepts of memory and programmable logic device
938SEC7 **Communication System**	**CO1:** To enable to understand the different types of communications
	CO2: To make them appreciate the flavour of physics in communication
III Year - V Semester	
338C5A **Relativity and Quantum Mechanics**	**CO1:** Understand various postulates of special theory of relativity
	CO2: Appreciate the importance of transformation equations and also the general theory of relativity
	CO3: Realize the wave nature of matter and understand its importance
	CO4: Derive Schrodinger equation and also realize the use of operators
	CO5: Apply Schrödinger equation to simple problems
338C5B **Solid State Physics**	**CO1:** Classify the bonding & crystal structure also learn about crystal structure analysis using X-ray diffraction
	CO2: Understand the lattice dynamics and thus learn the electrical and thermal properties of materials
	CO3: Give reason for classifying magnetic material on the basis of their behaviour
	CO4: Comprehend the dielectric behavior of materials
	CO5: Appreciate the ferroelectric and super conducting properties of materials
338C5C **Atomic Physics and Lasers**	**CO1:** List the properties of electrons and positive rays, define specific charge of positive rays and know different mass spectrographs
	CO2: Outline photoelectric effect and the terms related to it, state laws of photoelectric emission, explain experiments and

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in

	applications of photo electric effect, solve problems based on photoelectric equation
	CO3: Explain different atom models, describe different quantum numbers and different coupling schemes
	CO4: Differentiate excitation and ionization potentials, explain Davis and Goucher's experiment, apply selection rule, analyse Paschen-Back effect, compare Zeeman and Stark effect
	CO5: Understand the condition for production of laser and appreciate various properties & applications of lasers
338C5D **Microprocessor 8085 and Microcontroller**	**CO1:** Understand the architecture & organization of microprocessor 8085 and familiarize the instruction set of microprocessors 8085
	CO2: Apply the software instructions to write efficient assembly language programs
	CO3: Illustrate the interfacing of peripheral devices with 8085 microprocessors
	CO4: Acquire basic knowledge on the hardware of 8051 microcontroller
	CO5: Execute assembly language programs through practical work
338E5A **Python Programming**	**CO1:** Understand the fundamental concepts in python
	CO2: Acquire programming skills in python
	CO3: Apply the different data types available in python
	CO4: Analyze and select proper concepts to execute python script
	CO5: To develop python script to solve the given problems
338E5B **Relational Database Management System**	**CO1:** Understand the model, architecture and Schema of RDBMS
	CO2: Outline the fundamental RDBMS concepts and PL/SQL
	CO3: Apply database operations, normalization, SQL and PL/SQL
	CO4: Analyze the requirements to implement relational database concepts
	CO5: Evaluate the database based on various models and normalization
III Year - VI Semester	
338C6A **Electricity and Electromagnetism**	**CO1:** 1 Describe the concept of electric charges and electric fields. Explain Gauss' Law, its differential form and application
	CO2: Understand the basics of capacitors and dielectrics and solve relevant problems
	CO3: Differentiate electric field and potential and solve problems. Explain Poisson's and Laplace's equations. Discuss the AC circuits containing resistance, Inductance and capacitance
	CO4: Discuss the magnetic effect of electric current and its application
	CO5: Interpret the magnetic properties of materials. Derive Maxwell's equations and discuss the nature of electromagnetic waves

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in

338C6B **Nuclear and Particle Physics**	**CO1:** Describe various models that explain about the nuclear structures
	CO2: Give reason for various kinds of radioactivity and also know laws governing them
	CO3: Know the principles and applications of various particle detectors and accelerators
	CO4: Discuss the concepts used in nuclear reaction
	CO5: Classify various elementary particles and study the effect of cosmic rays
338C61 **Physics Core Practical-IV**	**CO1:** Construct circuits to learn about the concept of electricity, current, resistance in the path of current, different parameters that affect a circuit
	CO2: Demonstrate various optical phenomena principles, working, apply with various materials and interpret the results
	CO3: Set up experiments, observe, analyse and assimilate the concept
338E6A **Mobile Application Development Laboratory**	**CO1:** Chart the requirements needed for developing android application
	CO2: Apply proper interface setup, styles & themes, storing and management
	CO3: To know the Techniques for the application activities
	CO4: Analyze the problem and add necessary user interface components, graphics and multimedia components into the application
	CO5: Evaluate the results by implementing the concept behind the problem with proper code
338E6B **Internet of Things**	**CO1:** Understand the fundamentals of IoT
	CO2: Outline the fundamentals and Architectural Overview of IoT
	CO3: Apply the sensors effectively for IoT application
	CO4: Analyze the challenges faced by IoT smart devices
	CO5: Design IoT applications using the technology available
338S6A **Professional Competency Skill**	**CO1:** To enhance the communication and decision making skill
	CO2: To equip for success in the workplace and lifelong career management

Mocheri Road, Madurantakam, Chengalpattu Dt, Tamilnadu, India, Pin-603306
Phone : 044 - 2755 3011 / 12   Email : malolancollege@gmail.com
Website : www.srimalolancollege.ac.in