

# *Forestry Studies at the Papua New Guinea University of Technology*

*Your guide to  
a challenging  
career*

Papua New Guinea  
University of Technology



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# ***Forestry Studies at the Papua New Guinea University of Technology***

## ***Your guide to a challenging career***

Forestry is the science and technology of using forested lands for human benefit, while at the same time conserving the forest's resources for use by future generations. What are those resources? They are the trees and other plants which provide all the products needed in our traditional culture, and in our modern society. They are the soil in which these trees grow, and the water which flows from forested catchments. They are the environment that surrounds us, the air we breathe, and the climate we enjoy.

The integrated management of these forest resources requires expertise from a range of disciplines, including land use planning, botany, ecology, economics, sociology, entomology, plant pathology, hydrology, soil science, wood technology, timber utilisation, surveying and engineering. Foresters are equipped by training and experience to contribute to and coordinate this interdisciplinary approach to the management of forests.

***A career in forestry  
offers a challenging and  
rewarding working  
environment suited to  
both women and men.***

## ***Why does Papua New Guinea need foresters?***

Papua New Guinea has in excess of 36 million hectares of naturally occurring or native forest, the vast majority of which (some 97 percent) is held by customary landowners. The dominant role of customary landholders is unusual on the world scene, and creates some unique challenges for PNG foresters. About one third of the gross area of forest has some potential for timber production, but some of this is destined to be reserved from logging to protect mountainous watersheds or for the purposes of biological conservation.

In addition to native forests, there are about 40 000 thousand hectares of plantations: some 13 000 ha of government owned softwood (coniferous) plantations, and about 27 000 ha of hardwood (broadleaved) plantations in private ownership.

These forests and plantations must be managed to provide a wide range of goods and services for the community: pure water, traditional products such as food and medicines, and finery for sing-sings; as well as all the requirements of modern society, such as timber and wood products, opportunities for outdoor recreation and ecotourism, and nature conservation. They also need protection from damaging agents such as insects and disease. Planning and management require community participation to be effective, so foresters need to be able to communicate with a wide variety of people and groups in the community.

It is the task of trained male and female foresters to protect and manage the forests and plantations of Papua New Guinea for the community or for private companies or investors, and to ensure that the forest resources are sustainable in the long term.



## What do foresters do?

There is a wide variety of specialisations available in the forestry profession. Some foresters are concerned with the planning and management of field operations to minimise soil erosion, to conserve water catchment values, to provide suitable habitats for native fauna, and to ensure that rare and endangered plants or animals are protected. Others deal with the harvesting and marketing of forest products. Still others are involved in research and development activities throughout the forestry sector.

Central to forestry is **silviculture**, which is the art and practice of controlling the regeneration, growth and species composition of the forest. It is silviculture, more than any other discipline, that distinguishes forestry from other professions, and defines what is forestry and what is not.

*Foresters care for the future.  
If you are concerned about  
the kind of Papua New Guinea  
your children will inherit, and  
their children after them, you  
will never regret choosing a  
career in Forestry.*

A large part of silviculture concerns the tending of forests, which encompasses weed control, pruning and thinning. Silviculture also includes the production of seed for new forests, often using sophisticated genetic improvement techniques, and the establishment and the management of tree nurseries.

One branch of forestry deals with integrating tree cropping into farming activities. We call this **agroforestry**. An oil palm plantation is not agroforestry, because it concerns the growing of a non-wood product. Nor is a coconut plantation, because even though old coconut

trees are often used for building construction, they are planted for horticultural purposes, namely for their fruit. Integrated tree cropping becomes agroforestry only when the trees are planted to provide timber products, to diversify (and hopefully increase) farm income.

The business of **forest management** requires foresters to undertake inventories of growing stock in forests, to forecast future growth in the supply of, and demand for, a variety of forest products; and to identify optimum strategies for forest management. The latter may call for the use of advanced modelling techniques and computer based decision-making tools.

Some foresters are engaged in organising and controlling the cutting and extraction of timber from forests to produce sawn timber for house construction, furniture manufacture, plywood, particleboard, poles, posts, fuelwood and for paper pulp. For **timber harvesting**, the areas to be felled or thinned are identified and carefully planned to meet the requirements for environmental protection, soil and water conservation, and regeneration of the forest. Market requirements, and the economics of harvesting equipment, must also be considered. Harvesting involves a considerable amount of **forest engineering** skill to locate and construct roads, bridges and other facilities.

Foresters may also be involved in the **utilisation, processing and marketing of forest products**. They may provide technical expertise to ensure efficient use of timber, better timber seasoning, development of new wood adhesives and better methods of preservation of wood against rot and termites.

All forest operations are supported by **scientific research**, and a wide variety of research is undertaken by forest managing agencies or companies.



## Where can I get a job?

Foresters are employed by the National Forest Service, by the Department of Environment and Conservation and other government agencies – provincial and national – as well as private companies.

The number of foresters employed by private companies has increased in recent years, especially in connection with plantation management. There are some foresters who work independently as consultants, advising landowner companies or incorporated land groups on plantation establishment and management, or on the harvesting and regeneration of native forest.

## How do I become a forester?

There are several avenues for both male and female students to gain employment in the forestry sector, all of them associated with the PNG University of Technology (Unitech). Which path you choose to take will depend on your interests and aptitude. The University offers training in forestry at the trade, technical and professional levels. All programs are open to students from overseas, especially from countries of the South Pacific. Women are particularly encouraged to enrol in forestry courses. Separate accommodation is provided at all three campuses.

The **Timber Industry Training College (TITC)** was established in 1978 as a joint project of the governments of New Zealand and Papua New Guinea. Situated by the Bumbu River some four kilometres from Lae's town centre, the College has excellent facilities to provide a wide range of training for the primary and secondary sectors of the timber industry. The training program is varied and includes instruction in Sawmill Maintenance and Operation, Sawdoctoring, Wood-machining, Timber Seasoning and Wood Preservation, Timber and Log Grading, Chainsaw Operation and Maintenance, and Logging. Extension services are also

provided to the smaller sawmilling and logging operators. The college can accommodate up to 120 students at any one time.

Every year, about 30 students enrol for Pre-Employment Technical Training (PETT) either through the Natschol scheme, or with private sponsorship. The PETT course consists of 40 weeks of full time study in preparation for employment in downstream processing in the timber industry. Students may also enrol in one or more of the short courses (1–4 weeks) offered in the various fields in which instruction is available in the College; over 500 men and women annually take advantage of this opportunity.


TITC also contributes to the academic programs of the Bulolo University College and the Forestry Department of Unitech, by providing practical training modules on a variety of relevant topics to diploma and degree students.

**Bulolo University College (BUC)** was established as the PNG Forestry College in 1962, to provide training for men and women to be engaged as practical forest managers in government agencies and timber industry companies. Situated at 700 m altitude and centred between the montane forests above Wau and Bulolo and the lowland rainforests nearer the coast, the College has close and easy access to indigenous and exotic tree plantations, nurseries, research facilities including species trials, timber harvesting operations and wood conversion plants.

Under the integrated teaching programs described below, BUC concentrates on producing highly skilled forest technicians. The three-year curriculum places considerable emphasis on the acquisition of essential practical skills, and supervised field experience plays a central role in the diploma studies.

The **Department of Forestry (FDUT)** is situated on the campus of Unitech Lae. It offers a four-year course of professional Head





studies designed to produce male and female foresters capable of meeting the managerial needs of the National Forest Service at district, provincial and national levels, and for the private sector forest industries. Graduates should also be able to function effectively in other Government Departments such as the Department of Environment and Conservation. FDUT is the only institution in the South Pacific which offers training in tropical forestry at professional level and therefore welcomes overseas students both from the South Pacific and Southeast Asia.

Considerable emphasis is placed on forest management, resource inventory surveys, reforestation and afforestation techniques, wood technology and the wood-processing industries, on timber harvesting practices, and on extension and advisory services; these are fields of study which are important to the country's economy, both now and for the future. Extensive field studies and structured work experience are integral components of the course, which is taught in the context of sound environmental management for sustainable utilisation and conservation.

About half of the students' time is spent outdoors. There are one-day field excursions throughout the course to visit sites around Lae and longer field trips to Bulolo and Wau. Field camps of 1-2 weeks duration are conducted in the islands (West New Britain, East New Britain), and on the mainland (Eastern Highlands, Western Highlands, Madang). Generally students who love being outdoors will enjoy the forestry course.

### ***Integration of forestry studies***


In accordance with University policy, the facilities of the three training institutions are fully integrated, offering a unique combination of educational resources in the forestry sector. This is achieved through the **Integrated Forestry Studies Unit (IFSU)**, which incorporates FDUT, BUC and TITC: from the

professional education is centred on FDUT, and leads to the degree of Bachelor of Science in Forestry; technical education is offered at BUC and culminates in the award of a Diploma of Forestry; and vocational or trade training is provided by TITC.

The Head of the Department of Forestry, which operates from two campuses – Bulolo and Taraka (Lae) – is responsible to the Academic Board of the University for the rationalisation and academic administration of the teaching programs of the constituent colleges, and for the implementation and delivery of integrated degree and diploma studies.

Advice on the curricula of FDUT and BUC is given by a Forestry Studies Advisory Board, which is broadly representative of the whole forestry sector, the academic staff, and the student body. Oversight of vocational training at TITC is provided by the National Forestry Trade Training Board, assisted by Advisory Committees on Forest Industry Training. The Principals of BUC and TITC are responsible for the delivery of approved study programs at the technical and vocational levels, respectively.

### ***Integrated Degree and Diploma Study Programs***



One of the greatest challenges in forestry education is to produce professionals, both men and women, with the necessary technical skills while at the same time providing them with a liberal education. The forestry curricula at Unitech have been thoroughly revised to achieve these ends, and the interaction of forestry and society is stressed throughout the new programs; this is particularly important in a society like Papua New Guinea, where customary land ownership is the norm.

Commencing in 1997, the entry standard for both degree and diploma studies is Grade 12 matriculation from a National High School or its equivalent; full details may be obtained



from the Head of the Department. All students undertake a common study program during the first two years, at the end of which they are screened and – on the basis of their academic performance, aptitudes and interests – streamed into separate degree and diploma programs.

**Year 1** is given on the Taraka (Lae) campus, and is devoted to the study of the basic sciences, Biology, Chemistry, Physics and Mathematics, and the Principles of Geology; together with Study and Communication Skills and an Introduction to Information Technology. An Introduction to Forestry is also provided.

**Year 2** is taken at the Bulolo University College, and is designed to give certain basic practical skills, along with the essential underlying theory. Topics studied include Dendrology, Ecology and Biodiversity, Silviculture, Soils, Surveying, Mensuration, Forest Products and Industries; also Business Skills, and Communication and Negotiation.

**Year 3 of the Diploma course** begins with a semester of supervised industrial work placement, and continues at the Bulolo campus with further studies in Silviculture, and Communication and Negotiation. Other subjects are Forest Inventory and Management, Timber Harvesting (including the planning, monitoring and control of logging operations), Forest Engineering, Non-industrial Forestry, and Forest Policy and Legislation.

**Year 3 of the Degree program** commences with a semester of structured and supervised work experience, followed by a return to the Lae campus where students study Silviculture, Conservation Management, Timber Harvesting, Forest Economics, Wood Science and Technology, Experimental Design and Analysis, and Advanced Communications.

**Year 4 of the Degree course** includes the following topics, among others: Agroforestry,

Extension and Advisory Services, Forest Inventory and Assessment, Forest Management Planning, Forest Engineering, Product Development and Marketing, Forest Policy (formulation and analysis), and Human Resource Management.

## **Contacts for further information**

The following people can provide details of the study programs available:

The Head  
Department of Forestry  
**PNG University of Technology**  
PMB Unitech  
Lae, Morobe Province

Phone: 473 4651  
Fax: 475 4067

The Principal  
**Bulolo University College**  
PO Box 134  
Bulolo, Morobe Province

Phone: 474 5226  
Fax: 474 5470

The Principal  
**Timber Industry Training College**  
PO Box 2132  
Lae, Morobe Province

Phone: 472 1083  
Fax: 472 3586

Another source of information about the profession generally is the Association of Foresters of Papua New Guinea. Its objectives are to advance and promote the cause of forestry and to create and maintain a high standard of qualification in persons engaged in the practice of forestry. Students are encouraged to join the association, and participate in its activities.