**Sample Course Outline**

Plant Production Systems

General Year 12

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# Sample course outline

# Plant Production Systems – General Year 12

## Unit 3 and Unit 4

#### Semester 1

| **Week** | **Syllabus content** |
| --- | --- |
| 1–2 | * Course description, assessment, expectations * Revision – update on key concepts from previous years – photosynthesis, respiration, transpiration, soil types, plant production enterprises etc.   **Investigating plant production**   * Develop hypotheses to test based on prior information * Design and conduct an investigation, considering aspects of experimental design, including variables and controls |
| 3–4 | **Systems ecology**   * Impact of plant production systems on natural resources * Benefits to plant production systems of ecosystem components * Effects of pesticides on the environment * Nutrient cycles, including nitrogen, carbon, phosphorus |
| 5–6 | **Plant structure and function**   * Structure and function of stems, roots, leaves, flowers, fruit and seeds * Response of plant growth to limiting factors, including temperature, water, gases and nutrients * Nutrient requirements throughout plant growth stages |
| 7–8 | **Produce for purpose**   * Implement a calendar of operations for a selected plant enterprise * Select crops and cultivars to meet market requirements * Manage crops to optimise profitability |
| 9–11 | **Plant environment**   * The environment of the shoot, including gaseous exchange and light absorption * The environment of the root * Function of micronutrients and symptoms of deficiencies * Soil textures and their nutrient and water-holding capacity * Comparison of long-term climate records with current weather patterns * Soil pH and its influence on nutrient availability * Interpreting soil and plant test results * Correcting soil acidity and alkalinity * Monitoring soil nutrients * Options for nutrient management * Maximising the effectiveness of fertilisers through timing and placement * Identifying risks of nutrient pollution * Techniques to manage soil water, soil texture and soil structure |
| 12 | **Investigating plant production**   * Analyse and interpret data, including calculating means * Present data using appropriate methods * Draw conclusions based on experimental data and validate from other sources |
| 13–15 | **Plant health**   * Impact of pests and diseases on production systems * Life cycles of selected pests and diseases * Assessment of pest and disease risk * Biosecurity measures to reduce risk from pests and diseases * Factors influencing pest and disease control programs   **Externally set task** |

#### Semester 2

| **Week** | **Syllabus content** |
| --- | --- |
| 1–2 | **Plant health**   * Monitoring pests and diseases in a production system * Pest and disease management options, including integrated pest management (IPM) * Factors affecting the selection of pesticides, including withholding periods |
| 3–4 | **Plant structure and function**   * Sexual reproduction by seeds through self- and cross-pollination * Asexual reproduction by vegetative means * Phases of growth, growth curves, and plant requirements at different stages |
| 5–7 | **Breeding and improvement**   * Aims of breeding and selection, including profitability, meeting market requirements and environmental conditions * Sources of genetic variation * Selection criteria, including subjective and objective characteristics * Legal requirements of plant production, including plant variety rights (PVR) * Genetic terms and concepts * Predicting outcomes of crosses using Punnett squares * Interactions between genotype and environment (GxE) * Breeding systems |
| 8–10 | **Sustainable production**   * Maintaining and improving the quality of soil and water * Stewardship of natural and farming resources, including technologies * Complying with industry codes of practice * Identification of risks to sustainable production * Review the sustainability of current management practices * Government legislation relating to a selected enterprise |
| 11–12 | **Produce for purpose**   * Assess quality of product against market specifications * Identify quality assurance programs for selected plant production systems, including their purpose and major features * Identify transport and storage requirements for plant products |
| 13–15 | **Economics, finance and markets**   * Quantity and value of domestic plant products * Marketing options for plant products * Assessment of resources used in enterprises * Marginal costs and marginal returns and the application of the law of diminishing returns * Applying the law of the minimum to plant production * Factors affecting supply and demand * Interpretation of supply and demand information for a product * Preparation of simple budgets for an enterprise and identification of items likely to impact on profit |