

## **FORESTRY COURSE DESCRIPTIONS – MASSEY UNIVERSITY**

Please go to

[http://studyv.massey.ac.nz/massey/students/studymassey/programme.cfm?change\\_study\\_year=2008&major\\_code=2302&prog\\_id=93013&tab=plan](http://studyv.massey.ac.nz/massey/students/studymassey/programme.cfm?change_study_year=2008&major_code=2302&prog_id=93013&tab=plan) for more information.

### **119.153 - Applied Science (a) Chemistry and Physics (15.0 credits)**

*Restriction(s):* 123.101, 123.103, 124.100

A study of introductory inorganic chemistry and physics with associated demonstration of their role in or application to life processes. Energy provides a common theme for an integration of both sciences. The curriculum is linked to paper 19.154, Applied Science (b). Essential for students with little previous knowledge of scientific principles wishing to concentrate in an applied biological science.

*Note(s):* This paper will be run as a Double Semester paper over Semester 2 and Summer School.

### **119.154 - Applied Science (b) Molecules to Ecology (15.0 credits)**

*Restriction(s):* 162.101, 162.103

An integrated study of organic chemistry, biochemistry, cell biology, biological organisation and ecology with simultaneous demonstration of their involvement in life processes in natural and harvested ecosystems. Suitable for students with previous knowledge of introductory chemistry and physics wishing to concentrate in an applied biological science.

### **119.155 - Communication in the Sciences (15.0 credits)**

*Restriction(s):* 119.177, 139.107, 139.177, 140.125, 140.150, 140.151

A paper designed to introduce science students to the communication skills they will need through their undergraduate degree and in a science-related career. These skills include report writing, developing a position paper, presenting a seminar, accurate integration of secondary source material, appropriate scientific style, and the correct use of grammar, syntax, punctuation and structuring techniques.

### **119.156 - Principles of Agribusiness Management (15.0 credits)**

An introduction to the use of business principles and structures, including economics and marketing, in primary industries. The theory and role of management in agricultural and horticultural businesses. Principles of inventory management and income and cost assessment.

### **119.157 - Analytical Methods in Applied Science (15.0 credits)**

*Restriction(s):* 160.103, 160.131, 161.100, 161.110, 161.120, 161.130

Methods for solving problems involving numerical solutions. Mathematical and statistical techniques for the description, interpretation and analysis of data in selected agricultural, horticultural and natural resource management contexts, including the use of spreadsheets and statistical software.

*Note(s):* Access to a Windows PC, Excel and Minitab are required for analysis of data.

### **119.255 - Innovative Technologies for Food and Fibre Industries (15.0 credits)**

*Prerequisite(s):* Any 100-level paper; nil for GDipRuralStud

The application of emerging technologies in the agricultural, horticultural and land-based sectors, including biotechnology and bioinformatics. Key concepts and systems underpinning the development of emerging technologies. Implications and issues for the management of production systems and natural resources.

### **119.373 - Integrative Studies (15.0 credits)**

*Prerequisite(s):* Students should be in the final year of their degree programme.

An integrative paper designed to emphasise the importance of the broad knowledge base gained in the degree and the value of multidisciplinary teams in addressing the issues and problems of importance to the industries served by the degree. Emphasis will be placed on the application of knowledge to problem-solving, group learning and problem-solving strategies and communication in the context of applied science. Real-world problems will be used.

### **119.160 - Forest Systems and Industries (15.0 credits)**

Systems concepts and the use of a 'systems approach' when studying managed and natural ecosystems. Global wood production. The New Zealand forest industry. Examples of plantation, native forest and agroforestry systems are presented in detail, emphasising economic, environmental and social issues. An introduction to the use of value chain analysis in forestry.

### **121.103 - New Zealand's Natural Heritage (15.0 credits)**

An introductory course describing the geology, geomorphology, soils, plants and animals of New Zealand. Special emphasis is placed on the interrelations between the physical environment and the biota. The paper contains three case studies that illustrate the role played by society in the conservation of New Zealand's natural heritage. A course of practical work will be required.

### **171.253 - Forest Measurement and Inventory (15.0 credits)**

*Prerequisite(s):* Any 100-level paper; nil for GDipRuralStud

General principles, assumptions and design of forest sample surveys and experiments. Methods and skills necessary to assess forest stands for yield using measurements of tree diameter, height, stem sweep, tree age, branch size and frequency, tree stocking and spacing.

### **171.284 - Understanding Plant Protection (15.0 credits)**

*Prerequisite(s):* 120.101 or 171.102 or 171.127; nil for GDipRuralStud.

The importance of diseases, pests and weeds to horticultural, agricultural and forestry production, trade, gardening and conservation is outlined. The paper introduces the biology of these organisms and gives an understanding of their management and control. An introduction to strategies available for chemical, non-chemical and integrated control methods is included together with examples. A course of practical work.

### **171.308 - Silviculture (15.0 credits)**

*Prerequisite(s):* Any 200-level paper, or PPD

Managing stands of trees for wood production. The emphasis is on *Pinus radiata* but alternative species are included. Topics covered include tree physiology; genetic improvement; propagation; site characteristics; production regime; establishment; weed control; pruning and thinning; rotation length. A decision support system will be used to analyse the profitability of alternative silvicultural regimes.

### **188.263 - Natural Resource Management II (15.0 credits)**

*Prerequisite(s):* 121.103 or 188.163

The nature, objectives and problems associated with natural resource use and environmental quality (locally, nationally and globally). Physical, economic and institutional relationships. Options for managing natural resources and environmental quality at the land owner, regional and national level.

### **189.151 - Soil Properties and Processes (15.0 credits)**

*Restriction(s):* 189.142

An introduction to the soil as it influences plant growth; the soil as a physical environment for plant roots; soil organic matter. The regulation of soil nutrient availability by biological and chemical processes; soil acidity and pH; the soil resources of New Zealand. A practical course based on the above.

### **189.252 - Land, Soil and Water (15.0 credits)**

*Prerequisite(s):* 1 of 189.141, 189.151, 189.142, 233.101

An introduction to the attributes and limitations of the main soil groups of New Zealand, including restored soils, with particular reference to the most appropriate land use and management for each. The impact of management on the wider environment will also be considered. Basic soil water properties. An introduction to drainage, irrigation, soil conservation and soil structure management, GIS and remote sensing, and their relevance to soil users.

### **117.151 - Agricultural Enterprises and Products (15.0 credits)**

An overview of the structural and functional attributes of the agricultural production enterprises, how they have evolved and their important characteristics and products. Farm systems to be considered include dairy and beef cattle, sheep, deer, pigs, poultry and arable cropping. Emphasis is placed on an understanding of the basis for efficient sustainable production within the different enterprises and for differences in productive efficiency between systems.

### **171.202 - Pasture and Crop Agronomy (15.0 credits)**

*Prerequisite(s):* 15 credits at 100-level

The husbandry of agricultural plants and the management of plant communities at the farm level. Topics include balancing pasture growth and animal demand, pasture assessment, pasture establishment, cash crops, growth and utilisation of forage crops and control of weeds and pests.

### **233.204 - Geographic Information Systems (15.0 credits)**

*Prerequisite(s):* 233.101 or 189.151 or 145.121.

*Restriction(s):* 189.274, 189.374, 233.304

A course which introduces GIS as an enabling technology for environmental science. Computer cartography, database manipulation and spatial analysis.

*Note(s):* Access to, and familiarity with, the World Wide Web and email is required for this paper. You should also be comfortable with Windows-based software. This paper requires the purchase of GIS/image processing software.