Grade 11 Biology

Term 1 - 50 complete lesson plans

Ready to teach, in the KICD lesson-plan format | 40-minute lessons | PDF and editable Word

ABOUT THIS PACK

50 complete, ready-to-teach Grade 11 Biology lesson plans for Term 1, covering taxonomy I, ecology and taxonomy II.

TOPICS IN THIS PACK

Topic	Name	Lessons
1.1	Taxonomy I	14
1.2	Ecology	20
1.3	Taxonomy II	16

INSIDE EVERY LESSON PLAN

- The specific learning outcomes, key inquiry question, core competencies, values and PCIs, and the resources needed.
- A timed lesson flow: what the teacher does and what the learners do, from introduction to summary.
- The key content (a worked example, notes or a practical with its expected results), then four practice questions with the answers for the teacher.
- The common mistake to watch for, and ideas for learners who need support and for those ready for more.
- A four-level CBC assessment rubric (EE, ME, AE, BE), homework, and a blank reflection space to fill in after teaching.

A TASTE OF LESSON 1

Meaning of taxonomy and classification

By the end of the lesson, the learner should be able to: a) define taxonomy and classification; b) explain why organisms are classified

> **Taxonomy and classification**
> TAXONOMY is the science of describing, naming and classifying living organisms. CLASSIFICATION is grouping organisms according to their similarities and differences. A group at any level (such as a kingdom or a genus) is called a TAXON (plural taxa).
> Organisms are grouped mainly by structural (morphological) features, cell structure, mode of nutrition, body organisation and, today, DNA similarity.

You also receive this pack as an editable Word file, so you can change any lesson to suit your class before you print it. Lessons follow the order of the KICD curriculum design.

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Meaning of taxonomy and classification

Strand 1.0 Cell Biology and Biodiversity > Sub-strand 1.1 Taxonomy I | Lesson 1 of 14 | 40 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) define taxonomy and classification; b) explain why organisms are classified

KEY INQUIRY QUESTION(S)

- How are living organisms classified?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
COMPETENCY	**Self-efficacy**	Learners attempt each task with confidence and see that effort improves results.
VALUE	**Respect**	Learners listen while others explain and accept correction politely.
VALUE	**Responsibility**	Learners look after shared materials and finish every task.
PCI	**Safety and security**	Learners follow safety rules when using materials and moving about.
PCI	**Environmental conservation**	Examples link to caring for the school and home environment.

LEARNING RESOURCES

Charts of the taxonomic hierarchy and the five kingdoms | Pictures or specimens of local organisms | Manila paper and marker pens | Notebooks, pencils and rulers

ORGANISATION OF LEARNING

Whole class for explanations; groups of four for charts, field observation and sorting; pairs at microscopes. Learners keep to safe paths and observe road safety on walks.

KEY WORDS

taxonomy | classification | taxon | kingdom | species | binomial nomenclature | genus | prokaryote | eukaryote | hypha

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
6 min	9 min	10 min	9 min	6 min

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LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "A supermarket sorts thousands of items into sections. How does that help shoppers? How could the same idea help biologists?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	9	Take learners through "Taxonomy and classification" (key ideas on the next page), explaining as you go. Use charts of the taxonomic hierarchy and the five kingdoms, pictures or specimens of local organisms, manila paper and marker pens. Ask learners to predict what comes next before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	9	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Why do different groups in the activity end up with different groupings?"	Say the key idea in their own words and answer the exit question in the exercise book.

KEY IDEAS

Taxonomy and classification

TAXONOMY is the science of describing, naming and classifying living organisms. CLASSIFICATION is grouping organisms according to their similarities and differences. A group at any level (such as a kingdom or a genus) is called a TAXON (plural taxa).

Organisms are grouped mainly by structural (morphological) features, cell structure, mode of nutrition, body organisation and, today, DNA similarity.

Activity: in groups, sort ten pictures of local organisms (maize, kale, mushroom, mosquito, chicken, goat, frog, tilapia, moss, mould) into groups using your own criteria, then explain your criteria to the class.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	Define taxonomy.	**The science of describing, naming and classifying living organisms.**
2	What is a taxon?	**A group of organisms at any level of classification, such as a kingdom or a genus.**

3	Give two features used to classify organisms.	**For example: body structure, cell structure, mode of nutrition, DNA similarity.**
4	Why do different groups in the activity end up with different groupings?	**They used different criteria; scientists agree on standard criteria so that everyone classifies the same way.**

WATCH OUT FOR

Learners classify by size or colour only. Encourage structural features such as legs, wings, leaves or cell type.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

Level	What the learner can do
Exceeds expectations (EE)	Can define taxonomy and classification confidently and accurately, explain the method used, and apply the idea to new or unfamiliar problems.
Meets expectations (ME)	Can define taxonomy and classification accurately in familiar situations; notices and corrects slips without help.
Approaches expectations (AE)	Can partly define taxonomy and classification, or does so with prompts from the teacher or a partner; makes some errors.
Below expectations (BE)	Cannot yet define taxonomy and classification without direct help; needs the idea taught again with concrete objects.

SUPPORT AND EXTENSION

Learners who need support	Give a list of possible criteria: legs, wings, green leaves, backbone, feeds on dead matter.
Learners ready for more	Why is DNA now used in classification? (Answer: Organisms that look alike may not be closely related; DNA shows true relationships more accurately)
Inclusion	Seat learners with low vision near the board and read aloud whatever you write; use large, clear, tactile materials; allow extra time; pair with a patient partner; use gestures or Kenyan Sign Language for the key words.

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HOMEWORK AND FOLLOW-UP

Redo questions 3 and 4 neatly in the exercise book. Then tell someone at home what you learned about "meaning of taxonomy and classification" and bring one question of your own to ask next lesson.

TEACHER SELF-CHECK

- Did every learner get a turn to handle materials or explain their thinking?
- Did most learners meet the outcome? Write down the names of those who did not.
- Was the pace right — did any step take too long or too short a time?
- Which competency and value did I see learners showing?
- What will I change the next time I teach this lesson?

REFLECTION ON THE LESSON / SELF-REMARKS

Write this after teaching - what worked, what to change, which learners need follow-up.

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Significance of classification

Strand 1.0 Cell Biology and Biodiversity > Sub-strand 1.1 Taxonomy I | Lesson 2 of 14 | 40 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) explain the significance of classifying living organisms; b) relate classification to biodiversity conservation

KEY INQUIRY QUESTION(S)

- How are living organisms classified?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
COMPETENCY	**Self-efficacy**	Learners attempt each task with confidence and see that effort improves results.
VALUE	**Respect**	Learners listen while others explain and accept correction politely.
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KEY WORDS

taxonomy | classification | taxon | kingdom | species | binomial nomenclature | genus | prokaryote | eukaryote | hypha

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
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LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "If every county gave the same bird a different name, what problems would scientists face?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	9	Take learners through "Why classify organisms" (key ideas on the next page), explaining as you go. Use charts of the taxonomic hierarchy and the five kingdoms, pictures or specimens of local organisms, manila paper and marker pens. Ask learners to predict what comes next before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	9	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Why is a single scientific name better than local names?"	Say the key idea in their own words and answer the exit question in the exercise book.

KEY IDEAS

Why classify organisms

Significance: (1) places millions of organisms into manageable groups for study; (2) helps identify unknown organisms; (3) shows evolutionary relationships between organisms; (4) gives every organism one universal name, avoiding confusion between languages; (5) helps predict the features of a newly found organism from its group; (6) supports conservation by showing which species and groups are rare or endangered; (7) helps in agriculture and medicine, e.g. identifying pests, disease-causing organisms and useful plants.

Example: knowing that a new caterpillar belongs to the same family as the fall armyworm warns farmers that it may damage maize.

Biodiversity conservation: taxonomy lets conservationists count species, identify endangered ones (such as the Hirola antelope in Kenya) and protect their habitats.