

## Locus Learning Grade 9 Official Syllabus

Our syllabus, fully updated to reflect the latest NEP 2020 guidelines.

The Mathematics and Science sections are strictly mapped to the *newest NCERT textbooks*. The AI and Coding section is aligned with the official CBSE Skill Education framework (Subject Codes 417) for Class 9.

### 1. Mathematics: The "Concept Stacking" Order

#### Phase 1: The Algebraic Foundation

1. **Number Systems:** The bedrock of all mathematics. Establishes the real number line.
2. **Introduction to Polynomials:** Moves from pure numbers to variables and expressions.
3. **Exploring Algebraic Identities:** Deepens the understanding of polynomial manipulation and factorization.
4. **Coordinate Geometry:** Bridges the gap between algebra and spatial reasoning.
5. **Linear Equations in Two Variables:** Applies algebraic concepts to the coordinate plane.
6. **Sequences and Progressions:** Caps off the algebra block by introducing patterns (AP and GP) using the equations and variables learned above.

#### Phase 2: The Logic of Space (Geometry)

7. **Introduction to Euclid's Geometry:** Sets the ground rules, axioms, and history.
8. **Lines and Angles:** The fundamental building blocks of geometric proofs.
9. **Triangles: Congruence Theorems:** Applies lines and angles to the most stable 2D shape.
10. **4-gons (Quadrilaterals):** Expands triangle logic into four-sided shapes and the midpoint theorem.
11. **Circles:** Introduces curves, chords, and angles subtended by arcs.

#### Phase 3: Measurement & Data Application

12. **Mensuration: Area and Perimeter:** Uses the 2D shapes mastered in Phase 2 to calculate physical space (Heron's and Brahmagupta's formulas).

13. **Mensuration: Surface Area and Volume:** Extends 2D area concepts into 3D physical objects.
14. **Statistics:** Applies analytical thinking to real-world data collection.
15. **Introduction to Probability:** Combines data analysis with the logic of randomness to close out the year.

## 2. Science: The "Interleaved Inquiry" Order

### Phase 1: Foundations of Inquiry, Matter, and Motion

1. **Introductory Theme (Biology):** Covers the discovery of the cell, distinguishing between plant and animal cells, and understanding prokaryotic versus eukaryotic cells.
2. **Cell (Biology):** Explores the cell as a structural and functional unit, detailing key organelles, cell membrane permeability, cell division, and cellular interactions with the environment. (*Note: Taught consecutively with Chapter 1 to solidify the biological foundation*).
3. **Exploring Mixtures and Their Separation (Chemistry):** Investigates homogeneous and heterogeneous mixtures, solutions, colloids, suspensions, and separation techniques like distillation and chromatography.
4. **Motion (Physics):** Introduces displacement, velocity, acceleration, and kinematic equations for motion in a straight line using graphical methods.

### Phase 2: Forces, Atomic Structures, and Biological Systems

5. **Force and Laws of Motion (Physics):** Explains balanced and unbalanced forces, the role of friction, and Newton's three laws of motion.
6. **Structure of an Atom (Chemistry):** Dives into subatomic particles, atomic models (Thomson, Rutherford, Bohr), electron distribution, valency, isotopes, and isobars.
7. **Atoms and Molecules (Chemistry):** Expands on atomic structure to cover the laws of conservation of mass and constant proportion, Dalton's atomic theory, ions, and writing chemical formulae.
8. **Tissues (Biology):** Builds upon earlier cell biology to explore plant tissues (meristematic and permanent) and animal tissues (epithelial, connective, muscular, and nervous).

### Phase 3: Energy, Complex Life, and the Earth Ecosystem

9. **Work, Energy and Simple Machines (Physics):** Connects force to the work-energy theorem, kinetic and potential energy, conservation of energy, power, and the mechanics of simple machines (pulleys, inclined planes, levers).
10. **Sound (Physics):** Explores the propagation of sound as a longitudinal wave, its characteristics (wavelength, frequency, amplitude), reflection, and echolocation.
11. **Diversity (Biology):** Classifies organisms into five kingdoms, explores major divisions of animals and plants, and introduces binomial nomenclature and the ecological roles of diverse organisms.
12. **Reproduction (Biology):** Compares asexual and sexual reproduction, details reproductive systems in plants and humans, and covers reproductive health and birth control methods.
13. **Earth as a System: Energy, Matter and Life (Earth Science):** The capstone chapter explaining the interconnectedness of the Earth's spheres (biosphere, geosphere, hydrosphere), differential heating by solar radiation, and biogeochemical cycles (water, carbon, nitrogen, oxygen).

### 3. AI & Coding: The "Theory to Practice" Order

This subject should immediately start building practical coding skills while the theoretical framework of AI is established in the background. Employability skills are sprinkled throughout to break up the technical load.

#### Term 1: Logic and Foundations

1. **Unit 1: Introduction to AI:** Setting the stage, defining AI, and discussing AI ethics.
2. **Unit 4 (Part 1): Introduction to Python:** Immediate hands-on engagement (Variables, Data Types, Operators).
3. **Employability Unit 1 & 2:** Communication and Self-Management Skills.
4. **Unit 2: AI Project Cycle:** Teaching students how to frame a problem and acquire data before trying to solve it.

#### Term 2: Implementation and Neural Networks

5. **Unit 4 (Part 2): Python Control Flow:** Conditional statements (if/else) and Loops.
6. **Employability Unit 3:** ICT Skills (Information and Communication Technology).



7. **Unit 3: Neural Networks:** Understanding the conceptual architecture of machine learning, now that they understand basic coding.
8. **Employability Unit 4 & 5:** Entrepreneurial and Green Skills (Connecting tech solutions to business and the environment).