

PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

1 A.M.

Annual Report 2022

Grow World-Class Technocrats for the Real World



Vision

To Grow World-Class Technocrats for the Real World

Mission

To grow world class technocrats through high quality and experiential teaching and research and ardent application of science, technology and innovation

Guiding Principles

- A sense of Community
- Commitment to Excellence
- Providing Service to Students
- Upholding Freedom of Thought, Enquiry and Expression
- Anticipation and Response
- Critical Assessment of our Performance
- Integrity
- Equity, Access and Participation

Priority Objectives 2020 - 2024

1. Strengthen and Embed Institutional Governance

1.1. Consolidate, harmonize and realign the PNG University of Technology Act and Higher Education Act with other subsidiary Acts and Regulations.

1.2. Streamline Council and Committees for effective leadership and performance

1.3. Develop and adopt a structured and coherent framework for the development, attraction, retention and succession of Council members, Council secretariat and senior management.

1.4. Develop a performance management system based on balanced scorecard to operationalize, manage, monitor as well as track progress and accomplishments of the Strategic Plan.

2. Academic Excellence

2.1. Prepare scope of works and outsource to competent professionals to undertake comprehensive Higher Education Industry diagnostics and analysis. This should incorporate a supply/demand matrix to ascertain the gaps between what the PNG University of Technology is currently offering and the need and expectations of our 'real world' stakeholders.

2.2. Inculcate and model PNGUoT graduate attributes among all students.

2.3. All professional courses will be benchmarked or accredited to international or industry standards by 2024.

2.4. All subjects will have subject files and will be digitally available.

2.5. All faculty will attain PG Certificate in student-centered learning and teaching.

3. Research Innovation and Training

3.1. Strategize to conduct research that meets industry and community demand.

3.2. Strengthen research on environment conservation and climate change.

3.3. Research Centers will expand and strengthen links with stakeholders for appropriate developments.

3.4. Post Graduate training will flourish by producing qualified professionals with Masters and PhD degrees while building a strong research culture within the University.

4. Organisational Effectiveness and Performance

4.1 Develop a strategic institutional leadership and talent framework to attract, retain and develop highly professional and competent administrative and academic staff.

4.2. Improve and expand human resource management, systems and processes.

4.3. Realign workforce planning, reward achievers in recognition of excellence with our real-world learning.

4.4. Develop continuing professional development (CPD) framework for our academic technocrats, incorporating a wide range of collaborative and individual activities, including working with educational designers, attending workshops having discussions with peers, presenting at conferences, being mentored and undertaking professional reading.





4.5. Consolidate and enhance existing security and safety programs by tailoring the program to each unique situation and campus setting such as:

- 4.5.1. Overall Campus Security.
- 4.5.2. Emergency Management.
- 4.5.3. Occupational Health and Safety Services.
- 4.5.4. Video Surveillance.
- 4.5.5. Perimeter Fence, Security & Street Lights.
- 4.5.6. Legal Matters.

4.6. Empower the University community through information technology that enables:

- 4.6.1. Effortless access to data, information and knowledge.
- 4.6.2. Effective and efficient use and deployment of information technology to automate administrative functions and systems.
- 4.6.3. Rapid and profound innovation in teaching, learning and research.
- 4.6.4. Seamless collaboration across communities and disciplines.
- 4.7. Expand network capacity to deliver online courses remotely.

5. Access, Externalization and Infrastructure/Utilities

5.1. Inspect all institutional properties and assets (staff accommodation, office, lecture halls, academic buildings, etc.) incorporating a comprehensive report of each asset (age of property, engineering and architectural soundness of structure, state or condition of property). Develop a comprehensive asset register and inventory of the assets including white goods (furniture and fittings). This asset register will become therepository for the asset data, which will provide the structure within which asset history is recorded and will include maintenance, modifications, upgrades, breakdowns, spares replacement as well as performance or productivity information.

5.2. Fully integrate asset register into the asset management and financial systems. This ensures that asset transactions are updated on a real-time basis and that data integrity is maintained between the asset register and the other systems.

5.3. Review cost-effectiveness, economies of scale and utilization of public utilities such as water, power(including stand-by generators and solar-powered lights, sewage system and garbage collection and disposal).

5.4. Develop "Business Case" for UNITECH Master Plan as a City within a City and in addition as one of the strategic objectives to supplement the medium to long term goal of financial self-sufficiency (See Strategic Domain 6).

5.5. Deliver Courses online to increase intake of students.

6. Financial Self Sufficiency

6.1. Consolidate internal controls, policies and procedures that protect the assets of the PNG University of Technology.

6.2. Create reliable financial reporting, promote compliance with laws and regulations and facilitate effective and efficient operations. It is important to form internal controls for:

6.2.1. Handling funds (received and expended).

- 6.2.2. Preparing appropriate and timely financial reporting.
- 6.2.3. Conducting and completing timely annual audits of financial statements and core processes.
- 6.2.4. Evaluating Bursary staff and programs.
- 6.2.5. Maintaining inventory records of real and personal property.
- 6.2.6. Implementing personnel and conflict of interest policies.

6.3. Leverage and grow effective business

- 6.3.1. Review and streamline the UNITECH Habitat to ensure it effectively performs its functions as a conservation and nature park, preservation and research into local animals and plant species and a Business Hub to sustain and maintain its operations.
- 6.3.2. Ensure effective marketing and implementation of the Business Plan of the PNG University of Technology's Master Plan – City within a City.

7. Industry Partnerships and Internationalization.

- 7.1. Interface with Stakeholders
 - 7.1.1. Develop sustainable networks, partnerships, communication media, and activities between the PNG University of Technology and communities at local, national, regional and international levels. (Engagement activities between communities and higher education may be formal or informal. Example engagement initiatives include establishing relationships, collaboration initiatives, business ventures, co-sponsored meetings, conferences, sports events, research projects and many others.
 - 7.1.2. Collaborate with James Cook University to develop a sound business case to assist indigenous landowners of Wafi/Golpu in business training, development and incubation as well as social, economic and environmental transition.
 - 7.1.3. Expand and consolidate the PNG University of Technology alumni network.

7.2. Brand Marketing and Differentiation

- 7.2.1. Review the iconographic expressions of PNG University of Technology's identity and develop a unique brand to create a unique differentiation vis-à-vis other Universities providing similar programs and experiences in university education.
- 7.2.2 Public Relations Office will be active in promoting PNGUoT through all media.

7.3. Partnership with Overseas Universities

- 7.3.1. Conclude stage three of PNG University of Technology and James Cook University Twinning arrangement and ensure effective implementation and deployment.
- 7.3.2. International relations with multi and bilateral partners will be strengthened. Collaborate with Board of UNITECH Development Corporation and its subsidiary,National Analytical and Technical Laboratory (NATLS) to streamline and make them become "viable going concerns".





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Vice Chancellor's Overview

The past year, 2022, has been another triumphant year for PNGUoT. The implementation of the Strategic Plan continued. Given the focus on quality education, the Engineering Departments continued implementing strategic objectives towards full accreditation of their programs by 2024. Credit is accorded to the Chairman of the Industry Advisory Board, Mr. Luke Liria, for diligently guiding the accreditation process backed by the Dean of Engineering and the Accreditation Manager. The proactive leadership provided by the Engineering Departments has rubbed off on all other Departments. Under the able leadership of Professor Gonduan, a dedicated working committee was formed, directing all HODs to initiate the process of benchmarking respective courses to international or industry standards.

The research budget has been augmented to K1 million. We are steadily progressing toward our strategic goal of fostering a robust research culture. Our staff has consistently engaged in research, publishing their findings in esteemed peer-reviewed journals. Many of these scholarly articles were showcased during the Huon Seminar, which took place from the 30th to the 31st of August at PNGUoT. Numerous staff and students presented their research findings on the theme of "Embracing engineering technology and science to mitigate poverty." The Postgraduate School remains at the forefront of these research endeavours. The number at the postgraduate school had also increased to a total of 170 Masters and 30 PhD students.

Given the focus on access, PNGUoT also increased its intake through on-campus and online teaching. There is a total of 3300 students on-campus. The PNGUoT started rolling out online courses to major centers around PNG in 2022, initially with 60 students. There are plans to increase these numbers in the coming years. The initial online courses included Business Accountancy, Communications for Development, Geomatics, and Agriculture for Rural Development. The Simbu Unitech Satellite University (SUSU) will be the model campus for the online delivery of PNGUoT courses to the provinces.

The four consecutive unqualified financial audits have further strengthened the funding position of the University. The profile regarding PNGUoT accountability and transparency is reaching the hearts of the stakeholders. The bilateral partners have generously supported PNGUoT, thus; (a) Kumul Petroleum Holdings Limited with K2.6 million for engineering laboratory equipment, (b) the Indian High Commission with K500,000.00 for IT equipment, (c) the Chinese Embassy with K100,000.00 for teaching equipment, (d) the Australian High Commission with K310,000.00 for academic strengthening program with the Engineering Depts. PNGUoT has focused strongly on maintaining its building and a facelift to the existing infrastructure, including staff housing. The campus looks brighter with renovation works on dormitories, academic and admin buildings, and the upkeep of the grounds. The security of the campus has improved markedly with the engagement of G4S and the guard dogs.

We look forward to another successful year in 2023.

Professor Ora Renagi OL Vice Chancellor



Members of the University Council

- 1. Dame Jean Kekedo, CSM, OStJ, OBE (Chancellor)
- 2. Mr Sam Koim, LLB, OBE (Pro-Chancellor)
- 3. Dr Ora Renagi, OL (Vice Chancellor)
- 4. Dr Gary Sali (Deputy Vice Chancellor)
- 5. Prof. Frank Griffin (Vice Chancellor UPNG)
- 6. Prof Tom Okpul (Professerial Rep)
- 7. Prof. Gariba Danbaro (Professorial Rep)
- 8. Dr Sujoy Kumar-Jana (Senior Academic Rep)
- 9 Mr Paul Isan (Non-Academice Rep)
- 10. Mr Michael Pearson (Ministerial Nominee)
- 11. Mr John Byrne (Council Nominee)
- 12. Mrs Anna Wissink (Council Nominee)
- 13. Prof. Shamsul Akanda (Pro Vice Chancellor Academic)
- 14. Prof. Kaul Gena (Pro Vice Chancellor Administration)
- 15. Mr Elizah Kapma (SRS President)
- 16. Ms Christy Epea (SRS Vice President)

In attendence Mrs Veronica Thomas (Registrar) Mr Diraviam Tharmaraj (Bursar) Mr Nethon Milifala (Executive Officer)

PNG University of Technology Organizational Structure

The PNGUoT Organizational Structure is derived from the PNG University of Technology Act, 1986, the University Statutes (by-laws) and the University Staff Establishment. The University Council membership is established under Section 9 of the University Act. The Council is made up of 28 members from various representations including members of Parliaments, the Higher Education Minister and Department, the universities and the civil society.

The Senior Executive Management, are identified as the Officers of the University under Section 25 of the University Act and the University Statutes No. 1/1995.

The Officers of the University are the;

- 1. Chancellor
- 2. Pro Chancellor
- 3. Vice Chancellor
- 4. Deputy Vice Chancellor
- 5. Pro Vice Chancellor-Academic
- 6. Pro Vice Chancellor-Planning and Development
- 7. Pro Vice Chancellor-Administration
- 8. Registrar
- 9. Bursar
- 10. University Librarian

Under the Officers of the University, there are 13 Academic Departments and about 20 non-Academic departments and sections and units that support the officers of the University in implementing the University's purpose of establishment, including the University's visions and missions. The academic and non-academic departments, sections and units are derived from the University's Staff Establishment (established positions) as approved by the National Department of Personnel Management.

Attached is the illustration of the Organizational Structure.



DEPARTMENT OF AGRICULTURE

The Department of Agriculture offers a science-based agriculture curriculum for undergraduate and postgraduate degree programs besides conducting basic and applied agriculture research and disseminating relevant information to the community. The Department's functions are guided by a vision: A premier agricultural school providing high-class agricultural education to empower graduates to be innovative scientists, extensionists, entrepreneurs, and policymakers for sustainable agriculture and community development.

Academic Programs

The Department offers two undergraduate programs. The Bachelor of Science in Agriculture [B.Sc.(Ag)] is a full-time, on-campus, four-year study program, while the Bachelor of Agriculture and Rural Development (B.Ag. & R.D.) is a flexible and distance-mode administered program. The Department also offers three postgraduate degree programs, the Master of Science in Agriculture [M. Sc.(Ag)], Master of Philosophy (MPhil.), and Doctor of Philosophy (PhD). The M.Sc.(Ag) program combines coursework and research, while PhD and M.Phil study programs are research-only degrees. The total number of students enrolled in the B.Sc.(Ag) and BARD programs in 2022 were 228, with 184 and 44 students, respectively. In 2022, 56 and 8 graduated with B.Sc.(Ag.) and (B.Ag. & R.D.), respectively. The total postgraduate enrolment was 21 students, of which four were in PhD, 6 in M. Phil., and 11 in M.Sc. (Ag) programs. In 2022, 7 students graduated with Masters's degrees (3 MPhil and 4 MSc).

The curricula of our programs are reviewed regularly to be able to deliver up-to-date and relevant information to students. The 2022 academic year saw all year levels (Years 1 to 4) of the B.Sc.(Ag.) program taking subjects from the reviewed curriculum.

Staffing and Infrastructure

The Department has 16 qualified academic staff (13 PhDs, 2 MPhils, and 1 MSc) and a wealth of teaching experience. A staff member on study leave successfully completed PhD degree from the Queensland University of Technology, Australia and joined the Department in the second semester of 2022. Staff members use a variety of Learning Management Systems for classroom and distance-mode teaching, and the Department offers a robust curriculum. All classrooms provide audio-visual aids for the effective delivery of classroom teaching. Annual procurement of glassware, re-stocking of chemicals, and maintenance of lab equipment has ensured sufficient skill development in students through lab sessions. In preparation for program benchmarking, two labs, two undergraduate classrooms, six staff offices, the main reception area, and the farm infrastructure received facelifts

Vacant positions for academic and technical staff and a Farm Manager were advertised. One academic and two technical staff members, and a Farm Manager joined the Department in the second semester of 2022.

Research Activities

Research work in the Department is conducted around broad subject categories, including crop sciences, animal sciences, economics and management, extension and development, and farm mechanization and postharvest technology. Research is undertaken by third-year students, postgraduate students, and academic staff. In 2022, 36 students undertook supervised research work for the subjects AG312 and AG322. Research topics of the postgraduate students are highly relevant to meet the requirements of the stakeholders. Several of the postgraduates are jointly supervised by staff from research institutions and commodity industries, e.g., National Agriculture Research Institute (NARI), New Britain Palm Oil Limited (NBPOL), Ramu-Agri Industries Ltd (RAIL), and Oil Palm Research Association (OPRA). Departmental staff members, solely or in collaboration with postgraduate students, published 8 peer-reviewed journal articles in 2022; a few more are in the press. Academic also jointly presented 7 conference papers.

Dr. Ronnie Dotaona was the country leader for the ACIAR Sweet Potato Crop Protection project (in collaboration with Charles Stewart University, University of Southern Queensland, National Agriculture Research Institute [NARI], and the Fresh Produce Development Agency [FPDA]). This project ended in 2022. Dr. Patrick Michael won a research grant from the PNG Science and Technology Secretariat (PNGSTS) to research agronomic aspects of sweet potatoes in the Highlands region of PNG. The Unitech Biotech Centre (UBC) has conducted research in collaboration with the FPDA (for micropropagation of potatoes) and the Ok Tedi Development Foundation (for resin initiation in Eaglewood). A detailed report from UBC has been submitted to the office of the Pro Vice Chancellor (Academic).

Industrial Relationship

The Department considers the active academic and professional relationship with external institutions and industries as an important linkage facilitating knowledge, skills, and service benefits. The Department has established new or maintained contacts with several national and international organizations, including the Australian Institute of Agriculturalists (AIA), Australian Council of Deans of Agriculture (ACDA), Support for Rural Entrepreneurship, Investment and Trade in Papua New Guinea (STREIT), Outspan PNG (OLAM), ACIAR/CSIRO, GrowPNG Ltd, and Innovative Agro Industries (IAI). The Department's linkage to external national organizations is also actively maintained through the engagement of our students who go on an annual Work Integrated Learning (WIL). In 2022, student placements were organized in organizations throughout PNG.

Community Engagement

The South Pacific Institute for Sustainable Agriculture and Rural Development (SPISARD) is the conduit through which the Department channels its community outreach activities. A detailed report from SPISARD has been submitted to the office of the Deputy Vice Chancellor.

The University signed an MOU with Trukai Industries in 2022 for a term of 5 years, with the Department of Agriculture as the implementing body. Through this agreement, established or prospecting rice farmers throughout PNG will have the opportunity to receive training on all aspects of rice farming. It is envisaged that this partnership will facilitate knowledge, skills, and technology transfer to participating individuals, groups, or organizations.



Introduction

Applied Physics (AP) Department offers two 4-year degree programs. It also teaches foundation first-year Physics subjects to other departments such as Forestry, Applied Sciences, Surveying, Computer Science, etc. where students must have a basic knowledge of University Physics in their first year.

AP Department now offers full-time course-based postgraduate Masters (MSc and MTech) degrees and Research based MPhil and Ph.D. programs.

The two 4-year degree programs are "Bachelor of Science in Applied Physics with Electronics and Instrumentation" (BSAP) and the "Bachelor of Engineering in Biomedical Engineering" (BEBE). The first set of the BEBE program comprises 7 students. They will complete their degree program in 2023 and graduate in 2024.

Bachelor of Science in Applied Physics with Electronics and Instrumentation (BSAP)

The BSAP program is designed to produce graduates with technical skills in electronics and instrumentation and a good understanding of the underlying physical principles.

The Department's main objective is to produce graduates of international standards who can be locally and internationally marketable. The Department wishes that the graduates are of high quality, both ethically and morally, stocked with analytical skills to apply at any level, including entrepreneurship, to create wealth to alleviate poverty.

The minimum entry requirement is at Grade 12, scoring B grades in Physics, Advanced Mathematics, Chemistry, and English.

Bachelor of Engineering in Biomedical Engineering (BEBE)

The PNG National Department of Health (NDoH), through the Secretary for DHERST, initiated the Biomedical Engineering program because of the need for Biomedical Engineers in the Nation. Graduates of this course will be equipped with the theoretical and practical knowledge to work alongside clinicians in all the Provincial Hospitals and other major Hospitals, both in the private and public sectors, to maintain and operate essential Biomedical Engineering equipment and infrastructures in the country. As a result of the considerable demand envisaged, the Health Secretary wrote a letter requesting us to start the program.

Biomedical Engineering is an emerging field that takes Physics and Engineering design principles and applies them to medicine and biology for healthcare purposes. The program is designed to equip students with the skills to maintain and design equipment and devices, such as Clinical Imaging devices, CAT, PET, MRI, functional NMR, artificial internal organs, replacements of body parts, and machines for diagnosing medical problems. It also involves designing and constructing devices, such as cardiac pacemakers, defibrillators, artificial kidneys, blood oxygenators, prosthetic hearts, and joints. They will also be able to install, adjust, maintain, repair, or provide technical support for biomedical equipment, write technical reports, publish research papers, and make recommendations based on their research findings in their professional career.

The minimum entry requirement is at Gr 12 level, scoring B grades in Physics, Advanced Mathematics, Chemistry, and English.

DEPARTMENT OF APPLIED PHYSICS



The Strategic Plan for the Department of Applied Physics at PNG University of Technology is strategically aligned with the vision, mission, and core values of the University's Vision 2030 and the Government of Papua New Guinea's Vision 2050.

To meet the high standards of quality graduates, the department planned to develop human resources and upgrade existing facilities to the international level through institutional accreditation. Therefore, despite the size of the Department, the academic activities of the Department are expected to produce graduates with excellent output.

The staff and students are expected to feel satisfied with the level of academic achievements in all areas of activity within the department and the University as a whole.

Vision

To be an internationally recognized science department that produces graduates in the Applied Physics field of knowledge with Electronics and Instrumentation skills that is competent in the local and overseas market.

Mission

To produce employability graduates who are future-focused and systematic approach in analytical and problem-solving skills in applied Physics and Instrumentation. The graduates will serve the country's needs and with entrepreneurship skills that allow them to create wealth contributing to poverty alleviation.

To develop dynamic study programs with research, innovation, and commercial activities components to increase the graduate's marketability within the country and overseas.

Core Values

Excellence

Excellence in program delivery must be supported by state of the art equipment, facilities, and staff.

Ethical Behaviour

Development and delivery of dynamic study programs relevant to the Country's dynamic challenges involve teaching and management ethics. Knowing that teaching and learning are a social function and obligation, inherently tied to context, teaching methodologies, or different learning experiences must support interaction by acknowledging the contributions of all staff and students.

The Commitment is made to human development through behavioral standards which are transparent and socially, morally, and legally acceptable.

Partnership

Maintain and develop a partnership role with other Academic Departments, National Departments, International partnerships, and its Agencies and industries through collaborative work, consultancies, and academic and administrative issues for all concerned.

Transparency

Engage, undertake consultancies and research activities, and perform all academic functions openly and visibly for all stakeholders.

Goals

1. To instill recognition and sustainability among our students and course owners (Applied Physics Department) in ensuring that certification and accreditation requirements are met.

2. To be future-focused operational and logistical University Department with qualified human resource capacity and quality staff support and networks.

3. To externalize the undergraduate degree program.

Objectives

1. To design and have a curriculum review exercise in our study programs to offer appropriate courses that meet the real needs of the current and future marketplace in the Country's development goals and aspirations.

2. To provide quality tertiary education to a broader population through the externalization of courses

3. To provide quality and effective teaching and learning to achieve needed knowledge and skills in a broader section of the Country's population by considering different teaching methods.

4. To initiate and provide active research activities that promote teaching and learning that involve both theoretical and practical applications to technological advancement in today's modern world.

5. To maintain a vibrant review and/or development of courses/curriculum and increase the number of consultancies, commercial activities, and collaborative research activities with other educational entities/academic departments.

Staffing

Below is the list of Academic Staff on the ground excluding online lecturers.

Head of the Department: Dr. David Kolkoma				
Professors:		Prof Manoj Mukhopadhyay		
Associate Profe	essors:	Dr. Felix Pereira		
		Dr. Dapsy Olatona		
		Dr. Velusamy Senthilkumar		
Senior Lecture	rs:	Dr. Mohamad Ali		
		Dr. Gabriel Anduwan		
Lecturers: Mr. Suan Common Mr. Mich		ne Ampana (Studying for PhD – wealth Scholarship) ael Gaoma (Studying for PhD from		
	Unitech)			
	Mr. Kenson Tonny Mr. Sylvester Tirones			

List of Technical Officer	S
1.Mr. Kenny Michael	(BSc in BSAP, Unitech)
2. Mr. Mathew Waimbo	(MSc & BSc in BSAP, Unitech)
3. Mr. William Piel	(BSc in BSAP, Unitech)
4. Mr. Simeon Ifu	(BSc in BSAP, Unitech)
5. Mr. Geoffrey Wiavi	(BSc in BSAP, Unitech)

Technical staff assists the academic staff in supervising laboratory sessions and research work.

Undergraduate Program

The PNG University of Technology (PNGUOT) has become a dual-mode university as it embarks its academic programs to be offered through Open and Distance Learning and E-Learning, using a blended mode of study and delivery as well as traditional on-campus mode since its inception in 1993. PNGUOT will maintain parity between students studying on-campus and external modes within the limits of resource constraints.

The Strategic Plan and the aspirations of the Department of Applied Physics' broad policies are to

• raise the quality of teaching, and learning and facilitate the convergence of on-campus and off-campus teaching and learning modes by promoting and facilitating the use of relevant, interactive technologies and methodologies

• maintain an active program of research into alternative modes of teaching and learning in higher education

• publish and disseminate research results and ideas about external studies, online studies, and Flexible Learning in general

• Promote and participate in Consultancy through commercial activities by the department and impart knowledge to students who can go into entrepreneurship

With support from the central administration, the Applied Physics Department has all the required study materials and support services in all course programs. The MoU between PNGUoT, the Provincial hospitals, and NDoH to facilitate the industrial training aspect of the BEBE program is in progress.

The number of students who graduated from the Applied Physics programs is given below.

• The number of graduates per year is around twenty (20) to thirty (30) students. This number will increase with BEBE's first batch to graduate in 2024 and improved facilities with improved and additional academic staff positions are created.

• Table of male and female students who graduated in the past years, including 2023.

Year	No. Male students	No. of female students	Total graduated
2023	23	2	25
2022	24	2	26
2021	26	3	29
2020	25	3	28
2019	18	3	21
2018	18	5	23
2017	20	2	22
2016	16	7	23
2015	29	2	31
2014	21	2	23

Postgraduate Program

The Postgraduate programs in the department are.

Master of Science and MPhil in Applied Physics (MSc & MPhil)

Master of Technology in Exploration Geophysics (MTech)

• Doctor of Philosophy (PhD)

We have qualified staff in the department committed to effectively teaching our PG students in both programs.

We currently have six (6) Post Graduate Students for Applied Physics and Master of Technology in Exploration Geophysics, both continuing and new. There are three PhD students carrying out research, one completing 2023, one in 2024 and one in 2025.

Below is a list of Post Graduate students that graduated in previous years up to 2023.

Year	No. of male students	No. of female students	Qualification
2023	1	0	MSc/MTech
2022	8	0	MSc/MTech
2021	1	0	PhD
2021	4	0	MSc
2021	4	0	MTECH
2020	4	1	MSc
2020	6	0	MTECH

Curriculum Development

a) We have reviewed our existing Applied Physics degree program into 4 subjects per semester up to the final year.

b) We have also reviewed the Biomedical Engineering program into 4 subjects with arrangements in place with NDoH for hospital practical exposure/Industrial Training Experience.

F. Research Publication

There is a high turnover of highly qualified Lecturers due to a lack of research facilities and equipment. Therefore, We have set up a few research facilities in the department for different research areas. With our limited resources, the following research groups have been set up.

i) Exploration Geophysics Group

- We have obtained Gravity data for all of PNG from France,

-Signed an MOA with MRA to work collaboratively -We purchased Geosoft software which can be used to process data

-PG students and staff are working in this group, making use of the data and MOA

ii) Condensed Matter/Nanotechnology Group

We have bought some equipment and chemicals to do research in this field.

At the moment, one graduated with a master's degree. A PhD student and a Master's student are working with the group. We have published a few papers in international journals.



iii) Nuclear Physics Group

We have bought one of the best pieces of equipment (Gamma Ray Spectrometer by Nal(TI)), which is being used for research. Two of our staff members use the equipment to study for their PG program. One used the equipment to analyze radioactive samples in processed ore and soil from mining sites, and the other investigated the radiation level given off in towns and cities buildings. Of the two, one passed away, and the other just graduated with PhD degree in June 2022. Two PG students graduated with a Master's degree using this equipment.

Figure 1 shows the a) Gamma Ray Spectrometer by Nal(Tl) and b) Radon detector



iv) Energy Group

Energy groups consist of different applications or other groups that can generate energy, such as geothermal, which is in the area of the Geophysics group. So we have Geothermal, hydro, solar, wind, and other applications that generate energy.

SERI is currently contracted to train selected PNG Power Staffs how to install Solar Power by a UNDP EU-funded program. The photo below shows some of the participants in the 2022 training program



v) Electronics

Most Academic Staff are in the field of Electronics, and they do research and projects with both PG and final year undergraduate students. The Circuit board here shows the type of component used in this group.



vi) Environmental Physics Group

Staff members in various groups also have environmental-related projects or research that fall into this group (Eg, Nuclear Physics studying radon within the city buildings). One of our Technical Staff is doing his PG studies under the environmental study group.

vii) Some of these groups published papers in International Journals and hoped to do more. Most of these publications have been reported in the research report yearly.

Consultancy and Income Generation

The department has the potential to do a lot of consultancies using various skills and knowledge.

i) The Department is restricted by resources to do a more extensive scale project such as Exploration for an EL (Exploration License). We have written to some of the Provincial Governments to support us in buying equipment that we can use to do the exploration in their Provinces. They have shown Positive responses, and hope they will return to us.

ii) We also plan to build solar refrigerators through our skills but are still seeking financial support.

iii) When University wanted to contract CCTV cameras for security purposes on campus, we submitted our proposal to the University. The University awarded the contract to the Department out of other bidders. As a result, the Department installed the CCTV on campus at some cost. The project costs about K75,000.00, mainly on the equipment.

iv) We have the state-of-the-art equipment high purity Germanium P-Type Detector (HPGe), with its accessories and the latest software available on the market. The equipment will test samples from solid, liquid, and powder exposed to radioactive sources. It will also be useful for the country in terms of testing radiation levels in any food items, river sources, seawater, reefs, soil, rocks, and sediments in the areas that have mining activities. This equipment is the latest and enhances the Department's research drive and Postgraduate studies. Apart from the HPGe, there are also several radiation detectors to measure background environmental radiation.

It is the National Radiological Laboratory where all Government and private sectors using radioactive sources will send their materials for radiation exposure measurements at some cost.



Figure 1: Shows (a, b, c) High Purity Germanium Detector (HPGeD), which detects gamma rays in food, water, soil, seawater, reefs, rocks, and anything in the form of (liquid, solid, powder form) – with all its accessories.

Asset Management:

i) We have renovated two classrooms into the multimedia room with Air Conditioner installed. We hoped to convert all our classrooms into multimedia rooms with an internet connection.



ii) All-year laboratory equipment is bought new, and students use it for all first-year classes.

iii) Roof Top Solar for the Applied Physics department. The Department of Applied Physics is given another project to build a Roof Top Solar project to power the Department of Applied Physics. All the design and preparations have been made, but waiting for approval of Structural design by Structural Engineers and probably Building Board.

iv) We are now glad to announce that the National Dosimetry Laboratory which the Government approved of Papua New Guinea, is finally set up at the Applied Physics department. The National Laboratory will monitor and regulate radioactive sources in the country. It will also be the research Centre for radiation baseline study and other research related to radiation in the country. About K1.2 million of equipment was purchased by the International Atomic Energy Agency (IAEA). The latest state-of-the-art equipment was installed at the Applied Physics department last week, 5th of July, 2022.





v) The EXTENSION of the Applied Physics Department at a cost of K1.5 million, which has 4 rooms funded by the National Institute of Standard and Industrial Technology (NISIT) worth about K700,000.00 plus another K1 million from PNG University of Technology, which will take place anytime this year. Below is the design of the building.



vi) We are also building a seismic station to measure the region's seismic activity. The recordings will help assess Risk Assessment around the Lae area and Markham Fault.



Future Plan

Out of so many things in mind, four things needed to be done without delay. These are:

i) After completing the Extension of the Building, one room will be assigned "Industrial Training Center". All industrial equipment will be installed, and the training of students and employees from the industry will be part of consultancies. This will also help our graduates get direct employment with industrial knowledge.

ii) Once the Industrial Training Center runs, the Department will apply for Accreditation with the Australian Institute of Physics (AIP). So, having qualified Lecturers, PG students, Research running smoothly, and Industrial equipment set up, and the BSAP program is set to go for Accreditation.

iii) When Dosimetry Laboratory is set up. We have Planned to do a lot of research throughout the country regarding radiation and safety. We will do a baseline study, and anyone using radioactive sources will be studied and build the knowledge bank in that field for the country. IAEA is looking upon us to be the leader in this field throughout the island nations throughout the Pacific.

iv) Physics Education is very poor in the country. As a result, the first-year students we select are weak in Physics. Therefore, we have decided to start a new Master's program in Physics Education. In this, we planned to get High School Teachers to come for a Master's program, where Physics, Mathematics, and Electronics with one or two subjects in Education through TLMU. When completed, these graduates will return and improve their teaching in those subjects we teach. This will significantly improve Physics Education in all secondary Schools, Technical colleges, and anywhere our graduates are settled.

v) There may be new and exciting ideas, and things may come up which can be considered in the future. But, the items listed above can be implemented immediately for the department to be robust in its operation.

Conclusion:

In conclusion, strategically, the Department will reach 100% of the strategic Plan when all its objectives are reached. This includes the future Plan and a bit of perfection in its operation.

From our experience, we need strong, steady, and focused leadership to keep pushing to meet our objectives and get the job done to maintain a strong department in this institution.

The Applied Sciences Department is unique because it offers two different and separate degree programs in one Department Building. This creates an opportunity for our students to form a lasting network of friends in two very different yet related fields of practice.

The Department is committed to training students both at undergraduate and graduate levels of the highest quality. Our vision is "To become a quality department that produces intellectual manpower for Papua New Guinea's development and sustenance". Our mission is "To focus on high-class teaching and quality research, continuously strive to produce future leaders rich in intelligence and innovations in the field of Applied Chemistry and Food Technology and simultaneously concentrate on strengthening and enlightening the community."

Our intake is 60 students per year (30 students in each program). In 2022, 34 students completed their degree programs successfully. The Department's employable rate is among the highest in the University, about 90% of our students find employment within six (6) months after completing their degree programs.

Academic Programs

Undergraduate degree programs offered are Bachelor of Science in Applied Chemistry and Bachelor of Science in Food Technology. Two completely different degree programs. This creates budgetary constraints because the curriculums are very different and so the needs for laboratory and practical classes as well as instruments and equipment do differ. In the midst of these constraints, the staff and the students from both programs work together harmoniously to achieve the vision and mission of the department and the University as a whole. Our courses are revised periodically to keep them current. Key stakeholders and an Industrial Advisory Committee contribute to curriculum review and development.

The Department continues to mobilize its resources to impart high-quality throughput to its graduates. Hence, a strategy is in place to continue to adopt and use the best teaching practices to maintain quality. This has been reflected well in Academic Quality Assessment (AQAT) exercise by the University, in which the Department of Applied Sciences has been in the top three out of the thirteen (13) academic departments for a number of years now.

Bachelor of Science in Food Technology.

The Bachelor of Science in Food Technology is the only food science and food technology-related degree program in the South Pacific region apart from Australia and New Zealand. The program has been benchmarked with the Food Science and Technology program offered by the University of New South Wales (UNSW). The section has been working on addressing the recommendations given during the benchmarking. The food technology section has also been considering the accreditation requirements to professional bodies, especially the Institute of Food Technology (IFT).

Bachelor of Science in Applied Chemistry

General Chemistry, Mathematics, Biology, Physics, and Language are studied in the first year. The second year Applied Chemistry has a major emphasis on further chemistry; Analytical, Inorganic, Organic, and Physical Chemistry. Students also take courses in Mathematics, Language, and Applications of Computing in Applied Sciences. There is a greater specialization in the final two years with an emphasis on analytical methods and techniques which require students to spend much time in well-equipped laboratories and instrumental laboratories acquiring skills essential for an experimental science.

DEPARTMENT OF APPLIED SCIENCES





The Applied Chemistry section has begun communication with Royal Australian Chemical Institute regarding requirements for accreditation.

Postgraduate programs offered by the department

The department offers a Master of Philosophy and Doctor of Philosophy in Applied Chemistry and Food Technology. This year we have three national staff on PhD studies, two in the country and one in Australia, and we have nine (9) MPhil students.

The Department encourages high-quality need-based or impact research at both undergraduate and postgraduate levels and continues to produce around two publications per year.

The department has two chemistry laboratories, a microbiology lab, a chemical instrumentation lab, a food analysis laboratory, two lecture rooms, and offices for both the academic and technical staff. Next to the main building is the Food Processing Pilot Plant, which houses the necessary instruments and equipment that are used for food engineering and processing as well as product development practical classes and related researches. This year we have aimed to prioritize the budget we are given to facilitate the needs of staff and students with regard to teaching and learning aids, laboratory, and practical class requirements.

Attached to the Department is the National Food Testing and Monitoring Centre (NFTMC), which was established in partnership with the National Fisheries Authority (NFA). This facility will greatly benefit once it becomes 100% operational after accreditation. It will elevate the research capacity of the staff and students as well as equip them with the knowledge and expertise on some of the newest technologies in analytical instrumentation and equipment as well as high-quality skills and experience in the areas of microbiology, food analysis, and a range of chemical analyses.



Partnership, collaborations, and consultation

The Department is well connected to government departments, food, agriculture, chemical, and mining industries through research, short courses and consultancies. This partnership has helped in many ways to both the Department and University as a whole. It has reflected well in the employment status of our graduates and also in securing industrial training attachments for our third-year students.

There is an ongoing partnership between food industries and other agro-industries as well as other statutory organizations and community groups on matters related to food and agro-commodities or chemistry-related areas in which our staff and students are engaged.

In November 2022, the National Fisheries Authority and the PNGUoT through the Applied Sciences Department had a partners' meeting in Port Moresby where the revised MOU was signed by the NFA Managing Director and the PNGUoT Vice Chancellor.

Research, Innovation, and Entrepreneurship

The Department offers Master of Philosophy and Doctor of Philosophy in Applied Chemistry and Food Technology programs.

Recently, we have had a lot of interest in our MPhil and PhD programs from the food and Agro-industries as well as the environmental and medicinal chemistry areas.

Currently, we have 10 MPhil students, 3 PhD students, all are national lecturers, 2 are at PNGUoT, and 1 is in UQ, Australia. We also have a member of our staff doing Masters by course work in India.

The Department encourages high-quality need-based or impact research at both undergraduate and postgraduate levels and continues to produce around 2 publications per year. We are discussing the MSc (Master's by coursework) program in Applied Sciences.

The academic staff members engage in research and consultation activities related to their specific areas of specialization, and interested prospective students are encouraged to contact the department for details.

Apart from teaching and consultancy, research, innovation, and entrepreneurship are also priority areas of interest. Joint industry-department research activities have seen some adaptable innovative solutions to address problems in the industry and the community. For example, the image below shows a final year research project on chicken feed development using cocoa and brewery waste, a joint project with SP Brewery. Preliminary results have been good and show potential for further investigation of other domesticated animal feed.

Through the MOU, NFA has, in addition to refurbishment of the Applied Sciences Department Building, funded the National Food Testing & Monitoring Centre with the following instruments:

Inductively Coupled Plasma Mass Spectrometry (ICP-MS) - The ICP-MS is widely used to determine trace, minor and major elements in various sample matrices. The significant benefits of using an ICP-MS include; wide elemental coverage, it offers high sensitivity, fast analysis time, and wide analytical working range.

Triple Quadrupole GC-MS (GC-TQMS) - The NFTMC currently has this analytical equipment and technical capacity to develop methodology and carry out testing for environmental contaminants such as dioxin and dioxin-like polychlorinated biphenyls (PCBs), persistent organic pollutants POPs, polycyclic aromatic hydrocarbons (PAHs), pesticide residues and other organic contaminants relevant to the health and well-being of the people of PNG.

High-Performance Liquid Chromatography (HPLC) - This technique is currently primarily used to analyze histamine (fish poisoning) in tuna and fishmeal products. The HPLC technique can also be used for testing other organic contaminants, such as pesticide and antimicrobial residues in vegetables and meat products, and for analysis of many other food and pharmaceutical products.

NFTMC is currently embarking on accreditation to the ISO 17025 standard and subscribes to Proficiency Testing (PT) program in both Food/Water Microbiology and Food Chemistry as part of its external quality assurance program. The overall performance to date has been outstanding.

Consultation services

The Department continues to offer consultation services primarily in laboratory analyses in the areas of microbiology, food analyses, and chemical analysis. The department has many industry partners who have consistently used our services over the years.

Once the NFTMC is fully accredited and appropriately staffed, we would be expecting a lot of analyses work on chemical analyses, food analyses, and microbiological analyses.



Innovations, community impact projects

The Department, in line with the PNGUoT's mission of improving the lives of rural communities through the transfer of technology for sustainable development and community empowerment, has this year (2022), in partnership with FPDA, churches, provincial governments, and other farmer groups engaged in the designing, building, and use of solar dryers and biogas plants. Mr. Reilly Nigo, the head of the Food Technology section, is in charge of these impact projects. These projects are addressing the real-life problems affecting the everyday Papua New Guineans and help to raise the standard of living of our people, and this is what we encourage our students to do.

Biogas Projects – Lutheran Church Partnership. This research started as model student project work and then developed into trial fieldwork in partnership with the Lutheran Church (Lutheran Church of Hope Parish, East Taraka). A nine (9) cubic meter facility was commissioned in April 2022.

The prototype of the biogas was built at the department level with final year students using farm wastes, then trialed at a household level, and finally in the field with an urban toilet system. This project will provide an alternate clean energy source for lighting, cooking, and electricity and reduction in pollution created by the accumulation of organic wastes. Solar Dryer - This research work started as model student project work and developed further into trial field work in Gembogl, Chimbu Province, through FPDA since 2019. A working model has now been adopted for bulb onion in Chimbu (Gembogl District), Western Highlands (Ogelbeng, and Morobe (Markham District).

The solar drying partnership project with FPDA is gaining momentum, with FPDA rolling out the technology to many other farmer groups in other parts of the country after the field trial with bulb onion drying in Chimbu's Gembolg District. The local bulb onion farmers are now able to dry their bulb onions. This will cut down on imports of onions.

Collaborating partners in research in 2022

David Timi is a collaborating partner in a PIURN project between University of New Caledonia, James Cook University and PNGUoT on the biochemical examination of leaves of species of the Genus, Xenthostemon as a good source of biologically active volatile oil.

Dr. Bathula is a collaborating partner with other Pacific Island Universities on assessing and developing national water quality standards in Vanuatu.

There has been constant dialogue with the Research Science & Technology starting this year to develop a concept document for building research capacity to deal with the intention of Natural Product Research and Product Development.

Mr. Reilly Nigo has been working in close consultation with the Fresh Produce Development Agency, Church Organisations, interested provincial and local governments, and farmer groups on community impact projects on solar dryers biogas.



After the success stories of the solar dryer at Gembolg, thanks to the FPDA partnership, the farmers at Ogolbeng in the Western Highlands province have also been





The first focus point in 2022 was to get the newly introduced 3-year Bachelor in Architecture and the 4-year Bachelor in Construction Management Programs working as designed and/or intended. A concerted effort was also put in to congruently fit the new 2-year Master in Architecture and the 1-year Master in Construction Management to undergraduate programs and that would result in graduates in both the undergraduate and postgraduate programs delivering employable graduates into the industry.

The second focus point was to go on a staff recruitment drive due to the inadequate staffing levels in both the Architecture and Construction Management Programs. This was pursued on three (3) fronts. Upgrading current staff to attain postgraduate qualifications, recruiting from within Papua New Guinea Industry graduates of the Department, and recruiting from the international marketplace.

The third focus point was to upgrade the current academic infrastructure to ascertain as well as progressive build-up that will enable the availability of needed infrastructure in enabling delivery of the approved curriculum. The final focus point was to systematically manage the Department's capability, ability, and readiness for professional and academic accreditation of the respective courses with the external accreditation bodies by 2025 - 2026.

2.0 Targeted Objectives

With the above set in motion it was necessary to proactively monitor the new undergraduate programs in the need to review them when the first batch of intakes graduate in 2023 and 2024 respectively. This is now being done for the 2023 graduates in the 3-year Bachelor in Architecture and will be done for the 4-year Bachelor in Construction Management in 2024.

Concurrently, staff training is being addressed to upgrade to both Master levels as of 2024 with the introduction of the new Master Programs and, at the PhD levels, preferably in Australia and New Zealand under their scholarship programs.

The need for a new, fully fitted Digital Laboratory had been scoped with the required cost estimate and submitted to the Vice Chancellor's Office in 2021, and now waiting for an outcome.

3.0 Teaching and Curriculum

Lecture, seminars, projects, and assessment delivery is critical for the adequate performance of both staff and students. Current staffing levels deliver the undergraduate program with a notable 'stress factor.' This will increase with the introduction of the postgraduate programs. The Department is currently making the necessary adjustment (s) to have staff delivery in both the undergraduate and postgraduate programs.

Much of the nature of curriculum subject content and its delivery is digitalized, and, thus, the delivery mode will vary. The need to deliver remote learning has slowly been developed, especially for the Master Programs with the availability of the University outlet within the Department of Works Institute in Port Moresby.

4.0 Graduate Feedback

Graduate feedback and faculty membership in the professional boards and committees (PNGIA, PNGIOB, & PNGBOA) consistently evaluate graduate performance and their (CPD) assessment at the workplace. The Departmental presence in the Industry Boards and Industry Council enables continuous discussion and dialog in improving and developing the ideal and industry-ready graduate in the total 5-year education process. **DEPARTMENT OF**

ARCHITECTURE

AND

CONSTRUCTION

MANAGEMENT



The dynamics of technological innovation are giving boosted propulsion in production, interacting professional competence and exchange. This has changed the traditional makeup of project design development and delivery. The 'computer chip' has now prompted prominence for portability/mobility and smart professional conduct/output with ethical awareness of socio-cultural and environmentally conscious and within economic flexibility and feasibility. This is the epitome of the NEXT GRADUATE, anticipated out of the new programs. We are a small school but have the heart to deliver with tact and professional competence.

5.0 Final Year Project Benchmarked to Industry Expectation

Final year research projects are designed to address fundamental issues experienced in the PNG Building and now the more outstanding Construction Industry and the creative impulse in developing/finding solutions for these issues. A research report is presented as an assessment by all students. The architecture students take this report further into a capstone 'Design Thesis' production in several development scenarios – both urban and rural in nature. The Building and Construction Management students now do real project development simulation and development outcomes. The master programs are designed to elevate graduate expectations to meaningfully dovetail in the workforce, ready to be work-ready but equipped with the tools of the trade on the job.

7.0 Consultancy

There is huge potential and possibility in the Department with industry competent, licensed, and registered capability in the faculty membership. There was very little activity in consultancy work in 2021/2022 compared to previous years. Staff have voluntarily assisted the University in helping and giving expert advice on many physical infrastructure projects on campus and outside of Lae.

8.0 Community/Industry Engagement

Community engagement is conducted through community design projects, final-year capstone projects carried out in significant assignments every semester. Staff were engaged in many industrial committees and Boards. (National Polytechnic Council, NRI Council, PNGIA Council, PNGIOB, BOAPNG, UNITECH Academic Board Committees, community groups/organizations).

9.0 Staffing Quality/Qualification Progress

Staffing has been a major challenge for several years. The Department is making the effort to have staff on deck each academic year. One staff completed his Master's Degree from UNRE, and another completed a Master's Degree from UNRE but was a full-time staff at the National Polytechnic Institute of Papua New Guinea (NPIPNG) in Lae and has been successfully recruited to join the staff in early 2023. Another staff has commenced his PhD studies at the Queensland University of Technology, and the Department expects his successful completion by 2026.

A staff has completed his PhD studies at Queensland University of Technology (QUT) in 2021, whilst another has commenced his PhD studies at QUT. Another staff is planning to pursue her PhD studies in the 2024/2025 period. One has completed his Master's studies at UNRE. Due to the lecture loading, the Department has five (5) part-time lecturers helping out in taking several subjects. The Department of Business Studies (DBS) is the largest Department of the thirteen academic Departments at the university with more than 700 undergraduate and postgraduate enrolments each year. It is a multidisciplinary Department with a proven track record of producing national, Pacific-Region and international leaders. Our alumni have led PNG's industrial and governmental sectors for decades.

Vision

Our vision is to develop the Department of Business Studies into being the most innovative, entrepreneurial, and student-centered Department of the PNGUoT in PNG and the South Pacific region. Our mission is to pursue national and international excellence in teaching, learning, research, and community engagement in the areas of Accounting, Applied Economics, Entrepreneurship, Information Technology, and Management.

Programs

Department of Business Studies offers four main undergraduate programs in Accounting, Applied Economics, Business Management, and Information Technology, giving students an option to apply directly to each stream. The streams provide our students the ease to build bridges between knowledge, skill, and practice. It also offers postgraduate programs including a PhD in Information Technology, Applied Economics, Finance and Banking; and Master of Philosophy in Information Technology, Economics, Finance, and Banking. It also offers a Master's in Business Administration (MBA) and an Executive Masters in Business Administration (EMBA) program.

Recent Establishment of National Entrepreneurship and SME Innovation and Incubation Centre

The Department has recently established a National Entrepreneurship and SME Innovation and Incubation Centre. The focus of the Centre is to capture the GovPNG vision and goals 2030 to increase more SME's in Papua New Guinea. It is looking at four main objectives; SME incubation; Innovation and training; Mentoring and Business Model development and short course training. The Centre is in its initial stages of development and was expected to roll out its programs by early 2021. This has not eventuated due to the current incumbent not performing to expectation. In view of this, DBS is expected to fill the position of the Centre Director with a full time staff in the foreseeable future.

The Department also has a research centre for big-data analytics and intelligent systems. It is building a PNG–China Centre of Business Studies and a PNG-Australia Centre of Governance and Policy Development. The centre is headed by Professor Zhaohao Sun (PhD) who has published extensively, improving the Department of business studies research profile.

Future Programs Under Development

The Department of Business Studies is developing other comprehensive postgraduate programs, including an Honours in Applied Economics, as well as Postgraduate diplomas, Masters and PhD programs in Accounting and Management. The programs are currently aiming to drive various aspects of national strategic visions and development efforts of the University and the Government of Papua New Guinea, as well as regional and global competitiveness, innovation, and entrepreneurship in an increasingly complex business environment.

Professional Academic Staff

The faculty is staffed by a dedicated, nationally and internationally recognised team of academics whose teaching is innovation and entrepreneurship driven and supported by their active involvement in relevant industries, professional associations. All our academic staff have qualifications from reputable universities in Australia, USA, UK, China, and other universities in the world. Following the university's accreditation requirements, most of our staff have a minimum of a master's qualification or above. Our aim as a Department is to see young national academic staff graduating with PhD's in their respective specialties to lead in providing academic leadership. So far, we have one national staff who graduated with PhD in Economics (2020) and two master's degrees from reputable universities in Australia.

Department of Business Studies



Research and Consultancies

The faculty pursues excellence in teaching/learning, research, consultancy, and community service supported with innovative and interactive blended technologies. Academic staff have an established research record with a commitment to conducting competitive research with a national and international reputation.

For the past fifteen years, the Department has conducted various short-term tailored training and consultancies for both the private and public sectors. This outreach partnership is still continuing under the new brand name, "The National Entrepreneurship and SME Incubation and Innovation Centre".

Student Learning facilities

The Department has been committed to providing our students with excellent education opportunities using state-of-the-art ICT technology and equipment. Currently, the Department is transforming and improving its infrastructures to meet the expectations of providing lectures online. Due to the COVID-19 pandemic, all our programs are being delivered through online modes, using Google Classroom and Moodle. This will be a new approach going forward.

Satellite Campus Accounting Diploma Program

This is another recent milestone achievement in the establishment of a satellite campus at Simbu Province. The centre was established in 2018 with her first intake of diploma program in Accounting. This was the first of its kind for the Department to expand out of Lae. Its inaugural graduation of her pioneer students was conducted at the end of the year. The Department highly appreciates and thanks the committed staff for the successful development of course modules, on-site lectures, and completion of the program. Starting 2023, SUSU campus is now offering Diploma in Management.

Entrepreneurship Training and Partnership with Global Handong University, South Korea

The Department has embarked on building international partnerships since it was first established. Recently, it has partnered with Global Handong University in training more than forty Papua New Guinean SME owners on entrepreneurship mindset and design thinking. The training was highly appreciated by the participants and the Department acknowledge and thank the Global Handong University for this great initiative. The Department invites all our stakeholders to join us in building our nation through human resource development and creating more entrepreneurial mindsets.

Master of Business Administration

In the 55th Unitech graduation DBS graduated the following students:

1.	Alkie Joseph	ITAMA
2.	Bathsheba	ILAU
3.	Alex Joe	NONA
4	Seko	PETER

UÚTO 5. Alex

Executive Master of Business Administration

- Samson APAI 1.
- 2. Illvne ISSAC **KASSI**
- 3. Ken
- 4. Nancy Jerome LAENA 5. Kusak Isasah MELUK
- 6. Michael Nem MOTAN
- Keith SMACKER 7.
- 8. Flias
- 9. **JoselithoYAUMA**



TAU

Despite challenges from the COVID-19 pandemic, the Department had a very good year in 2022 under the leadership of Acting HoD, Mr. George Wrondimi.

1. Teaching and Learning Activities of the Department

The teaching and learning activities of the Department transitioned successfully from pandemic restrictions, and in-person teaching and learning activities resumed, supplemented by the adroit use of new e-learning systems to enhance student learning.

In-person teaching in the Department's Postgraduate program resumed. Due to continuing capacity constraints pertaining to supervision, the Department had opted to reduce its intakes, mainly for the MCS and M.Phil. programs. Because of this shortage of qualified staff, the Department continues actively recruiting senior staff, especially given the unfortunate, unexpected departure of recently recruited A/Prof Dr. Steven Winduo. Even so, we are happy to report that Mrs. Wilma Langa has returned from PhD studies abroad, and Ms. Imelda Ambelye has submitted her final revised PhD dissertation for graduation. In addition, one shortlisted finalist is awaiting approval to hire at the Senior Lecturer level in a needed area of the Department (social mapping). Hopefully, these additions to our full-time academic staff will enable the Department to increase its intakes for both the Master's and PhD study programs in 2023 and onwards.

The Department continued its external teaching activities at the SUSU campus by completing and delivering course modules for the second-year students in the Diploma program. The third SUSU graduation is scheduled for May 15, 2023.

Once again, the CDS Department was chosen to join the other three PNGUoT academic departments to pilot the Online Education Programme in 2022 for Non-School Leavers across the country. Staff teaching the first year, semester one subjects started producing their respective course modules towards the second half of semester two, 2021. (The OLEP commenced on 25 May 2022 and is now enrolling students for 2023.)

This year 2022, saw the commencement of the full undergraduate degree program from years one to four.

2. Graduate Feedback from Industry Partners and Stakeholders

Due to various reasons, including the restrictions imposed nationwide on public gatherings caused by COVID-19, no meetings were arranged for the CDS Industry Advisory Committee in 2022. The Department plans to have the next meeting in 2024. This will be a year after our first group of graduates completed the new course structure of four (4) subjects per semester. Feedback from Industries, Government Departments, and NGOs will be timely in correlation to the department's Benchmarking exercise.

Former graduates of CDS are now coming on board to participate in the Department's Industrial (Professional) Training field attachment programs. They are representing their employers by involving in the designing of fieldwork plans that are tailored to our students' training needs.

3. Short Course on Workplace Safety & Risk Management

After it was suspended due to COVID-19 in 2020, many more professionals are showing interest in the Department's short course on Work Place Safety and Risk Management.

The first training commenced in early December 2021, and 29 participants graduated after two weeks of training with their Levels One to Three Certificates. Due to high demand, the short course will now continue regularly as in the past from 2022 onwards.

4. Final Year Projects Relevant to Producing Employable Graduates

Our final year (4th year) undergraduate and post-graduate (Master's and PhD) students are required to complete research projects to present seminars and submit reports as part of their respective study programs. Here are their research topics for 2022:



DEPARTMENT OF COMMUNICATION AND DEVELOPMENT STUDIES

	Name	Supervisor	Dissertation Title
1.	BENENG, Brendon	Mr Jesse	An Assessment into Ahi Local Level Government Ward Development Planning Committee's Capacity.
2.	DOROGARI, Tasma	Mrs <u>Maino</u>	Evaluating Sides Effects of Inadequate Protein on the growth of the adult Population in Ward 14 of Kokoda LLG, <u>Sohe</u> District in Oro Province.
3.	ESROM, Bianca	Mr Wrondimi	The Impact of Gender- Based Violence on Women's Economic Empowerment in Dauli Community, Hela Province.
4.	FRANCIS, <u>Aitan Issau</u>	Mr <u>Yaro</u>	Community Awareness on Coffee Berry Borer Pest: A Survey of local farmers in <u>Sukapass</u> village, Goroka, Eastern Highlands Province.
5.	JING, Valentine	Mrs Maino	The Challenges of Cocoa Production: A Case Study in Ward – 14 of Kokoda LLG (Hamara).
6.	KALATE, Naomi	Mr Sefo	The Negative Impacts caused due to the Lack of Education for Youths at Uni-Block Community.
7.	KAVO, Moses	Mrs Maino	The Effects of Development on Law and Order Stability: A Case Study of Hamara Village, Oro Province Papua New Guinea.
8.	KAWAGE, Otto	Mr Paul	Underlying Factors Affecting Eight (8) Students in Rural School from Continuing into High Schools: A Case Study of <u>Hamara</u> Primary
			School in Ward 14 of Kododa LLG, Oro Province.
9.	KOTTSON, Natasha	Mr Jesse	The Effects of Customary Land Tenure on Peri Urbanization Leads to High Challenges in Development Issues such as Lack of Clean Water and Sanitation: A Case Study of <u>Bumbi</u> Peri- Urban Suburb, Lae.
10.	LUPISA, Raymond	Mr <u>Milba</u>	Marriage is the Ultimate Foundation for as Strong, Stable and a Healthy Society: A Perspective of <u>Wabag</u> Urban – Ward 4 Council.
11.	NANGOI, Trisha	Ms <u>Ambelye</u>	Early Childhood Education is Paramount for Child Development. A Case Study of <u>Wagang</u> ullians Las Maroha Province
12.	NINJI, Gabriella	Mr Wrondimi	Impact of the Internet on the Academic Performance, Social and Spiritual Values of Students, Impact of the Internet on the Academic Performance, Social and Spiritual Values of Students.
13.	NIR, Jemimah	Mr <u>Sefo</u>	The Effects of Settling Customary Land Dispute using the Land Dispute Settlement Act of 1975. A Comparative Case Study between Lae City and Mendi, Southern Highlands Province.
14.	NIRU, Joyce	Mr <u>Milba</u>	Economic Empowerment for Women and Girls in Papua New Guinea: An Insight from Women's Economic Activity in Ward Six (6), Lae Urban (LLG)- Lae District, Morobe Province.
15.	OLALAI, Joy	Mr Winuan	Influence of Local PNG Music on the West New Britain Province, A Case Study on: Hoskins Secondary School and <u>Poinini</u> Catholic
			Agriculture and Technical Secondary School.
16.	ORORI, Melva	Mr Kuri	Factors Contributing to Youths in Hamara Village to Neglect Formal Education: A Case Study of Hamara Village in Ward 14, Kokoda
17.	OSWYN, Israel	Mr <u>Yaro</u>	Female Participation in the Extractive Industries: A Research Case Study on Assessing the Equal Participation in the Extractive Industries.
18.	PA'AK, Moses	Mrs <u>Maine</u>	Impediments to the Access to Primary Healthcare Services in Rural Areas: A Case Study of Hamara Ward 14, Kokoda LLG Sohe District in Oro Province.

19.	PEMA, Terence	Mr Sangundi	Investigation into Election Related Issues Affecting People's Livelihood in Lae District: A Case Study of Lae in 2022 National General Election.
20.	RONNIE, Mary	Mr Paul	The Causes and Effects of University Student's Academic Performance in Papua New Guinea.
21,	SANGUNDI, Libert	Mrs <u>Moka</u>	Assessing The Impacts of Gambling on the Livelihood of People Living at 9- Mile Settlement in Port Moresby.
22,	SILAS, <u>Mirriam</u>	Mr Jesse	An Assessment of Student's Performance in Communication Skills. A Case Study of the Papua New Guinea University of Technology.
23.	TANABI, Asley	Dr Aisoli-Orake	How Mental Health Issues Can Affect Social Life & Academic Performance.
24.	TOIARA, Carolyne	Mrs <u>Moka</u>	The Effects of Clustered Housing on People's Health: A Case Study of <u>Rapindik</u> settlement.
25.	TUMUN, Georgina	Ms Ambeive	A Comparative Analysis of Polygamous Marriage in Traditional and Modern Society in PNG – A Case Study of <u>Mini, Jiwaka</u> Province.
26.	WAFI, israel	Mr Sangundi.	A Survey to identify and communicate the negative health effects of lack of exercise and how it affects the job performance of the Unitech Academic Staff, 2022.
27.	WARTUPUA, Liman	Professor Gilder	A Qualitative Descriptive Analysis of Kokopo Local Level Government Civil Servants' Work Experiences with Ward Development Committees in Reference to their Educational Level and Key Skills Competencies.

5. Postgraduate Certificate in Student-Centred Teaching

Taught at the Teaching and Learning Methods Unit (TLMU) Centre under the supervision of Prof Eric Gilder, the PGCSCT consisted of the following modules, offered to registered staff members at the University as an after-hours instructional course to nominated academic staff of the university: CD 511: LMS and Flipped Classroom (Dr Shoeb Ahmed Syed); CD 512: Project/Problem-Based Learning (Ms Dora Kialo); and, CD 513: International Trends in Higher Education Teaching and Learning (Ms Ruth Moka). Twelve (12) enrollees completed all subject requirements for the course and will thus obtain a PG Certificate in April 2023:

Last Name	First Name	
Ame.	Daniel	
Dotaona	Ronnie	
Helebi	Peter	
Kelvin	David	
Kifas	Vincent	
Laki	Jim	
Mali	Anna	
Moripi	Leeroy	
Pater	Seko	
Sidil	lenifier	
Sosanika	Gibson	
Yaro	Jack	

Plans are underway to expand the current PGCSCT offer to a two-semester course, so as to meet PNG's National Qualifications Framework (NQF) standards for Level 8.





6. Postgraduate Degree Research Activities

Candidate	Program	Year	Supervisor(s)	Research Topic
Lucy MAINO	PhD	1	Dr But	Impacts of Integrated
(Began studies			AG/A/Prof	Development Approaches
August 2022)		1	Winduo	on the Livelihood of Rural
		1		People: A Case Study in the
		1		Oro Province of Panua New
		1		Guinea
Devide CELL	DL D.	-	Prof. Citida - IDa	Guinea,
David GELA	PhD	3	Prof Gilder/Dr	Effective Organizational
(Withdrew		1	Aisoli-Orake	Communication is a Tool to
form studies		1		Drive Efficient Services: A
Sept. 2022)		1		Case Study of Simbu
		1		Province in Papua New
				Guinea.
Michael AGUM	MPhil	1	Prof Gilder/Dr	Evaluating the Current
(Began studies		1	Aisoli-Orake	Practice of Social Mapping in
August 2022)		1		Papua New Guinea.
Stephanie	MPhil	1	A/Prof Garry	Assessing the Process for
TRINGIN	100.000.000		Sali/Dr Francis	Internal Accreditation of
		1	Essacu (UNRE)	Academic Programs at PNG
		-		
				University of Natural
				Resources & Environment
Desley ALU	MCS	2 (late)	Dr Aisoli-	The impact of Morobe
			Orake, Prof	Provincial Education
		1	Gilder	Department and The
		1		Teachers
		1		in Morobe Province of Papua
		1		New Guinea.
James YAWING	MCS	2 (late)	Ms Ambelve/	Effects of High Illiteracy Rate
	011750	2012024	Dr Aisoll-	of School-aged Children in
		1	Oraka	the Rural Arear of Mumone
		1	Orake	U.C. Bulala District Marcha
		1		LLG, BUDIO, DISTRICT, MORDDE
		1		Province, 2021: A Case
				Study.
Derrol BUGEN	MCS	2	Ms Ambelys/	Assessing the Efficacy of
		1	Dr Aisoli-	Theoretical and Logical
		1	Orake	Frameworks Used in NGOs
		1		BCI Programs in Papua New
		-		Guinea
Bethelle KASIR	MCS	2	Prof Gilder/	Challenges to Military
			Dr Aisoli-	Capabilities of the PNGDF
			Orake	Engineer Battalion, 2022. A
				Strategic Communication
				Approach.
Noah KILIP	MCS	2	A/Prof Sall/	A Study on White-Collar
			Prof Gilder	Crime as a Challenge
				towards Morobe Provincial
				Government Development
				Strategies: The Case of
				Governor's Office in 2020.
Lioneth A.	MCS	1	Dr Aisoli-	The Challenges in Teaching
MANE		· · ·	Orake/ Ms	English as a Second
			Ambelye	Language in Papua New
			0.0000000000	Guinea (PNG): A Case Study
				of Upper Secondary Schools
				Teachers in the National
				Capital District (NCD).
Elias MOKA	MCS	1	A/Prof	Communication Strategies
		<u> </u>	Winduo/Dr	for Entrepreneurial Self-
		1	Alsoli-Orake	Reliance Projects in Panua
		1	CHARTER STREET	New Guinea Educational
		1		Institutions: A Case Study for
		1		Educational
		1		Institutions in Lan Mornha
		1	1	Province.
Tania PETER	MCS	1	Prof. Gilder/Dr	Assessing the key required
-ana PELER	1416-D	*	Aisoli-Orata	competencies of multi-
		1	Platin-Grake	relation communication
		1		practitionars in DNC todays A
		1		survey of OR professionals
		1		employed by the protessionals
		1		NGO: In Post Marched

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Notes:

1. For MCS research students, the principal supervisor is mostly responsible for the research outcome; the co-supervisor is available for student consultation.

2. For MPhil and PhD scholars, both the principal supervisor and co-supervisor are responsible, but the former directs the research project.

7. Highlights of Outreach and Research Activities by Academic Staff

Follow ns f

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A. Ongoing Community Partnership Projects Both staff and students are engaged in community outreach and/or consultancy programs as part of the course requirements and through academic interests.

At the beginning of 2021, the Department met with an industry partner (National Gaming Control Board) in Port Moresby to review the Industrial Training engagement of our final-year students under the MOA signed between PNGUoT and NGCB in 2019.

In May 2021, CDS Department joined the Department of Agriculture to attend a ground-breaking ceremony in one of our staff member's villages (Hamara Village) at Kokoda in Oro Province to establish the Village's Community Transformation Centre. The Centre will become a venue for both staff and students (our IT students) to live with the people, conduct research, and assist the community in various activities. Our first batch of seven final-year students has just completed their IT and returned this semester (semester 1, 2022). They are the pioneers of this first arranged community outreach program between a rural village, and the CDS Department. Similar arrangements are being planned with other communities, with initial discussions commenced with the Ward Councilor of Laukano Village near Salamaua in Morobe Province.

The CDS Department continues its cooperation with the Wesleyan Bible College (WBC) in Mt Hagen, focusing on developing the (English-Language) Academic Writing Skills of theological instructors at WBC and partner theological schools, including Christian Union Bible College (CUBC), Christian Leaders Training College (CLTC) and others. Professor Eric Gilder, Dr Aisoli-Orake, and Ruth Moka have been involved in this program from the beginning, which started in 2020 as a conversation between missionary Cheri and Don Floyd asking for specialist expertise in developing the program. The Department is engaged and committed to continuing this project as part of its community outreach and development mission and trusts that sound, applicable action research can be generated by it.

B. Research Activities

Edited Book:

Florea, S., Gilder, E., Florea, D. & Grunwald, R. (Eds.) (2022). Representations of otherness in Romanian philological studies. Berlin: Peter Lang, International Academic Publishers, 228 p.



Journal/Book Chapters:

Aisoli-Orake, R., Bue, V., Aisi, M., Ambelye, I., Betasolo, M., Nuru, T., Kialo, D., Akanda, S. Denano, S., Yalambing, L., Gasson, S., Spencer, E., Bruce, C. & Roberts, N. (2022). Creating sustainable networks to enhance women's participation in higher education in Papua New Guinea. Journal of Higher Education Policy and Management 44 (2): 208-20.

Avram, S. & Gilder, E. (2022). Is the pursuit of well-being and happiness possible in organizations under stress using the hybrid communication format? 2022, Language, Culture and Change, Vol. 3 "Communication vs Hybridization", (Editura Universității "Alexandru Ioan Cuza" din Iași): 9-20.

Scholarly Presentations:

Gilder, E. (2022). Special Guest Speech for "European Transforming Education Conference 'The Fostering of the Youth Transversal Skills in the new EU and in view of the UN SDG 2030 vision', 10th Anniversary of the International Honorary Chair" Jean Bart" (CIO-SUERD). Bucharest, Romania (online participation), 9 November.

Gilder, E. (2022). Invited Valedictory Speech for ICAIR conference, Sangam University, Bhilwara (Raj.), India (online participation), 8 October.

8. International Benchmarking of Undergraduate Academic Programme

In 2021, the Department submitted itself to an international benchmarking exercise of its revised undergraduate academic program, undertaken by Prof Dr Habil. Silvia Florea of the Lucian Blaga University of Romania. A fully experienced auditor of university academic programs, Professor Florea submitted her report on this exercise, "Proposed Measures to Increase the Added Value of the Communication and Development BA Study Program at PNGUoT," to the Department and University management on 8 February 2022. We are now discussing with her and the SEMT on retaining her services on a continuing basis to implement the recommendations of this benchmarking report.

9. Conclusion

Overall, 2022 was a year in which the Department resumed normal operations and moved forward. I am proud to lead the Department through administering some of its ongoing projects. One such is sustaining its development initiatives by submitting the Department's 'New Building' concept through the PNGUoT Projects Office (in progress) and sourcing funding. Additionally, establishing an Academic Writing Centre/Career Advising Centre with TLMU encompasses the continuation and expansion of our unique contribution as a Department to the wider University community.

Established in 1968, the Department of Civil Engineering is the oldest Department at Papua New Guinea University of Technology. It has produced the country's Civil Engineers as the only institution that offers Bachelor's Degrees, Master's Degrees, and PhD levels and the whole of South Pacific apart from Australia & New Zealand. The first graduate was in 1972. An annual graduate of about 50 who takes greater responsibility to educate more would-be engineers and prepare them for the challenges of the country's development. In its attempt to be at par with the rest of the Universities in the world, we participated in the Accreditation process for its Bachelor of Engineering in Civil Engineering starting in 2015 and submitted for accreditation to Washington accord in 2019, of which we got the provisional accreditation. Among the highlights of the accreditation exercise is the development and implementation of a new syllabus from which the first batch of graduates comes this year, 2022.

Vision

To be the premier Civil Engineering provider in PNG and the South Pacific that grow world-class Civil Engineers or a technocrat for the real world.

Mission

To provide an opportunity to grow world-class Civil Engineers or technocrats through high-quality experiential Teaching & Learning, Research & Development, External Collaboration & Partnerships, Consulting Engineering, Commercial Testing, and Active Community Services with an ardent application of scientific and technological knowledge and innovation in Civil Engineering.

Core Values

To live in a culture of world-class Civil Engineers or technocrats who are honest and accountable for what they do, who are aware and with inclusiveness in a culturally diverse world, who are resourceful, who work innovatively and creatively to meet the past face of development with sustainability, and who can work as a team to achieve the vision and mission.

Graduates Attributes

Communication. Adequate and appropriate communication skills to present a clear and coherent exposition of civil engineering knowledge and ideas to various audiences across all levels of society.

Problem Solver. Skills to review, analyse, consolidate, and synthesise knowledge to identify and solve complex problems in Civil Engineering with intellectual independence.

Teamwork. Undertake various team roles, work effectively, and utilise effective teamwork skills to achieve professional outcomes. Apply interpersonal skills to interact and collaborate to enhance results through shared individual and collective knowledge within their specialisation.



DEPARTMENT OF CIVIL ENGINEERING





Ethical. Act responsibly and with accountability for won behaviour and practice ethically and professionally.

Lifelong Learning. Recognise the need for engaging in life-long learning to ensure contemporary knowledge within their specialisation to address issues due to changing technical scenarios and the ability to handle challenges using a problem-based approach.

Innovative. Cognitive, technical, and creative skills to investigate, analyse and synthesise complex information and theories to generate appropriate theoretical and professional responses to problems in Civil Engineering.

The Department of Civil Engineering (DCE) Annual Report 2022 is the Department's modest contribution to fulfilling the University's Strategic Plan 202-2024. It reports it highlights the Department of Civil Engineering's compliance with the University's 7 Strategic Domains: 1) Inculcate best practices in Institutional leadership and governance, 2) growing world-class technocrats for the real world, 3) cutting-edge research and innovation,4) Optimum organisational effectiveness and performance, 5) Physical and virtual infrastructure, 6) Financial self-sufficiency, and 7) Grow and expand community and industry interface.

Inculcate best practices in institutional leadership and governance.

The teaching staffs in 2022 at the DCE are majority Nationals, with 62% and 37% Expatriates, with four part-timers who are also expatriates. Among our staff, Ms Grace Wantepe was awarded to participate a STEM Nau Community of Practice, a PNGAus Partnership Higher Education Program supported by Australian Awards PNG (AAPNG) as sponsor held in Port Moresby in December of 2022 for Part 1, and Part 2 and 3 on next year.



Ms Grace Wantepe seated front and second from left posing for the group photo of STEM Nau Awardee

Growing world-class technocrats for the real world

The first-year subject Engineering Design (EN124) continues to showcase 54 projects this year with the application of engineering design by utilising waste to minimise waste disposal to landfill. Fifty-three problem-based projects were attempted to solve through critical thinking and adopting appropriate Sustainable Development Goals (SDGs). There was 31 problem-based research project on Project Management and Economics conducted by year 3.

Cutting-edge research & innovation

There were eighteen Final year projects and an online publication. The Engineering Practise & Sustainability (EN111) class output was presented in Huon Seminar and two other research outputs. There were 54 prototypes presented and judged from year 1 projects under the class EN124 (Engineering Design). Photos below:





A prototype for solar charging for rural communities A prototype for charging using used disk to capture solar

Optimum Organisational effectiveness and performance The occupational health and safety (OHS) programs continued to be improved. Using the beam deflection and truss deformation unit, continued use of the equipment in the structural laboratory.





Physical and virtual infrastructures

The continued use of the world-class computers equipment for Computer Aided Design and Engineering Modelling class is expanding for use in other civil engineering classes such as the purchase of the software: GeoHecras for Hydrodynamics & Hydrology, REVIT for structural analysis, SAP 2000 for Integrated Building Design.

Purchase of Experimental engineering equipment made possible the Improvement of the Environmental laboratory by purchasing pollution testing equipment that can test particulate PM2.5 and Dust PM 10. Another is the Improvement of the Hydraulics Laboratory by purchasing a Computer controlled water treatment plant, hydrologic systems, rain simulation & irrigation system units, a Pelton turbine test rig, and a multistage centrifugal test rig.





- Computer-controlled water treatment plant - Computer-controlled irrigation system unit

The geotechnical laboratory was also improved, which covers subjects in soil mechanics & geology and geotechnical engineering which equipment was purchased., The Transport laboratory was also improved by purchasing equipment for the traffic & transportation laboratory, road, and pavement engineering.

Financial self-sufficiency

The Department Civil Engineering Commercial Unit (CECU) provides services to the general public through the following laboratories: Concrete Laboratory, Structural Laboratory, and Geotech Laboratory.

Grow and expand community and industry interface

The International Labour Organization (ILO) EU-STRE-IT Project in Sepik signed a contract with the Department to conduct 18 modules on capacity building to their constituents, both contractors and government stakeholders, and delivered seven (7) modules this year, 2022.

Geoscience Australia visited and conducted a briefing in November of 2022 with the DCE academic staff relative to the proposed Lae Earthquake Risk Assessment Survey Plan.



Module 7: Contract management, dispute resolution, and arbitration in roads training


Electrical and Communications Engineering of the PNG University of Technology teaches courses in power systems, renewable energy, process control and instrumentations, radio communication, and information and communication technology. Electrical and communications engineers design power generations and substations, transmission lines, distribution lines, computer networks, and communication networks. Power (energy), Communication, and transport systems are the lifeblood of the national economy. The nerve systems of the electrical and communications world are the electrons and electromagnetic waves. Electrical engineers design network infrastructures that keep the electrons flowing from the highlands to the coast or vice versa to supply power. Communications engineers design the network infrastructures, such as wireless technology, which are the source of electromagnetic waves that keep information being processed for transmission to interact in the real world. When you tune your radio, watch TV, send a text message on mobile phones, or cook in a microwave oven, you are using electromagnetic energy. You depend on this energy every hour of every day from your mobile phones for communication and entertainment. What would the world be without electromagnetic waves and the electrons that flow through the electrical networks? It will be a chaotic world with no aircraft to fly, no ships to operate, no power, and no communications.

Teaching and Learning

of the academic year.

The undergraduate program covers mathematics and physics in addition to the core curriculum in either power engineering or communications engineering and other required electives. The program enables students to specialize in one of the following two majors: Communications and Power Engineering. The courses are being accredited by Engineers Australia (EA) at Level 8 honors degree, which has been granted Provisional Accreditation. This has seen course subjects developed and mapped to EA Stage 1 Competency Standards and the PNG National Quality Framework Level 8. The Competencies and Elements of Competency represent the profession's expression of the knowledge and skill base, engineering application abilities, and professional skills, values, and attitudes that make up the attributes of a graduate engineer.

The ECE Department has undergone vigorous course restructure aligned to meet the EA Stage 1 Competency Standards. Other requirements of accreditation include furnishing all laboratory equipment. The Department is equipped with the latest state-of-the-art laboratory equipment in both the Power and Communications streams. In the final year of the studies, students undertake research projects on various topics in Electrical Engineering. The students show their ingenuity and innovation in researching various topics and building prototypes or undertaking design and simulation models and presenting their work at the end DEPARTMENT OF ELECTRICAL AND COMMUNICATIONS ENGINEERING



The research projects are designed to trigger the engineering curiosity of students and find new methodologies to foster innovative design that employ the synergistic effect between design and innovation as the key to promoting engineering ingenuity. The Department appreciates students' performance in the thesis project design in granting an academic award for the best dissertation.

The ECE Department continues to incentivize students with awards for the best students at all levels of the program of studies. Thus, recognizing students for their effort and hard work is a way to encourage them to achieve high honors class degrees in the Bachelor of Engineering (Electrical) under the provisional accredited program.

Staffing

Our professional staff is dedicated to excellence in research, education, innovation, and service. The Electrical and Communication Engineering (ECE) Department staffing comprises of 8 full-time academics, five sessional academic staff, one online Professor, and ten technical and administrative staff. About 200 undergraduate students, nine postgraduate students enrolled in M. Eng. by course work and MPhil programs, and another four candidates enrolled in PhD studies.

The Department continues to align its operational plans for 2023-2027 to pursue long-term goals of sustained excellence in research, teaching, and active community outreach. One priority area is attracting top-notch school leavers into the program. In 2022, the Department managed to recruit nine students with High Distinctions (straight A's) in Advanced Mathematics, Physics, English, and Chemistry into the program, of which three are females. Gender inclusive has been a road map to success in enrolling a total of 35 females into the undergraduate program and 4 in the MPhil studies.

Further, the ECE Department is recruiting two Professors to develop the syllabi for a new major in Computer Engineering. The Department expects 20 students in the first class of students in 2024. The new degree in computer engineering has the potential to double the number of undergraduate students in the ECE Department over the next five years.

Research and Publications

Strategically, the department continues to pursue long-term goals of sustained excellence in research through postgraduate studies. Four (4) candidates are now enrolled in the PhD programs and nine other candidates are undertaking master's degrees. One of the key priority areas is the implementation and sustainability of staffing, where the Electrical Engineering Department plans to have about 70% of the full academic carder to be filled by national members of the academic staff. The primary research areas undertaken at the postgraduate level are:

- (i) Electric Power Systems,
- (ii) Renewable Electric Energy Sources, and
- (iii) Advanced Wireless Technology.

Electric Power Systems

The ECE Department has made significant progress in electric power systems in inter-disciplinary areas, including wireless technology applied to power system monitoring, renewable energy generators such as micro-hydroelectric generators and DC grids and power system grid extension involving the AC power grid and renewable electric energy generators. The research work has been reported in a journal. Moreover, the ECE Department was given a partial grant from the University for a Major Interdisciplinary Research Project. Further, ECE Department is looking at the overall PNG grid from the systems reliability and contingency perspective of the Ramu, POM, and Gazelle electricity grids in PNG. The work will also consider the system performance from the reliability and sustainability perspective with grid interconnection of renewable energy systems to the main power grids

Renewable Electric Energy Sources

A working pico-Hydroelectric generator was designed, installed, and controlled. The work has been reported in a journal. A related published work was on a comparative study of different ways of connecting distributed solar panels supplying electricity to a village with clustered loads. Further, research on hybridizing and control of different renewable energy technologies in microgrid systems for remote communities is being undertaken in the Department by MPhil students. The ECE students have installed a 600 Watt solar-wind hybrid system on the rooftop of the Department. Further, as part of their professional work experience, the students are engaged in a photovoltaic design of a 30 kW system on a rooftop. The design is complete, with the costing finalized and awaiting submission for funding.

Advanced Wireless Technology and ICT

Advanced wireless technology has developed several powerful and new software tools for beam controlling in 4G and 5G, 6G wireless systems. Work on studying and improving the wireless systems in Lae City and on the University campus is underway, as well as the design of better data capacity and speed at economical costs and the possible use of the 5G system to replace the present system. Moreover, research work on the Port Moresby Jackson airport aircraft to control tower communication and signaling systems, particularly addressing signal glitches or interruptions, is ongoing. 135

Community Outreach

ECE staff members have been involved in various community outreach programs in remote communities on energy and communication accessibility. Some of the community outreach work includes feasible studies of renewable energy systems such as photovoltaic systems design and micro hydroelectric power design. Further, the Department is engaged in school internet connectivity to empower teachers and students to access online learning materials. The community outreach program is an ongoing initiative to empower rural and fragmented communities to access electricity and internet services for online learning. The three schools visited in 2022 are (i) Mendo Primary School in Kagua-Erave District, Southern Highlands Province, (ii) Kiseveroka Primary School, Yakaria-Kiseveroka LLG, Lufa District, Eastern Highlands Province and (iii) Guambot Primary School, Boana LLG, Nawaeb District, Morobe Province. The outreach has been part of the operational plan to support and facilitate engineering and science exposition at the primary school level. Further, the outreach program will introduce staff and students to the digital learning environment by using online classroom technologies for blended learning, gamification by introducing gaming elements into classroom learning, mobile reading applications, e-textbook for teachers, and other software tools in creating an effective digital learning environment.

Electrical Engineering Alternate Path-way Program

The ECE Department is diversifying its program to enroll students in its Diploma Courses under the Electrical Engineering Alternate Pathway Program (EEAPP). The program commenced in 2021 with over 100 students now in Year 1 and Year 2 pursuing industry-based certifications under Cisco Academy. The Department will include the Huawei Academy and City & Guilds (London) certified courses. The EE-APP is an avenue for Gr. 12 school leavers who do not make it to Tertiary Institutions to pursue studies to reduce the unemployment rate. The Diploma course will also become a bridging program into the Degree courses in Power, Communications, and Computer Engineering. All academies have been assigned separate computer laboratory facilities. Cisco Academy is now in operation, while Huawei Academy will come into operation in July 2023. The ECE Department is now working on the next academy to establish a City & Guilds Centre in the country through the PNG University of Technology City & Guild Centre. PNG University of Technology will have the right to operate as a Resource Centre for City and Guilds programs.

Milestone

ECE Department has two female students who have completed their MPhil thesis and are due to graduate in 2023.

Introduction

The Forestry Department has trained professional foresters for PNG and the region at the Bachelor's Degree level since 1972, with the first graduates in 1976. Our graduates are employed as scientists, administrators, and managers in the public and private sectors, NGOs, and CBOs locally and within the Asia Pacific Region. Others become entrepreneurs and community leaders serving various roles throughout the Pacific region. As we take pride in our rich history, our vision is to strive for improved training, teaching, and research standards through international accreditation in the near future.

The Department's mission is to produce professionals, both men, and women, with scientific, management, and technical production skills and expertise needed to manage Papua New Guinea's forest resources sustainably at the same time tailoring the curriculum to meet regional and global job market requirements. It is our teaching and training philosophy that a well-managed forest is an asset to local, national, and regional economies for current and future generations. The essence and relevance of this philosophy are not only valid but timeless too.

This is the fourth year of implementing the revised four-subjects per-semester curriculum, whereby many of the subjects taught in the past are condensed into four main subjects per semester while increasing teaching hours per week to six (6). This review was done to all courses at PNG University of Technology to be on par with the changing trends of higher learning teaching in the region, facilitating a pathway to international accreditation. The department is excited to announce some notable milestones achievement in 2022;

i) We will have our first batch of graduates under the new four subjects per semester curriculum in April 2023 and;

ii) The Bulolo campus has upgraded the three (3) year Diploma in Forestry program to a new four (4) year Bachelor of Forest Resource Management program.

iii) 49 students graduated in June 2022 (2 graduated with an MPhil, 25 with Bachelor of Science in forestry, and 22 with a Diploma in Forestry)

iv) Five of our faculty staff attained Postgraduate Certificates in Student Centered Teaching

These achievements would not be possible without the efforts of our staff and students, including the support from all partners and stake-holders both within and outside the University.

Undergraduate courses and revised curriculum

The Department has two campuses, the Taraka Campus and the Bulolo University College Campus offering two (2) Bachelor's Degree programs in Forestry Science and Forestry Resource Management, respectively. The Bachelor of Science in Forestry is a 4-year degree program partially taught on both campuses, while the 4 years Bachelor of Forest Resource Management program is taught at the Bulolo University Campus.

The curricula for the two programs place emphasis on forest management, environmental protection, multi-purpose forest resource surveys including wood technology, and forest-people interactions. The course work is complemented with field trip components to surrounding forest areas, forest industries, and communities in Morobe Province. Both degree programs require students to complete a 60 days of professional work experience (PWE) on their initiatives during the holidays before graduation.

DEPARTMENT OF FORESTRY



Postgraduate Programs

The postgraduate programs consist of MSc, MPhil, and PhD in Forestry for a duration of two years for each Masters' Degree and three years for PhD studies. The PhD studies are dependent on the availability of supervisors at the moment. Since 2014, about 4, on average postgraduate students have graduated annually. There has been an increase in the number of students interested in doing Postgraduate studies with the Department in recent years. Currently, about 6 six postgraduate students are enrolled in MPhil and PhD programs.

Department staff and Training

There are 14 current full-time faculty members teaching on both campuses and three of the faculty members are currently undertaking their PhD studies abroad and are expected to join the Department as early as 2023. Five (5) faculty members have completed their Postgraduate Certificate in Higher Learning and Teaching and have graduated. The Department is also upgrading the qualifications of administration officers, where a female administration staff has also completed her Diploma in Business Management at the Lae Polytechnical institution this year.

Research, consultancy and stakeholder engagements

The Department's engagement in research, consultancy, and community development projects this year is concentrated on ongoing collaborations, postgraduate and final-year student research projects, field trips, and engagement with stakeholders. Our Insect Farming and Trading Agency (IFTA) is creating networks with communities nationwide to promote community partnership programs through its insect farming, buying, and selling activities.

As part of the newly revised curriculum, the department has regularly contacted a couple of industries to engage our students during the festive holidays as part of their industrial experience. Many companies have indicated favorable responses, including National Forest Service, PNG Forest Product Ltd, and others around the country. The department is currently working on an MOU with PNG Forest Authority and a couple of NGOs to facilitate the 60 days of professional work experience for our students.

Congratulatory and Complimentary messages

The department wishes to congratulate the following staff;

* Mr. Louis Veisami, Mr. Benson Gusamo, Mr. Olo Gebia, Mr. Koniel Alis, and Ms. Priscila Menin, who successfully completed their Postgraduate Certificate in Higher Learning and Teaching

* Ms Barbara Stevens successfully completed her Diploma in Business Management at the Lae Polytechnical Institution this year.

Finally, we thank all our stakeholders and partners who have supported us in any way to successfully complete this academic year 2022.

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

The Department of Mathematics and Computer Science offers two four-year Bachelor of Science degree programs. One in Computer Science (BSCS) and the other in Applied Mathematics (BSAM). We provide teaching services in Computer Science and Mathematics to other academic Departments. The new Applied Mathematics program started this year with its first intake of about 25 students.

Our mission is to produce quality graduates in Computer Science and Applied Mathematics with standards compatible with other universities in the region.

Teaching Activities

The Department revised its Computer Science subjects to adhere to the Engineering programs accreditation process requirements. The new curriculum has four subjects per semester, and each subject will have a six-hour contact time per week. A total of 32 subjects enables the students to cover all areas of Computer Science that includes ICT, Networking, Databases, Programming, Operating Systems, Software Engineering, and Artificial Intelligence. This gives our students the advantage of being introduced to all areas of computer science before entering an industry where they will begin to specialize.

The new Applied Mathematics program is tailored to produce graduates in the higher education sector with a solid grounding in Mathematics and the ability to solve industry-based problems. The program aims to equip students through advanced computing aids, appropriate theories, and mathematical skills to be able to solve problems in Statistics, Reliability, Science, Technology, and Engineering.

The Mathematics service subjects have also undergone a lot of changes. Most Departments we service prefer compressed versions of the number of Mathematics subjects and/or topics in their syllabuses. This often means two subjects in a year are combined and taught in one semester. This has decreased the number of subjects the Department teaches per Department, but the contents are more compact and rigorous.

The staff profile includes five PhDs, ten Masters, and six Bachelor's degree holders. In addition, the Department engages three to five part-timers each semester to make our programs operational. Staff are generally very committed and competent.

Graduates Feedback from Industry

The Department recently received positive feedback from various industries about our recent graduates working with them. Some of the organizations that contacted us include Santos, PNGFM, Nasfund, major banking firms, major telecommunication and mobile companies, and others. The demand for Computer Scientists is increasing with the rise in new technological developments around the globe, and PNG is no exception. We prepare our graduates with the fundamental skillsets to easily specialize in specific technical areas in the industries depending on industry applications.

Mathematics subjects provided to other disciplines ensure that the graduate has sufficient mathematics knowledge for logical reasoning, identification of appropriate mathematical tools for problem-solving, and competent computation ability.

Final Year projects

Our student projects mainly cover the areas of Databases, Programming, and Networking. Some students were able to create and manipulate databases using a programming language. Some students could build a website through which they can access databases. The website features icons to automate data processing, retrieval, and displaying. Real-world applications of some of these projects are implemented in many applications, such as online trading, online registrations, and online filing systems. For example, one student did a project on the MVIL system. He created a web interface for motor vehicle owners to update their information on the system and send alerts to vehicle owners when their insurance coverage is about to expire.

Research and highlights of publications

Our research areas in Mathematics depend on the staff composition. Our main research areas are Topological groups and rings, Mathematical modelling and differential equations, Statistics, and discrete mathematics. In Computer Science, current interests include Database systems and the design of Computer apps that can store, process, and retrieve data.

Professor M. Ursul, was an all-season writer, and he continues to contribute one paper each year for publication in distinguished journals. Professor Ursul is retiring soon and will leave the department. He is supervising a PhD candidate, Mr J. Lanta, and a Masters's candidate, Mr A. Wemin.

Mr B. Andrews completed his MPhil in Mathematics studies last year and will graduate this year. His Supervisor was Professor Ursul, and his research paper is titled "Least Squares Method: Linear and Non-linear regressions."

Mr B. Mirou is our only Computer Science staff undertaking PhD studies, and his research is on the Application of ICT in Agriculture.



Community and Industry Engagement

The Department is actively involved in community engagements such as writing and marking ICT and Mathematics related exams for the Department of Open and Distant Learning (DODL), PNGUoT's non-school leaver, and the PNG National Department of Education (PNG NDoE) Grade 12 national examinations. Other areas of our community engagements include supporting PNG Unitech's Satellite Campus in Simbu Province.

Achievements

Our Learning Management System, tSMAS, has been integrated with the main student records database to process student marks in semester one this year.

Mr L. Nerit has incorporated additional functionalities and features to accommodate user requirements from other Academic departments, TLMU, Accounts, Student Admin & Records.

Mr Nerit (tsMAS Developer) was asked to help with the student records for semester one. He successfully accomplished the task in 3 weeks by automating the uploading process of student records from respective departments directly into the student's main records database. This upload function is now automated through t-DMAS.

The Department conducted weekly seminars on a wide range of topics. Most of the presenters were our colleagues from the department:

1. Uni10 system grading process, presented by Student Records Team.

2. Updates on tSMAS Learning Management System, presented by Mr Nerit.

3. Revisions and updates on the new Mathematics program, and existing Computer Science syllabus, conducted by the Department Syllabus Team.

- 4. How to effectively use the Mathematica Application tool, presented by Dr Mohsen.
- 5. Least Squares Method: Linear and Non-linear regressions, by Mr Andrews

Established in 1973, the Department of Mechanical Engineering at Papua New Guinea University of Technology is one of the oldest departments in the university. It has been supporting engineering education at bachelor, Master, and PhD levels for students from all island countries in the South Pacific outside Australia and New Zealand.

To support its sustainable growth, the Department adopted the strategic plan for 2020-2024 developed by PNG University of Technology University. An operational, and a succession plan have also been prepared based on this strategic vision. The Department is also engaged with the communities in PNG to deliver projects for mutual win-win situations and benefits. Students are also encouraged to align the objective of their final year projects to solve the socio-environmental problems of PNG. The Department of Mechanical Engineering benefits from a provisional international accreditation from 2019 of its Bachelor of Engineering in Mechanical Engineering programs and aims to the full international accreditation status by 2024. In compliance with the accreditation guide-lines, the Department also developed and implemented a new curriculum starting with the academic year 2019.

Vision

The Department of Mechanical Engineering aims to achieve national and international recognition by attracting, rewarding, and retaining outstanding academics, students, and support staff.

Mission

In view of the growing and continuous development in the industrial fields in the Pacific islands and keeping abreast of the continuous scientific and technological development in the field of Mechanical engineering, the Department of Mechanical Engineering sees its mission to: • Educate competent, ethical, and moral graduates of high quality and in sufficient numbers to serve the needs of PNG and the neighboring island countries of the South Pacific in Mechanical Engineering.

• Develop a strong graduate program to enhance scientific research, and active commercial and community service operations to further serve the needs of the country and the above-mentioned geographical area.

Curriculum Development

In compliance with the international accreditation requirements, the Department of Mechanical Engineering identified the requirements for redesigning the course structure – process internationally assisted by Engineers Australia (EA) and based on industrial partners' inputs. The revised curriculum offers four subjects per semester. It concentrates on the following fields of study, such as Design and Manufacturing, Fluid and thermal, Materials and simulations based on the Finite Element Method, and Mechatronics.

The fields of study mentioned above are supported by world-class computerized equipment and experimental engineering equipment and are shown below:



Computer Controlled Torsional Vibrations



Computer Laboratory

DEPARTMENT OF MECHANICAL ENGINEERING





· Engineering Materials with a strong focus on experimental engineering and composite materials





Computer Controlled UTM Computer Controlled Tensile, and Hardness Testing Machine

Systems, and Heat Transfer.

• Thermo-Fluidics Engineering, focusing on Fluid Mechanics and Computational Fluid Dynamics, Thermodynamics, Thermo-Power



Computer Controlled Subsonic Wind Tunnel



Computer Controlled Steam Turbine

· Flexible Manufacturing and Related Design Approaches



MicroCNC Experimental Setup



Automatic Sorting Line with Siemens PLC Control

• Control Engineering, Mechatronics and Robotics.



Control Engineering / Mechatronics



3-Degrees of Freedom Robotic Arm Setup

The academic staff of the Department of Mechanical Engineering includes six PhDs in Mechanical Engineering, one PhD in Industrial Engineering, and one Principal Technical Instructor. The department also has 8 Technical staff in the labs. A balanced pool of faculties comprising young, middle-level, and experienced academics with national and international credentials and scientific research experience is one of the significant strengths of the department. In addition, the department is encouraging and constantly promoting its Bachelor in Mechanical Engineering students to pursue post-graduate education towards developing a viable pool of national workforce in the department.

Graduate Feedback

The courses offered by the Department of Mechanical Engineering are tailored to conform to national and international industry standards and requirements. The courses are designed to enable our graduates to adapt and effectively mitigate the fundamental challenges encountered by the industries operating in PNG and other parts of the world.

Graduation Projects and Relevant Preparation of Employable Graduates

Students enrolled in the Mechanical Engineering Course are offered hands-on training through projects and group work to better prepare them to adapt to the challenges of future workplaces. Our students are allocated final-year projects in both semesters. The project allocations are based on their choice and designed to enhance their analytical, decision-making, and R&D abilities as required by potential national and international employers.

Research and Publications

The academic staff of the Department of Mechanical Engineering is actively engaged in scientific research in their areas of specialization. In a 2022 summary, the scientific research materialized in a total number of:

- 20 Papers in International Journals
- 19 International Conference Papers
- 4 Internationally Published Book Chapters
- 1 Book Published with CRC Press
- 5 International Patents

Some of our academic staff are appointed as external examiners for PhD and Master of Engineering dissertations and theses by several foreign Universities.

Activities in the department

1. One of our academic staff, Dr. Steve Ales, was sent to an approved training via Vice Chancellor's office, which was nominated by Mechanical Engineering Department and was sponsored by the Indian High Commission, POM, PNG for Unispace Nanosatellite Assembly Integration & Training (UNNATI) by Indian Space Research Organization (ISRO), Bangalore, India for 40 days.



Team B posing for a group Photo in Clean room at ISRO

2. The Mechanical engineering department also undertook the fire evacuation drill in the department for the first time to create awareness of the importance of safety and health issues at the workplace.



Mechanical Staff and Students during the Fire Drill

Community and Industry Engagement-Consultancies

Two of our academic staff members served on the Technical Vocational Education & Training Committee in charge of reviewing the tertiary institution's curricula in compliance with the national PNGNQF standards. One of our academic staff was elected Chair of the Mechanical Working Group with NISIT, based in Port Moresby, and is also on the Academic Board of the National Polytechnic Institute of Papua New Guinea, based in Lae.

Staff Post-Graduate Studies Development

Mr. Brian N'Drelan is finalizing his PhD dissertation in Mechanical Engineering titled Failure of Components and Systems in Alluvial Mining Engineering within our department. In addition, Mr. Paul Kuri and Mr. John Kamit are in the process of graduating with their Master of Engineering theses within the Department.

Complimentary Message

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The Department of Mechanical Engineering wishes to congratulate our academic staff Dr. Jack Khallahle for successfully defending his PhD dissertation titled Numerical Simulation of Flow Parameters in Stratified Gas-Liquid Flow in a Horizontal Pipe within the University of Sydney, Australia, in August 2022. As an expert in computational fluid dynamics with international recognition, Dr Khallahle will become a very valuable addition to the department's academic staff for the 2023 academic year.



Dr Jack Khallahle, with his Class in Thermodynamics

The Mission of the Mining Engineering Department is to produce high-quality graduates who are employable in oil, gas, and mineral resources industries, government, and academia.

The year 2022 saw, amongst other changes, in the headship of the department. The Department has made great progress in the key areas of main strategic pillars. Particularly;

- Teaching and Curriculum Development
- Graduate Feed Back (Industry and Graduates)
- Industry Engagement and Partnership
- Industry-Based Real Live Final Year Project
- Research and Publication
- Consultancy and Short Courses
- Students' Engagement with Resources Industries

Teaching and Curriculum Development

The Department offers two (2) degree programs, Bachelor of Mining Engineering (Hons) and Bachelor of Mineral Process Engineering (Hons). Our two degree programs, together with the three engineering departments at the university, are in the final stages of the accreditation process towards full accreditation in accordance with the Washington Accord in 2023.

Starting in 2017, our departmental staff members have aggressively participated in developing the curriculum to upgrade from the old system to the new accreditation requirements of four (4) subjects per semester. This process has been meticulous and tedious, including several consultative meetings with overseas universities for benchmarking and input from wider stakeholders – alumnae, mineral & energy resources industries, government, including the general public. This also included a major facelift and upgrade of our teaching facilities including our four major laboratories in the department – mining, mineral processing, pyro & hydrometallurgy, and geology.

The year 2022 saw the completion of four (4) years of syllabi review for full accreditation and completely phasing out of the old syllabi.

A notable achievement in 2022 included the development of e-learning materials for online teaching mode and the establishment of a studio for video shooting under the Australian Awards Academic Strengthening Project - Developing E-learning materials and Benching-marking of key academic programs in Engineering. The mining engineering department is the first to begin this process. In collaboration with the University of Queensland, the department started the development of e-learning materials for the subject Mine Environments & Safety Legislation, which is offered to our final year Mining & Mineral Processing students.

Graduate Feed Back (Industry and Graduates)

The department continues to receive positive feedback from the industry regarding the performance of our Mining and Mineral Process engineering graduates working in both the mining and energy sectors. Our engineers are flourishing whilst working in such multinational environments. Reportedly some have quickly moved into senior roles.

The support from the industry in terms of training, equipment donations, or funding has been healthy over the years. K92 Gold Mine has been quite prominent in supporting our academic programs. Student field trips, research samples and final year projects, training engagements, and funding.

K92 Mine gave us K50,000 in 2020 and K60,000 in 2021. In addition, the mine awards two full scholarships (tuition fee, monthly stipends, book allowance) annually to two of our students in 3rd year. One is from mining, and the other one is from mineral processing.

Industrial training or professional work experience is a requirement of our degree programs, and the industries have supported in meeting this vital requirement. In 2022, out of 45 final years students in both mining & mineral processing, 38 students were engaged by the industries notably K92 Mine, Hidden Valley, Ok Tedi, Simberi, Ramu Nickel, and, MRA.

On the rating of students' performance by these industries, the majority were rated as outstanding, reflecting the quality of learning in the department.

Industry Engagement and/or Partnership

The department continues to engage in and partner with industry as part of technology transfer. In 2022, the department was engaged in the following projects;

DEPARTMENT OF MINING ENGINEERING





1. Leachate data analysis as part of Hidden Valley Mine Closure Plan (completed in November 2022)

2. Partnership with MRA to develop Alluvial Resources Evaluation Standard Code. This project is in 3 – phases. Phase 1 involves training & upskilling of the workforce worth K400,000.00. Phase II involves fieldwork - sampling & developing resources evaluation worth K700,000.00. The final phase III involves actual standardization and pilot projects to validate the evaluation standards and is worth K2,000,000.00. (See project team members in Fig.1)

Industry Based Real Live Final Year Project

The Department continues to gain momentum in engaging with the industry. This year 2022, the department has received ten live industry-based final year projects.

K92 Mine has given 10 of their problems to our final year students to work on as their final year research project. Some of these topics include:

- Tailing Dam Design
- Underground Mine Ventilation efficiency
- 3. Grindability

1.

2.

4. 5.

6.

- Optimum collector type and dosage
- Process mineralogy of fluorine in the K92 ore
- P80 grind size of K92 Au ore
- Reason for gold losses in tailings
- 7. 8. Alternative Mining Method

Orica Explosives conducted one-day intensive course on Explosives and Blasting and gave certificates to our third-year Mining Engineering students. Orica Explosives has also given opportunities to our students to participate in plant site visit here in Lae.



SMALL SCALE MINING BRANCH AND PNG UNITECH MINING ENGINEERING DEPARTMENT COLLABORATIVE RESEARCH AND DEVELOPMENT PROJECT

"Developing Mineral Resource and Reserve Estimation Code For Papua New Guinea's Small Scale Mining Sector"



Consultancies and Short Courses

Offering short courses and providing professional advice and engagement with industry and external partners through consultancy is gaining recognition again in 2022. The Department continues to conduct a number of short courses for the industry as part of its ongoing service to industry employees' professional development needs. Some of these courses were conducted at the industry's request as they saw the need to upskill their workforce.

This year, the department has conducted the following short:

- Occupational Health and Safety Engineering
- Mineral Economics Techno-Economic Decision making, Financial Evaluation, Investment Analysis, Taxation, Royalty, and Policy

Staff News

This year 2022, we welcome our Dr Wilson Kobal who did his Ph.D. at the Queensland University of Technology.

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In terms of functionality, the Department of Surveying and Land Studies (DSLS) must be understood as a tripartite entity comprising Surveying, Geographic Information Sciences, and Property Studies. The three (3) discrete yet interdependent academic disciplines embrace the subject, land, in its varied and different layers of disciplinary interests. Each disciplinary interest has fully fledged and recognized academic programs (undergraduate and postgraduate). This report is presented according to the disciplinary interests.

1. SURVEYING SECTION

(a) Mission Statement

• To produce world-class competitive graduates with in-depth knowledge and adequate motor skills in all aspects of surveying techniques relevant to the profession and allied field of Geomatics. Hence, the section recognizes the significance of embracing emerging surveying and mapping technologies, which include GNSS, Automated Surveying and Mapping Systems, and Photogrammetry/Remote Sensing/Drones.

• To enhance the existing capabilities of the section's professional expertise through postgraduate studies and applied research in emerging state of art technologies.

(b) Teaching & Curricular Activities

• Currently, there are 119 registered, full-time students in the section.

• The section's efforts to recruit teaching staff have been futile due to poor remunerations and stringent university requirements, particularly for competent and experienced citizen surveyors. The section lost a Professor and two lecturers through resignations, two Senior Lecturers due to deaths, and one through non-contract renewal.

• In 2016, the section embarked on a training scheme to retain our Council Medalists and graduates with degrees with merit under the university's GAP program.

• Recently, the section was fortunate to recruit the former Chief Mining Surveyor for Harmony Gold as PTO, and an experienced Cadastral Surveyor as STO2.

• The section's advertisement for Associate Professor and Professor in June 2020 is still pending. The section needs a senior academic at the Associate Professor or Professor level to provide academic and research leadership.

• Most staff have a master's degree, and the individual level of professional/industrial experience ranges from 3 to 40 years. The old course (Bachelor of Technology in Surveying) and the new course (Bachelor of Surveying) syllabi are being taught as parallel programs.

(c) Graduate Feedback

• Very positive. Most of the Senior Surveying positions in PNG's public and private sectors are occupied by our former graduates. Likewise, all practicing surveyors are former graduates, and almost all the Chief Mining Surveyor positions are occupied by our former graduates.

• In the last 10 years and to date, our graduates have been employed as mining surveyors in mines across Australia. There may be over 20 graduates working in different mines in Australia.

(d) Research by Students and Staff and Publications

• All undergraduate and postgraduate students submit and defend a dissertation and/or thesis, respectively, in their final year, with due compliance with the plagiarism policy.

• Only a few individual staff in the section have conducted research and published papers. See List of Departmental Publications. Therefore, the appointment of a Professor or Associate Professor with a proven track record in research and publications is seen as a sine qua non for improved research performance.

• Over the last 6 Years since 2018, we've produced and graduated five Master's Students. Currently,, three (3) students are undertaking the Master's program in the DSLS.

• Two Survey Section staff are doing their final year Master's Program.

• The Section Staff and Undergraduates are collaborating with Geoscience Australia to collect Seismic data using GNSS survey technologies to observe survey stations within Morobe Province. DEPARTMENT OF SURVEYING AND LAND STUDIES



(e) Consultancies and Outreach

• In 2019, the section worked with the Defense Force to establish GPS controls and survey the area for the new Army Barracks in Southern Highland Province. Over the years, the Project Office has engaged Mr. Navua Kapi in setting out areas for new housing projects, including the SDA Residential College at Unitech.

• Survey camps for BTSR/3 and BTSR/4 are planned and conducted yearly to benefit groups and individuals in the community who are willing to collaborate and work with the section.

2. GEOGRAPHIC INFORMATION SCIENCE (GISCI) SECTION

(a) Mission Statement

• GIS focuses on the collection, storage, retrieval, analysis, and modeling of geographical data, while Cartography specializes in the best way to visualize and present the information.

• The two disciplines are closely related to other disciplines like surveying, geodesy, photogrammetry, and remote sensing, which concentrate on ways to measure accurately and collect information about features on the Earth's surface. Together, these fields constitute the high-tech mapping sciences or geographic information science or the science of analysis of spatial data.

(b) Teaching & Curricular Activities

Some of the numerous activities that the section carries out include,

• Visualizing and effectively displaying complex spatial and socio-economic interrelationships. We are involved in the design, production, and use of maps; charts from physical, economic, social, and other data supplied from surveys, census, remote sensing, and existing maps.

• Conducting research in ways to improve the mapping process and develop more efficient ways of representing geographical features, creating and storing complex spatial objects, and handling features that change through time.

(c) Consultancies undertaken by the GISci section

Consultancies include, amongst others: Suitable rice farming areas in entire Papua New Guinea, sponsored by Trukai Industries Ltd; Climate studies/climate change modeling/temp-rainfall interpolation by GIS; Exploring market accessibility of agricultural produce in association with NARI; Rice suitability mapping for Morobe Province using RS /GIS; Production of tourist map for the Tourism Development Corporation; Use of Remote Sensing to survey coffee plots in EHP; Coastal monitoring and mapping; and Creation of a geographic database of land tenures for ENBP.

(d) Implementation of a phased new curriculum structure of 4 subjects per semester has been completed for Years 1 and 2, while that of Year 3 is now in process.

(e) Faculty strengths comprise four holders of PhD including 2 Associate Professors, and 4 Master's degree holders, including two who are currently doing their PhD programs.



(f) There are 99 full-time BGIS students, 44 distance-mode BGEM students, and 5 MSc RS/GIS (distance mode) students. A set of 24 students were eligible for Diploma/Degree awards in Geomatics in 2022. The MSc (DODL) RS//GIS program that started in 2013 has graduated 25 students.

(g) Research Activities and Publications

All final-year BGIS and BGEM students must carry out a supervised research project. The section has graduated three (3) in-house PhD graduates (Cathy Koloa in 2019, Joel Varo in 2020, and Tingneyuc Sekac in 2021). 5 MSc and 1 MPhil completion are expected in 2023, while two departmental staff members and five external students are currently registered for PhD. The department's research activities revolve around the pivot of optimum utilization of land and allied resources, management and valuation, Climate studies, Disaster Risk Reduction, and Disaster Risk Management. The department is actively involved in research and publications as indicated on the website (See publications under Unitech Research Report at www.unitech.ac.pg). Academic staff also attend local and international conferences from time to time.

3. Property Studies Section

(a) Mission Statement

To take a proactive and strategic approach to fully integrate all aspects of real property to enable the graduates to take on the challenges in the market of this country, other South Pacific nations, and the global property market.
To prepare students for various vocations with interests centered on real property.

(b) Teaching & Curricular Activities

The Section undertakes the following as part of its teaching activities at the undergraduate and postgraduate levels:

• Valuation – Land and property valuations for assessing market value (MV), statutory valuation, compensation assessments, indemnity/insurance, financial investment analysis, etc.

• Land development and property management – focusing on the development process, lease management, repairs, property economics, and planning with other physical and financial management aspects.

• Land Administration – Engages in carrying out Social Mapping, Land Investigations, ILG processes, and using the Land Administration Processes to formalize them.



• Distance Mode of Learning -The Section through Distance Learning (DODL) recently introduced a master's degree program in Urban & Regional Planning facilitated by Prof. Babarinde, which commenced in 2019. It is a very demanding course for Physical Planners in the land and property profession.

• E-learning through Online Teaching – The Section through the DODL has introduced online teaching in 2022. This year (2023) will be the second year of the program with 12 students enrolled in total. It runs concurrently with the conventional program on campus. Because of the high demand, the number of students enrolling is expected to increase in successive years.

• Our post-graduate program in Property Studies has been rejuvenated after being docile for a while. The degree of master's in Property Studies (MPhil) by research is ongoing and avails for prospective students.

• The Property Section comprises knowledgeable faculties with vast industry and teaching experience cutting across the common areas of Property Development, Valuation, Viability Analysis, Property Management, and Land Administration.

• Currently, 136 registered full-time students and 12 registered students through online learning. A total of 148 students are in the section.

• There are eight full-time faculties, including 1 PhD holder, 5 Master's degree holders and 1 PhD student in waiting (See www.unitech.ac.pg for their profiles), while 1 is on study leave in South Korea for his Master's degree. The 8 faculties have expertise in teaching Valuation, Urban & Regional Planning, Property management, Property development, Viability analysis, Valuation, and Land administration.

(c) Links with Industry, Graduate Employment and Feedback

• About a quarter of our graduates find immediate employment after graduating at the end of each year.

• Due to effects (internal & external) on our current economic climate, there are serious challenges with fixing students for industrial work experience in 2023, and this is expected to continue in the coming years.

• The Section enjoys strong collaboration with the industry through the support of our Course Advisory Committee which meets bi-annually

(d) Research Activities and Publications

• .Our faculties are increasingly expanding their research and publications profiles in local and international peer-reviewed journals. See www.unitech.ac.pg. Staff also attend local and international conferences and workshops as opportunities arise.

DEPARTMENT OF OPEN AND DISTANCE LEARNING

The Department of Open and Distance Learning (DODL) recognizes the fact that education is a fundamental human right and a force for sustainable development and peace. It empowers people with knowledge, skills, and values to live in dignity, build their lives and contribute to their societies. Within this spirit, DODL has increased access to education through online and distance-based education.

Online Learning for Increased Access

At the forefront of kicking off this major shift in learning is the DODL, whose target is to increase access to quality education to all deserving nationals. The rising demand for education, coupled with the country's social, technological, and economic dynamics, jointly exert pressure on higher education in demand for appropriate solutions. Guided by this shift, the PNGUoT, through DODL externalized some of its academic programs (e.g., Bachelor of Business Administration in Accountancy, Bachelor of Business Administration in Applied Economics, Bachelor of Business Administration in Information Technology, Bachelor of Business Administration in Management, Bachelor of Arts in Communication for Development, Bachelor of Science in Applied Mathematics, and Bachelor of Property Studies) to address the soaring demand for university education.

This approach to delivering education service builds on the significant changes which were announced after the endorsement of the Strategic Plan (2020-2024) by the University Council, that in part required the University to externalize its academic programs to the wider public. Through externalization, education services could be extended to everyone in the country, irrespective of the location, to equip people with the knowledge and skills necessary to live fulfilled and rewarding lives. This plan was actualized in 2022, with six academic programs launched for online education.





New Study Centres for Matriculation Program

As a response call to reach out to various categories of disadvantaged learners, DODL extended its presence in 2022 by opening five more study centres for Matriculation Program. They include; Southern Highlands Teachers College-affiliate, Sepik Matriculation Centre-franchise, Dregerhaffen TVET Secondary-affiliate, Bougainville Technical College-affiliate, Institute of Continuing and Flexible Education Goroka-franchise, Vanimo Secondary School-affiliate, Laiagam Appropriate Technology Centre (LATC)-franchise, Min Community Education Development Services-franchise, Popondetta Study Centre -Franchise, South East Matriculation Centre-franchise, and Gazel Franchise Study Centre-franchise.

Implementation Plan for DODL 2020-2024

Year 2022 demanded a new style of doing things in the Department. An Implementation Plan appealing to the Strategic Plan of Unitech 2020-2024 was implemented with measurable and attainable key performance indicators to track progress. This Plan aligns itself with the national and global trends in academia while toning down in the University's Philosophy, Vision, and Mission statements. It further provides a clear path with traceable indicators for the Department to follow in its quest for excellence and relevance. To respond to the need for change, the Plan takes stock of the strength, weaknesses, opportunities, and threats affecting the Department directly and/or indirectly. This Plan also contains a Risk Assessment and Minimization Plan, which is very important in alerting the implementers of possible risks and how to minimize them (converting threats into opportunities) for better results.

Conclusion

In pursuit of excellency, DODL has put implemented waste-free operational processes, routine review of the KPIs, and a robust reporting approach that keeps the whole system in check for better results. To this end, I thank the students, staff, partners, community, and Senior Executive Management for the support accorded to DODL.

The Bulolo University College (BUC) is a campus of Papua New Guinea, University of Technology (PNGUoT) specializes in teaching Forestry programs. The school also houses Adult Matriculation Program (AMP) for the Department of Distance Open Learning (DODL) of the PNGUoT. The sections that are in place to support the academic programs are Administration, Grounds and Maintenance, Catering, Lodging, Security, Health and Information Technology (IT).

1. STAFFING

2.1 Staff movement

2.1 1 Departures

Mr. John Beko resigned and joined PNG Forest Authority.

Three temporary academic staff had their employment expired on 30th November 2022.

Nine temporary security officers voluntarily ceased employment with PNGUoT on 30th November 2022.

2.1.2 Retirement

Mr. John Jacob a permanent security and Mr. Akuila Soten, a janitor, both retired after serving Bulolo University College for over 20 years.

2.1.3 Arrivals

Mr. Philemon Sikari, as the Foreman Artisan and Ms. Helen Bume, as the Senior Secretary, joined Bulolo University College in October 2022. **2.3 Recruitment**

In October 2022, four academic staff, Koniel Alis, Samson Aguadi, Gibson Sosanika, and Charles Feriwok, were interviewed and confirmed for teaching in 2023.

2.3 Staff Development and welfare

i. Mr. Tombo Warra is in the second year of his doctoral (PhD studies at the James Cook University in Australia. He will finish in 2025.

ii. Five academic staff namely, Olo Gebia, Louis Veisami, Benson Gusamo, and Priscilla Menin, graduated with a Post Graduate Certificate in Student Centre Teaching from PNG University of Technology.

iii. Mr. Gibson attended a short course on Seed Conservation Techniques at Royal Botanical Garden Kew in England.

2.4 Recruitment

Four academic staff were selected at end of 2022 to commence teaching at BUC in 2023.

3. ACADEMIC PROGRAM

3.1 The New Degree Program

Academic Board approved a new degree program called Bachelor of Forest Management (BFM) on 23rd September 2022, and this has already commenced in 2023.

4. STUDENTS

4.1 Number of students

For the 2022 academic year, BUC registered a total of 119 students, made up of 78 males and 41 females.

4.2 Discipline

Five students, in 2x BScF, 2 x DipFor 2, and 1 x DipFor 3 from Bulolo University College, were suspended for three years due to misconduct after alcohol consumption.

5. RESEARCH AND PUBLICATIONS

5.1 Researches published

Gusamo, B and Alis K., 2022. A Comparative Evaluation of Combustion Characteristics of Araucaria cunninghamii, Intsia bijuga and Pometia pinnata for Bio-Energy Source, Forest 13, 563.

BULOLO UNIVERSITY COLLEGE



5.2 Conference attendance

Only two events attended in 2022 are reported below:

i. Mr. Gibson Sosanika attended Seed Millennium Seedbank conference at Royal Botanical Gardens, Kew in England in September 2022. He reported on operations in PNG.

ii. Eko Maiguo, attended Ninth (9th) Huon Seminar which was held on 30th – 31st August 2022 at Unitech. A paper presented entitled: Community Planting Initiatives in the Upper Mape area, Finschhafen District, Morobe Province

6. INFRASTRUCTURAL FACILITIES

6.1 Building

In 2022 a staff Bungalow for three units with two bedrooms was constructed. The houses were officially opened by the Deputy Vice Chancellor, Dr. Garry Sali on 14th December 2022.

6.2 Computing facilities

The internet connectivity of Bulolo University is through an optic fiber cable directly linked to ITC Unitech, which manages and controls the entire system.

Recently, we experienced a continuous disruption between PNGUoTand BUC. In order to alleviate these issues, towards the end of October 2022, Datacom has set up a satellite backup system that can maintain internet connectivity during any disruption in the optic fiber cable.

6.3 Land

In 2022, it was discovered that all portions of land on which Bulolo University College (BUC) is situated since the 1960s have never been registered. BUC desperately needs the support of the University management to have all the portions of land currently used to be registered.

7. BUC BUDGET

In 2022, BUC received K304, 000.00 grant from PNGUoT for 3 x 2 bedroom unit staff bungalow. The BUC sawmill account also made a significant contribution to the construction of this house.

8. CONCLUSION

In 2022, three milestone achievements for Bulolo University College were: (i) getting approval from Academic Board for the new degree program to be offered in 2023: (ii)) construction of $3x^2$ bedroom staff bungalow; and (iii) installation of a disc for the internet service improvements.



Figure 2: New Internet disc

The PNG University of Technology (PNGUoT) is a unique institution as it is the only technological university in Papua New Guinea and the South Pacific Island Countries, excluding Australia and New Zealand. Recognizing its special responsibility, the university is dedicated to producing postgraduates who meet the human resources needs of Papua New Guinea and the South Pacific Island Countries. To achieve this, the PNGUoT is committed to offering nationally and internationally competitive postgraduate programs and innovative research, which will contribute to sustainable development in various sectors, including academia. The university's postgraduate programs have produced 603 graduates, including 25 PhDs, since its establishment. To align with the PNGUoT Strategic Plan 2020-2024, the Postgraduate School has reorganized its departmental programs to serve the wider community. Additionally, the Postgraduate School is committed to diversifying its programs to offer students more options based on the country's needs, including distance and/or hybrid model program offerings. Currently, the university offers 20 PhD programs, 34 Masters programs, 3 PG Diploma programs, and 2 PG Certificate programs, including 3 Master's programs in distance mode. The university is also introducing more programs in the distance and/or hybrid mode to increase student access.

The year 2022 of the Postgraduate School started with an orientation and welcoming program for the postgraduate students on 25th February. The orientation was attended by Heads of the Departments, professors, academic staff, Senior Executive Management (SEM) members, the Consul General of Australia in Lae, and Mrs. Anna Wissink, PNGUoT Council member, among others. A total of 118 students enrolled in the first semester; among them, 55 were new, including 7 PhDs. In the second semester, 23 students registered, including nine new ones.

In 2022 a total of 50 students successfully completed their studies and obtained

various postgraduate qualifications, including 1 PhD, 11 MPhil, 11 MSc, 1 MEng, 5 MTech, 1

MCS, 3 MBA, 3 EMBA, and 14 PGCSCT. In 2022, two students from Nigeria enrolled in MSc program in the Department of Agriculture under the Queen Elizabeth Commonwealth Scholarships (QECS) of the Associations of the Commonwealth Universities (formerly ACU). We are also expecting another student from Kenya to start the MCS program in 2023 under the ACU Scholarship. The presence of students from different parts of the world in the program provided an opportunity for cross-cultural learning beyond classroom teaching, enriching their knowledge and understanding. The PNGUoT is a proud member of the ACU, and we also congratulate all the graduands who have made the university proud.



Postgraduate studies/programs at the University have become a necessity, not a luxury, due to globalization, rapid technological changes, and intense competition. To stay ahead in knowledge evolution and accelerated technological advancements, advanced knowledge, innovative and cutting-edge technologies, and skills are crucial for a country's sustainable economic growth. The University aims to become the technological knowledge hub to serve the nation for sustainable national development, emphasizing the significance of postgraduate education and innovative research.

Postgraduate studies, research, and innovations are interdependent. Without research, there can be no innovation; without innovation, there can be no national development. Research and innovation provide a competitive advantage to a country over other nations. The university is committed to building skilled human capacity, empowering youth, and reducing the gender gap to achieve Vision 2050's goal of creating a smart, wise, fair, healthy, and happy society.

In 2022, the PSR&IC disbursed K532,647.61 to support staff and student research and conference attendance from an allocation of K850,000 by the university. This budget reflects the University's commitment to supporting postgraduate studies, research, and innovation to become a technological knowledge hub.

Academic publications hold great value for the career of academics, especially for young scholars. To expedite academic publications and encourage young academics, the Academic Board has approved the establishment of a multidisciplinary in-house academic journal named The Papua New Guinea University of Technology Interdisciplinary Journal.

It would be a biennial journal and is expected to have its first volume in December 2023. In 2022, staff and students published 69 papers in peer-reviewed journals, 62 presentations at seminars, conferences, and workshops, 11 other types of reports, and five patents. It is worth mentioning that, unlike the previous years, the Mechanical Engineering Department outperformed other Departments by publishing 20 peer-reviewed papers in reputable journals and obtaining all five patents. Since 2005, the Graduate Assistantship Program (GAP) Scholarship Scheme has revitalized the PG Program, attracting highly talented students to pursue Master's and Doctoral studies, with increasing numbers every year. In 2022, eighteen postgraduate students (10 male and 8 females) were on this GAP scholarship, and 38 students secured loans through the Higher Education Loan Program (HELP) from the government, all of which contributed to the strength of postgraduate studies and research.

Like other years, in 2022, the Postgraduate School has organized the Annual Postgraduate Research Seminar on the 4th and 5th of October to showcase PG studies and research capabilities, communication and presentation skills, and disseminating research findings to the broader community as reflecting PNGUoT's core values. A total of 54 presentations were made in two days.

The Weekly research seminar was organized in 2022 after a slowdown due to COVID-19. A total of 13 seminar presentations were made by academics from within PNG and abroad in 202. In addition, many academic departments also organized seminars in their respective departments.

As part of internationalization, PNGUoT is a partner of the University of Valladolid, Spain, and the University of Porto, Portugal, under the EU-funded Project ERASMUS-Plus. PNGUoT also has bilateral agreements with several universities in Australia, India, Japan, China, Fiji, Romania, and the Czech Republic for staff/student mobility.

In 2022, some administrative changes also occurred. Professor Shamsul Akanda, Dean of the PG School since 2013, moved to the central administration to take up the position of Pro Vice-Chancellor (Academic). Then, Professor Macquin Maino, Head of the Agriculture Department, was appointed Acting Dean. Furthermore, Ms Pamela Dubaba, the Acting SAR (PG), resigned from the university in November 2022 and was temporarily replaced by Ms Lucy Aisi.





A section of the audience including Mrs Anna Wissink (PNGUoT Council member, front row far right), and Dr Gary Sali (Deputy Vice Chancellor of PNGUoT, front row, 2nd from right) listening to a presentation at a session of the PG Seminar.



Notable attendants at the 2022 PG seminar. Standing from left: Prof M Maino, (Dean of PG School), Prof A Pue, (Vice Chancellor of UNRE),.Mr Hengene Ivan (A/MD, Kumul Minerals Holdings Ltd) and Dr K Mulung (Director of Science and Technology Secretariat of DHERST). Sitting from left: Ms L Aisi and Ms Pamela Dubaba, the

Introduction

Following the pathway in our Strategic Plan, 2nd Edition (June 2020 – June 2024), the Teaching & Learning Methods Unit (TLMU) has been transforming its functions. We continue to support the development and implementation of policies and procedures for the paperwork associated with lecture plans, timetables, teaching allocations, student evaluations, and academic quality assurance processes, provide academic support to both staff and students and maintain training supporting the transition from manual to automated electronic management systems, such as Google Classroom and the locally developed tsMAS System. In addition to streamlining these processes, TLMU has expanded in-house training, focusing on this area to create a sustainable training program for all university employees.

Staffing

The current staffing for TLMU is: Acting Director - Professor Dr habil. Eric Gilder (PhD), Acting Deputy Director - Ms. Dora Jimela Kialo, ICT Officer - Mr. Lemuel Dom and Miss Lorraine Senginawa, Secretary/Administration Officer.

Undergraduate Program Academic Support

TLMU provides virtual academic support to undergraduates of PNGUoT through a web portal. We also offer internal industrial training (IIT) to undergraduate students and Technical and Vocational Education & Training (TVET) students of Morobe Province in partnership with the Career Development Office at PNGUoT. We also function as the Student Online Evaluation of Teaching (SOET) & Academic Quality Assurance Team (AQAT) Secretariat for the thirteen academic Departments at the University.

Postgraduate Student Academic Support

TLMU provides academic support to postgraduate students in preparing theses (via instruction on the use of TURNITIN), through Q & A academic advice weblogs.

Staff Support

TLMU provides curricula pedagogy and software/hardware ICT training to academic staff (via the annual Postgraduate Course in Student-Centered Teaching PGCSCT offer, provided in cooperation with the CDS Department). We also provide administrative staff training in both conventional and online modes through the Career Development Office of PNGUoT. Furthermore, promoting professional development strategies and working conditions to empower everyone to excel, the TLMU holds an annual orientation program for all new academic staff and periodic impactful workshops to enable both teaching and non-teaching staff to progress nicely through the academic calendar while remaining motivated, optimistic, and confident.

Externalization

TLMU has been part and parcel of PNGUoT's externalization process. We provide academic support online to both Bulolo and SUSU campuses. Furthermore, we have also (in partnership with UNESCO) established an International Telecommunications Union (ITU) online training campus to extend our soft skills training to the wider world.

Research Publications & Presentations

In 2022, TLMU staff participated in several research publications and projects.

Consultancy & Revenue Generation

In 2022, TLMU generated PGK85,728.99 (US\$25,000) through a partnership project with UNESCO, with 90% of this money going to the University for its Consultancy and Curriculum Review project. External organizations have contacted TLMU regarding the provision of TLMU Soft-Skills Training resources for the training of their staff.

TEACHING & LEARNING METHODS UNIT (TLMU)

rew



IT Officer Mr. Lemuel Dom and team members, Dr. Londari Yamarak from DBS and Ms. Leonie Baptist of the Divine Word University giving a copy of the PNG Voices Report to the PNG University of Technology Vice Chancellor, Dr. Ora Renagi, OL

Asset Management

TLMU has three new installations of air conditioners and two new printers - the most recent has capacities for copying, scanning, and printing. We have ten training Dell laptops, five Desktop workstations, and four UPS units. TLMU also has a bottled water dispenser and an urn for hot water provision for meetings in our conference room, equipped with a projector and sound system.

Departmental Budget

The Teaching & Learning Methods Unit's current budget is approximately PGK80,000.00 for training provision and operational costs, including internal industrial training support expenses and university-related business travel.

Miscellaneous Activities

TLMU continues to support forsupport the University Debate Team online and on-site. This includes ICT support and avenues for intervarsity virtual debates in 2022 as well as a debate judge support service.

Specific Activities in 2022: "Moving the Needle Forward"

In 2022, the Department leveraged its strengths to consolidate the foundation built in the wake of COVID-19. The key focus was ensuring high-quality teaching and learning continuity by providing instructional support to the faculty as they dealt with the challenges of employing online Learning Management systems, unfamiliar conferencing technologies, and new protocols of summative and formative assessments. Besides the general ongoing pedagogical support, TLMU

customized personalized training to the individual academic staff at their behest. The Department amplified its intent of accelerating digital transformation in higher education with in-house and community outreach activities.

Develop(ing) Initiatives.

While supporting PNGUoT's strategic aspiration of differentiating itself by creating an integrated, customized, and continuous experience throughout the learner lifecycle, TLMU held several workshops for students to support them in coping with the demands of university life. Topics such as Academic Survival in PNGUoT, Digital Citizenship for young adults, and Job Search strategies were covered.

Such Soft Skills & Academic/Non-Academic Courses Training will continue in conventional and online modes in 2023. We look forward to developing offers in specific areas, such as webinar presenters in partnership with the Department of ECE- Mr. Herman Kunsei overseeing global training delivery, as part of PNGUoT's global training partnership with ITU, as well as Academic Writings and Career Advising for students and staff, to be developed with the CDS Department.

Concluding Remarks

The TLMU inspires excellence, innovation, and inquiry in teaching and learning within and beyond PNGUoT. In this spirit, we collaborate with individuals, academic departments, and academic support units to foster capacity in our learning community by promoting an institutional culture that values effective teaching and meaningful learning. Furthermore, the TLMU supports the PNGUoT family to promote real-world experiential learning through the ardent application of science, technology, and Innovation. We proudly support the university to produce world-class technocrats for the real world.

We are confident that we can make self-improvement a way of life together in 2023!



1. Role(s) and function(s) of ICTS Department in $\ensuremath{\mathsf{PNGUoT}}$

The ICTS Department of PNGUoT is entirely in charge of the Internet, Server, Network (LAN, WiFi), 4G Mobile Network infrastructures, Student Computer Labs (Haus Europa, CALC), Staff/Student Google Workspace (Unitech Email), Active Directory Services, PNGUoT Website, .PG ccTLD (DNS) Management and Electrical Service Unit (ESU), including Campus Cable TV Service (CCATV), CCTV monitoring. ICTS is also responsible for ICT services provided at PNGUoT remote/satellite campuses such as Bulolo and Simbu Unitech Satelite University (SUSU). In 2022, the ICTS reporting structure was changed from the Vice Chancellor to the Deputy Vice Chancellor.

2. Achievements for 2022

There are several achievements in 2022, with a lack of human resources and Covid-19 restrictions. That was a challenging year to improve service for students and staff, but we made a few milestones for PNGUoT ICTS department. This is the summary of our achievements this year.

Infrastructure

2.1 Redundancy Internet Service (Dataco Ku Band VSAT: 40Mbps)

2.2 Dataco Increase Bandwidth from 200Mbps to 500Mbps (Huon Seminar: August 2022 till 11th September (911) Earthquake)

2.3 Short-term relief of Speedcast-O3b 95Mbps (additional 50 Mbps bandwidth) after the 911 earthquake till the end of November

2.4 Implementation LAN Upgrade (CAT5 to CAT6) Project (All academic Department completed)

2.5 Smart Cabinet and new Server for redundancy Installation (Mining Building)

2.6 Replace Student Lab Computers (HELab3,4,5)

2.7 SUSU Campus and Bulolo University College Visit

2.8 Scope of Work, Network Audit, and Moonlight Project (10G Fibre and WiFi6 Installation/Implementation Plan)

2.9 CCTV installation at Administration Building, including the main gate and monitoring

Application

2.10 Stop UNI10 Development and tSMAS base Student Database System Integration (UNISIS)

2.11 Launching New CMS (Contents Management System) and new look PNGUoT Website (www.uni-tech.ac.pg)

2.12 Smartsheet Foundation Product Training

INFORMATION AND COMMUNICATION TECHNOLOGY SERVICES (ICTS)

s Europ



Operation

2.12 Attending and co-hosting the Digital Transformation Officer Inaugural Workshop (3 days) in November

2.13 Signing MOU between DICT and PNGUoT (.GOV-.PG regulation)

2.14 Signing MOU between PNG ICT Digital Cluster and PNGUoT (Entrepreneurship)

2.15 Introduce Vodafone and Digicel Container Kiosk on campus

2.16 Introduced and enforced Central Procurement ICT Items Policy (Trading Items, Saving ICT Operational cost by department)

2.17 9th Huon Seminar Technical Assistance (August)

2.18 Online Education Assistance

Others

2.19 ICTS Staff Sports, Team Infotech win overall results of Unitech Staff Sports

2.20 Haus Europa Minor Maintenance (Cleanup Wall, New Car Park, Fixed Aircon)

2.21 Japanese Ambassador's Visit

2.22 Nara Institute of Science and Technology (NAIST) internship program (MCS)

2.23 Regular Online meetings with the University of South Pacific (USP) and National Samoa University (NSU)

2.24 Forming All 7 Universities in PNG, ICT Directors/Managers technical advisory group

2.25 Received award for APTLD83 Fellowship Program (February 2023, Vientiane, Laos)

3. Problems and Challenges encountered and Recommendations for improvement

This year we have had several difficulties and challenges.

- * Continues Power Problem
- * Luck of Human Resources

* Primary Internet Link (Dataco OPGW Fibre) significant cut off (11th September, by M7.6 Earthquake) 3 months and limited access to WiFi Access Points

* Cease the contract of the Student Management System (UNI10) and develop UNISIS based on tSMAS

* Review.PG DNS Policy to improve service and increase service fees

Recommendations for improvement

* Install Solar Panels and Power (Li-on battery) Storage System

* Redundancy of Internet from Satellite (O3b=mPower, Starlink)

* Recruit Database Programmer(s)

* Attend APTLD83 and do research for .PG Marketing Plan

* Need a proactive ICT PAC (Policy Advisory Committee) meeting every quarter.

4. Way forward

Next year (2023), our priority is improving our WiFi connectivity. Based on the Network Audit (by external professionals) and recommendations. Then, we will develop a three years ICTS Development plan and implement our connectivity.

At the same time, we will review PG Domain Policy and establish a .PG Marketing Plan to promote more companies and schools to use .PG country code domain.

New Installed Telikom 4G Antenna and Point to Point Equipment

5. Budget (Revenue and Expenses)

This year the university allocated over K1.5mil for ICTS operational budget. Plus we spent a lot of money on Internet connection(s) K1.4 mil. ICTS Capital Items spent nearly K0.5 mil. Also, we purchased a 915 Student Laptop (K2.3mil). But this year we saved nearly K1mil for our budget for the following reasons.

Review PABX/Telephone operational cost. ICTS Central Procurement items Stop Student 20GB data plan (Digicel)

At this moment, the ICTS department did not generate Internal Revenue, but especially for the DNS operations, we need to make more revenue targeted at K0.5mil in 2023.

6. Human Resources

Under the ICTS Staff establishment, we have 30x established permanent positions. In December 2022, we occupied 24x Permanent Staff and 2x Temporary staff, so the total

number of ICTS Staff is 29. In addition, 6x Permanent Staff position(s) are vacant, 2x positions have taken over to other departments (Project office and VC's office).

This year, we did some recruitment processes to accommodate current vacant positions, especially Database Programmer positions with qualified (experienced) PNGUoT graduate staff.

7. Impact Project ICTS in 2023

In 2023, we must implement many ICT-related impact project(s). The main aim of our department is "Digital Unitech," and the below are target impact projects.

- LAN Upgrade Project for Support Departments
- Network Audit and Implementation Plan
- tSMAS base Student Database System (UNISIS)
- Increase primary Dataco Link (from 200 Mbps to 1Gbps)
- Smart Cabinet Redundancy Server Room
- .PG Domain Policy review and do more marketing
- Prepare for the new Open Campus (Port Moresby)
- Set-up an ICT SME Incubator Hub
- Lab PC replacement (CALC Lab)





8. Conclusion

We acknowledged that University Management, led by the Vice Chancellor Professor Dr Ora Renagi, OL, gave us a high priority in allocating resources. We recruited and appointed some new Staff with new ideas, passion, and vision led by the Director, ICTS, to archive "Digital Unitech" to capture all current paper base operations to the automated Digital base system.

We will contribute from our end to archive the PNG Digital Government Plan and develop capacity building by working with other academic departments and partners, including other PNG and Pacific universities.



Executive Summary

This report covers research and development work in modern biotechnology undertaken at the PNGUoT Biotechnology Centre (UBC). The Centre aims at using biotechnology tools to enhance agricultural production to alleviate poverty and improve livelihoods in Papua New Guinea (PNG). The laboratory facilities are also used for undergraduate and postgraduate teaching and research. The research and development objectives, current and potential research, and developmental opportunities are outlined. Collaborations between Academic Departments and Research Centres of the PNG University of Technology (PNGUoT) and other government Departments and Institutions in research and national issues are highlighted. Numerous challenges that should otherwise give UBC a competitive edge in research and development and self-sustenance are acknowledged. As they are pivotal in setting the impetus to venture into collaborative research and development Agency.

Preamble

The PNGUoT Biotechnology Centre (UBC) was established by the Council of the Papua New Guinea (PNG) University of Technology (PNGUoT) in 1997 in recognition of the immense role that modern biotechnology could play in contributing to national development. The UBC became an independent entity as a Centre of the PNGUoT on the 29th of November 2013. Administratively, the UBC is managed by the Director, who reports directly to the Pro-Vice Chancellor (Academic). The focus of the UBC is on modern biotechnology.

Biotechnology is a broad term for a group of technologies based on applying biological processes. It has diverse applications in medicine, agriculture, food processing, manufacturing, and environmental management. The term "modern biotechnology" is used to distinguish recent, research-based activities from traditional fermentation technologies such as bread, cheese, or beer making and animal and plant breeding, which were the first examples of biotechnology. Modern biotechnology includes a range of techniques from recombinant DNA technology, molecular and cellular biology, biochemistry, and immunology to information technology. Gene technology is a specific subset of biotechnology based on the manipulation and modification ("recombination") of the genetic material of living organisms to develop new characteristics, processes, and products.

Biotechnology is a powerful enabling technology with applications that have the potential to and revolutionize many industry sectors, including agriculture, forestry, fishing, pharmaceuticals and health, chemicals, textiles, food processing, environmental industries, energy, and mining.

Vision

An appropriate vision for the UBC that encompasses the nation's current developmental issues in the face of the changing climate is "to be leaders in the use of agricultural biotechnology to improve livelihoods".

Mission

The UBC strives to accomplish high-quality research, training, and development outcomes with an entrepreneurial characteristic that emphasizes the application of agricultural biotechnology in addressing issues associated with food and livestock production, forestry, and the environment in PNG.

Organizational Structure

The PNGUoT Biotechnology Centre (UBC) was established by the Council of the Papua New Guinea (PNG) University of Technology (PNGUT) in 1997 in recognition of the immense role that modern biotechnology could play in contributing to national development. The UBC is a Centre that is housed at the Agriculture Department of the PNGUT. Administratively, the UBC is governed by a Technical Advisory Committee (UBCTAC) and is managed by the Director, who reports directly to the Head of the Agriculture Department and the Deputy Vice Chancellor.

UNITECH BIOTECHNOLOGY CENTRE (UBC)

Taking a new form as an independent entity of PNGUoT, a revised UBCTAC has been proposed since 2015 to include relevant university officials, Centre and Departmental representatives, and representatives from relevant government departments and institutions (Table 1).

Table 1. Current membership to the PNGUoT Biotechnology Centre's Technical Advisory Committee

No.	Representative	Department/ Centre/ Institution ^e
1	Dr. Patrick Michael	Chairman-UBC-Committee
2	Prof. Tom Okpul	UBC – A/ Director
3	Prof. Gariba Danbaro	Agriculture Department, PNGUoT
	Dr. Ronnie Dotaona	Agriculture Department, PNGUoT
4	тва	ERMC, PNGUoT
5	TBA	National Agricultural Research Institute
6	Mr. Elias Taia	Department of Agriculture and Livestock
7	TBA	Conservation & Environment Protection
		Agency
8	Prof. Macquin Maino, Head – of	Ex Officio
	13 Step 2. And 2003 Distances and the second structures. 2011;20	

Agriculture

PNGUoT = PNG University of Technology; ERMC = Environmental Research and Management Centre; and UBC = UNITECH Biotechnology Centre.

Personnel

The current staffs who are directly engaged at the UBC include the A/ Director, a Senior Technical Officer, and other Departmental staff and postgraduate students (Table 2).

Table 2. List of staff and current postgraduate research students who were directly engaged
in research and teaching at the Unitech Biotechnology Centre in 2022

Name	Position	Qualification	Research Interest
Prof. T. Okpul	A/ Director	PhD (UQ)	Plant Genetics & Breeding
Prof. S. Akanda	Plant Pathologist	PhD (OSU)	Plant Pathology
Prof. G. Danbaro	Animal Breeder	PhD (Kobe)	Animal Genetics & Breeding
Dr. P. Michael	Crop Physiologist	PhD (UA)	Plant Physiology & environment
Dr. M. Maino	Crop Protection	PhD (PNGUoT)	Plant Virology/ Nematology
Dr. R. Dotaona	Entomologist	PhD (CSU)	Insect Pathology
Dr. Gwendolyn Ban	Plant Pathologist	PhD (PNGUT)	Plant Pathology
Mrs Totave Kamen	Senior Technical Officer	Diploma	Laboratory Management
Ms Melanie Pitiki	Research Officer	MSc.	S/potato weevil bio-control
Ms Emmie Mauligen	Research Officer -FPDA	BTA	Potato micropropagation
Mr. S. Poloma	PhD Student	MSc.	Mycorrhizal symbiosis in rice
Mr. R. Manus	MSc. Student	BSc.Ag	Genetic diversity
Ms Dollah Inapo	MSc. Student	BSc.Ag	Plant Pathology
Ms. Roberta Sio	MSc. Student	BSc.Ag	Entomology
Mr. I. Bunsa	MPhil. Student	BSc. Ag	Plant Pathology
Mrs. Sogoing Denano	PhD Student	MSc.	Heavy metal biochemistry
Mr. J. Narimbi	PhD student	MSc.	Colloidal nano-particles
Mr. S. Hege	MPhil. Student	PGD	Cysteine protease biochemistry
Mr. M. Monare	MSc. Student	BSc.Ag	Kappa casein gene in goats
Ms. Cybill Poiva	MSc. Student	BScLAg	Wild rice diversity

Strategic Objectives

The strategic objectives that the UBC aims to achieve are:

i) Transfer and develop cutting-edge biotechnologies.

ii) Provide an environment that encourages creativity and investment in biotechnology.

iii) Direct applications of biotechnology to achieve health and food safety.

iv) Use biotechnology to achieve food and health security.

v) Protect PNG's environmental resources by developing appropriate biotechnology applications and products.

vi) Strengthen the relationship between the biotechnology program and society.

Specific Objectives

i) To facilitate high-quality human development in the field of biotechnology at undergraduate, postgraduate, short courses, and on-the-job training levels;

ii) To facilitate high-quality research, and provide a conducive environment for institutional collaborations in the fields of microbial, agricultural, forestry, industrial, and environmental biotechnology;

iii) To provide quality scientific advisory support to the PNGUoT, and the government of PNG on issues pertaining to biotechnology and bio-safety; and

iv) To promote and create awareness on biotechnology issues by hosting visits for any interested individuals or groups and carrying out educational programs, especially during school visits.

Facilities at UBC

i) Plant tissue culture area

ii) Portable growth chambers

iii) Containment-1 laboratory with the capacity to undertake basic nucleic acid (DNA/RNA) assays involved in genotyping, disease diagnosis, paternity testing, gene transformation (gene technology), and gene expression analysis. The most important equipment required to undertake these molecular tasks include a thermocycler (or polymerase chain reaction machine), electrophoresis apparatus, gel documentation system and accessory computer (yet to acquire), bio-safety cabinet (yet to acquire), fume hood (yet to acquire), Enzyme-linked immunosorbent assay reader and accessory computer (yet to be acquired), -20°C freezers, -80°C Freezer (faulty power) and incubators.



Facility Renovation at UBC

The renovation work, particularly for ceiling replacement and painting of all walls and the exterior wall has been scoped and is pending the engagement of the contractors.

New Equipment

The Centre acquired a new Autoclave through the support of the ACIAR Sweet Potato Weevil project headed by Dr. Ronnie Dotaona.

Feasible Research Areas

i) Agriculture

- a) Disease diagnostics (plant and animal)
- b) Pathogen-tested plant production
- c) Genotyping and Gene discovery
- d) Biodiversity assessment (plant and animal)
- e) Germplasm conservation
- f) Genetic manipulation (plant)

ii) Forestry

- a) Clonal propagation
- b) Disease diagnostics
- c) Biodiversity assessment
- d) Genotyping and Gene discovery.

Financial Report

i) Internal Support funding 2022:

* The Vice Chancellor, A/ Prof. Ora Renagi committed K100, 000 to drive R&D in agricultural biotechnology.

Current Research and Development Activities

Faced with immediate challenges especially those surrounding accreditation of the laboratory, staffing, and essential equipment, the Centre is taking a proactive approach to addressing these issues whilst performing its mandated role. The current and proposed research & development (R&D) opportunities for the UBC (and potential commercial opportunities) cover a broad range of areas, including plant disease diagnostics and biodiversity assessment using DNA-based techniques, pathogen-tested plant production, clonal forestry, and gene discovery.

The Centre's activities to date can be categorized into the following areas:

- a) Industry-oriented research and development
- b) Student research projects
- c) Other research studies
- d) National participation in biotechnology-related issues
- a) Industry-oriented research and development
- i) Potato plantlet production Potato Seed Scheme Fresh Produce Development Agency.

* Studies on microtuber production in vitro (Fig. 1) have been conducted with initial funding of K50, 000 by FPDA.



* This project will be reviewed this year for continuation into 2023.

ii) Genetic Barcoding of the 18 cocoa hybrids released by PNG Cocoa Board (PNGCB. Proposed budget: K30, 000.

Expected outcomes:

- * Establish the genetic identity of the selected cocoa hybrids
- * Enable PNGCB to register their hybrids.

iii) Clonal propagation of coconut. This was one of the proposed areas identified by the Kokonas Indastri Koporesin (KIK) MOU signed in 2021. Preliminary studies are underway, and awaiting a call from KIK.

b) Student research projects

Promising research projects conducted by students are being conducted at the UBC laboratory with commercial potentials ranging from potential bio-pesticides to genetically modified plants (Table 3). These student projects are supported by various institutions and donor agencies, including the University's Graduate Assistance Program and collaborating stakeholders.

c) Other research studies

Other promising research studies initiated by UBC include:

i) PNG Wild rice germplasm collection. Fifteen accessions of Oryza and Leersia spp. are currently maintained in ceramic pots. A recent collection was conducted with researchers from Hirosaki University in Madang Province, where several wild rice species were collected. The next collaboration is planned for 2023.

ii) Breeding of locally adapted rice lines from crosses NR-1 x Finsch brown and NR-1 x TCS-10. The breeding work is now screening the 9th-generation family lines.

iii) Screening for insect resistance in local corn. A population of 23 inbred lines is being monitored for the genetic study of the observed resistances.

Immediate Challenges Facing UBC The immediate challenges facing UBC include the;

i) Accreditation of the laboratory;

ii) Lack of staff (Research and technical) in certain fields of biotechnology; Limited funding support and seed money to establish commercial projects;

iii) Lack of equipment and other facilities. Several equipment and computer software (Table 4) are urgently needed to give UBC its independence and competitive edge in biotechnology research and development.

iv) Renovation (funded) of the Sir Julius Chan Building will be made to improvise the current setup to cater for an incubation room and staff office spaces and working benches and shelves; and

v) Development of research proposals and training programs.

Collaborations On Current Research Activities

The numerous researchers from various academic Departments of PNGUoT and other collaborating institutions are involved in the several identified research areas (Table 4). Such collaborators include:

- i) Agriculture Department, PNGUoT;
- ii) Forestry Department, PNGUT;
- iii) Mining Engineering Department, PNGUoT;
- iv) National Agricultural Research Institute (NARI);
- v) Fresh Produce Development Agency;
- vi) Ok Tedi Development Foundation (OTDF); and
- vii) PNG Cocoa Board (PNGCB)
- viii) Binatang Research Centre (BRC)
- ix) Kokonas Indastri Koporesin (KIK).
- x) Hirosaki University, Japan.

Participation at the National/ International Level

i) Alternate Focal Point for Genetic Modified Organisms (GMO) Issues for PNG through the Department of Agriculture and Livestock to the Food and Agriculture Organisation – T. Okpul

ii) IUCN SSC Crop Wild Relatives Specialist Group (Member, 2021-2025) – T. Okpul.

iii) Niugini Biotechnology Network (Member, 2020-) - T. Okpul

iv) Research, Science & Technology Secretariat, Biotechnology Program Advisory Group Chairpersons: T. Okpul (Infrastructure) & M. Maino (Technical Capacity Development).





Major Milestone For 2022

i) Submission of the UBC Strategy to the Vice Chancellor's Committee.

ii) Continue renovation of the laboratory in preparation for accreditation.

iii) Review the MOA for the extension of collaboration with the Fresh Produce Development Agency on its potato seed scheme.

iv) Initiated collaborations with KIK and PNGCB on coconut clonal propagation and genetic barcoding of the cocoa hybrids, respectively.

Conclusion

The Centre is focused on turning the challenges it faces into milestones that need to be achieved in 2022 and onwards, and fully equipping the laboratory in the process of developing an enabling Centre of PNGUT. A Centre that can enable us "to be leaders in the use of agricultural biotechnology to improve livelihoods" in PNG.

Table 3. Current biotechnological researches conducted at the UNITECH Biotechnology Centre and potential commercial opportunities

Funding sources: GAP + Papua New Guines University of Technology - Graduate Assistance Program, AD + Agriculture Department, UBC + UNITECH Biolechnology Centre, BPC + Binatorg Research Centre, RU

Bernard	tunle	Funding system	Becararhar	Commercial property all
Texture.		Locald Mary,	NEW YORK	commences opportures
i) Plant d	keare diagrava			
*	Molecular identification for East Septil Vanilla Disease Survey	BU-STRET Program/ UBC	D. Woruba, M. Pitiki, M. Kabiwaga, E. Poiya, C. Caleb, N. Siri, Rabi and T. Okpul	Note
i) Patho	gen tested plant production			
- 4	Micro-propagation of plantiets and micro-tubers for seed potato production	UBC/FPDA	E Maulgon, T. Kamen and T. Okpul	High
ii] Bodi	ersity assessment			
4)	Assessing the extent of its genetic diversity Leensis hexandra in Papua New Guinea	U8C/GNF	C. Poiya, M. Kabiwaga, R. Manus, C. Bugatim & T. Okpul	Note
b)	Morphological characterisation and frequency of Kappa casein gene in some local goat populations of Simbu Province, Repuia New Guines	GAP	M, Monare and G. Danbaro	HØ
M Gene	ic monipulation			
a)	Standardising protocols for rice plant regeneration and transformation	UBC	CI Polys and T. Okpul	Long-term
s Gene	and gene product discovery			
-2)	Identification of gene(s) controlling shattering in the wild rice, Oryza schlechten Pig.	UBC/PING Cacea Board	C. Polya and T. Olgul	Heh
b)	Identification of DNA barcodes for eite cocca lines from Papua New Guines.	PNGUT-GAP	D. Sogoware, P.Epaina and T. Okpul	
¢	Investigating the use of colloidal nanoparticles as gene carriers to increase the efficiency of gene transfer by particle tombandment	UBC/ Applied Sci. Dept.	1. Narimbi, S. Bathula and T. Okpul	Hip
w) Clone	forestry			
2)	Micro propagation of the eaglewood species, Aqualaria crossa.	UBC	C. Polya and T. Okpul	Het
b)	Identification of plant pathogens associated with agarwood formation in Gyrinops ledermonii.	UBC	M. Pitiki, M. Maino, J. Beke and T. Okpul	Hip
d	Production of fungal inoculum for agarwood formation in Gyrinops indemonif.	UBC	M. Kabiwaga, M. Pitiki, M. Maino, J. Beko, K. Mulung and T. Okpul	He
vj Enviro	emental research			
*	Investigating heavy metals in water, soil, sediment and plants along the Marisham over system and its tributaries.	U8C/G4P	S. Denano, D. Timi and T. Dipul	Hip
b)	Assessing the potential of endemic wild rice species in bioaccumulation of heavy metal, and their use in mitigating environmental pollution from landfills.	UBC/ GAP	S. Denano, D. Timi and T. Okpul	
d	Investigating systeme protease as defence mechanisms of tropical trees against inset	BRC/ URC	S. Hege, D. Timi, BKC Researchers, T. Okpul	Net

Equipment/ Tool Qty		Qty	Use	Supplier	Estimated Cost (K)
1.	NanoDrop	1	Nucleic acid quantification	Thermo Fisher	40,000
2.	Geneious 11.1 Software	1	software for sequence analysis, bioinformatics	Achema Pte Ltd	1,500
3.	Millipore	1	Water sterilization	Fisher Scientific	12,000
4.	Incubator Std 300L	1	Microbial culture	Thermo Fisher	70,000
5.	Fume Hood	1	Safe handling of volatile chemicals & gases	Alibaba	15,000
б,	-80°C Freezer	2	Material/ consumable storage	Brian Bell	30,000
7.	Tissue culture racks	6	Tissue culture	Alibaba	20,000
8.	Real Time Thermal Cycler		Quantitative PCR	BioRad	30,000
9.	ELISA reader		Virus testing	EMax Devices	15,000
10.	Computer sets	2	RT-PCR and Gel Doc system	Datec	10,000
	Total				243,500
Background of SPISARD

The South Pacific Institute for Sustainable Agriculture and Rural Development (SPISARD) was founded in 2003 at the Papua New Guinea University of Technology. It promotes sustainable agriculture and rural development through tailored extension methods, training, and technology transfer. The institute conducts research on food and cash crops, and livestock to improve farming practices, productivity, and income while minimizing environmental impact.

Over time, SPISARD expanded its focus to include household food security, livelihood strategies, gender issues, resource management, education, health, water supply, sanitation, and more. The institute uses a "model village approach" for research, training, and extension, involving the target population, communities, students, and academic staff. This approach ensures real-time feedback and a participatory process, with activities conducted in model villages across various agro-ecological zones. Vision

The Institute envisions itself as a dynamic and innovative leader in extension and sustainable agriculture development, providing lifelong learning and positively impacting rural communities in Papua New Guinea, Melanesia, and the South Pacific Island Countries.

Mission

The Institute's mission is to advance "Model Villages" and enhance skills for rural development, foster collaborative action and learning through demonstration projects and centers, and encourage direct farmer participation to improve farming systems, increase productivity, income, and food security, while sustainably managing the environment.

Function

The Institute's functions include applied research, training, development of farm implements and post-harvest technology, extension services, market and agri-business information, technology transfer, policy evaluation, advisory services, promoting agricultural biodiversity, rice cultivation, aquaculture, agroforestry, and traditional farming systems. It receives an annual budget of K100,000 from the University to support its outreach activities, with this report detailing the community outreach conducted in 2022.



2022 SPISARD Activities Preliminary Assessments

Preliminary assessments were conducted to identify training needs for rural populations in Kendale and Masandanai villages in Ialibu, Southern Highlands Province, and Angoram, East Sepik Province, respectively.

lalibu, Southern Highlands Province

In February 2022, the SPISARD Acting Director and a team visited Kendale village in Ialibu, Southern Highlands province, to conduct a Training Needs Assessment. The visit was in response to a request from the Deputy Mayor of Ialibu District for collaboration on various projects. Kendale village, located in the basin of Mt Yalibu and Giluwe, offers great potential for sustainable and profitable farming due to its arable land, marshes, and rivers. The area could support alternative feed ingredients for stock feed making, promoting sustainable agriculture while preserving the environment. After the assessment, priority training was identified, including vegetable farming and stock-feed making. The first training was scheduled for September but was postponed to early 2023 due to the national election.



Left: Dr. Bue, Mrs. Tiko-Motoro and Mr. Kewa giving address to the villagers at the gathering. Center: One of the village accommodations offered to the visiting SPISARD team. Right: The village Council standing, giving his introduction with his villagers seated at the gathering place. Photo Credit: SPISARD.

Masandanai Village, East Sepik Province

In September 2022, the SPISARD team visited Masandanai Village in Angoram District, East Sepik Province, to establish agricultural and community development connections. The visit revealed the community's need for training in cocoa farming, which was introduced through the Smart Cocoa Program. The villagers faced challenges obtaining Cocoa Board certified seedlings, so the SPISARD team suggested establishing a cocoa bud wood garden to propagate seedlings cost-effectively. They donated 180 clone seedlings to the community and planned a follow-up visit to help develop the garden.

To further support cocoa farming in Masandanai Village, the team identified the need for training programs on cocoa block establishment, husbandry, management practices, and grafting skills. Although these training sessions were postponed to 2023 due to budget constraints, they are expected to enhance the sustainability and profitability of cocoa production in the village.

Cocoa Budwood Garden Development Masandanai Village, East Sepik

In October 2022, Dr. Bue and Mr. Fanua visited Masandanai village to help develop a cocoa bud wood garden. The community had allocated a site and cleared virgin forests for the garden. Mr. Fanua provided guidance on block lining, cocoa clone varieties, and nursery practices before the group participated in planting seedlings according to Cocoa Board standards. Due to transportation losses, 42 seedlings were damaged and will be resupplied in early 2023 as work progresses. The team looks forward to continued collaboration with Masandanai Village for growth and development.



Meithe Village, Kapari, Central Province

Baseline and Household Income Survey

To better understand the socioeconomic conditions and dietary habits of households in Kapari, a baseline survey was conducted from 29th March 2022 to 5th April 2022. Ms. Tabitha Parau carried out the survey, and a comprehensive report is currently being finalized. The primary objective of the baseline study was to establish important benchmarks that can be used to evaluate the effectiveness of selected program interventions and assess their impact on household income and dietary diversity.

The baseline study findings will serve as a valuable reference point for future planning and development activities in Kapari, as they will provide a clear picture of the existing socioeconomic situation and inform the design of targeted interventions to improve the well-being of the local population.



Masandanai Community participating in the Budwood Garden establishment led by Cocoa Officer Mr. James Fanua

Gravity-fed Water System

The Meithe Gravity Feed water system is a significant milestone for SPISARD, aimed at improving cocoa nursery and farming development and enhancing local livelihoods. It will support nursery setup and cocoa development by providing a reliable water source for irrigation and other agricultural activities, increasing yields and incomes. Additionally, it will give communities access to clean water, positively impacting health and well-being while saving time for women. This initiative is expected to contribute significantly to Meithe village's sustainable development, with SPISARD committed to its success through ongoing monitoring and evaluation.

The gravity-fed water system, spanning 3km from the mountains to the village, was installed using poly piping in 3 days. The project was a success, funded by the Kapari Development Association (KDA) and carried out by SPISARD's Agriculture Department in collaboration with ATCDI at PNGUoT. Within three days, villagers gained access to clean water in their homes for essential activities like cooking and washing.



Top left to right: Water source from which water is piped down to 9000 litres water tank. Bottom left to right: Water piped into the water tank and distributed various points in the village. Photo Credit SPISARD



Cocoa Nursery Development

Following the successful completion of the gravity-fed water system, a cocoa nursery was established in Meithe Village under the supervision of Cocoa Officer Mr. James Fanua. The nursery can hold around 30,000 seedlings. Mr. Fanua demonstrated block lining and shade tree planting to villagers, who will apply this knowledge to their cocoa blocks. A follow-up visit will assess the progress of block establishment in preparation for transplanting cocoa seedlings.

Integrated Community Transformation Center (ICTC), Hamara Village, Oro Province

The people of Hamara Village in Kokoda LLG, Ward 14 in Oro Province, completed the construction of the ICTC. The Center is a dedicated learning space where villagers can convene to acquire knowledge and skills. It functions as a hub for transferring innovation and technology to the rural population, fostering an environment of growth and empowerment for the community members. Ten students from the CDS Department carried out community profiling work as part of their eight-week industrial training in the village.

Originally scheduled to open in December 2022, the opening was later deferred to January 2023. A 5-day training program on Stock-feed making and Cocoa Husbandry is planned for January 2023, coinciding with the Centre's opening.





Partnerships

The SPISARD is establishing partnerships with relevant organizations to facilitate training delivery and promote rural community development.

Small and Medium Enterprise Corporation

In mid-2022, SPISARD committee member Mr. Nick Kewa met with the SMEC Director to establish a collaboration to improve rural farmers' financial literacy in PNG. SPISARD focuses on sustainable integrated farming practices, while SMEC supports small businesses and promotes entrepreneurship. This collaboration will help farmers access credit facilities, apply for loans, and manage basic bookkeeping, leading to better financial management, improved income, and quality of life. The partnership also supports rural entrepreneurship and aligns with SMEC's mission, contributing to the sustainable development of rural communities in PNG.

Visitation by Bogia Open MP, Madang Province

In October, Honorable Robert Naguri, a Member of Parliament from Bogia in Madang Province, met with representatives from the Department of Agriculture, SPISARD, ATCDI, and the Vice Chancellor of Papua New Guinea University of Technology to seek expertise in agriculture and rural development for his electorate. This meeting showcases his commitment to improving the livelihoods of rural communities through agriculture.

SPISARD's focus on sustainable agriculture and ATCDI's expertise in community development can provide valuable support in promoting agricultural productivity, income generation, and addressing environmental and social concerns. This collaboration highlights the potential for partnerships between government, academia, and civil society to work towards sustainable development in Papua New Guinea, especially in rural areas where most of the population lives.

Conclusion

Over the past year, SPISARD has made significant progress in promoting sustainable agriculture and rural development in Papua New Guinea. They have established cocoa nurseries, budwood gardens, and gravity-fed water systems, provided training to farmers, and built community centers, demonstrating their commitment to improving rural livelihoods.

SPISARD has expanded its reach and strengthened its networks by collaborating with other organizations. With dedicated staff, supportive partners, and resilient communities, the organization is poised to continue positively impacting sustainable agriculture and rural development in Papua New Guinea.

Executive Summary

The Environmental Research and Management Centre (ERMC) was established in 1993 and was mandated to conduct environmental research and environmental management programs involving faculty, students, and sister institutions. ERMC has a director, a technical officer in environmental science, a secretary, and a janitor, indicating a need for more scientific officers. The lack of scientific officers is coupled with a chronic shortage of laboratory equipment. Since its establishment, ERMC has only had one substantive appointment, the Late Dr. Harry Sakulas as the director. Since then, two acting arrangements in Dr. William Modey and Prof. Tom Okpul have been made. The Centre needs the appointment of a full-time director at the professorial level, an environmental chemist, and a terrestrial and marine biologist. The current global and local environmental and climate issues put ERMC strategically positioned to conduct world-class research. To do that, the laboratories must be developed to a high standard and fully equipped with the analytical and essential equipment to undertake research, consultation, and student training. The appointment of the full-time director at a professorial level and the two additional scientific officers will make ERMC focus on four thematic areas: Biodiversity conservation and management, herbal medicine & natural product development, environment, and waste management research, and contribute towards current global issues such as climate change.

Vision & Mission

Our vision is to become a leading regional multidisciplinary research and development hub for the development of technocrats. Our mission is to promote and facilitate multidisciplinary problem-based research of significance to environmental and climatic sciences, technology, and innovation.

Strategic Goals

a) To conduct technology-driven innovative research that would lead to broader community publicity and benefits,

b) To mentor and train students to be equipped with advanced knowledge and skills in environmental and climatic sciences and allied fields.

c) To provide scientific and technological advisory services to the government and the community, and,

d) To promote innovative and entrepreneurial research that would lead to product development.

Board and Meetings

ERMC has a Board comprising of the following:

- Chairman PVC Academic.
- Dr. P. Michael, Executive Officer, Acting Director of ERMC.
- Prof. M. Maino Member, HOD Agriculture.
- Prof. T. Okpul Member, Director of Biotechnology Centre.
- Dr. L. Yalambing Member, HOD Applied Sciences.
- Dr. G. Anduwan, Member, HOD Applied Physics.
- Dr. Jim Lem, Member, HOD Mining Engineering.

Two Board meetings were held (Attachments 5 and 6) with the current Acting Director, and most of the plans pointed out on the ERMC IP 2023 were discussed and agreed upon. HOD Forestry, Civil Engineering, and Architectural and Constructions Management need to be included in the future. The Biotechnology Centre rep needs to be removed since Agriculture Department is represented. The Board has decided to work with the Director and working group members in delivering several kinds of research, funded directly via ERMC and PG School, starting in 2023.

Staffing & Training

To effectively carry out the mandated responsibilities, ERMC needs:

- (i) Director full-time appointment at professorial level
- (ii) Scientific Officer Environmental Sciences (Dominic Kia)
- (iii) Scientific Officer Environmental Chemist (proposed)
- (iv) Scientific Officer Terrestrial and Marine Biologist (proposed)
 (v) Scientific Officer Biodiversity Conservation (Rainforest Habitat Manager).

(vi) Janitor - A male janitor

ENVIRONMENTAL RESEARCH AND MANAGEMENT CENTRE (ERMC)



Research Areas

The ERMC's objectives complement the focus areas:

• Environmental and climatic issues and their associated managementmining waste disposal.

• Rehabilitation (air, water, soil, and natural ecosystems).

• Sustainability issues in the natural (forest, soil, water) and built environment (agriculture, forestry and fisheries, and the civic infrastructure).

Since 1993, and after 29 years, more needs to be done at ERMC. However, there is evidence of engagement in the extractive industries and staffand student-based studies that resulted in several limited publicities, e.g., publications and conference attendance. The current Board has approved an ERMC Working Group with members from various departments of the University. The purpose is to do multidisciplinary research out of ERMC by staff and students. The members will contribute research topics, do proposals, recruit students and supervise, and carry out any appropriate activity. A plan has been discussed and implemented and will be communicated among the Working Group members starting in 2023.

Operational Budget and Funding

There needs to be clear evidence of how much the direct funding of ERMC from the University is. A 2021 Annual Report from Dr. Modey shows K188,000.00 was given, but there needs to be evidence of where the money was spent. A centre like this cannot be funded K100,000.00 a year and is expected to perform some of the mandated tasks. I have included a K1 million and K45,000.00 work plan and budget for administrative operations, staff recruitment, direct student funding, and general maintenance (

Physical & Lab Infrastructure Report

The Yufu Biang Building accommodates the PG School and ERMC. The building has deteriorated over the last 29 years and needs serious maintenance. The images in Attachment 3 show the dire need for serious attention to maintenance. The major includes a general washdown, fixing of the general cooling system, and the leaking waste disposal and ablution systems.

Major Developments in 2022

- (i) Establishment of ERMC Board
- (ii) Establishment of ERMC Working Committee/Group
- (iii) Development of the ERMC 2023 Work and Implementation Plan
- (iv) Establishment of the ERMC Staffing Structure

(v) Establishment of contacts (CEPA, Yantai Institute of Costal Zone Research, China, FNU, Climate and Security Policy Centre, Australian Policy Institute, Australia, ACIAR, CSIRO and a number of others, e.g. NARI, Binatang Research Institute, UNRE.

Publicity is very poor, and moving forward, a number of presentations about ERMC will be made in 2023 to relevant government organizations and departments and the extractive industries.

Conclusions

The ERMC is strategically positioned to train, do research, and contribute to the developmental agendas of the PNG University of Technology and PNG in Environmental and Climatic Research and Management. To fully realize the importance of ERMC in delivering its mandated roles, a director must be appointed at the highest level possible, fully staffed, and funded. In addition, all the office and laboratory spaces need to be fully furnished, and medium-scale maintenance done to put the facility back to a standard level for operation. The PNGUoT Sustainable Energy Research Institute (SERI) is the platform where all Renewable Energy Practitioners in PNGUoT come together to interact and carry out collaborative research and consultancy activities under one umbrella at the SERI lab and SERI office currently located within Applied Physics Department. The Institute was founded in 2018 by Prof Ora Renagi, Dr Gabriel Arpa, and Dapsy Olatona with a mandate to initiate, participate, collaborate, and enhance PNGUoT staff and student-inclusive research activities in the area of sustainable (renewable and non-renewable) energy research, energy technology development and deployment, for the benefit of the University, our collaborators, the Government and People of PNG, and entire mankind.

SERI activities can be divided into two broad categories viz; Research, Consultancy, and Training.

Research:- Renewable Energy Research, Paper Publication, and Participation at National and International Conferences.

SERI's research and sustainability are derived from the research and impute of its members. The SERI members and experts are primarily full-time lecturers and technical staff of several departments at PNGUoT. While the individual research by SERI members can also be attributed to the 'several' departments, SERI plays a significant role in coordinating and providing support and assistance to energy research and development activities in PNGUoT.

The list below does not include all research activities supported by SERI. Still, just a few handpicked front-liners initiated and coordinated by the SERI Secretariat after the covid restrictions period.

1. Agricultural Photo Voltaic Research

(Ongoing research by SERI Secretariat in collaboration with other Universities overseas)

This research focuses on encouraging Solar Energy options that will not compromise rural PNG farmland reserved for food production. Conference participation includes Kuala Lumpur and the paper publication "Adaptation of Agricultural Photo Voltaic Technology for PNG Rural Household Energy Supply and Farm Land Preservation."

2. Climate Change and Renewable Energy

The aim of this research team is to highlight Renewable Energy Advocacy as a practical pathway to climate change mitigation in the Pacific. Conference participations and publications include the widely referenced European conference publication titled "Renewable Energy as Saving Graces for Pacific Island Nations Fighting Climate Change".

3. Multi Hybrid Power system combining Hydro, Solar, Wind, and Biodiesel (Ongoing research headed by Dr Shoeb Syed: HOD; Mech Engineering Department)

 Longevity of Solar Power Installations in three PNG provinces (Ongoing research headed by Dr Olatona and SERI members from three departments)

Other Research and Feasibility studies under AP Dept. Capstone Project in 2021 and 2022 includes

5. Hydro Power potential for power generation to supply Kombu Glirande village in Kerowagi District in Chimbu Province by WENA Dorugl

6. Design & Construction of a prototype energy-efficient reverse cycle car air conditioning system By Miss Tatianna BON and Miss Shameka BANTA

7. Renewable Energy Design and Fabrication of Biogas Digester for Household Uses by MALKEN Philemon

8. Mini Hydro Electricity for Kegosuku village in Chimbu Province by Yanda Mathias Thomas Clifford, Gaima Joshua

9. Mini Geothermal Electricity for Matupit village Rabaul, ENBP Malmalit Ronnie, Poko Rickson, Tomadek Boa

Below is a SERI drone Photo of a waterfall during a hydropower feasibility study

SUSTAINABLE ENERGY RESEARCH INSTITUTE (SERI)

Consultancy and Training

In addition to SERI research and product development activities, SERI also participate in Renewable Energy (RE) Infrastructure contracting redeployment, and the Professional Training of Renewable Energy Practitioners such as Electricians, Renewable Energy Installers, and Company Design Engineers.

Renewable Energy Training and Consultancy is the community engagement arm of SERI. It is the primary income-generating activity of the institute. It has the potential to enable SERI to become a self-sufficient and self-reliant organization if the current tempo is maintained.

SERI is, however, a not-for-profit organization, and therefore, SERI rates are negotiable and "means-tested". Regardless, insightful economic management and reaching out to overseas fund administrators have proven to be a substantial income-generating activity for SERI energy experts and the SERI Secretariat.

To name a few, SERI experts, through oversea collaborations and fund donors, have won contracts as Renewable Energy consultants and training providers for MSc Renewable Energy courses, Technical Solar Installation Training, and PNG power digitalization roadmap project.

To avoid competition with local businesses, all past and present funding and contract interest of PNGUoT-SERI is 100% from overseas sources. SERI is currently contracted to train selected PNG Power Staff on how to install Solar Power in accordance with international standards. The photo below shows some of the participants at the 2022 training program.







PNGUoT FARM

1. Introduction

The Farm is one of the pillars of the Department of Agriculture and has a land area of 39 hectares. The main functions are to provide physical and financial data on various farming activities for teaching, demonstration, research, materials (e.g., land, crops, livestock, machinery) for demonstration and practical training in agricultural techniques, facilities for research and development work by the University staff and students, and the opportunity for the students to have an active and intimate association over a period of time with a farming situation.

2. Staffing and operations

All the Farm operations are managed by the Manager with the support of an admin clerk and three technical officers (livestock, crop, and research and teaching), and with 20 field staff. Out of these, there is a driver, a carpenter, and a mechanic, and the rest are field workers. There are two main sections in the Farm – teaching and research, and the commercial. Most teaching and research activities are conducted by staff and students, coordinated by a designated farm staff (Research and Development Officer). The commercial section includes livestock (cattle, sheep, goats, pigs, ducks, layer birds, and meat birds) and crops (annual and perennial crops). All the sections are managed by a technical officer, and the general labor force is used for the respective production activities. Towards the middle of 2022, Mr. Joseph Kimagl was recruited as the substantive Farm Manager.

3. Infrastructure

The Farm facilities include an office complex that houses the offices of the technical officers and the Farm admin. The livestock section has a number of sheds: one each for hog breeder and weaner, two for broiler production, and one each for layer birds and ducks. There is a feed storage facility, a slaughter shed, and an animal feed mill (newly built and yet to be commissioned). The livestock production and management system is supported by a number of paddocks fenced to separate the stocking rates. The crop section has 18 ha of land under the crop, a cocoa nursery capable of holding 3,000 seedlings at any one time, cocoa bean fermenting and drying facilities, and facilities for raising seedlings of field crops.

There are blocks of cocoa, oil palm, rubber, coconut, and vanilla. These facilities are open to student and staff research, training and extension, and demonstration to students, the public, and farmers. In addition, two staff houses, a 2 x 2,000 meat bird shed, and renovation of the slaughter shed were submitted as PIP Projects. With the in-sourcing of catering by the University, and an initiative to supply animal meat and vegetables from the Farm, the PIP projects have been reviewed. Renovation of the slaughter facility was completed by the University's project office and has been commissioned and is now in operation. Construction of three broiler sheds, each with a capacity of 10,000 birds, is under construction.





Farm Productivity

The Farm can generate income, provided it is managed well. Over the years, the Farm has operated on a break-even basis. Any additional income is not necessarily considered profit since the Farm is not a 'stand-alone' commercial unit. All costs relating to operations, utilities, staff salary, maintenance and repair, and other sundry expenses are met through the University's annual recurrent budgets. Systems have been put in place for the prudent management of staff attendance by way of keeping a logbook to increase productivity and reduce absenteeism. The sum of K40,000.00 was brought forward to 2022 from the 2021 operational year.

5. Research and training

The Farm conducts its research for development in livestock and crop production which is ongoing. All staff and students' research activities, including practical classes are conducted on the Farm. More than 100 visits are made to the Farm, and these relate to field practical sessions and projects related to undergraduate classes. Postgraduate students do most of their field experimental studies at the Farm. Outcomes of research and training activities from students and staff are published in low to medium-impact journals.

6. Extension and community services

The provision of extension services to the wider community is a mandatory function of the Farm. The Farm conducts training in basic livestock and crop husbandry on-site and around the country. Widely requested training is in cocoa production-related activities and livestock production.

As part of its extension services, the Farm participates in annual agricultural shows, seminars, and field days, such as the Morobe Agriculture Show and NARI field day. The farm opens its doors to the public during events like Career Fair and Open Day, where secondary, high and primary school students can visit the Farm and get a glimpse of what is done in livestock and crop production. Even kindergarten children visit the farm with their teachers during their field excursions.

7. Future plans for development

The Farm has the potential to generate income significantly if managed properly, and staff productivity is enhanced through recruitment and training. Recently, the substantive Farmer Manager, two technical officers, and six more additional field staff were recruited, in addition to 8 older staff. Managing these staff strengths and utilizing them is important for productivity now that a more practical and experienced manager has been recruited.

The phase-3 power was set up in the newly built feed mill and needs to be commissioned to make feed for farm use. There is a demand for cattle, goat, and sheep meat, and to meet these, a number of feedlots need to be built on the excess land that is available. There is enough lase to grow annual aeasy-to-growrow crops, sufficient for everyone, including the student mess. A number of PIP Projects (staff houses, poultry sheds and 30, 000 seedling capacity nurseries) were submitted to the University for funding.

APPROPRIATE TECHNOLOGY AND COMMUNITY DEVELOPMENT INSTITUTE (ATCDI)

Introduction

The Appropriate Technology for Community Development Institute (ATCDI) is located at the PNG University of Technology (PNGUoT) in Lae, Morobe Province. The institute was long established concurrently with the existence of the PNG University of Technology. It's core operations focus mostly on conducting research and developing technologies appropriate to Papua New Guinea communities' needs and providing technical assistance and information to locals by mode of project. The projects are identified through requests from stakeholders such as other NGOs, local level government, and various community groups. The institute is aimed to assist the underserved rural communities preferably with technical advice, training, and to some extent, the actual implementation of impact projects. Its operations are financially supported by internal revenues, annual university allocations, donor funding agencies, and recurrent salary budgets. Internal revenues from the sale of products made at ATCDI, the University's annual funds for impact projects, external sources, including donor funding agencies, and recurrent salaries.

There are five programs offered;

i. Renewable Energy,

ii. Water & Sanitation,

iii. Appropriate Technology (Small Industry),

iv. Food & Downstream Processing and

v. Information Disseminating (The Community Information Section normally responds to community requests for information on various development issues).

ATCDI is driven by the vision to be a leading Institute in the country providing innovative technologies on sustainable projects suitable for rural marginalized population, especially those underserved communities. Its mission remained to improve the quality of living standards of local communities through research, development applications, training, and dissemination of information to address the needs of the people. Its mission is to enhance the quality of life in local communities through research, development, training, and disseminating information tailored to their needs. ATCDI employs a range of approaches to rendering these services, which include:

* Identify communities in need and the challenges they face, and initiate the application of relevant technologies to address these needs, with the goal of improving the quality of life and living standards.

* Demonstrate and effectively popularize the usefulness of various appropriate Technologies that are successfully experimented with at the PNG University of Technology through relevant training and workshops

* Provide the opportunity for student engagement in research activities and as well as to expose the local people to various scopes for employment generation through Science &

Technology.

* Review of the program's effectiveness through community and stakeholders feedback, case studies, and compliance with the relevant government policies (e.g., National WaSH Policy)



The new ATCDI administration department building is located behind the Mining Engineering Department, adjacent to the Mechanical Engineering Workshop and the NDE Lab. Our full-time Officers are currently occupying offices in the building mending the following program;

1) Food & Down Stream Processing – Mr John Tenakanai

2) Renewable Energy – Mr Nosare Maika

3) Water Supply & Sanitation and - Mr Sona Anegi

4) Appropriate Technology – Mr Robert Kipong

5) Information Dissemination/Liklik Book - Currently vacant

Our Acting Director and FDSP Scientific Officer, Mr. John Tenakanai, who served as a long-term officer at the department, retired at the end of 2022 after a distinguished career.

Mr. Nosare Maika, a Senior Engineer in Renewable Energy, achieved a notable accomplishment by securing the prestigious Australian Award Scholarship. He began his PhD in Mechanical Engineering at James Cook University in early June 2022. His studies into hydro-electricity would be valuable in assisting ATCDI to develop more efficient and sustainable rural-based hydro-electricity plants.

In the Water Supply and Sanitation division, Engineer Mr. Sona Anegi is in his third year of service. Based on the recommendations from the Acting Director and colleagues, he is set to be promoted to Engineer IV in 2023.

Similarly, Mr. Robert Kipong, an Engineer specializing in Appropriate Technology and Support, is expected to be promoted to Engineer III in the coming year, reflecting his valuable contributions to the department.

We welcomed two new members to the administrative team in 2022: Ms. Joberth Wape joined as an Admin Officer at the beginning of the year, and Ms. Petronila Tade joined as a Secretary mid-year. Both have performed commendably, and recommendations have been made for their transition to permanent employment status.

Mr. Ronald Dei, our dedicated Technical Officer, has assisted engineers across various sections with their respective projects. Plans are underway to engage additional technical staff to support the ongoing projects, which will also help reduce Mr. Dei's workload.

Ms. Illan Sasarongo, our versatile utility staff member, plays a crucial role in supporting the administrative team. Additionally, she assists the FDSP Officer in the production of downstream processing products and is involved in baking and soap-making initiatives.

The FDSP section is one of the most active within the department, with a steady stream of customers and clients seeking its products and services on a daily basis.

We were also pleased to have the involvement of four students from St. Joseph Vocation Centre - Joyleen Aisi, Jason Chui, Raymond Zeming, and Benjoe Jerry. These students joined the department and volunteered in the workshop, where they assisted with fabricating and installing ram pumps, brick mold making, charcoal stove making, and the installation of solar bore water pumps, among other departmental activities.

As we reflect on the past year, we acknowledge the hard work and dedication of all staff members and look forward to continued growth and success in fulfilling our mission.

Pro.#.	Project Location	Projt Type	Section	Project Cest	Remarks
1	Kinim, Sumkar Dist	Feasibility	WaSH	K5,008.00	PS completed, implementation pending funding
z	Port Moresby, NGCB	Proposal submission	Wish/ ATCDI	K13,000.00	Proposal pending hunding approval
3	Kapari, Abau Dist	Implementation	WLSH	K63,090.00	Implementation completed
4	Kinim, Sumkar Dist	Training	FDSP	K5,000.00	Training completed
5	Bishop, Bumayong, Lae	Training	FDSP	K5,000.00	Training completed
6	Gebadick, Nawaeh Dist	Implementation	AT	K20,000.00	Partly completed and expected to be completed June 2023
		Tetal	Project Cost	K111,000.00	

A. Water Supply & Sanitation Section

1) Sumkar WaSH Feasibility Study

A feasibility study was conducted to identify potential water supply sources that can meet the water demand of the residents in and around Kinim Station, including the local communities of council wards 4 and 5. The study discovered groundwater springs along the shoreline at Galuk, with an approximate flow rate of 10 liters per second. The combined population estimated to benefit from this water source is around 8,000 people. The spring water plays a vital role for these communities, as it is the primary source accessed for drinking water and other water-related needs.



2) Project Proposal submission to NGCB

Engineers specializing in WaSH (Water, Sanitation, and Hygiene) and Appropriate Technology from ATCDI made a proposal submission to the National Gaming Control Board (NGCB). The submission was made during a meeting with the CBF Manager, Ms. Alice Mamu Kian, and the CBF Finance Director, Ms. Naomi Eringe, at the NGCB office located in Pacific MMI Building, downtown Port Moresby.



NGCB expressed its interest in the proposal and assured ATCDI that it would consider partnering with them for the implementation of community projects. The final decision is pending approval from the NGCB Board of Trustees.

3) Kapari Bore Water Supply

The bore water supply project reached a successful completion and was officially commissioned in October 2022. The local communities of Kapari and Viriolo expressed their sincere gratitude for the initiative taken by the university. This project has made a significant impact by providing access to fresh water supply, which is essential for meeting the water needs of these communities.



B. Food Down Stream Processing Section

1) Kinim Station –Sunkar Dist. Soap Making & Baking Training

In June 2022, FDSP Officer Mr. John Tenakanai, accompanied by the WaSH Engineer, traveled to Karkar Island to conduct a training workshop on soap making and baking at Kinim Station in the Sunkar District. The workshop was primarily attended by villagers from council Wards 4 and 5, who expressed immense appreciation for the new skills imparted to them by Mr. Tenakanai. Furthermore, the attendees were awarded certificates by the ATCDI of PNG University of Technology, officially recognizing and certifying the skills they acquired during the training



2) Lae Back Road –Bishop – Soap Making & Baking Training

In December 2022, FDSP Officer Mr. John Tenakanai conducted another training session on soap making and baking. This session took place at the Bishop of Back Road Settlement in Lae, Morobe Province. Notably, the training was offered free of charge, with a particular focus on engaging unemployed mothers and young girls. The aim was to empower these individuals by enhancing their skills, enabling them to become self-reliant through the creation and sale of products. Additionally, participants were awarded certificates by the ATCDI of PNG University of Technology, which serve as official recognition of the skills they acquired during the training.



C. Appropriate Technology Section

1) Gobadick Ram Pump Water Supply Project

In October 2022, the Appropriate Technology Engineer successfully built and installed a hydraulic ram pump at Gobadik, in Lae. Notably, this innovative system operates without the use of electricity, harnessing the natural force of water to pump fresh spring water uphill. The water is sourced from a gulley situated at 204 meters above sea level and is pumped to a height of 229 meters. Adding the 7-meter height of the water tank stand, the total lift head amounts to approximately 32 meters. The installation of this system has been transformative for the local community, which comprises over 300 members. The residents expressed immense excitement and relief, especially among the elderly, young women, and girls who, for the first time, are spared the arduous and risky trek downhill through difficult terrain to access fresh water. The new system allows for the convenient availability of fresh water at a more accessible location uphill.



D. The Externally Funded Projects

ATCDI has also secured an external project in collaboration with the Salamaua LLG for the construction of a rural water supply system that will serve the Nuknuk and Lagui communities. The funding for this project was procured through the office of the late former Deputy Prime Minister, Sam Basil. ATCDI's technical staff initiated the construction phase on-site but faced challenges as the local community withheld their free labor contributions due to internal disagreements, which led to a temporary halt in the construction process.

The project is currently awaiting completion, and it is anticipated to be finalized by September 2023. All the necessary materials for the project have already been transported to the site. The Water Supply & Sanitation Engineer is in the process of rescheduling and developing a calendar to recommence the construction work.





The ongoing internal revenue supported projects;

A. FDSP Section

1) Soap Making2) Baking Training3) Virgin Coconut Oil4) Tumaric Powder 5)Noni Products

A total of 200 liters of Noni juice was extracted and bottled for consumer purchase. Additionally, turmeric powder and coconut oil were processed and sold, totaling 3.5 kg and 20 liters, respectively. Furthermore, 15 batches of soap in various sizes were produced and sold to clients. The production was funded through internal revenues, which are reinvested to generate additional revenue.

B. Appropriate Technology

1) Fabrication of Brick Mold2) Ram Pump Modification3) Charcoal Stove Coal production

ATCDI has successfully built and tested charcoal stoves made from concrete and sand. In addition, charcoal is produced at the ATCDI workshop using a built Tongan Kiln. The charcoal is derived from coconut shells and hardwoods. As a result of these initiatives, the department is now offering the following products for sale:

- * Selling charcoal stoves
- * locally produced charcoal

* Training on charcoal stove making and charcoal production shall be developed after feedback is received from the people.



C. Water Supply & Sanitation

Solar Bore Water Pump & wiring

ATCDI purchased several solar bore water pump kits from the Brian Bell Trade Electrical Center in Lae. With the assistance of electricians from BBTE, ATCDI successfully installed and mounted a system for projects that require solar sets.

This collaboration proved to be invaluable as it provided staff members with insights into the wiring and connections of the solar set. The water supply section, in particular, greatly benefited from the technical expertise shared by the electricians.



WaSH Feasibility Studies

ATCDI engineers, Mr. Robert Kipong and Mr. Sona Anegi, conducted several water supply feasibility studies upon receiving requests and service fees. The studies were carried out for the following locations and authorities:

- i. Moro & Rurunat Communities, Almami LLG, on behalf of Bogia MP Hon. Robert Naguri
- ii. Kinim Station & Kuduk, Kilden, Mobam, and Bafor Communities, on behalf of Sumkar MP Hon. Alexiii. Bundaira Correctional Service, Kainantu, Eastern Highlands Province

Note: These feasibility studies are essential in evaluating the viability and requirements for potential water supply projects in the respective areas."

D. On-Jobob Training Students

Our volunteer students from St. Joseph Technical School have successfully completed their training with ATCDI. All of them, including three males and one female, have been given recommendations to continue contributing as volunteers to ATCDI's projects in 2023. They have been exemplary in their support of our operations, and we are enthusiastic about the prospect of welcoming more volunteers in the future. ATCDI has also trained final-year Mechanical Engineering students in the work of appropriate technology and water supply. These students have developed an understanding of developing ram pumps, learning how to make bricks, and making charcoal stoves and charcoals - all of which are essential skills for young engineers wanting to be valuable assets in their respective communities.



No.	Students	Institution	Trade	
T	Joyleen Aisi	St Joseph Technical	Plumbing & Fabrication	
2	Jason Chui	St Joseph Technical	Plumbing & Fabrication	
3	Rayond Zeming	St Joseph Technical	Plumbing & Fabrication	
4	Benjo Jerry	St Joseph Technical	Plumbing & Fabrication	
5			<i>े</i>	
6	Hatsen Bimai	PNG Unitech	Mechanical Engineering	
7	Asher Koigiri	PNG Unitech	Mechanical Engineering	
8	Wangtowe Raisis	PNG Unitech	Mechanical Engineering	
9	Ishmael Lohuso	PNG Unitech	Mechanical Engineering	

E. Morobe Agricultural Show 2023

ATCDI participated in the 2023 Morobe Show held in October as a part of PNG Unitech's involvement. During the event, the department displayed its entire range of products and engaged in interactive sessions with a diverse audience, including youths, students, mothers, and men. The on-the-job training students from St. Joseph played an active role in disseminating information, working alongside the entire ATCDI staff. The event provided an excellent platform for showcasing ATCDI's contributions and for connecting with the community.



ACADEMIC AND STUDENT ADMINISTRATION

Introduction

Academic and Student Administration Division administers students' admissions, examinations, academic performance records, academic appeals, scholarships, Higher Education Loan Program (HELP), graduation, and carries out awareness programs under the University's brand.

Quality Assurance (STAT-P)

The Special Tertiary Admissions Test (STAT) offered by the Australian Council of Education Research (ACER) has been used by the Papua New Guinea University of Technology since 2016 and the University of Goroka since 2017. It is a simple, cost-effective tool used to find the most suitable applicants for tertiary-level studies. It is an admission requirement for the two institutions. The STAT-P results are used in addition to grade 12 results to screen school leaver applicants.

The STAT-P publicity activities included newspaper adverts, Digicel SMS blasts (50, 000 sms), NBC Radio Jingles broadcasted over a period of 5 weeks, and a promotional video. STAT-P awareness was also conducted as part of the University Carrier Fair and Secondary School Expos.

STAT-P Test

The STAT-P test took place in 18 locations covering 18 Provinces of Papua New Guinea from 7th to 12th November 2022. In total, 9,146 applicants took the STAT P test.

Graduation Statistics

Below are brief statistics on graduation in 2022.



The Graph above depicts the total number of students who graduated in 2021 and 2022. The 2021 graduating students graduated in the 54th graduation in 2022. In addition, the 2022 graduating students graduated in the 55th Graduation on the 5th of April 2023.

Semester 1 Statistics																
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REG	170	179	194	215	664	203	174	246	156	139	224	207	379	61	85	61
PASS	149	157	170	206	595	187	172	216	145	113	213	183	340	38	83	36
S= FAIL	20	19	20	7	66	14	2	32	10	24	12	22	28	15	2	13
OTHERS	1	3	4	2	3	2	0	4	1	2	2	2	11	8.	0	12

TABLE 2: Registration and Examination Statistics for Semester 1, 2022.

Total number of students	registered,	graduated,	passed,	failed,	and	others in
semester 2, 2022						

Semester 2 Statistics																
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REG	162	172	183	223	640	191	177	214	152	145	228	191	327	38	84	36
GRAD	41	25	34	47	148	47	21	58	24	21	78	52	63	11	27	0
PASS	111	128	138	151	436	130	135	135	116	101	145	119	24Z	14	51	29
FAIL	8	19	9	20	54	13	16	17	18	21	5	19	16	7	2	3
OTHERS	2	0	2	5	2	1	5	3	5	2	0	1	6	6	4	4

HIGHER EDUCATION LOAN PROGRAM (HELP)

Below is the tabulated summary of the HELP for 2022.

HIGHER EDUCATION LOAN PROGRAM, 2022.

DESCRIPTION	NO#. OF STUDENTS	AMOUINT	REMARKS
1. Total declaration Received (online)	481	K1.872,036.71	
2. Manual Applications	22 (16)	K90,221.25	
3. Batch one payment	108	K1.488,559.10	
4. Batch two payment received	373	K1,913,496.00	
5. Batch 4 payment received	42	K137,452.00	Paid 21/4/2023
6. Postgraduate	26	K83,855.63	
Total amount received for 2022		K3,633583.98	

TESAS STATISTICS 2022 BY DEPARTMENTS AND COURSE

DEPARTMENT	COURSE	AES	TESAS	TOTAL
AGRICULTURE	BSAG 1	1	35	36
	2		18	18
	3		22	22
	4		19	19
APPLIED PHYSICS	BEBE 1	9	4	13
	2		7	7
	3		2	2
	4			-
5	BSAP 1	12	16	28
14. 1	2		22	22
	3		19	19
	4		19	19
ARCH. & CONSTRUCTION MANAGEMENT	BACM 1	6	38	44
	2	-	21	21
	3	615	19	19
	BARC 1	4	16	20
	2		24	24
1	3	1	20	20
8	4		9	9
3	5		11	11
	BBLD 4	7	11	11
	5	_	11	11
APPLIED SCIENCES	BACH 1	7	13	20
	2	2	23	25
	3	1	15	16
	4	1.11	15	15
	BFTE 1	2	18	20
21 C	2	-	10	10

	3		7	7
	4		6	6
BUSINESS STUDEIS	BBAC I	33	46	79
9	2	1	32	33
2-	3	1	35	36
	4		51	51
	BBEC 1	17	6	23
	2	31.000	11	11
	3	1	13	14
	4		20	20
	BCMA I	5	38	43
20	2		10	10
0	3		7	7
÷	4	1.1	9	9
	BBIT 1	5	18	23
	2		10	10
	3		7	7
2	4		9	9
CIVIL ENGINEERING	BECV 1	26	5	31
	2	1	33	34
	3		20	20
	4	1225-01	43	43
MATHEMATICS & COMPUTER SCIENCE	BSCS 1	14	13	27
	2	2	23	25
7	3		14	14
	4	Second and	6	- 8
ELECTRICAL & COMMUNICATION ENGINEERING	BEEL I	29	6	35
	2	1	43	44
	3	1	25	26
	4		44	44
FORESTRY	BSCF1	2	28	28
	2	1.0.0	27	27
	3	1	36	37
n. Na manana manana manana ara na ma	4	1.22	21	21
BACHELOR OF ARTS & COMMUNICATION STUDIES	BBCD I	3	27	30
	2		23	23
	3		37	37
na anna an tao	4	1	19	20
MECHANICAL ENGINEERING	BEME I	36	4	40
No reason on a second pression and a most	2	1	38	39
	3	1.000	23	23
	4	1.	- 59	59
MINING ENGINEERING	BEMN I	16	-23	39
5	2	1	17	18
	3		17	17
S	4	2	14	16
Q	BEMP 1	12	6	18
0	2	1	13	14
	3		8	8
	4	1	17	18
SURVEYING & LAND STUDIES	BGIS 1	1	20	21

Non-School Leavers Entry Examination

The non-school leavers' entry examination is another filtration process after the compliance check and department screening processes.

This entrance examination was conducted from November 21st – 25th simultaneously in the Port Moresby, Lae, Mt. Hagen, Kokopo, and Wewak test centers.

These examinations are content-based and are equivalent to the Grade 12 examinations. Applicants were examined in Language & Literature, Mathematics, Physics, Chemistry, Biology & Business Studies.

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	3	8	9	9
	4		12	12
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	2		15	15
	3		13	13
	4	i de la composición de	14	14
	BTSR 1	2	16	18
	2		14	14
	3	- 23	14	14
	4	- 9 ee o ee -	29	29
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	2		15	15
	3		18	18
	8	- C		42

ENROLMENTS STATISTICS-2022, SEMESTER 1

Department	Male	Female	Total
Agriculture	84	86	170
Applied Physics	136	43	179
Applied Sciences	96	98	194
Architecture & Construction Management	165	50	215
Business Studies	346	318	664
Civil Engineering	168	35	203
Mathematics & Computer Science	103	36	139
Communication for Development Studies	74	100	174
Electrical and Communications Engineering	218	28	246
Forestry	105	51	156
Bulolo University College	57	28	85
Mechanical Engineering	188	36	224
Mining Engineering	152	47	199
Surveying & Land Studies	235	94	329
	2127	1050	3177

2022 SEMESTER 2 STATISTICS

Department	Male	Female	Total
Agriculture	80	82	162
Applied Physics	131	41	172
Applied Sciences	87	96	183
Architecture & Construction Management	175	48	223
Business Studies	337	303	640
Civil Engineering	156	35	191
Mathematics & Computer Science	106	39	145
Communication for Development Studies	101	76	177
Electrical and Communications Engineering	187	27	214
Forestry	102	50	152
Bulolo University College	56	28	84
Mechanical Engineering	193	35	228
Mining Engineering	140	51	191
Surveying & Land Studies	226	86	312
			3074

STUDENT SUPPORT & FACILITIES CENTER

1. Introduction

The Student Support & Facilities Center (SS&FC) is one of the oldest support sections of this university. It came into existence when the university was incepted over 50 years ago. Purpose:

• To cater the students' social welfare needs at all levels by providing, maintaining, and managing facilities and support services relating to the students' welfare.

• Students' facilities and Support Services are provided and managed under the sub-sections described below below.

2. Staffing & Respective Roles

We perform our roles under two primary areas: Students' Facilities and Students' Support.

Student Facilities: Warden, Matron, and the Male Counsellor

Table 1 - Room Allocation by Halls of Residence.

No.	HALL	NUMB	BER OF DENTS	
_		Male	Female	
01	Male Residential Halls (Zone 1-Zone 4)	1140		
02	Corporate Village	0027		
03	International Village	0036	+	
04	SAC (Catholic College)	0014		
05	UARC (Adventist College)	0079	0078	
06	Female Residential Halls (Tuluan/Poroman/New Wing/Hetura)		0465	
07	Lawi Si Andu		0015	
	TOTAL	1296	0558	
	GRAND TOTAL	18	54	

Table 2 - Room Allocation by Sponsors

	NUMBER O		
SPONSOR	Male	Female	TOTAL
TESAS (AES)	0154	0061	0215
TESAS (HECAS)	0977	0452	1429
SELF SPONSOR	0150	0030	0180
CORPORATE	0013	0013	0026
INTERNATIONAL (S.I. Government)	0002	0002	0004
TOTAL	1296	0558	1854

Table 3 - Room Allocation by Year of Study

YEAR	NUMBER OF STUDENTS			
	Male	Female	TOTAL	
1	0327	0256	0583	
2	0315	0099	0414	
3	0295	0102	0397	
4	0339	0097	0436	
5	0020	0004	0024	
TOTAL	1296	0558	1854	





2.1 ROOM ALLOCATION SUMMARY IN GENERAL

• At the close of room allocation on Thursday, March 3, 2022, 1854 Students (Male 1296 & Female 0558) were allocated rooms and issued with Tenancy Agreement Forms (TAF). This includes students residing in the Corporate Village, International Village, Lawi Si Andu, and the Colleges (SAC & UARC).

The tables below show Room Allocation by;

- Table 1 Halls of Residence.
- Table 2 Sponsors
- Table 3 Year of Study
- Table 1 Room Allocation by Halls of Residence.

• At the close of room allocation on Thursday, March 3, 2022, 261 Students (Male, 183 & Female, 78) missed out on bed space(s) here at Taraka Campus.

2.1.1 Summary of Room Allocation for Female UG Students

• Total bed spaces in Semester 1 was 465.

• In semester 2, 32 additional bed spaces were created after the conversion of the two Poroman and Hetura Short Wings

- The capacity increased to 497 in total for undergraduate females
 TESAS-New Intake 267.
- Continuing 224, but the third list gave us an additional 177
- Total Female TESAS- 2022= 668

2.1.2 Warden's Brief Report

The Warden's office undertook many activities in 2022, with a lot of milestone achievements. These milestones are achievements apart from other recurring tasks which are worth mentioning.

• Warden, Matron & Team completed 1st Semester Room allocation on 3rd March 2022 with increased number of scholarship awardees. Refer to the Statistics attached in Appendix 1

• Pool of TESAS students without rooms was managed with rooms allocated during the year.

• Newly renovated Male Amenities Room located at Lodge 3 was furnished to about 80 % by the end of the year.

 SS & FC team participated and helped conduct 2x UNITECH graduations

Newly renovated and Opened Christian Fellowship Centre two signages installed

Chemical Handling Training by KKK Kingston was organized and conducted for SS & FC workers, with certificates awarded to workers.
1x New TV set and 1x washing Machine purchased and put to student

use at International Village Male Residential village

• 1x New TV set and 1x washing Machine purchased and put to student use at Corporate Male Residential Village

New power tool sets were bought and used for the SS & FC operations.
Over 130 Bed Frames, either worn & torn or discarded by students, were collected and safely stored to be fixed

• Over 150 new Bed frames were purchased, installed, and distributed to male and female students.

• Warden initiated King James Bible distribution to almost all students, both male and female students receiving a bible with nearly 2000 Bibles distributed.

• All SS & FC workers received new working safety boots.

• All SS & FC workers received new Polo shirts working uniform shirts.

2nd Semester 1 Failed Students were removed timely out with available rooms filled

• No major reported incident of extreme unrest and disorderly behavior on campus or in the residential dorms

• Several night patrols were conducted by SS & FC on weekends and at strategic times to keep the peace and order among students in the residential halls throughout the year.

• SS & FC male workers completed new perimeter fencing around the female residential dorm over three weekends.

• Attainment certificates made to all 47 male and female sub wardens with references also issued at the end of the year.

• Timely clearance of residential students at the end of final Semester 2 exams and repatriation

• Timely vetting and all invoices for accommodation service providers, namely AOG Okari Campus and UARC been done. All services have been paid for by UNITECH in 2022.

• Security & SS & FC Officers volunteers looked after all residential halls in 2022 during the holiday with no major issues encountered.

• Wash down, and a limited amount of maintenance work were undertaken by Maintenance Team and engaged Contractors to all residential dorms during the holiday period.

MOST PREVALENT ISSUES AFFECTING STUDENT'S ACADEMIC LIFE

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ed <u>case</u> 1 reported 6 reported nonresider	l case 4 2 cases (most 6
6 reported nonreside	2 cases (most 6
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students)	ntial female
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2 reported	cases 2
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ed case 2 reported	6
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ed 11reportd	20
ed case	1
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ed case 2	7
	25
	25
	206
	ted case 2 ted case 3 ted ca



2.2 Brief Report from the Counselling Unit

The Counselling unit has two staff: one male and a female who was recruited toward the end of 2022 but commenced duties in January 2023. Our achievement is that we now have a female-qualified Counsellor. The total number of cases (students) attended is stated below:

TOTAL NUMBER OF STUDENTS WITHDRAWN = 43 TOTAL NUMBER OF STUDENTS FOR SPECIAL CONSIDERATION = 59 TOTAL NUMBER OF STUDENTS FOR OTHER CASES = 79 TOTAL NUMBER OF PNGUoT STAFF = 25 TOTAL NUMBER OF REPORT CASES in 2022 = 206

2.3 BRIEF USDC REPORT FOR 2022

The USDC had Nine (9) meetings in 2022. This summarizes students being suspended and fined for breaching the Student Rules. This report presents the disciplinary tally for the Unitech Main Campus and the Bulolo University College.

1. The main campus students:

a. Two (2) students were suspended for one (1) year for breaching zero-tolerance alcohol policy. On judicial review, the court struck out the USDC Decision and made the ruling for them to fine.

b. Two (2) students were suspended for three (3) years for breaching zero-tolerance alcohol policy. On judicial review,

the court struck out the USDC Decision and made the ruling for them to fine and continue their studies.

2. Bulolo University College students

a. Five (5) students were suspended for three years.

3. Three (3) Main Campus Students were fined for vandalizing the University property and were placed on a Good Behaviour bond.

4. Three (3) Main Campus Students were fined for Intimidation and verbal assault and were placed on Good Behaviour Bond.

5. One (1) Main Campus Student was fined for sexual assault and was placed on Good Behaviour Bond.

6. Four (4) Main Campus Students were fined for vending betel nuts in their room and were placed on Good Behaviour Bond.

7. Main Campus Students that breached Cyber Offence:

- a. Three (3) students were fined and placed on Good Behaviour Bond.
- b. One (1) student made a generic comment and was not guilty

8. Two (2) Main Campus students were fined for causing public Nuisance and Disturbance and were placed on Good Behaviour Bond.

9. Two (2) Main Campus Students were fined for accommodating the opposite sex in their rooms and were placed on Good Behaviour Bond.

2.4 SRS Activities – 2022

The major activities are highlighted below:

, , , , , , , , , , , , , , , , , , , ,		
 SRS Executive Election 	-	April – May
SRS Swearing-In & Induction	-	June
 Students Sports 	-	July – September
Staff Sports	-	September – December
 Independence Mini Show 	-	September
 SRS Election 	-	September - October



This report provides an overview of some recent improvements in Rainforest Habitat (RFH). The Rainforest Habitat forms an attractive part of the PNGUoT campus with 3,000 square meters of land, , with lush tropical forested vegetation, and wildlife.

Rainforest Habitat (RFH) continued to focus on and serve its purpose of conservation and a sustainable friendly environment for the staff and students to observe and appreciate the extinct and rare animal species. We ensure that the core areas of RFH are fully functioning and that individual staff is performing well in their respective roles and responsibilities for positive results. The facility itself and the surrounding environment do not reveal the real purpose of RFH at the initial appointment date. We have started on a deficit balance with rundown facilities (Requires Maintenance). We are fully engaged in the refurbishment of the facilities and managed to buy more animals and birds. We are gradually maintaining the entire facility, and planning to upgrade the facility with additional projects underway to get this place a conducive and friendly environment for people to enjoy.

The Original well-planned, established, and managed Landscape with built facilities has been detetoriated and needs upgrading. Limited or no maintenance budget from PNGUoTand the previous management's inaction in getting the business community's support, seeking external funding also contributed. Moreover, the business house contributed to the Rain Forest Habitat by sponsoring various stands, and cages and also providing animal feed. This assistance has stopped due to a lack of proper acquittal and reporting to the donors.

In 2022, the team put so much effort into the improvement of the facilities, enabling to procure of animal, grounds, and function areas always kept tidy, walkways were rebuilt, repaired of the animal cages etc.

Staff

Rainforest Habitat has committed 13 staff (Permanent Casual & supporting staff) to report to the manager. Everyone provided undivided support to the RFH management, collectively working to achieve the best result within the timeframe. Rainforest Habitat Area of Responsibility

- Rainforest Habitat Guest House
- Function and Barbeque Area
- Grounds

- Canteen Operation (Management of Tenant)
- Zoo and its facility Management
- Garden and Orchids
- Gift Shop

95



Procurement and care of animals

It has been estimated that for every animal on display, only a few were bred in captivity, the remainder having been collected in the wild and usually purchased through dealers. Equally, for every animal that ends up in the RFH, few were injured when attempted to capture. In the interest of animal conservation, the breeding of captive animals is encouraged. On arrival, zoo animals are quarantined and acclimatized to their new surroundings. Temperature and other environmental requirements are also considered to quarantine the animal. Certain birds, for example, release into the aviary after procuring. Appropriate cages were built for the animal's sleep. Funding

Rainforest Habitat is a self-funded facility. The Lae City Authority (LCA) and the University of Technology, through its business arm (UDC) partially supported the operation of RFH. For the last three years of operation, Due to a lack of support, RFH started to manage the facility independently, with grant assistance from the University of Technology for the maintenance. Admission charges from the Guest House, Zoo collections, gifts sales, and function area meet the running costs of the zoos.

Impact Project Undertaken 2022

- Construction of fencing
- Rebuilding of the walkway at the Aviary
- Maintenance of Guest House, Gift Shop, Animal Cages & Workshop
- Mushroom Project
- Landscaping & Beautifications
- New Construction of Haus-Win and Shed at the function area

etc....

Proposed Project for 2023

- Rebuilding of the Nursery facility
- Kids amusement park
- To construct swimming Pool
- To build Self Contain rooms at the guest house
- Construction of Conference room

Conclusion

The Unitech Rainforest Habitat forms an attractive part of Unitech campus with 3,000 square meters of land with lush tropical forested vegetation and wildlife.

The Original well-planned, established, and managed Landscape with built facilities has deteriorated and needs upgrading. This facility is a sleeping giant, and if more attention is given to improving the facility, it will be a commercial arm of the University.

As part of the plan moving forward, Rainforest Habitat has planned to develop its facilities to their original status to attract more people to come and pay a visit.

PNGUoT MEDICAL CENTRE

Introduction

PNGUoT Medical Centre is situated within the campus, and it's near the Bookshop, Union shop, and the Student Mess. It is easily to accessible to students, all the staff with their dependents, and also the outsiders of the surrounding communities.

PNGUoT Medical Centre comprises 13 nursing officers,1 Health Extension Officer, 1 Chief Medical Officer, four ambulance drivers, two secretaries and two janitors.

The Medical Centre has two other sub clinics and they are; Timber and Forestry Training College (TFTC) and Bulolo University College (BUC). Timber and Forestry Training College has only one nursing officer and Bulolo University College has two nursing officers. The clinic usually gives them medical supplies whenever they need them.

According to our monthly report from the last year, 2022, our clinic serves more than 2000 - 3000 patients each month compared to other health centers within the Lae District.

Major Services

PNGUoT Medical Centre opens seven days a week to serve our students, staff and dependents, and even the outside communities.

Our clinic operating hours are: Weekdays- Monday to Friday from 8 am – 10 pm and Weekends- Saturday and Sunday with Public holidays from 9 am - 4 pm only. From February to November, when the students are on campus, we usually open from 8 am till 10 pm at night which will cater to students who attend classes during the day and in the evening they can come to the clinic and present themselves with their complaints to get treatment accordingly. From December to January, during the weekdays, the clinic will only open from 8 am to 6 pm only.

The nurses are working in 2 shifts only during the weekdays and weekends only one shift, whereas our ambulance drivers are working in 3 shifts which are 24 hours for seven days.

At our medical centre, we provide 9 different medical services to our clients each day and each has their own fees. The students, staff, and their dependents below 20 years old are free to use our services, whereas the student's dependents, outsiders, and other staff relatives will be charged accordingly to the services that we give and they are:

• Outpatient consultation:

We have a nurses' consultation fee in the amount of K15 and HEO's consultation fee is K20, and Dr's consultation fee is K30. At the clinic, the Chief Medical Officer and the HEO also do general medical examination checkups and medical reports too, and it's only K50.

* Day Ward Admission:

We have only five beds in the ward, and one of the beds is strictly for emergency only while the other four beds are for acute – sub acute ill patients who are admitted to be stabilized with the proper clinical management and if not improving, then we refer them to Angau Memorial Hospital and Private Hospital upon their request.

* Ambulance service:

The ambulance service is 24/7 every day to help students, staff, and their dependents. During after-hours, the students, dependents, or staff who are sick are brought out of the campus to Angau Hospital or other private hospitals to get medical help.

* CHNS Baby Clinic:

Every Tuesday, we vaccinate babies from 0 months -5 years old child that visits the clinic. We provide free service for the baby clinic.

* Antenatal Clinic:

At the clinic, we have three midwives who do the clinic every Wednesday. Every Wednesday is for an antenatal clinic where the pregnant mothers are given counseling, proper check-ups, and more important information is given for new pregnant mothers. Every pregnant mother is checked properly to identify the high-risk pregnant mothers from the low-risk pregnant mothers.

* Family Planning Clinic:

Every Thursday is Family Planning Day, in which women come in to take either pills or Depo Provera injection, which is provided at the clinic. The service is open to staff, students, dependents, and outsiders as well.

* Minor Theatre

The clinic has a minor theatre in which we do minor operations such as; suturing open wounds, incisions and drainage for abscesses, excision for small warts, applying pop to fractured bones, and removal of sutures with the cleaning of dirty sores and applying the change of dressing.

* Malaria Laboratory

Just last year November 2022, the clinic recruited a laboratory technician to do blood slides so the result should come out as soon as possible so the patient can be treated accordingly to their blood slide result.

* Disease Control Office

At the clinic, we have a Disease Control Officer who is in charge of TB, STD, HIV/AIDS, and Covid 19, and this service is free of charge. The officer in charge takes care of the TB patients by supplying them with their treatment and also does counselling for HIV/AIDS.

	SUMMARY	FREQUENCY	PERCENTAGE
1	NEW CASES	26,051	78%
2	RE-ATTENDANCE	4,565	14%
3	CHNS BABY CLINIC	722	2%
4	FAMILY PLANNING	152	0.5%
5	ANTENATAL CLINIC	611	2%
6	TUBERCULOSIS- New cases	152	0.5%
	TUBERCULOSIS- Re- attendance	999	3%
7	Sugar Level Test	0	0
8	HIV Test	72	0.2%
ATT	TOTAL CLINIC ENDANCE	33,325	

B. CATEGORY OF PATIENTS TREATED AT REGULAR HOURS AND AFTER HOURS AT THE CLINIC

Patient seen After Hours Patient seen After Hours			17303	
				9684
		NORMAL HRS	AFTER HRS	TOTAL
	Students	4035	2933	6968
	Staff	4872	2397	7269
	Dependents	7933	4030	11963
	Outsiders	1257	448	1705
	Referrals (Angau Hospi	ital)		93
Bulolo University College				1215
	Timber Forestry Trainin	ng College		662

Figure 2. Showing the distribution of the category of patients being treated at normal hours and after hours at the clinic.

С	Common cases treated at outpatient	Total number of patients
1_(a)		2106
	Malaria (blood slide) - Negative	991
(b)	Malaria (RDT) - Positive	1125
	Malaria (RDT) - Negative	4249
2	Typhoid - Positive	79
in the second se	Typhoid - Negative	183
3	Chest Infections	2811
1	Gastroenteritis	568
	Skin Infection	4828
	Accidents/Injuries	797
	Eye, Ear, Nose and Throat	713
-	Sexual transmitted Diseases	194
	Immunization	1619

Patients seen with common medical cases treated at outpatient

Figure 3 Shows common medical cases that are treated at the outpatient.

OTHER INFORMATION

(1) Out of 5374 Malaria Rapid Test cases, 1117 were students. Malaria Positive: ...317.... Negative: ...800... Total ...1117....
(2) Out of ...3097 Malaria blood slide cases, ...479.... were students Malaria Positive- ...204. Negative - 275... Total - ...479....
(3) Out of ...611..... Antenatal patients...29.... were students.
(4) Deliveries by Village Birth (VB) -...65......

Figure 4: Total number of students treated with Malaria and antenatal students attending the clinic.

Major Challenges

The major challenge that we faced last year, 2022 was due to Covid 19 which made it impossible to get all the medicines that we order from pharmaceutical stores in Port Moresby on time. After Covid 19, all the prices for medicines increased, and it was really expensive to even buy some of the medicines at the nearest pharmacy in town to cater to the number of patients at the clinic. Even though we are running out of common drugs or any other medical supplies for the clinic, it's still very expensive to buy all supplies in bulk, so we just buy them in small amounts but it won't even last for a month or so.

The other challenge that we had was that; the clinic does not have all the medical equipment on hand that we could treat the patient according to the medical intervention that they have gone through. We are continuously having problems diagnosing a very sick patient without any good investigation to be done quickly. We diagnose them clinically and treat them, but if we could have all the full medical equipment on hand then it won't be a problem for us to treat the patient medically according to their results. We send patients to town to do an x-ray, ultrasound scan, and other blood tests to confirm their diagnosis which had to be done at the clinic right away. With the delay of the results, the patient's condition might get worse, and will need further medical help in which we do referrals to hospitals for further management and proper investigations to be done to help the patient to be treated accordingly.

The other problem that we had was with our ambulance, which was going through wear and tear and giving us mechanical problems every now and then. At times, during an emergency, patients are being transported in an ordinary car, and it's hard to get the public to know that it's an emergency and we are trying to get quickly to the hospital to get help. At present, the clinic got equipped an ambulance from Japan under the JICA program which we are using for critically ill patients.

Upgrade Plan

PNGUoT Medical Centre is still in the process to be upgraded to Urban Hospital Level 3 with all the full medical equipment to be installed with easy access by the patient. For now, Unitech Medical Centre has already purchased an Ultra Sound Scan Machine and Electro Cardio Gram Machine (ECG), which will be arriving soon and will be installed in the clinic.

The new urban hospital will be housed with an admission ward, surgical ward, dental and eye clinic with a fully equipped laboratory to do all other blood tests, an x-ray department with ultrasound scan machine, and an ECG machine too. This will really help in the management of the patient according to the symptoms that he/she presented with. We also plan to cater for Life Style Diseases like; Diabetes, High Blood Pressure, and other Heart Diseases.

We are looking way forward to the new PNGUoT Urban Hospital Level 3 in 2-3 years' time.

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

Annual Financial Report (Un-audited)

Financial year ended 31 December 2022

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY Income Statement For the year ended 31 December 2022

	Notes	31 December 2022	31 December 2021
**		K	K
MCOME			
Government Grants	4	81,B87,135	75,861,541
Student School Fees	5	28,120,771	28,655,134
DHERST Subsidy	5	6,224,792	3.993,145
Other Income	6	2,625,500	2,885,988
Gross Prafit from Commercial Activities	7	2,973,736	2,758,302
TotalIncome		121,831,933	114,155,111
EXPENDITURE			
Employment costs	8	67,280,984	67,925,603
Operating Expenses	9	41,411,954	33,016,752
Other Operating Expenses	10	4,404,988	3,597,411
Depreciation Expense	17 .	13.981.237	13.654.423
Total Expenditure	23	127.079.163	118,194,190
Total comprehensive surplus/(deficit) for the y	car _	(5,247,229)	(4,039,080)

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

Statement of Financial Position

As at 31 December 2022

		31 December 2022	31 December 2021
	Notes	ĸ	ĸ
ASSETS			
Cash and Cash Equivalents	12	55 020 856	10 842 272
Internet beering depend	120	10,330,030	49,042,373
Trede and other receively a	128	13,710,270	0,710,270
	13	820,002	3,053,472
Inventory	8	854,367	760,908
Total Guilent Assets	1	/1,322,009	00,907,022
Non-Current Assets			
Property, Plant and Equipment	14	445,044,648	445,535,496
Total Non-Current assets	2. 	445,044,648	445,535,496
TOTAL ASSETS	_	516,366,737	506,502,518
LIABILITIES			
Current Liabilities			
Trade Creditors	15a	17,435,904	14,270,455
Other Payables	15b	8,028,292	4,127,791
Group Tax Payable	16	2,400,000	2,400,000
Employee Provision	17	7,996,298	7,634,374
Total Current Liabilities	-	35,860,494	28,432,620
Non-Current Liabilities			
Deferred Income		69,684,877	60,791,422
Employee Provision	18	13,829,632	12,477,203
Group Tax Payable	16	83,312,813	85,875,122
Total Non-Current Liabilities		166,827,322	159,143,748
TOTAL LIABILITIES	-	202,687,815	187,576,368
NET ASSETS		313,678,921	318,926,150
EQUITY			
Accumulated Deficit		(89,482,131)	(84,234,902)
Asset Revaluation Reserve		403,161,052	403,161,052
TOTAL EQUITY		313,678,921	318,916,150

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY Statement of Cash Flow As at 31 December 2022

	31 December 2022 K	31 December 2021 K
Opening Balance as of 01.01.2022	56,552,643	54,329,157
Cash inflow		
Grant	74,345,266	66,002,443
DHERST	6,224,792	3,993,145
Debtors (realized from students)	30,947,640	27,830,533
PIP Grant	5,000,000	6,000,000
Incentive Fund Grant	5,501,642	5
Other Income	5,599,236	5,170,317
Total Inflow	127,618,576	108,772,953
Cash outflow		
Salaries & Wages	65,566,631	66,209,019
Payment to Suppliers & Service Providers	35,472,859	31,008,377
Purchase of Assets	13,490,602	9,555,557
Total Outflow	114,530,093	106,772,953
Closing Balance as of 31.12.2022	69,641,126	56,552,643 □

Notes to and forming part of the financial statements for the year ended 31 December 2022

4. Government Grants

4. Government Grants		
	2022	2021
	к	ĸ
Government Grants -Recurrent	72,288,860	65,402,287
PIP Grants	1,567,571	1,590,087
Government Grants -Utilities	5,974,298	8.269,011
Other Government grant	2.056,406	600,156
	81,887,135	75,861,541
5. Student lacome		
Tudion Fees	15.271,095	13,732,715
DOOL Fee	3,874,711	4,046,843
Boarding and Lodging fee	2,972,732	5,518,662
Compulsory fee	4,628,752	4,333,824
Leplop Fee	1,373,481	1.023.091
	28,120,771	28,655,134
DHERST Subsidies	6,224,792	3,993,145
	6,224,792	3,993,145

6. Other Income

Pantal income	702 672	1 088 122
Service fee	102,012	1,000,125
Other grants receipted	7.525	11 434
Training fees	151 317	177 720
Consultancy fee	3.500	450
Interest income	29,771	12,179
Royalty from Datec	505.778	490 195
SRC Union Fee	194 641	198 422
Clinic Frees	517.068	597 354
Other miscellaneous income	513,228	306,625
	2,625,500	2,886,988
7. Gross Profit From Commercial Activities		
Income from sales and service rendered	7.618.475	5,844,798
Less: Cost of sales	4,644,741	3,086,495
Gross profit	2,973,736	_ 2,758,302
& Employment costs	20.22	20.24
	K	K
Salary and allowance	44 423 454	44 626 691
Wages and allowance	7.175.192	6.831.355
Gratuity costs	5,590,727	6.284.164
Leave fares	3,111,079	3.374,061
Superannuation contribution	3.076.369	3.104.275
Annual leave	361.924	293,133
Long service leave	1,352,429	1,423,451
Other staff related costs	2,189,810	1,988,474
	67,280,984	67,925,603
9. Operational expenses	1710 Bass B. Bass B.	
Student messing expenses	9,655,115	7,269,842
Water charges	3,885,002	4,249,254
Electricity charges	3,744,747	4,448,880
internet expenses	7,316,897	1,250,293
Consumables	4,177,698	3,094,597
Repairs and maintenance - Properties	5,837,553	4,271,541
Repairs and maintenance - Equipment	1,794,058	1,188,711
Student laptop	2,303,106	1,748,709
Travelling expenses	2,014,291	1,305,262
Vehicle hiring expenses	236,268	272,607
Fuel expenses & Transport Maytenace	2,195,548	1,369,655
Stationary expenses	347,136	292,832
Postage & Telephone	486,194	478,321
VC Discretionary fund	266,584	138,071
Research expenses	816,831	248,178
Events/Conferences	255,125	175,696
Accreditation Expenses	252,741	142,891
Other Administrative Expenses	1,826,959	1,070,412
	41,411,954	33,016,752
(***)	4,404,988	3,489,411
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Miscellaneous	816,044	1,068,456
Clinic Expenses	1,625,952	938,440
Rental	51,237	57,360
Registration & Renewal	49,956	65,900
Other Security Expenses	504,752	453,978
Legal Fees	230,085	149,379
Bank Charges	78,409	104,617
Insurance	591,980	335,333
Consultants Fees	2,750	5,148
Audit Foos	215,675	28,804
Other Operational Cost	238,147	281,998
10. Other expenses		

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

Notes to and forming part of the financial statements for the year ended 31 December 2022

12. Cash and Cash Equivalents		
325.0	2022	2021
	ĸ	к
Main Bank Ale - BSP 1000386580 -	942,665	7,327,681
Mess Bank Ale - BSP 7017972501	1,009,537	512,866
School Fee Account: 1000386581	1,268,314	130,938
Stat-P Bank Account	1,198,105	299,974
MCDC Cardholder 7008191970	272	272
MCDC Cardholder 7011649576	9,458	9,472
PIP Project BSP 1002661773	32,643,884	28,755,026
BSP Bank Account DOD 1-603660	1,697,698	2,475,656
Housing Ale- BSP 7010630858	459	459
SERI Account	247,183	71,497
Union Board	45,.863	400.904
BSP. TFTC	95,583	85,180
ANZ_ TFTC (AC/AR Projects)	31,864	69.463
BSP 1000386086 _ Play School	11,637	1.021
BSP Trust Bank Account	6,142,959	4,567,831
BSP ATCDI	69,605	2,428,529
KINA Lae School of Nursing	5,239,669	217,857
ASP UDG	(16,229)	2,438,990
Undeposited Fund	1,943	23,627
Petty Cash	49,173	3,057
BSP _ Compulsory Fee	1,171,142	20,843
Incentive Fund	4,089,567	•
EFTPOS Cash Out	508	1.230
	55,930,856	49,842,373

12a. Investments in Interest Bearing Deposits

Interest Bearing Deposits are placed with financial institutions with interest ranging from 0.08% to 1.64%. It's a short-term deposit held with Bank of South Pacific (BSP) with term of maturity less than 3 months and as such has been included as part of cash and cash equivalents.

	2022	2021
	ĸ	K
Bank South Pacific Ltd	13.710.270	<u>6.710.270</u>

13. Receivables			
Student fees receivable		1,569,065	3.257,248
Unitech Savings & Loans		987,269	987,269
Advances to UDC		1,000,000	1.000.000
Receivables - Debtor			26,155
Staff Debtors		(43,966)	(55,896)
Advances to Supplier		a construction	1,371,547
Staff Salary Advance		27,407	16,161
Air Niugini UATP account	a.	9,205	22,853
Other Sundry Debtors		49,363	48,230
Receivable from NATSL		1,109,337	1.034,790
NAL Debtors		35,048	35,048
Staff Debtors-Tuition		(39,681)	(6,536)
Union Board-C Clearance A/C		15,529	11,196
UDC Receivable			28,622
ATCD/ Clearing		42,184	34,922
University Enterprises Ltd		223.979	
		4,984,740	7,811,609
Less: Provisions for doubtful debts		(4, 158, 138)	(4,158,138)
		826,602	3,653,472
		2012 K	2021 K
15. Greditors and other payables			
a. Trade Creditors		17,435,904	14,270,453
b. Other Creditors			
Students Credit Balance and Advance	Payment	2,153,081	1,526,095
H.E.L.P Clearing A/C	2221 7 03023250	1,438,462	203,661
Superannuation contribution		27,379	21,914
Gratuity payable		1.027.444	1.023,189
Payroll clearing		3,746	192,572
Audit Accrued Fee		380,625	380,625
Contractor Payable		37,864	37,864
Aptitude Test Clearing Ale		716,102	211.549
School Fee Packaging Clearing Ale		345,314	299,312
OHE Trust AIC		175,197	17,471
Unitech /LO-STREIT Consultancy		622,969	-
Other accrual		1,100,107	213,540
		8,028,292	4,127,791
16. Tax Liabilities			
Group Tax		86,712,241	89,253,031
GST		(1.000,517)	(985,656)
Business Withholding Tax		1,089	7,748
		<u> </u>	88.275.122
17. Annual leave			
Opening balance		7,634,374	7,341,241
Addition during the year	_	361,924	293,133
18. Long service leave	-	7,996,298	7,634,374
Opening balance		12 477 202	11.053 752
Addition during the year		1.352.429	1,423,451
	•	13,829,632	12,477,203

2022	Land	Buildings	Motor vehicles	Furnitures & fittings	Computer equipment	Plant & Office equipment.	WIP
	X	¥	×	×	×	×	X
Cost							
At 1 January 2021	139,700,000	319,803,733	10,617,915	3,505,773	11,044,316	31,800,371	4,585,174
Additions 1			1,560,614	301,588	918,584	3,377,214	7,332,602
Transfer							
Deletion					(22,000)		
At 31/12/2022	139,700,000	319,803,733	12,178,529	3,807,362	11,940,901	35,177,584	11,917,776
Depreciation							
At 1 January 2021		39,924,754	6,436,573	1,821,387	1,578,476	19,760,597	
Deletion					(21,786)		
Charge for the year		10,960,210	757,132	163,340	740,469	1.360.086	

(22.000) 534,525,886

521,057,283 13,490,603

TOTAL

(21,786)

13.981,237 89,481,239

75,521,788

445,044,647

11,917,776

14,056,901

1.360.086 21,120,684

740,469 8,297,160 3,643,741

153,340 1,984,727 1,822,635

757,132 7,193,705 4,984,824

10,950,210 50,884,964 268,918,769

139,700,000

Net Book Value 2022

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY Notes to and forming part of the financial

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Notes to and forming part of the financial statements for the year ended 31 December 2022

19. Deferred income

60,797,4	10,871,788	(395,384)		11, 582, 929	69,684,876	Total deferred income
1,378,7	370,126	(395,384)	0	(15,358)	1,338,085	
531,0 847,6	370,126	- (395,384)		(15,358)	515,895 822,390	Satelitis campus fund Research and scholarship fund
2,880,0					2,380,000	
056,0 1,923,9					956,072 1,923,928	Examine from DHERST Maintenance to Academic Departments Information Communication Technology System (ICTS)
	5,501,642				5,501,642	Incontivo Fund Project
42,513,2	5,000,000	,			47,513,231	
2,000,0	2,000,000				4,000,000	Intrastructure/Telekom College
6,500,0					8,500,000	Staff House
\$,000,0	1,500,000	8			9,500,000	Mulli Purpose Hall
6,000,0	1,500.000				7,500,000	Library
20,000,0					20,000,000	Student mess
13.1		•			13,231	Buildings and Accreditation projects
						PIP related oniects
a la cale i				Press and a second	and an and a second	b. <u>Outstanding project</u> and researches
14 0104				11.567.574)	12.451.018	
450.3				(90.065)	360,262	Motor vehicle
13,569,1				(1,477,505)	12,091.656	Buildings (academic, dormitories and staff residence)
ĸ	R	x	x		K	a. Completed projects - PIP related projects
Balance a: 01.01.2	Grants	Incurred.	Projects/Transfer		as of 31.12.2022	
.upen	Additional	Expenses	Completed	Depreciation	Closing Balance	



Annual Report 2022

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