

2023/24 ANNUAL TEACHING PLANS: AGRICULTURAL SCIENCES: GRADE 11 (TERM 1)

TERM 1	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
CAPS TOPIC	BASIC AGRICULTURAL CHEMISTRY (CAPS PG. 25)	CHEMICAL BONDING (CAPS PG. 25)	INORGANIC AND ORGANIC COMPOUNDS (CAPS PG. 25)	ALKANES AND ALCOHOLS (CAPS PG. 25)	FATTY ACIDS AND BIO-MOLECULES (CAPS PG. 26)	PROTEINS (CAPS PG. 26)	CARBOHYDRATES (CAPS PG. 26)	SOIL SCIENCE (CAPS PG. 26)	SOIL STRUCTURE (CAPS PG. 27)	SOIL COLOUR AND SOIL PORES (CAPS PG. 27)	REVISION & TEST
CORE CONCEPTS, SKILLS AND VALUES	<i>The following terminology:</i> Matter, atom, molecules, periodic table and isotopes, the differences between elements, compounds and mixtures, the basic interpretation of the periodic table of elements, the difference between acids and bases, the general structure of an atom, the main types of particles of an atom and their respective charges, the relation between atomic numbers and number of particles in the nucleus, the formation of ions, the arrangement of electrons around the nucleus and valency	A basic chemical bonding as it occurs to form a molecule, the following chemical bonding with their respective structural formulae: <ul style="list-style-type: none"> • Covalent bonding (hydrogen gas, water, etc.) • Ionic bonding (copper chloride, sodium chloride, etc.) 	The distinction between inorganic and organic compounds (with examples), the chemical formulae, structural formulae, Lewis structures, importance and functions of the following inorganic compounds: Water; carbon dioxide; mineral salts, for example sodium chloride/table salt and ammonia The characteristics of the carbon atom (bonding on the carbon atom) and organic substances, the basic grouping of organic compounds	The basic types of alkanes (not more than 5 carbon atoms), their chemical and structural formulae, their importance in plants and animal metabolism, the concept: Isomers as illustrated by simple alkane structures, the basic types of alcohols (their structures and importance) with reference to methanol and ethanol, comparison between alcohols and alkanes based on their general structural formulae	The chemical structure of a simple fatty acid, differentiation between saturated and unsaturated fatty acids (their structures and importance), the differences between fatty acids and alcohols based on their structural formulae, bio-molecules, basic composition of a simple lipid/fat; the differences between fats and oils, saturated and unsaturated fats, and the main functions/importance of lipids/fats in living organisms	General structure of the monomers of proteins (amino-acids), the differences between simple and complex proteins (also refer to essential amino acids and non-essential amino acids), the general structural of polypeptides/simple proteins, the synthesis and hydrolysis of proteins, the main functions/importance of proteins in living organisms	The basic chemical composition of carbohydrates, the general formulae of carbohydrates, structural and chemical formulae of simple sugars (monosaccharides), the main classifications of carbohydrates - monosaccharide, disaccharides and polysaccharide (with relevant examples), the main functions of carbohydrates in living organisms	Soil texture, the main groupings of soil particles (clay, silt and sand) that determine the soil textures and their respective diameters, scientific method to determine the quantity of sand, silt and clay in a soil sample, determination of the textural classes of soil and interpretation of textural triangle, the influences of sand and clay particle size/texture on soil characteristics/behaviour, the two field methods to determine the soil texture class: Sausage method/feeling method; and the most important reasons for a farmer to know the textural class of his/her farm land	<i>The concept:</i> Soil structure, the classification/types of soil structures (shape and size), the factors influencing the development and stability of soil structure, the factors or malpractices that cause the destruction/decline in soil structure, the different methods which farmers can apply to improve a poor soil structure, the advantages of good soil structure	Differences between a homogeneous and non-homogenous soil colour, the main factors that determine the colour of soil, the interpretation of the following soil colours: Dark, red, light, yellow, greyish coloured and mottled appearance The effect of soil texture, soil structure, soil depth and soil cultivation on the total pore space in a soil, the differences between macro pores and micro pores and their functions in a soil, the bulk density and porosity, the definitions of soil bulk density and porosity, ways to determine, calculate and interpret the bulk density of a soil, factors that influence the bulk density	TASK 2: Term 1: Content 100 marks 1½ hours
REQUISITE PRE-KNOWLEDGE	Link with Agricultural Studies Gr 8 & 9, Gr 9 Natural Sciences and Gr 10 Physical Sciences							Link with Grade 10 Soil Science			
RESOURCES (OTHER THAN TEXTBOOK) TO ENHANCE LEARNING	Own Developed PowerPoint slides and videos, past examination papers										
INFORMAL ASSESSMENT	Questions from past papers, tests, practical work & worksheets, homework, classwork The assessment mentioned under formal assessment is the minimum number of pieces Educators are free to add more informal assessment pieces to enhance learning										
SBA (FORMAL ASSESSMENT)	TASK 1: Practical investigation/research task: (25%) of term 1							TASK 2: TEST -- 100 marks (75%) of Term 1			

2023/24 ANNUAL TEACHING PLANS: AGRICULTURAL SCIENCES: GRADE 11 (TERM 2)

TERM 2	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
CAPS TOPIC	SOIL AIR (CAPS PG. 28)	SOIL MOISTURE (CAPS PG. 28)	SOIL TEMPERATURE (CAPS PG. 28)	SOIL MORPHOLOGY (CAPS PG. 29)	SOIL CLASSIFICATION (CAPS PG. 29)	SOIL COLLOIDS AND ACIDITY (CAPS PG. 29) SOIL ALKALINITY AND SALINITY (CAPS PG. 30)		SOIL ORGANIC MATTER: LIVING & NON-LIVING ORGANIC MATTER (CAPS PG. 31)		REVISION & CATCH-UP	Test: Term 2 content
CORE CONCEPTS, SKILLS AND VALUES	The factors that affect/influence storage and movement of soil air, comparison between atmospheric and soil air (based on the nitrogen, oxygen and carbon dioxide content), the importance/necessity of the following soil gases: Oxygen, carbon dioxide and nitrogen	The basic types of soil water and their characteristics, a description of soil water losses and ways to limit these losses, the forces of nature that have an effect on soil water, the different movements of water through the soil, the availability of soil water to a plant at the following limits of soil water content: Saturation point, field water capacity, temporary wilting point and permanent wilting point Scientific methods to illustrate the following aspects that are related to soil water: Capillary; and gravitational movement of water, effective soil water management	The main factors influencing soil temperature, the scientific approach to measure the effect of these factors that influence soil: Temperature, the effects of soil temperature on physical, chemical and biological processes that take place in the soil, the ways/methods to manipulate soil temperature for better production (cultivation methods and controlled environment)	The terminology: Soil profile, soil horizon and profile hole, the development and description of the following master horizons: O-horizon, A-horizon, E-horizon, B-horizon, G-horizon, C-horizon, and R-horizon (a schematic representation of a soil profile), the soil profiles of the following: Adult soil, young soil, wet/waterlogged soils and eroded soils, a practical identification of topsoil and subsoil horizons	Description of soil classification and the use of a binomial soil classification systems in South Africa, the procedures to be followed when identifying and classifying soil by the binomial system, the reasons/purposes/value of the classification of soils in agriculture, the description of diagnostic horizons of the topsoil and subsoil horizons	The description and characteristics of inorganic soil colloids, the differences between inorganic and organic colloids, cation adsorption and cation exchange in soil, manipulation of the cations and cation exchange in the soil, the PH-scale and hydrogen ions concentration, the concepts: Soil acidity (predominant cations), the distinction between active acidity and reserve acidity, the factors influencing/causing the soil acidification process, the effects of soil acidity on crop production, the methods of preventing/controlling soil acidification, the exchange reaction in the soil that occurs during the reclamation process The concept: Soil alkalinity (predominant cations), the differences between saline soils and sodic soils, the characteristics of saline soils/white brack soils, the factors influencing/causing brackishness/soil alkalinity/saltiness, the effects of alkaline/brack on crop productivity, the methods of preventing/controlling soil alkalinity, the procedures to be followed on the reclamation of alkaline/brackish soils		The differences between soil micro-organisms and macro-organisms (with examples), the main groups of soil micro-organisms (with examples), the importance and roles of soil micro- and macro-organisms, the requirements for soil micro- and macro-organisms, the carbon cycle/conversion by micro-organisms, the nitrogen cycle/conversion by micro-organisms, the process of symbiosis based on the following: Mycorrhiza (fungus) and <i>Rhizobium</i> bacteria, ammonification, nitrification, denitrification, nitrogen assimilation, solubilisation, immobilization and mineralisation Definitions of the following concepts: Fresh organic matter and humus, the physical, chemical and biological effects of organic matter on soils, the factors affecting the balance between gains and losses of organic matter in soils, the effects of the decline in organic matter content on soil degradation		100 marks	
REQUISITE PRE-KNOWLEDGE	Link with Gr 8 & 9 Agricultural Studies, Gr 9 NS and SS, Gr 10 Soil Sciences and Term 1 Gr 11 Agricultural Sciences										
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INFORMAL ASSESSMENT	Questions from past papers, tests, practical work & worksheets, homework, classwork The assessment mentioned under formal assessment is the minimum number of pieces Educators are free to add more informal assessment pieces to enhance learning										
SBA (FORMAL ASSESSMENT)	TASK 3: JUNE EXAMINATION, 100% of term 2 mark										

2023/24 ANNUAL TEACHING PLANS: AGRICULTURAL SCIENCES: GRADE 11 (TERM 3)

TERM 3	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
CAPS TOPIC	PLANT NUTRITION (CAPS PG. 31)	WATER AND NUTRIENTS (CAPS PG. 31)	MINERAL NUTRITION (CAPS PG. 32)	PLANT NUTRIENT UPTAKE AND ANALYSIS (CAPS PG. 32)	ORGANIC AND INORGANIC FERTILISERS (CAPS PG. 32)		ORGANIC FERTILISERS AND FERTILISATION PRACTICES (CAPS PG. 33)	PLANT REPRODUCTION (CAPS PG. 33) SEXUAL REPRODUCTION AND POLLINATION	FERTILISATION AND ABLACTATION (CAPS PG. 34)	SEEDS AND FRUIT SETTING AND SEED GERMINATION (CAPS PG. 34)	TASK 5: TEST 1 100% of term mark Term 3: Content only
CORE CONCEPTS, SKILLS AND VALUES	The importance of photosynthesis, the storage of food and various organs utilized for food storage in plants, the factors influencing the rate of photosynthesis, the manipulation of plants to increase the photosynthetic rate	The importance/functions of water in plants, the movement of water from the soil to the roots of plants, the distinctions between osmosis and diffusion, the differences between the following processes: Movement of water from the roots to the stems and leaves, movement of water from the leaf to the air (atmosphere), the terms: Transpiration pull and osmotic flow, plants' adaptation features to reduce transpiration rate (how plants control transpiration), movement of the products of photosynthesis (nutrients)	The difference between micro/trace elements and macro-elements, the different macro-elements: Nitrogen, sulphur, phosphorus, potassium, calcium and magnesium (the importance/functions, form in which it is absorbed and the deficiency symptoms of each), the different micro-elements: iron, manganese, boron, zinc, copper, molybdenum and cobalt (the importance/functions, form in which it is absorbed and the deficiency symptoms of each)	The plant nutrient/mineral uptake based on the following: Passive ion uptake by diffusion and active ion uptake by transport carrier molecules, the forms in which nutrients/minerals are available to plants, the factors affecting/influencing nutrients/mineral such as phosphorus, potassium and nitrogen availability to plants, the importance of nutrient element analysis in crop production, methods utilised in crop production to determine the nutritional status of the soil (soil samples, plant/leaf samples)	A definition of the term fertiliser, the difference between organic and inorganic fertilisers, the main nitrogenous, phosphorus and potassium inorganic fertilisers, the calculation of the percentages of each plant nutrient in the fertiliser mixtures/multi-fertiliser mixtures, impact of inorganic fertilisers on the environment, the differences between calcitic and dolomitic lime; and the beneficial effects of liming (physical, chemical and biological effects), the use of gypsum Organic fertilisers, green manure, farm manure, compost, fertilisation practices		Definition of sexual reproduction in plants, the functions and structures of the following parts of a flower: Stamen, pistil and non-sexual parts, for example petals (corolla), sepals (calyx) The concept: Pollination, the differences between self-pollination and cross pollination, the description of the main agents of pollination	The structure of a matured/ripe pollen grain and a receptive stigma, the germination of a ripe pollen grain on a receptive stigma until fertilisation, the terminology: Fertilisation and double fertilisation, the development of a fertilised ovule to form a seed/fruit, the distinction between vegetative and stimulative parthenocarpy, the concept: Ablactation, the factors causing/influencing ablation	The concept: Fruit setting and seed germination, the development of seeds/fruits from a fertilised flower, the different types of fruits according to the way in which they develop, the process of seed germination, the distinction between seed dormancy and scarification, the basic requirements for seed germination		
REQUISITE PRE-KNOWLEDGE	Link with Agricultural Studies Gr 8 & 9, Gr 9 NS, Gr 10 Soil Sciences and Term 1 Gr 11 Agricultural Sciences										
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SBA (FORMAL ASSESSMENT)	TASK 4: PRACTICAL INVESTIGATION TASK 5: TERM TEST 75-100 marks – 100% of term mark										

2023/24 ANNUAL TEACHING PLANS: AGRICULTURAL SCIENCES: GRADE 11 (TERM 4)

TERM 4	WEEK 1	WEEK 2	WEEK 3	WEEK 4/5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10
CAPS TOPIC	PLANT REPRODUCTION (ASEXUAL REPRODUCTION), PLANT IMPROVEMENT AND BIOTECHNOLOGY (CAPS PG. 35)		PLANT PESTS (CAPS PG. 36)	OPTIMAL RESOURCE UTILISATION (CAPS PG. 37) SOIL CULTIVATION AND CROP ROTATION (CAPS PG. 37) GREENHOUSE, HYDROPONICS AND AQUACULTURE (CAPS PG. 38)	REVISION	PAPER 1 Marks: 150 Time: 2½ hours <i>Learners must answer all 4 questions</i>		PAPER 2 Marks: 150 Time: 2½ hours <i>Learners must answer all 4 questions</i>	
CORE CONCEPTS, SKILLS AND VALUES	Oculation and grafting, the advantages and disadvantages of using asexual reproduction methods to propagate plants Introduction to biotechnology	Weed management, plant diseases and their control, plant pests and their control, integrated pest management control (IPM), insect control in stored seeds and grass, the general role of the state in plant protection		Soil surveying and planning, precision farming Soil cultivation & crop rotation Greenhouse, hydroponics and aquaculture		Topics <i>Basic agricultural chemistry</i> <i>Soil science (Physical)</i> <i>Soil science (Chemical)</i>		Topics: <i>Plant Studies- Nutrition</i> <i>Plant studies – Reproduction</i> <i>Optimal resource utilisation</i>	
REQUISITE PRE-KNOWLEDGE	Link with Grade 10 Plant Studies	Link with Grade 10 sustainable natural resource utilisation				Question 1 <ul style="list-style-type: none"> • Short questions, objective questions e.g., MCQ, terminology, columns/statements and items (45 marks) Section B: Question 2-4 <ul style="list-style-type: none"> • Variety of question types • 3 questions of 35 marks divided into subsections Cognitive levels Knowledge – 40% Comprehension and application – 40% Analysis, evaluation and synthesis– 20%			
RESOURCES (OTHER THAN TEXTBOOK) TO ENHANCE LEARNING	Own developed PowerPoint slides and videos, past examination papers								
INFORMAL ASSESSMENT	Questions from past papers, tests, practical work & worksheets, homework, classwork The assessment mentioned under formal assessment is the minimum number of pieces Educators are free to add more informal assessment pieces to enhance learning								
SBA (FORMAL ASSESSMENT)									