SKJ Education

LC HL BIOLOGY

FOUNDATION PROGRAM

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1 Overview of 8-week LC HL Biology Program

LC HL Biology - Foundation Program

Does the complexity of life–from cellular processes to genetic inheritance–feel overwhelming? This 8-week Biology Foundation Program is designed to transform that overwhelm into understanding and exam confidence. You do not need to memorise; we teach you how to think like a biologist. Through a science-based metacognition approach, you'll learn to connect microscopic processes to macroscopic systems, interpret experimental data, and master the key definitions that are the language of Biology. This isn't about passive learning; it's about building a deep, lasting understanding of how life works. In just 8 weeks, you'll gain the conceptual clarity, practical knowledge, and exam techniques needed to excel in Leaving Cert Biology. Your transformation starts here.

Here are links to extra questions and resources on StudyClix for this 8-week program, should you wish to use them.

Links	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Topic 1	Intro to Biology	Bio-molecules	Enzymes & Energy	Photo-synthesis & Respi-ration	DNA & Protein Synthesis	Genetics	Human Systems	Plant Sys-tems
Topic 2	Mitosis & Meiosis	Food	Metabolism	Energy Carriers	Genetic Crosses	Evolution	Immunity	Ecology
Experiment	YT Video "All of Bi-ology"	Food & Food Tests	Cell Metabolism & En-zymes	Experiment Questions	Experiment Questions	Experiment Questions	Blood & Cir-culatory System	Plant Re-sponses

The program is structured to build from the micro to the macro, ensuring you understand how small-scale processes create large-scale biological systems.

- **Block 1 (Weeks 1-4): The Cellular Foundation.** Master the language of life itself—cells, biomolecules, and the energy processes that power every living thing.
- **Block 2 (Weeks 5-8): The Organism & Beyond.** Apply this core knowledge to understand genetics, human and plant physiology, and how organisms interact with their environment.
- **Interleaved Revision:** From Week 2, our spiral curriculum ensures you constantly revisit and connect concepts. This builds the flexible understanding needed to tackle the multi-topic, experiment-focused questions on the Biology exam.

2 Sample Study Plan

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Review Key Terms & LO's. Watch video *(30 mins)*	Finish Ex. Work sheet + Online Lesson *(90 mins)*	Rest and Re-flect, Correct Work sheet. *(20 mins)*	Experiment Exercise Work sheet *(50 mins)*	Error Anal-ysis Exercise *(40 mins)*	Exam Q As-sessment *(60 mins)*	Self-Correct & Prep Day *(30 mins)*

3 Weekly Study Resources

1. **Key Terms:** Key vocabulary, definitions and formulae required for the worksheets (i.e., a cheat sheet/quick guide to this topic).
2. **Learning Objectives & Indicative Content (aligned LC HL Biology curriculum & specification):** Clear, quantifiable, achievable **goals** for the coming week.
3. **Exercise Worksheet:** Your main learning tool. It contains clear notes, worked examples, and key questions to solidify your understanding. This can be used for 1-4 study sessions in a given week (takes 90-120 minutes to complete).
4. ***Students have an online lesson after the exercise worksheet is completed***
5. **Error-Based Analysis Exercise:** A unique exercise where you'll find and fix common mistakes, training yourself to think like an examiner.
6. **Exam Question Assessment:** A short exam-style test to check your progress and get comfortable with the format of the real thing.
7. **Self-Correction & Progress Tracking Protocol:** see below.

4 Self-Correction & Progress Tracking Protocol

(This is the MOST IMPORTANT task of the week – complete this on Sunday, then immediately plan the following week's study to guarantee consistency).

1. **Mark your work.** Use a different colour pen.
2. **For each question, categorise your result:**
   - **Fluent:** I got it right and knew why.
   - **Lucky:** I got it right but was guessing/doubtful. I could not fully explain why this is the answer/how I got it.
   - **Error:** I got it wrong.
3. **For each Error, complete this sentence:**

   "The root cause of this was: I _____."
   (e.g., "I confused the formula for displacement with distance," or "I forgot to convert units.")
4. **For each Lucky answer, mark with a highlighter for later revision tests.**
5. **Action Plan:** Based on your analysis, what is **one specific thing** you will do before next week's lesson? (e.g., "Create a flashcards for function properties," "Redo the error-analysis exercise," "Watch a video on integration steps").
6. **Confidence Rating:** On a scale of 1-5, how confident do you now feel with this week's core concepts? (1 = Not at all, 5 = Rock Solid). Go through every Learning Objective and rank them. Continue this at the end of every week.

5 Why This System Works

- **Smarter Learning, Not More Learning:** My materials are designed using proven learning science to help you understand and retain information more effectively.
- **Build Confidence Through Mastery:** Start with the absolute essentials, ensuring you have a rock-solid foundation before moving on. No gaps, no confusion. Ask as many questions as you can.
- **You Learn How to Learn:** This program will teach you how to review your work, spot your own mistakes, and identify what you need to focus on. This is a skill that helps you in every walk of life.
- **Focus on Weaknesses:** By directing most of your time to analysing mistakes and revising difficult topics, you are forcing your brain to grow rapidly.

6 Weekly Learning Objectives

Week 1: Introduction to Biology

- **1.1:** State the characteristics of life.
- **1.2:** Identify the structure and state the function of key animal and plant cell organelles (nucleus, mitochondria, chloroplast, cell membrane, cell wall, ribosome).
- **1.3:** Describe the stages of mitosis and state its importance for growth and repair.
- **1.4:** Describe the stages of meiosis and state its importance for gamete formation.
- **1.5:** Define cancer and explain how it results from uncontrolled cell division.

Week 2: Biomolecules

- **2.1:** Describe the structure of monosaccharides, disaccharides, and polysaccharides (starch, cellulose, glycogen) and state their functions.
- **2.2:** Explain the structure of an amino acid and how proteins are formed (peptide bonds). State the functions of proteins.
- **2.3:** Describe the structure of lipids and state their functions.
- **2.4:** State the functions of water, and one source and function of a named vitamin and mineral.

Week 3: Cellular Biochemistry I

- **3.1:** Explain the induced-fit model of enzyme action.
- **3.2:** Investigate the effect of pH, temperature, and substrate concentration on enzyme activity.
- **3.3:** Define denaturation and explain how it occurs.
- **3.4:** State the role of ATP and NADP as energy carriers.

Week 4: Cellular Biochemistry II

- **4.1:** State the word equation and the balanced chemical equation for photosynthesis.
- **4.2:** Explain light-dependent/-independent stages, including their locations.
- **4.3:** State the word equation for aerobic respiration and explain the process of anaerobic respiration.
- **4.4:** Explain the role of respiration in releasing energy for cell activities.

****Students will have a "Reading Week" between Weeks 4 and 5.****

Week 5: DNA & Protein Synthesis

- **5.1:** Describe the structure of DNA (double helix, nucleotides, base-pairing rule).
- **5.2:** Explain the process of DNA replication and state its importance.
- **5.3:** Outline the processes of transcription and translation.
- **5.4:** Explain the relationship between DNA, mRNA, tRNA, and a protein.

Week 6: Genetics & Evolution

- **6.1:** Define key genetic terms: gamete, allele, genotype, phenotype, heterozygous, homozygous, dominant, recessive.
- **6.2:** Complete genetic cross diagrams (Punnett squares) for monohybrid crosses.
- **6.3:** Interpret pedigree charts for the inheritance of a single trait.
- **6.4:** State the theory of natural selection and explain how it leads to evolution.

Week 7: Human Physiology

- **7.1:** Identify the main parts of the digestive system and describe their function (physical and chemical digestion).
- **7.2:** Identify the main parts of the heart and circulatory system and describe the pathway of blood.
- **7.3:** Explain the mechanism of breathing and gas exchange in the alveoli.
- **7.4:** Identify the main parts of the male and female reproductive systems.

Week 8: Plant Physiology

- **8.1:** Identify the structure of a typical plant cell and a leaf, and state the function of each part.
- **8.2:** Explain the process of transport of water and minerals (xylem) and food (phloem).
- **8.3:** Explain a plant response to a named stimulus (e.g., phototropism, geotropism).
- **8.4:** Identify the main parts of a flower and state their function in reproduction.