

# Associate Degree in Forestry Management

## First-year subjects

### Semester 1

#### 202-155 Information Technology and Communication

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Nick Bailey

**Contact:** Thirty-six hours of lectures and 36 hours of practicals/tutorials (*Semester 1*).

**Description:** On completion of this subject, students should:

- have a working knowledge of, and basic competence in the use of, tools for communication and for accessing and managing information, particularly electronic and web-based technologies;
- understand the principles of effective communication at different levels (one-on-one, small group, large group etc.) and with audiences from different backgrounds and with different interests;
- have experience in written and oral communication for a range of audiences and be competent in both forms of communication, and also have experience in inter- and intra-team communication using electronic and web-based communication tools;
- have developed problem-solving and critical-thinking skills to a level that will serve as a platform for further development of these capabilities throughout the course;
- have formally interacted with students completing this subject at other campuses, and developed an understanding of the learning environment of their peers at those campuses; and
- understand group dynamics, and the factors that lead to effective team work.

**Assessment:** Referenced abstract (20% of final marks), oral presentation (20% of final marks), three software projects (15% each of final marks), assessed team processes (15% of final marks).

**Prescribed texts:** J Dwyer, *The Business Communication Handbook*, Prentice-Hall, 2000. • G Courte and A Marquis, *Mastering Microsoft Office 2000 Professional Edition*, Sybex, 1999.

#### 220-156 Sustainable Outputs from Forested Lands

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Ms Robyn Price

**Contact:** Thirty hours of lectures, 30 hours of practical work (*Semester 1*).

**Description:** This subject discusses the production of sustainable outputs from forested land. It covers both wood and non-wood forest products.

On completion of this subject, students should:

- recognise forests as having multiple uses and the complexity of making management decisions for multi-resource forests;
- be familiar with both wood and non-wood forest products and the marketing and sale of these forest products;
- understand the concept of sustainable forestry; and
- be familiar with the features and structure of hardwoods and softwoods, the conversion of logs into wood products, value adding, defects, degradation and decay of wood products.

The subject covers the areas of:

- characteristics of world forests, developments in conservation and forest management;
- forest management practices and trade patterns in forest products;
- structure and features of hardwoods and softwoods, milling processes, solid and composite wood products, value adding, paper and pulp production;
- non-wood forest products, integrated forest management;
- marketing forest products;
- wood science; and
- sustainability.

**Assessment:** A 2-hour examination worth 40%, and up to three projects of a maximum of 2000 words each, totalling 60%.

#### 220-161 Fire and Water Management

**Availability:** Creswick campus.

**Credit points:** 12.5

**Coordinator:** Ms Robyn Price

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 1*).

**Description:** This subject examines the Management of Fire and Water within a Forested Land Environment. On completion of this subject, students should:

- understand the nature of wildfire and fire behaviour in forests and other vegetation types;
- be aware of approaches to fire suppression;
- appreciate the complexity of catchment management; and
- be able to assist in the preparation of catchment management plans.

The subject covers:

- basic fire chemistry, behaviour and suppression and personal fire safety; and
- principles of water movement in forested catchments and management of catchments for conservation of hydrologic and riparian values.

**Assessment:** A 2-hour examination worth 50%, and up to three projects of a maximum of 2000 words each, totalling 50%.

#### 220-163 Silviculture

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Mark Stewart

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 1*).

**Description:** This subject introduces the concept of silvicultural systems and how they are applied to forests for satisfying management objectives. On completion of this subject, students should:

- understand the range of silvicultural techniques available for forest management;
- understand the application of silvicultural systems to forests;
- be able to assist with the planning and supervision of silvicultural operations in the field; and
- understand the management of plantations and native forests for wood production.

The subject covers:

- forest policy relevant to silviculture;
- silvicultural system design for meeting management objectives;
- implementation of silvicultural designs;
- operational considerations for silvicultural systems; and
- pest, weed and disease management.

**Assessment:** A 2-hour examination worth 40%, and two projects of a maximum of 2000 words each, totalling 60%.

### Semester 2

#### 208-166 Financial Management I

See full subject details on page 1.

#### 220-160 Forest Botany and Ecology

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Ron Hateley

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 2*).

**Description:** This subject introduces ecological concepts and the importance of ecological balance in forest management. On completion of this subject, students should:

- understand basic plant structure, the terms used to identify trees and be able to identify common tree species;
- be familiar with plant classification and systems used to classify plants;
- understand the fundamentals of tree growth and forest structure;
- be familiar with the principle of niche theory, inter and intra-specific competition, diversity and species richness; and
- have an appreciation of the processes influencing community diversity and structure and ecosystem stability.

This subject covers:

- basic plant structure, classification, taxonomy and identification.
- functional relationships, trophic levels, microenvironment, adaptation, habitat and niche;
- limiting factors, variability and diversity of forest populations, spacing, territoriality and social hierarchies;

- population growth and development of forest stands;
- community structure and species composition, interaction within the community and the external environment; and
- community change, succession and ecosystem stability and response to manipulation.

**Assessment:** A 2-hour examination worth 40% and up to five practical exercises totalling 60%.

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## 220-162 Forest Surveying and Measurement

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Mark Stewart

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 2*).

**Description:** This subject introduces the techniques and tools used to measure the forest and its attributes. On completion of this subject, students should:

- be able to collect and interpret land survey data;
- be able to measure trees;
- apply basic sampling techniques and designs to assess various forest attributes in both native forest and plantations;
- be able to interpret aerial photographs; and
- appreciate the potential of remote sensing for use in land surveying and management.

The subject covers:

- map interpretation, use and maintenance of surveying instruments;
- compass traversing and mapping, gradelines and plotting contours;
- stand parameter measurement and field assessment;
- tree volume and growth; and
- aerial photograph interpretation and remote sensing systems.

**Assessment:** A 2-hour examination worth 40% and up to eight practical exercises totalling 60%.

## Year-long subject

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### 220-166 Forestry Work Skills I

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Mark Stewart and Ms Robyn Price

**Contact:** Twelve weeks in total (*Year long*).

**Description:** This subject introduces students to field techniques, tools and report writing as required in the forestry sector. Students also gain experience working in field situations, supervising work crews and managing projects.

On completion of this subject, students should:

- be able to describe and comment on the major tasks performed;
- have gained an insight into working as a member of a team and supervising a team working in a forest;
- understand the process of project development, completion and reporting;
- understand occupational health and safety issues and responsibilities in forests; and
- be able to prepare and write a report.

Forest skills developed during the subject should include:

- hand tools, mechanical tools, first aid, occupational health and safety, environmental care and chemical handling, surveying, measurement, mapping and remote area skills;
- project management, coordination and reporting;
- supervision skills, team work and group dynamics; and
- report preparation and time management.

**Assessment:** Students are required to complete a report (of 2000 words) on the activities undertaken. Students not currently employed in the forest industry must attend 80 days of field instruction.

## Second-year subjects

### Semester 1

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#### 220-279 Forest Policy

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Ms Robyn Price

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 1*).

**Description:** This subject introduces policy and legislation for forestry and examines the role of, limits to, and creation of policies and legislation.

On completion of this subject, students should:

- understand the need for policy and legislation and the role it plays in forestry;
- be aware of the different levels at which policy and legislation operate;
- be able to implement and adhere to policy and legislation in the field;
- understand the legality of policy and legislation and be able to enforce policy and legislation requirements; and
- understand the process by which policy and legislation are created.

The subject covers the areas of:

- policy and legislation in forestry;
- creation and implementation of policy and legislation;
- codes of practice; and
- adherence and enforcement.

**Assessment:** Up to three projects of a maximum of 2000 words each and totalling 100% of the final marks.

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### 220-285 Wildlife, Soil and Cultural Conservation

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Ms Robyn Price

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 1*).

**Description:** This subject introduces and outlines the management strategies and conservation of Wildlife, Soil and Culture within a forested landscape.

On completion of this subject, students should:

- be familiar with both terrestrial and aquatic habitats and be able to conduct wildlife surveys;
- understand animal population dynamics;
- be able to identify soil types and problems;
- understand soil fertility and the action of fertilisers and soil/water relations;
- understand the complexity of cultural issues in land management; and
- be aware of cultural conservation conflict issues and the management strategies developed to meet the challenge of these issues.

This subject covers:

- population dynamics and terrestrial and marine wildlife surveying and monitoring techniques, habitat change and wildlife management plans;
- assessment of physical and chemical fertility of Australian soils;
- soil texture, structure, organic matter, organisms, water and pH;
- soil degradation problems and control;
- soil acidity, salinity and erosion;
- nutrient cycles and the selection, application and handling of fertilisers;
- factors important to cultural conservation, communication and liaising;
- conflicts of values and the concept of balance; and
- role of legislation and policy in cultural conservation.

**Assessment:** A 1-hour examination worth 30%, and up to three projects of a maximum of 2000 words each and totalling 70%.

## Semester 2

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### 208-274 Managing Staff

See full subject details on page 2.

## Year-long subject

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### 220-287 Forestry Work Skills II

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Mark Stewart and Ms Robyn Price

**Prerequisites:** 207-166 or 207-168 Forestry Work Skills I

**Contact:** 16 weeks in total (*Year long*).

**Description:** This subject builds on the knowledge students gained in Forestry Work Skills I. Students are required to apply principles learnt through their studies to participate in work placements and projects. Students experience the practical application of techniques and methods studied during the course of the advanced diploma.

On completion of this subject, students should:

- be able to work independently and unsupervised as well as actively participate in group work; and

- understand the process of project development, completion and reporting, and effectively manage time allocated to activities.

The subject covers the areas of:

- practical application of the field skills acquired during Forestry Work Skills I and other advanced diploma subjects;
- advanced project design management, coordination and reporting; and
- supervision skills, team work and group dynamics.

**Assessment:** Students are required to complete a report (of 2000-2500 words) on the activities undertaken. Those students not employed in the forestry or a related industry must complete 80 days of industry experience.

## Electives

### 202-252 Quantitative Skills for Land and Food

See full subject details on page 3.

### 208-267 Financial Management for Resource Ind II

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Assoc Prof Bill Malcolm

**Prerequisites:** 208-161 Financial Management for Resource Industries I and 208-163 Farm Management

**Contact:** Thirty-six hours of lectures and 36 hours of tutorials. Residential workshop for flexible-delivery students (*Semester 1*).

**Description:** On completion of this subject students should be able to:

- understand investment analysis/capital budgeting in order to analyse investments;
- understand strategies for coping with risk and uncertainty in decision making;
- be able to appraise assets for acquisition, leasing options to ownership;
- understand investment principles (both in and out of the principal industry);
- understand the taxation implications of investment and finance decisions;
- understand the issues involved in the transfer of a business;
- understand the strategic management process and its application to farming;
- develop a strategic business plan to improve the productivity and profitability for rural business;
- give due consideration to enterprise selection, business risk and changing business environment; and
- complete a comprehensive financial analysis plan: interpret and critically analyse the project's results, draw rational conclusions and identify key success factors.

The subject covers areas of:

- investment analysis - capital budgets, discounted cash flow techniques, cost benefit;
- development budgets;
- asset valuation;
- land valuation;
- asset acquisition: purchase, rent, lease, syndication; stock market investment;
- risk management strategies, futures, insurance, quantitative decision analysis; and
- advanced taxation planning and issues and business transfer issues.

Students will undertake a number of case studies to develop strategic management skills before undertaking a project of significant size which exhibits original investigation, analysis and interpretation, and which results in the production of a well-written and presented report.

**Assessment:** One 2.5-hour written examination worth 40% of final marks, two assignments equivalent to 3000 words and worth 30% of final marks each.

**Prescribed texts:** Makeham and Malcolm, *The Farming Game Now*, Cambridge Press, 1993. • Coulthard, Howell and Clarke, *Business Planning-The Keys to Success*, Macmillan Education Australia, 1996.

### 220-273 Tree, Water and Land Planning

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Peter Shepherd & Jeff Lawes

**Contact:** Equivalent of 60 hours of lectures, practicals and tutorials (*Summer semester*).

**Description:** This subject should enable students to:

- understand the ecological principles that influence the management of sustainable land systems;
- analyse natural resource management practices and strategies for sustainable tree, water and land productivity;
- apply appropriate principles and methods in physical tree, water and land planning;
- competently develop a plan for a property, that incorporates considerations of long-term sustainability, flexibility, labour efficiency and economic viability;
- apply forestry principles and techniques to tree, water and land planning; and
- plan and develop farm water supply systems for both stock and domestic use and irrigation.

**Assessment:** Activity document (2500 words, 40%), land-system case study (1500 words, 30%), whole farm plan (30%).

### 220-280 Silviculture of Native Forests

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Ron Hateley

**Prerequisites:** 207-163 Silviculture

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 2*).

**Description:** The subject expands on the basic principals of silviculture and looks in detail at the silvicultural systems applied to forests of varying type.

On completion of this subject, students should:

- have an awareness of the constraints on silviculture due to ecological and social factors;
- understand the factors which can affect stand health and growth and be aware of the techniques available to manage these factors;
- understand silvicultural processes, as applied to different forest types, from site selection through to harvesting and post-harvesting processes; and
- be aware of genetic developments, tree breeding and nursery practices.

The content includes:

- stand health and growth and the factors that affect them;
- ecological and social limiting factors;
- site selection, preparation, planting, stand tending, monitoring, harvesting and post-harvesting treatments;
- yield regulation and harvesting, second rotations, and product oriented silviculture;
- stand monitoring and seed collection; and
- genetics, tree breeding and nursery practice.

**Assessment:** A 2-hour examination worth 40%, and up to three projects of a maximum of 2000 words totalling 60% of the final marks.

### 220-282 Plantation and Farm Silviculture

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr Mark Stewart

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 1*).

**Description:** The subject introduces the concept of plantations as forests and outlines the range of uses for tree on farms.

On completion of this subject, students should:

- understand the processes involved in establishing both softwood and hardwood plantations;
- understand the range of uses of trees on farms, including commercial possibilities and the potential of agroforestry;
- be aware of the stand tending operations required in both plantations and farm forestry; and
- be familiar with current practices involving policy, planning, establishment, maintenance and utilisation of farm forests and plantations.

The subject covers the areas of:

- use of trees on farms and whole farm planning;
- markets for farm tree products;
- agroforestry;
- species selection;
- site assessment and preparation;
- establishment;
- stand tending and health; and
- government incentives.

**Assessment:** A 2-hour examination worth 40%, and up to three projects of a maximum of 2000 words totalling 60% of the final marks.

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### 220-284 Protected Area Management

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Ms Robyn Price

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Summer semester*).

**Description:** The subject introduces the concepts of parks, reserves and wilderness areas and discusses the considerations for effective land management of these areas.

On completion of this subject, students should:

- be aware of the recreational opportunity spectrum and its implications in managing recreational activities in the forest;
- understand the complexity of park management and the need for balance in making decisions about forest use;
- be aware of the development process and history of parks and wilderness areas;
- be aware of the policy and legislation relevant to the management of these areas; and
- understand the importance of extension, interpretation, education and enforcement in the effective management of parks and wilderness areas.

The subject covers the areas of:

- history and development of National Park legislation and systems;
- policy, planning and management for National Parks;
- cultural and historic values in National Parks and extension and enforcement;
- recreation and park management; and
- interpretation techniques.

**Assessment:** Activity Document of up to 1500 words (40%) and a project of 3800 to 4200 words (60%).

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### 220-286 Plant and Animal Pests

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Ms Robyn Price & Mr Karl Liffman

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 2*).

**Description:** This subject introduces common plant and animal pests which affect forests and outlines the management practices used for pest control.

On completion of this subject, students should:

- be able to define a pest in forest ecosystems;
- be familiar with the main plant and animal pests and their biology and ecology;
- be aware of the impacts of plant and animal pests on production forestry; and
- know of the management techniques available for pest control.

The subject covers the areas of:

- plants and animals declared as pests;
- environmental weeds and feral animals;
- ecological impacts of pest plants and animals; and
- management practices to avoid and overcome damage caused by pest plants and animals.

**Assessment:** A 2-hour examination worth 40%, up to three practicals totalling 30%, and a project of a maximum of 2000 words worth 30% of the final marks.

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### 220-289 Fire Suppression

**Availability:** Creswick campus

**Credit points:** 12.5

**Coordinator:** Mr John Nankervis

**Prerequisites:** 207-161 Fire and Water Management

**Contact:** Thirty hours of lectures and 30 hours of practical work (*Semester 1*).

**Description:** This subject deals with the management of fire control incidents and the use of fire as a management tool.

On completion of this subject, students should:

- be able to assist in fire weather forecasting;
- understand the principles of fire behaviour and the basis of fire danger ratings;

- understand the principles of fire control, planning and conduction of fuel hazard reduction and fire suppression strategies;
- be aware of the role of personnel and organisations in fire suppression;
- understand fire law and logistics; and
- appreciate the role and impact of fire on forest ecosystems.

The subject covers the areas of:

- fire weather forecasting and climatic zones, weather systems, temperature, moisture and wind effects;
- fire behaviour, fuel, weather, topography effects and fire danger rating systems;
- fire control, hazard reduction, suppression strategies;
- fire law, logistics and operational considerations; and
- fire ecology.

**Assessment:** A 2-hour written examination worth 50%, and up to three practical activities/assignments totalling 50% of the final marks.