NDA Syllabus

NDA Syllabus comprises of Mathematics & General Ability sections.

National Defence Academy (NDA) Exam Is Conducted by Union Public Service Commission (UPSC) For Enrolling Candidates to the Indian Defense Forces that includes Indian Army, Indian Navy, And Indian Air Force. The National Defence Academy (NDA) Exam is carried out twice during a Year NDA (I) and NDA (II).

UPSC NDA Exam is divided into 2 papers – Mathematics and General Ability Test (GAT).

Mathematics Paper I:

ALGEBRA SYLLABUS:

- Concept Of A Set
- Operations on Set
- Venn Diagrams De Morgan Laws
- Cartesian Product Relation
- Equivalence Relation
- Representation of Real Number on a Line
- Complex Numbers – Basic Properties
- Modulus Argument
- Cube Roots of Unity
- Binary System of Numbers
- Conversion of a number in Decimal
- System to binary system and vice-versa
- Arithmetic
- Geometric & Harmonic Progression
- Quadratic Equations with Real Coefficients
- Solution of Linear Inequations of two variables by Graph
- Permutation and combination
- Binomial theorem and its application
- Logarithms and their applications

MATRICES AND DETERMINANTS SYLLABUS:

- Types of Matrices
- Operations on Matrices Determinant of a Matrix
- Basic Properties of Determinant
- Adjoint & Inverse of a Square Matrix
- Applications—Solutions of a system of Linear Equations in two or three unknowns by Cramer's Rule and by Matrix Method.

CAREER VISION ACADEMY
....excellence personified

ANALYTICS GEOMETRY OF TWO 7 THREE DIMENSIONS SYLLABUS:

- Rectangular Cartesian Coordinate System
- Diatance Formula
- Equation of a line in various forms
- Angle between two lines
- Equations of a circle in standard and in general form
- Ellipse & Hyperbola
- Eccentricity ad Axis of a Conic
- Point in a three Dimensional space, Distance between two points
- Direction Cosines and Direction Ratios
- The equation of plane and a Line in various forms
- The angle between two lines & angle between two planes
- The equation of a sphere

TRIGONOMETRY SYLLABUS:

- Angles And Their Measures In Degrees And In Radians
- Trigonometrical Ratios
- Trigonometric Identities Sum And Difference Formulae
- Multiple And Sub-Multiple Angles
- Inverse Trigonometric Functions
- Applications – Height And Distance
- Properties of Triangles.

DIFFERENTIAL CALCULUS SYLLABUS:

- Concept Of A Real-Valued Function – Domain
- Range And Graph Of A Function
- Composite Functions
- Derivative Of Function At A Point
- Derivatives Of Sum
- Product And Quotient Of Functions
- Derivative Of A Function With Respect Of Another Function
- Derivative Of A Composite Function
- Second Order Derivatives
- Increasing And Decreasing Functions
- Application of Derivatives in Problems of Maxima and Minima.

INTEGRAL CALCULUS SYLLABUS:

- Integration as Inverse Differentiation
- Integration by parts and Substitution

- Standard Integrals Involving Expression of Algebric
- Hyperbolic and Exponential Function
- Trigonometric
- Evaluation of definite Integrals—Determination of areas of plane regions bounded by curves.

DIFFERENTIAL EQUATIONS SYLLABUS:

- Definition Of Order And Degree Of A Differential Equation
- Formation Of A Differential Equation
- General And Particular Solution Of A Differential Equation
- Solution Of First Order And First Degree Differential Equations Of Various Types
- Application In Problems Of Growth And Decay

STATISTICS SYLLABUS:

- Classification of data
- Frequency distribution
- Cumulative Frequency Distribution—examples
- Graphical Representation – Histogram
- Pie chart
- Frequency Polygon – examples
- Measures of Central Tendency – Mean Median & Mode
- Variance & Standard Deviation Determination & Comparision
- Correlation and Regression

PROBABILITY SYLLABUS:

- Random Experiment
- Outcomes And Associated Sample Space
- Events
- Mutually Exclusive And Exhaustive Events
- Impossible And Certain Events
- Union And Intersection Of Events
- Complementary
- Elementary And Composite Events
- Conditional Probability
- Bayes' Theorem – Simple Problems
- Random Variable As Function On A Sample Space
- Binomial Distribution
- Examples of Random Experiments Giving Rise to Binominal Distribution.

VECTOR ALGEBRA SYLLABUS:

- Vectors In Two And Three Dimensions
- Magnitude And Direction Of A Vector

- Unit And Null Vectors Addition Of Vectors
- Scalar Multiplication Of Vector

General Ability Paper II:

This section of the syllabus is divided into two parts, part A is for English paper and part B is for General Knowledge:

PART A – ENGLISH SECTION SYLLABUS:

- Grammar and Usage
- Vocabulary
- Comprehension and Cohesion in Extended Text
- Use of Words

PART B – GENERAL KNOWLEDGE SYLLABUS:

The paper consists of general knowledge and covers the subjects such as Chemistry, Physics, Social Studies, General Science, Geography and Current Affairs.

PHYSICS:

- Newton's Laws of Motion,
- Force and Momentum,
- Motion of objects,
- Parallelogram of Forces,
- Stability and Equilibrium of bodies,
- Gravitation, elementary ideas of work,
- Velocity and Acceleration,
- Power and Energy,
- Properties of a Magnet,
- Earth as a Magnet
- Siphon, Levers,
- Balloon, Pumps,
- Hydrometer, Pressure Cooker
- Sound waves and their properties,
- Simple musical instruments,
- Natural and Artificial Magnets
- Thermos Flask, Gramophone
- Telegraphs, Telephone, Periscope
- Telescope, Microscope
- Mariner's Compass
- Lightening Conductors
- Safety Fuses

- Simple Pendulum.
- Simple Pulleys
- Physical Properties and States of Matter
- Mass, Weight, Volume, Density and Specific Gravity
- Principle of Archimedes
- Pressure Barometer
- Effects of Heat
- change of State and Latent Heat
- Modes of transference of Heat
- Rectilinear propagation of Light
- Reflection and refraction
- Spherical mirrors and Lenses
- Human Eye, Static and Current Electricity
- Measurement of temperature and heat
- conductors and Non-conductors
- Ohm's Law, Simple Electrical Circuits
- Heating, Lighting and Magnetic effects of Current
- Measurement of Electrical Power
- Primary and Secondary Cells, Use of X-Rays.

CHEMISTRY:

- Preparation and Properties of Nitrogen
- Hydrogen, Oxygen & Carbon Di-oxide
- Oxidation & Reduction
- Material used in the preparation of substances like Glass, Soap, Paper, Ink, Cement, Paints, Safety Matches, Gunpowder
- Carbon – different forms
- Physical & Chemical changes
- Symbols, Formulas and simple Chemical Equations
- Law of Chemical Combination (excluding problems)
- Properties of Air and Water
- Acids, bases and salts, Elements, Mixtures and Compounds
- Fertilizers – Natural and Artificial
- Elementary ideas about the Structure of Atom
- Atomic, Equivalent and Molecular Weights, Valency.
- GENERAL SCIENCE:
- Basis of Life – Cells, Protoplasms and Tissues
- Constituents of food, Balanced Diet
- Achievements of Eminent Scientists
- Difference between the living and non-living
- Elementary knowledge of human Body and its important organs
- Food – Source of Energy for man
- Growth and Reproduction in Plants and Animals
- Common Epidemics, their causes and prevention

- The Solar System – Meteors and Comets, Eclipses.

HISTORY:

- Freedom Movement in India
- Bhoodan, Sarvodaya
- National Integration and Welfare State
- Basic Teachings of Mahatma Gandhi
- A broad survey of Indian History, with emphasis on Culture and Civilisation
- Elementary knowledge of Five Year Plans of India
- Elementary study of Indian Constitution and Administration
- Panchayati Raj, Forces shaping the modern world
- Renaissance, Exploration and Discovery
- War of American Independence
- French Revolution
- Industrial Revolution and Russian Revolution
- Impact of Science and Technology on Society
- Concept of one World
- United Nations, Panchsheel
- Democracy, Socialism and Communism
- Co-operatives and Community Development
- Role of India in the present world.

GEOGRAPHY:

- Origin of Earth, Weathering – Mechanical and Chemical
- Earthquakes and volcanoes
- Atmosphere and its composition
- Temperature and Atmospheric Pressure
- Rocks and their classification
- Planetary Winds, cyclones and Anti-cyclones
- Humidity, Condensation and Precipitation
- Major Natural regions of the World
- Important Sea ports and main sea
- land and air routes of India
- Main items of Imports and Exports of India
- Types of Climate
- The Earth, its shape and size, Lattitudes and Longitudes
- Concept of time, International Date Line
- Movements of Earth and their effects
- Ocean Currents and Tides
- Regional Geography of India
- Climate, Natural vegetation
- Mineral and Power resources
- Location and distribution of agricultural and industrial activities.

CAREER VISION ACADEMY
....excellence personified

CURRENT AFFAIRS:

Current necessary world events, information of necessary events that have happened in Republic of India within the recent years, outstanding personalities – each Indian and International as well as those connected with cultural activities and sports.