

ACP MODULE I – SYLLABII

COMPULSORY COURSES:

DEPARTMENT	COURSE OFFERED	DETAILED SYLLABUS	NO OF HOURS
PSYCHOLOGY	SELF ENHANCEMENT	Workshop	10
VISITING	LAW	-	06
SOCIOLOGY	COMMUNITY HEALTH	Good health as a right Determinants of good health	03
VES LARC	GOAL SETTING	Workshop	03
CS - IT	E- COMMUNICATION	MS Office (word and PPT) E-Mails Social networking	04

ELECTIVE COURSES (8 HOURS EACH):

DEPARTMENT	COURSE OFFERED	DETAILED SYLLABUS
PHYSICS	LIVING OUTSIDE EARTH	<ul style="list-style-type: none"> • What happens when we go to space • Introduction to space biology and laws of gravitation • What are levels of gravity? Ways to achieve these levels • Impact of zero gravity on cells and microbes • Effects of zero gravity on animals and plants • Effects of zero gravity on humans • Applications to biotechnology and medicine
	ASTRONOMY AND COSMOLOGY	<ul style="list-style-type: none"> • Planets of Solar system , Sun ,Earth , planets of other stars • Stars , Main sequence stars , mass, size and distance , • Evolution of stars , their final stages , red giants, white dwarfs, supernovae , neutron stars , black holes , • Gravitational lensing • Galaxies : structure & classification of galaxies , our galaxy milky way , Large scale structure of the universe , Quasars and Blazars , • Galactic rotation curve & dark matter • Cosmology : Expansion of the universe , Hubble law , Big bang & early universe , Cosmic microwave background • Future of the universe

	INTRODUCTION TO MATERIALS SCIENCE	<ul style="list-style-type: none"> • Historical prospective of Materials Science. • Importance and Introduction to Materials Science. • Advanced materials and Nanoscience. • Overview of bonding. Classification of Materials: Metals, Ceramics, Polymers, Biomaterials, Smart materials. • Synthesis Techniques of Nano Materials (Sol-gel, Lithography, etc.) • Characterization Techniques (XRD, SEM, TEM, etc.) • Important properties of materials Dielectric, magnetic, etc. • Applications and future prospects
	STANDARD MODEL OF PARTIAL PHYSICAL	<ul style="list-style-type: none"> • Basic Concepts: (4 lectures) • The emergence of particle physics: the standard model and hadrons, Particles and Antiparticles, Symmetries and Conservation laws, Particle interactions and Feynman Diagrams, Particle Exchange :Range of forces and Potential. • Particle Phenomenology (4 lectures) • Leptons : Lepton multiplet and lepton number conservation, neutrinos, Quarks : Evidence for quarks, quark generation , quark number conservation and quark model spectroscopy.
COMPUTER SCIENCE	ADVANCED EXCEL	<ul style="list-style-type: none"> • Basics of Excel • Excel Functions • 3. Working with multiple sheets • Vlookups and Pivot Tables • Excel Charts • Arrays & Formulas • Excel Macros-I • Excel Macros-II
INFORMATION TECHNOLOGY	FINANCIAL INSTITUTIONS' SECURITY	<ul style="list-style-type: none"> • Threats & Attacks • Cyber Criminals & Frauds • Security Mechanisms • Grid-based Security • OTP • Security Token • End-Users' Literacy towards security
CHEMISTRY	CHEMISTRY AND LIFE	<ul style="list-style-type: none"> • Cosmetics and Toiletries • Fabrics and Dyes • Drugs of Use and Abuse • Soaps and Detergents • Oils and Fats • Petroleum and Polymers • Making cosmetics at home

MICROBIOLOGY AND BIOTECHNOLOGY	FOOD TECHNOLOGY	<ul style="list-style-type: none"> • Nutrition • Food preservation • Causes of food spoilage and their prevention • Food borne diseases • Food adulteration Estimation of microbial load in various foods
PSYCHOLOGY	PSYCHOLOGY OF EVERYDAY LIVING	<ul style="list-style-type: none"> • Introduction to variety of behaviours studied • How psychology helps us live better • Conscious and unconscious • Dreams • Understanding Intelligence • Enhancing learning and remembering • Laws of Attraction
MATHEMATICS	STATISTICS	<ul style="list-style-type: none"> • Data Analysis : Measures of central tendency and dispersion, Correlation and Regression • Hypothesis testing : Basic Probability, Central limit theorem, Normal distribution, z-test.
	OPERATIONS RESEARCH	<ul style="list-style-type: none"> • Linear Programming Problem: Formulation of a Problem as an LP Model, Graphic method solution, Solutions by Simplex method. • Transportation Problem: Formulating Transportation Models, North-West Corner Method, Least Cost Method, Vogel's Approximation Method, Maximization and Transportation Problem. • Assignment Problem: Mathematical Model of Assignment Problem, Solution Methods of Assignment Problem, Assignment Algorithm.
ACCOUNTANCY	ACCOUNTANCY AND TAX	<ul style="list-style-type: none"> • Basic concepts in Accountancy – Capital, Asset, Fixed Assets, Current Assets, Liability, Goods, Purchases, Sales, Debtor, Creditor, Bad Debts • Three rules of accountancy • Introduction of Journal Entry • Introduction of Ledger Account • Introduction of Trial Balance • Vertical Revenue Statement and Balance Sheet • Ratio Analysis – Current Ratio, Return on Investment (ROI) , Return on Equity capital, EPS
ECONOMICS	INTRODUCTION TO ECONOMICS	<ul style="list-style-type: none"> • Nature and scope of Economics: What is economics all about? • Scarcity and opportunity cost: The central facts of economics. • Mankiw's ten principles of Economics. • Conceptual adventures in six basic economic realities: The

		<p>invisible hand, Paradox of thrift, Phillips Curve, Comparative Advantage, The Impossible Trinity, Rational Choice theory</p> <ul style="list-style-type: none">• Investment and stock markets: An introduction
ENGLISH	CREATIVE WRITING	<ul style="list-style-type: none">• Importance of writing skills-Types of writing• Basic Grammar tips - Dos & Don'ts, Common errors• Developing writing skills -1• Developing writing skills -2