



CLASS 12 BIOLOGY — LO's Aligned Monthly Split-up Syllabus (April 2026–March 2027) + Portion Boundaries + Exams + Weightage + Question Paper Design + Blueprint (For CM SoE & Non-CM SoE)

Developed by:- Jharkhand Council Of Educational Research & Training (Curriculum Division)

| Month | Teaching Days (Available) | NCERT Chapter Titles | Sub-topics / Portion Boundary | LOs (*LO Mapping - IDs) (NCERT Secondary Stage LO-2017) | Practicals / Activities (Minimum) | Assessment / Exams |
|----------|---------------------------|--|---|---|--|---|
| Apr 2026 | 23 | BIO: Chapter 1 Sexual Reproduction in Flowering Plants (Complete); BIO: Chapter 2 Human Reproduction (Start) | Ch 1 complete: flower structure; development of male and female gametophytes; pollination; pollen-pistil interaction; double fertilisation; post-fertilisation events; apomixis, parthenocarpy and polyembryony. Ch 2 start: overview of male and female reproductive systems, microscopic anatomy of testis and ovary, gametogenesis (intro). Portion boundary: Chapter 1 complete; Chapter 2 started. | LO3, LO4, LO5, LO6, LO7, LO18 | Observe and label reproductive structures in flowering plants; pollen germination/demo/ICT; diagram practice for male and female reproductive organs; introductory MCQ + case-based questions. | Project RAIL (April portion): 04-05-2026 |
| May 2026 | 14 | BIO: Chapter 2 Human Reproduction (Finish); BIO: Chapter 3 Reproductive Health (Complete) | Ch 2 complete: menstrual cycle, fertilisation, embryo development up to blastocyst, implantation, pregnancy, placenta formation, parturition and lactation. Ch 3 complete: reproductive health, STDs, birth control methods, MTP, amniocentesis, infertility and ART. Portion boundary: Chapters 2–3 complete. | LO4, LO5, LO6, LO7, LO17, LO18 | Prepare comparison chart of contraceptive methods; STD awareness poster; ART flowchart; foetal development stages chart; short answer and assertion-reason practice. | Project RAIL (May portion): 15-06-2026 |
| Jun 2026 | 12 | BIO: Chapter 4 Principles of Inheritance and Variation (Start/Continue) | Ch 4 start: Mendel's experiments; monohybrid and dihybrid crosses; laws of inheritance; deviations from Mendelism — incomplete dominance, codominance, multiple alleles, blood groups, pleiotropy. Portion boundary: Chapter 4 Part-I complete. | LO3, LO5, LO6, LO7, LO8, LO18 | Genetics problem solving (monohybrid/dihybrid); pedigree basics; family trait survey using non-sensitive traits; Punnett square practice and recap worksheets. | Project RAIL (June portion): 06-07-2026 |
| Jul 2026 | 23 | BIO: Chapter 4 Principles of Inheritance and Variation (Finish); BIO: Chapter 5 Molecular Basis of Inheritance (Start) | Ch 4 complete: chromosome theory of inheritance; linkage and crossing over; sex determination in humans, birds and honey bee; sex-linked inheritance; Mendelian and chromosomal disorders. Ch 5 start: search for genetic material, DNA as genetic material, structure of DNA and RNA, DNA packaging, DNA replication. Portion boundary: Chapter 4 complete; Chapter 5 Part-I complete. | LO3, LO4, LO5, LO6, LO7, LO8, LO18 | DNA double helix model (eco-friendly); pedigree chart practice; sex-linked inheritance numericals; DNA replication animation/ICT and concept notes. | Project RAIL (July portion): 03-08-2026 |
| Aug 2026 | 22 | BIO: Chapter 5 Molecular Basis of Inheritance (Finish); BIO: Chapter 6 Evolution (Complete) | Ch 5 complete: central dogma; transcription; genetic code; translation; gene expression and lac operon; human genome project; DNA fingerprinting. Ch 6 complete: origin of life; evidences and theories of evolution; adaptive radiation; Hardy-Weinberg principle; human evolution. Portion boundary (Half-Yearly): Chapters 1–6 complete. | LO3, LO4, LO5, LO6, LO7, LO8, LO18 | Central dogma flowchart; genetic code chart; evolution evidences portfolio; Hardy-Weinberg problem practice; Half-yearly revision sheet and competency-based questions. | Half Yearly Examination: 07-09-2026 to 12-09-2026 (covers Apr–Aug taught portion) |
| Sep 2026 | 14 | BIO: Chapter 7 Human Health and Disease (Complete); BIO: Chapter 8 Microbes in Human Welfare (Complete) | Ch 7: pathogens, immunity, vaccines, AIDS, cancer, drugs and alcohol abuse. Ch 8: microbes in household products, industrial products, sewage treatment, biogas, biocontrol and biofertilisers. Post half-yearly remediation + application-based practice. Portion boundary: Chapters 7–8 complete. | LO3, LO4, LO5, LO6, LO7, LO18, LO19 | Immunity chart; vaccine and disease mapping; fermentation products table; sewage treatment flow diagram; case-based questions and remedial discussion. | Project RAIL (September portion): 05-10-2026 |



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| Oct 2026 | 21 | BIO: Chapter 9 Biotechnology: Principles and Processes (Complete); BIO: Chapter 10 Biotechnology and its Applications (Complete); BIO: Chapter 11 Organisms and Populations (Start) | Ch 9: principles of biotechnology; tools and processes including restriction enzymes, vectors, PCR, bioreactors and downstream processing. Ch 10: Bt cotton, RNAi, transgenic animals, gene therapy, molecular diagnosis, GMOs, biosafety and bioethics. Ch 11 start: organism and environment; population attributes and growth models. Portion boundary: Chapters 9–10 complete; Chapter 11 started. | LO3, LO4, LO5, LO6, LO7, LO18, LO19 | Biotech tools concept map; PCR / electrophoresis overview via ICT; GMO case discussion; population growth graph practice and PYQ drill. | Project RAIL (October portion): 02-11-2026 |
| Nov 2026 | 16 | BIO: Chapter 11 Organisms and Populations (Finish); BIO: Chapter 12 Ecosystem (Complete); BIO: Chapter 13 Biodiversity and Conservation (Complete) + Quick Revision | Ch 11 complete: interactions and population ecology. Ch 12 complete: ecosystem structure and function, productivity, decomposition, energy flow, ecological pyramids, succession and nutrient cycling. Ch 13 complete: biodiversity levels, patterns, loss of biodiversity and conservation strategies. Portion boundary: Full syllabus completed (Chapters 1–13). | LO3, LO4, LO5, LO6, LO7, LO8, LO18, LO19 | Ecological pyramid and nutrient cycle diagrams; biodiversity conservation caselets; final chapterwise revision; practical record completion and viva question bank. | Syllabus completion target for Class 12: Nov 2026 |
| Dec 2026 | 15 | Full Syllabus Practice & Remedial (Pre-Board Block) + Practical/Viva Revision | Full syllabus mixed practice: board-pattern subjective + objective + case-based questions; high-frequency diagrams; genetics numericals; biotechnology and ecology applications; targeted remedial teaching. | LO6, LO7, LO17, LO18, LO19 | Minimum: 2 full mock papers + analysis; practical file completion; specimen/slide/model identification; viva preparation and topic-wise error correction. | Pre-Board + Remedial + Practice: 07-12-2026 to 12-12-2026 (Full syllabus) |
| Jan 2027 | 17 | Revision + Sample Papers + Previous Year Questions + Pre-Board-II / Mock Test (Full syllabus) | Complete syllabus revision through chapter/unit-wise recap and mixed board-pattern practice; focus on weak areas identified in Pre-Board, answer presentation, time management and concept retention. | LO6, LO7, LO17, LO18, LO19 | Weekly timed mock tests + item-wise analysis + doubt clearance + targeted remediation. | Pre-Board-II / Mock Test (Full syllabus): as per Board/school schedule |
| Feb 2027 | 18 | Board Examination Preparation / Board Examination | Final revision and examination readiness; mixed practice of important terms, diagrams / numericals / source-based / case-based / application questions as applicable to the subject. | LO6, LO7, LO17, LO18, LO19 | Rapid revision sheets + oral viva / practical / project support (where relevant) + teacher feedback. | Board Examination (as per Board schedule) |
| Mar 2027 | 20 | Board Examination (continued, if applicable) / Post-exam Academic Support | Board examination continuation / light post-exam academic engagement, bridge work, reading / enrichment / record completion as applicable. | LO6, LO7, LO17, LO18, LO19 | Bridge activities / portfolio / reading enrichment / feedback. | Board Examination / Post-exam school support (as applicable) |

LOs (*LO Mapping - IDs) (NCERT Secondary Stage LO-2017)



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|--------------|---|----------------------|-------------------------------|---|-----------------------------------|--------------------|
| LO ID | NCERT Learning Outcome | | | | | |
| LO1 | differentiates materials, objects, organisms, phenomena, and processes, based on, properties and characteristics, such as, autotrophic and heterotrophic nutrition, biodegradable and non-biodegradable substances, various types of reactions, strong and weak acids and bases, acidic, basic, and neutral salts using different indicators, real and virtual images, etc. | | | | | |
| LO2 | classifies materials, objects, organisms, phenomena, and processes, based on properties and characteristics, such as, metals and non-metals, acid and bases on the basis of their physical and chemical properties. | | | | | |
| LO3 | plans and conducts investigations and experiments to arrive at and verify the facts, principles, phenomena, or to seek answers to queries on their own, such as, investigates conditions necessary for rusting, tests the conductivity of various solutions, compares the foaming capacity of different types of soap samples, verifies laws of reflection and refraction of light, Ohm's law, etc. | | | | | |
| LO4 | relates processes and phenomena with causes and effects, such as, hormones with their functions, tooth decay with pH of saliva, growth of plants with pH of the soil, survival of aquatic life with pH of water, blue colour of sky with scattering of light, deflection of compass needle due to magnetic effect of electric current, etc. | | | | | |
| LO5 | explains processes and phenomena, such as, nutrition in human beings and plants, transportation in plants and animals, extraction of metals from ores, placement of elements in modern periodic table, displacement of metals from their salt solutions on the basis of reactivity series, working of electric motor and generator, twinkling of stars, advanced sunrise and delayed sunset, formation of rainbow, etc. | | | | | |
| LO6 | draws labelled diagrams, flow charts, concept maps, and graphs, such as, digestive, respiratory, circulatory, excretory, and reproductive systems, electrolysis of water, electron dot structure of atoms and molecules, flow chart for extraction of metals from ores, ray diagrams, magnetic field lines, etc. | | | | | |
| LO7 | analyses and interprets data, graphs, and figures, such as, melting and boiling points of substances to differentiate between covalent and ionic compounds, pH of solutions to predict the nature of substances, V-I graphs, ray diagrams, etc. | | | | | |
| LO8 | calculates using the data given, such as, number of atoms in reactants and products to balance a chemical equation, resistance of a system of resistors, power of a lens, electric power, etc. | | | | | |
| LO9 | uses scientific conventions to represent units of various quantities, symbols, formulae, and equations, such as, balanced chemical equation by using symbols and physical states of substances, sign convention in optics, SI units, etc. | | | | | |
| LO10 | handles tools and laboratory apparatus properly; measures physical quantities using appropriate apparatus, instruments, and devices, such as, pH of substances using pH paper, electric current and potential difference using ammeter and voltmeter, etc. | | | | | |
| LO11 | applies learning to hypothetical situations, such as, what will happen if all herbivores are removed from an ecosystem? What will happen if all non-renewable sources of energy are exhausted? | | | | | |
| LO12 | applies scientific concepts in daily life and solving problems, such as, suggest precautions to prevent sexually transmitted infections, uses appropriate electrical plugs (5/15A) for different electrical devices, uses vegetative propagation to develop saplings in gardens, performs exercise to keep in good health, avoids using appliances responsible for ozone layer depletion, applies concept of decomposition reaction of baking soda to make spongy cakes, etc. | | | | | |
| LO13 | derives formulae, equations, and laws, such as, equivalent resistance of resistors in series and parallel, etc. | | | | | |
| LO14 | draws conclusion, such as, traits or features are inherited through genes present on chromosomes, a new species originates through evolutionary processes, water is made up of hydrogen and oxygen, properties of elements vary periodically along the groups and periods in periodic table, potential difference across a metal conductor is proportional to the electric current flowing through it, etc. | | | | | |
| LO15 | takes initiative to know about scientific discoveries and inventions, such as, Mendel's contribution in understanding the concept of inheritance, Dobereiner for discovering triads of elements, Mendeleev for the development of the periodic table of elements, Oersted's discovery that electricity and magnetism are related, discovery of relation between potential difference across a metal conductor and the electric current flowing through it by Ohm, etc. | | | | | |



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| LO16 | | | | | | exhibits creativity in designing models using eco-friendly resources, such as, working model of respiratory, digestive, and excretory systems, soda acid fire extinguisher, periodic table, micelles formation, formation of diamond, graphite, and Buckminsterfullerene, human eye, electric motor and generator, etc. |
| LO17 | | | | | | exhibits values of honesty, objectivity, rational thinking, and freedom from myth and superstitious beliefs while taking decisions, respect for life, etc., such as, reports and records experimental data accurately, says no to consumption of alcohol and drugs, sensitises others about its effect on physical and mental health, sensitises for blood and organ donations, understands the consequences of pre-natal sex determination, etc. |
| LO18 | | | | | | communicates the findings and conclusions effectively, such as, those derived from experiments, activities, and projects orally and in written form using appropriate figures, tables, graphs, and digital forms, etc. |
| LO19 | | | | | | makes efforts to conserve environment realising the inter-dependency and inter-relationship in the biotic and abiotic factors of environment, such as, appreciates and promotes segregation of biodegradable and non-biodegradable wastes, minimises the use of plastics, takes appropriate steps to promote sustainable management of resources in day-to-day life, advocates use of fuels which produce less pollutants, uses energy efficient electric devices, uses fossil fuels judiciously, etc. |

A. THEORY BLUEPRINT

| S.No. | Unit / Block | Marks | Details / Scope |
|-------|--|-------|--|
| 1 | Unit VI — Reproduction | 16 | Chapter 1 Sexual Reproduction in Flowering Plants; Chapter 2 Human Reproduction; Chapter 3 Reproductive Health |
| 2 | Unit VII — Genetics and Evolution | 20 | Chapter 4 Principles of Inheritance and Variation; Chapter 5 Molecular Basis of Inheritance; Chapter 6 Evolution |
| 3 | Unit VIII — Biology and Human Welfare | 12 | Chapter 7 Human Health and Disease; Chapter 8 Microbes in Human Welfare |
| 4 | Unit IX — Biotechnology and its Applications | 12 | Chapter 9 Biotechnology: Principles and Processes; Chapter 10 Biotechnology and its Applications |
| 5 | Unit X — Ecology and Environment | 10 | Chapter 11 Organisms and Populations; Chapter 12 Ecosystem; Chapter 13 Biodiversity and Conservation |
| | TOTAL | 70 | Theory Paper: 3 Hours |

B. QUESTION PAPER DESIGN / BLUEPRINT

| Component / Distribution | Weightage |
|---|-----------|
| Demonstrate Knowledge and Understanding | 50% |



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| Application of Knowledge / Concepts | | | | | | 30% |
| Analyse, Evaluate and Create | | | | | | 20% |
| TOTAL | | | | | | 100% |

C. TYPOLOGY OF QUESTIONS

| Item | Details |
|-----------------|---|
| Typology | VSA including MCQs, Assertion–Reasoning type questions; SA; LA-I; LA-II; Source-based / Case-based / Passage-based / Integrated assessment questions. |
| Internal Choice | An internal choice of approximately 33% would be provided. |

D. PRACTICAL BLUEPRINT — 30 MARKS

| S.No. | Component | Marks | Details |
|-------|--|-------|---------|
| 1 | One Major Experiment | 5 | |
| 2 | One Minor Experiment | 4 | |
| 3 | Slide Preparation | 5 | |
| 4 | Spotting | 7 | |
| 5 | Practical Record + Viva Voce | 4 | |
| 6 | Investigatory Project and Project Record + Viva Voce | 5 | |
| | TOTAL | 30 | |