**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
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