

**FACULTY ANNUAL REPORT**

**FOR THE YEAR**

**2014**

**FACULTY OF SCIENCE**

**SUBMISSION TO SENATE**

**TABLE OF CONTENTS**

**EXECUTIVE SUMMARY & HIGHLIGHTS**

**SECTION A: OVERVIEW OF FACULTY ACTIVITIES AND ACHIEVEMENTS FOR THE YEAR**

**1. INTRODUCTION**

**2. GOVERNANCE AND PLANNING**

2.1 Achievement of faculty strategic/implementation plan

2.2 Quality Improvement & Programme Review

2.3 Safety, Health and Environment

**3. STUDENT DEVELOPMENT**

**3.1** Awards received by students

**4. STAFF DEVELOPMENT AND CAPACITY BUILDING**

4.1 Professional Staff Development Opportunities

4.2 Qualification improvement

4.3 Staff involved in further study

4.4 Awards received by staff members

4.5 Involvement with Committees, Associations, Management of Scientific Councils, Professional, Advisory & Editorial Boards, Etc.

**5. COMMUNITY ENGAGEMENT PROJECTS**

**6. CO-OPERATIVE EDUCATION/**

6.1 Work Integrated Learning

6.2 Advisory Committees

* 1. Industry Liaison (International & Local Partnerships)
  2. Industrial Engagements

**7. INSTRUCTIONAL TECHNOLOGY**

**8. EXTERNAL FUNDING**

**SECTION B: KEY PERFORMANCE INDICATORS**

**1. STUDENT OVERVIEW AND DEMOGRAPHICS**1.1 Student overview by campus (including Headcounts, FTEs, Success and Graduation Rates)

1.2 Student headcount by mode of instruction (contact/distance)

1.3 Student headcount by race, gender and disability (D/A)

1.4 Number of students in foundation courses

**2. FACULTY STUDENT HEADCOUNT ENROLMENTS**2.1 Headcount Enrolment by Major Field of Study

* 1. Headcount Enrolment by Qualification Type

**3. GRADUATIONOVERVIEW**3.1 Graduates by Major Field of Study

3.2 Graduates by Qualification Type

* 1. Graduates by First Order CESM

**4. RESEARCH AND RESEARCH OUTPUT**

4.1 Publications

4.2 International visits

4.3 Visiting Researchers

4.4 Conference Participation

4.5 Funding for research

**5. TEACHING INPUT UNITS (TIUS) AND TEACHING OUTPUT UNITS (TOUS)**

**6. STAFF PROFILE, QUALIFICATIONS AND RATIOS**

6.1 General Overview

6.2 Number of Staff per Race, Gender and Disability (D/A)

6.3 Number of Staff per Person Category

6.4 Instructional/Research Staff per Qualification Type

6.5 Instructional/Research Staff Ratios

**7. PQM ALIGNMENT TO HEQF**

**CONTENT**

**SECTION A**

**1. INTRODUCTION**

**EXECUTIVE SUMMARY**

The total number of students enrolled in the Faculty showed a substantial increase to 7330 compared to 6911 in 2013 while for Postgraduate students remained stable at 336 compared to 331 in 2013. The number of postgraduate qualifications awarded in 2014 remained steady with 39 Master’s degrees and 7 Doctorates. According to the 2012 -2019 enrolment plan projections for the faculty inclusive of both old and implemented new programmes for the year 2014, the total number of students is supposed to be at 6734. The Faculty has therefore over budgeted by 932 students in 2014.

The Faculty currently employs 793 Permanent and Temporary staff with 535 (67.47%) belonging to the designated groups.

The Faculty has seen very positive growth with regards to its student success rate over the last couple of years. Student success rate for undergraduate studies increased to 78% in 2014 (Compared to 76.7% in 2013). The Faculty is now starting to see the results from its success rate improvement plans being implemented.

**SELECTED HIGHLIGHTS**

The Faculty of Science had yet another good year in 2014. The refurbishment of laboratories, conversion of normal classrooms to SMART classrooms, as well as a number of staff improving their qualifications bodes well for the future of the faculty.  With the growth experienced in the faculty two new senior appointments were conferred with Dr Shirley Motaung taking up the position as Assistant Dean: Research and Postgraduate studies and Dr Ingrid Mokgobu  the position of  Assistant Dean: Teaching and Learning.

Whilst laboratories in the Orthotics and Prosthetics as well as Pharmaceutical Sciences labs have been signed of, an extensive upgrade to the Faculty of Science’s dental technology and Dental Assisting laboratories has resulted in what could now be considered the most advanced dental technology training laboratories on the African continent. Made possible by the Infrastructure and Efficiency Funding (IEF) for scarce skills received from the Department of Higher Education and Training, upgrades and refurbishment amounting to R20 million were undertaken by the Dental Technology division managed by Prof Prince Ngobeni (Associate Dean: Faculty of Science). The project enabled and continue to enable TUT to deliver world-class graduates, as well as addressing the shortage of skilled professionals in this sector. The renovations included equipping the new laboratories with the most modern equipment available as well as the refurbishment of the dental laboratories, plaster rooms, machine and casting rooms, student workstations and diagnostic facilities. The new equipment enables students to enhance their practical skills on the most innovative technical equipment currently available.

SynBo beverage, a product developed by Prof Piet Jooste and Dr Richard Nyanzi from the Department of Biotechnology and Food Technology, Faculty of Science, won a third place in the Biosciences category of the Gauteng Accelerator Programme (GAP) innovation competition concluded on 6 December 2013. SynBo beverage is a probiotic mageu that has a variety of potential health benefits. “The maize based, fermented, non-alcoholic beverage contains probiotic bacteria and prebiotic ingredients that are generally regarded as safe. The technology for processing the product that was developed as part of Dr Nyanzi’s Master’s and DTech studies, was patented by the Tshwane University of Technology in 2007.

The game and wildlife industry’s generous support in providing bursaries to the value of R350 000 will enable ten students at the Tshwane University of Technology (TUT) to realise their life-long dreams of pursuing careers in this industry. These bursaries form part of the Stud Game Breeders® extensive drive to transform South Africa’s game industry. Mr Cyril Ramaphosa awarded bursaries totalling R280 000 on behalf of the Stud Game Breeders® to eight deserving students studying Game Ranch Management.

Linde du Toit, lecturer at the Department of Animal Sciences, received the David Uys Award during the Annual South African Society of Animal Sciences Congress held at the University of Pretoria in July 2014. He received the award in recognition of the best scientific article published in the South African Journal of Animal Science by a member of the society for the calendar year.

The objective of Linde’s article entitled: Direct methane and nitrous oxide emissions of South African dairy and beef cattle, that was co-authored by HH Meissner and WA van Niekerk, was to re-calculate the direct methane and nitrous oxide emissions of dairy and beef cattle production in South Africa, taking into consideration the uniqueness of the South African scenario by using a refined localised approach.

Prof Alvaro Viljoen, DST/NRF Chair in Phytomedicine at the Department of Pharmaceutical Sciences, has once again been recognised for his expertise; he has been appointed as an expert member of the American Botanical Council’s (ABC) Advisory Board. He is one of ten new members appointed to the ABC. ABC Advisory Board members generously volunteer their time to peer review articles that appear in HerbalGram, HerbalEGram, HerbClips, and various other peer-reviewed ABC publications. Additionally, ABC management and HerbalGram editors seek feedback and advice from the Advisory Board members on research questions, article ideas, ABC policies, and book reviews, among many other topics.

TUT hosted the first International Conference on Tissue Engineering and Regenerative Medicine (ICTERM). ICTERM brought together more than forty experts, nine of which are global experts, in the field of tissue engineering during the five day-long conference. Speakers included distinguished clinicians and scientists from around the world who work in the areas of: stem cell tissue engineering; cartilage and bone tissue engineering and biomaterials tissue engineering.  The talks covered basic studies through translational efforts and clinical trials, and will address novel topics, discussions on recent advances, challenges and breakthroughs in the field of tissue engineering.

The Minister of Science and Technology, Derek Hanekom, inaugurated a new science centre housed in two old train carriages at the Matjiesfontein Transport Museum. The science centre is intended to be part of a longer term Science and Technology Train, which Tshwane University of Technology (TUT) and other stakeholders are working towards under the leadership of Dr Stoffel Fourie of the Department of Environmental, Water and Earth Science at TUT. In his address the minister commented that the opening of the science centre brings SA yet another step closer to realising its dream of making science and technology accessible to communities in rural areas that do not have access to the latest trends, or even the basics of science and technology.

**2. GOVERNANCE AND PLANNING**

**2.1 Faculty Strategic and Implementation Plan(s)**

The Faculty of Science consists of 14 departments; seven of these are situated on the Arcadia campus and seven on the Pretoria West campus. One of the 14 departments, Mathematics and Statistics, will continue to have staff on all the urban sites where they provide a valuable service to other faculties.

The Faculty is in an enviable position because all of its current National Diplomas lead to B Tech degrees while most of the B Tech degrees lead to Master’s degrees. In the Department of Sport, Rehabilitation and Dental Sciences a number of programmes are without a suitable Master’s degree and this is a matter of serious concern to the Faculty.

At the end of this reporting period, the HEQSF was still not finalized leading to huge uncertainty with regards to future planning of the Faculty. Not knowing in which programmes we will be allowed to have postgraduate programmes makes future planning very difficult and almost impossible to plan for recruitment of staff. The future PQM of the Faculty depends totally on the HEQSF and not having clarity is placing a huge damper on all aspects of planning.

A decision was taken to utilize a quota system in the admission of black learners in the following programmes: National Diploma: Medical Orthotics and Prosthetics, B Tech: Medical Orthotics and Prosthetics, National Diploma: Dental Technology, B Tech: Dental Technology and B Tech: Biokinetics. The rational for the utilization of the quota system is to ensure representation, to enhance demographic profiles of students in these programmes and to grow the profession in communities where they are mostly needed. In the Faculty as a whole the number of students from the designated groups currently stands as 89.15% compared to that of 10.85% of white students in 2014.

The Faculty Strategic Plan 2009 – 2013 was completed with great success seeing major improvements in success rate, throughput rate, the faculty’s employment equity numbers as well as student numbers for the period. A strategic workshop session has been planned and will take place in early March 2015 in order to draw up the new strategic plan 2014 – 2018. The Faculty Strategic Implementation Plan will be aligned to the Institutional Strategic Plan currently under review by the Acting Vice Chancellor and the EMC.

**2.2 Quality Improvement & Programme review**

Following on the quality Programme Review of 2011 various departments has taken steps to improve on their academic programmes including:

**Department of Biotechnology & Food Technology**

## Programme review

The purpose of the programme review, in 2011, was to assess the value or worth of the academic programme within TUT’s vision and mission and its local, regional, national, and international contexts. This was followed with the submission of quality improvement plans (QIP) for both programs.

## Quality improvement plans

Quality management systems and procedures are in place and functioning well. Quality improvement is a continuous process and part of strategic planning.

M**ain areas highlighted for improvement:**

* The department has formalised its strategic planning sessions.
* Succession plan - this issue is still outstanding and will receive attention over the short term.

Continuous involvement with intervention strategies to improve overall throughput rate. This matter was vigorously pursuit and progress has been made.

**Department of Crop Sciences**

QIPs from the 2011 evaluations have been handed to all staff members to assist them with continuous improvement of the programmes.

**Department of Environmental Health**

Through the quality improvement plan put in place immediately after the review. The Department has successfully completed its readiness survey by the QP section of TUT and the Professional Board for Environmental Health during November 2014. Study guides for the 1st year of the new 4-year degree to be implemented as from 2015 have all been completed. The Department addressed the recommendations made by the Professional Board for Environmental Health in their report (re-accreditation visit conducted on 20-22 May 2013).

1. **Programme review**

The development of a new 2-year Diploma for Environmental Health assistants is also in the pipeline for implementation during 2017. The outcomes for the programme has been developed with the assistance of the Professional Board for Environmental Health Practitioners and approved likewise. The outcomes have been unpacked in learning units and full development of the programme will be completed during the 2015 academic year. A business plan has been developed and will be submitted to Senate for approval where after the required approval from DoHET will be requested.

1. **Quality improvement plan**

The Department periodically addresses quality management through Departmental quality goals set during the annual Departmental planning meeting. There is a quality subcommittee which oversees all quality related matters within the Department including examination question papers quality checks. Yearly basis the department conducts a peer review of subject files focussing either on exercising the theory or practical part of the subjects including WIL logbooks. This ensures that the department is always ready for either internal or external reviews.

**Department of Horticulture**

Quality improvement plans were implemented; including a workshop on assessment methods. RISK analysis and follow-up intervention by SDS for all first year students was done. RISK analysis of laboratory facilities was carried out. Dr Kleynhans finished her License to Teach course successfully.

Subject files were evaluated and updated by lecturers; discussions were held with the student liaison committee in order to provide students with a forum for addressing their complaints and for providing input on the programme; reviewing of the research activities for both B Tech and M Tech programmes were done for possible improvement. Planning of the new Advanced Diploma and Post Graduate Diploma continued.

A new design studio, part of the postgraduate research laboratory, was taken into use and will be upgraded to improve landscape design facilities for diploma students; lecturers encouraged deserving students to register for postgraduate studies and approximately five new M Tech students and four D Tech students will enrol for 2015; additional lecturing for first year students on AUTOCAD and general computer skills was implemented; additional appointment of PGTA was continued for additional teaching classes; improvement of practical sessions and post graduate student assistance and teaching was continued in order to address success rate and built capacity.

A lecturer (K. Prinsloo) was re-appointed as Gauteng board member of ILASA; and appointing programme coordinators to manage programmes and departmental activities is an ongoing activity.

**Department of Mathematics & Statistics**

1. **Programme review**

The B Tech Quality, M Tech Mathematical Technology, the M Tech Quality, and D Tech Mathematical Technology and D Tech Quality programmes are to be phased out.

The B Tech Quality and M Tech Quality will be replaced by the Post Graduated Diploma and the Advanced Diploma in Quality. The new qualifications are currently being developed.

M Tech Mathematical Technology will be replaced by the new programmes in Applied Mathematics and Mathematics. The new qualifications are currently being developed. D Tech Quality will be phased out.

D Tech Mathematical Technology will be phased out and be replaced by the PhD (Science).

Weekly curriculation meetings are being held with representatives of Curriculum Development and Support together with affected departments.

1. **Quality improvement plan**

In response to the panels' feedback the DMS submitted the Quality Improvement Plans (QIP's). Staff members are participating in the implementation of the plans. The QIP's are available on request.

The two days of orientation with the students on the Arcadia campus and Toppieshoek were very successful. Students still found it difficult to cope with their studies and their responsibilities at work.

**Adelaide Tambo School of Nursing Science**

1. **Programme review**

The Bachelor of Nursing is currently being curriculated. The HEQC online document is completed and has gone through the first quality assurance round. We had a successful workshop with the advisory committee who gave input from industry on the programme’s design, module map and module descriptors.

We are in the process of developing the module descriptors that should be complete by 31 January 2015. We have registered our intention with the South African Nursing Council to submit the Bachelors of Nursing Programme to CHE and are currently in the process of accreditation of clinical facilities for student placement for the new programme.

The Post Graduate Diploma in Community Nursing was accredited by CHE, approved by DHET and added to the Universities PQM. In 2015 this programme will be developed for introduction in 2016.

The M Tech was initially categorized as a Cat A qualification and changed to a Master of Science in Nursing. The submission of the programme was revised and resubmitted to CHE as a Master of Nursing. This programme is not envisaged to be introduced before 2016.

The two post basic programmes B Tech Nursing Science: Oncology and Occupational Health are still well attended. All four campuses of the Occupational Health programme are still viable and there was no decrease in the student numbers. Challenges in the Occupational Health programme experienced are obtaining venues to accommodate all the students for classes and exams. The Pretoria Campus has very large classes and there are no adequate venues to accommodate these students. We had to use a venue in Leseding which is not fit to serve as a lecturing venue for such a large group. Accreditation of additional clinical facilities for Work Integrated Learning is currently underway as submission is required at the South African Nursing Council (SANC) by 31 December 2014. We are also currently applying to SANC to allow the School to take in larger numbers of students in this programme than they had approved in 2006.

1. **Quality improvement plan**

The School is implementing the recommendations of the SER (2011). Aspects that have been improved include the following:

* Implementation of Performance Management System ongoing. The PMS of the Head of School (HoS) has been signed and the process was rolled out to the personnel of the School.
* Prescribed material was revised and updated and additional library sources acquired.
* A student liaison committee was initiated however must be further pursued next year.
* The monitoring system of the WIL hours of the students have been improved as well as the routes for transport to and from the WIL facilities.
* The turnaround time after tests are written has improved with most lecturers adhering to the 2 weeks turnaround time.
* Student evaluation of teaching was done and feedback will be used by the HoS to further improve on teaching and learning practices in the school. In 2015 these evaluations will also be done with the clinical preceptors to improve the quality of clinical accompaniment.
* MyTUTor, an E-learning platform, is being used more by staff in the School. All new staff appointed completes a license to teach programme, where e-learning and other teaching and learning competencies are enhanced.
* All exam papers were quality assured before submission.

**Department of Pharmaceutical Sciences**

1. **Programme review**

The response to the South African Pharmacy Council (SAPC) monitoring and accreditation visit of 2013 was submitted. This BPharm will be presented as a TUT programme and the joint BPharm with UL (Medunsa) will be phased out. TUT and UL(Medunsa) will however continue to collaborate by sharing expertise, experience and resources.

The Department has received approval from the SAPC to present a BPharm degree from 2015.

**Department of Physics**

1. **Programme review**

The development of the Diploma in Fire Technology to conform to HEQSF provision was completed. It has well defined Work Integrated Learning (WIL) component.

1. **Quality improvement plan**

The Department of Physics has now an established quality management system (QMS). Under the QMS, programme organogram is drawn up with lines of accountability, communication and reporting well defined. In addition, the Fire Technology’s programme fitness for and of purpose have been reformulated. Standard operations procedures (SOP) of academic and administrative categories have been written down as well as Quality Management Calendar (QMC) that has been develop to manage the process.

**Department of Biomedical Science**

1. **Quality improvement plan**

The HPCSA had a visitation to evaluate the training of the Biomedical Technology programme in October 2014. The outcome of the visitation is not yet available.

**Department of Dental, Sport & Rehabilitation Sciences**

Dental Technology had meetings with the SADTC inspection team where the time-line of the renovations was discussed. The academic year was adjusted to facilitate the renovations without compromising teaching and learning.

Dental Assisting was audited by the HPCSA (Health Professions Council of South Africa) and it was accredited with conditions. The follow-up audit which was scheduled for 9 and 10 November 2014 took place where verbal feedback was given with a lot of commendations as compared to recommendations.

In Officiating and Coaching Sciences, quality improvement plans based on the 2011 internal quality review were continuously implemented. Frequent meetings and input from student representatives, additional coaching courses, internal evaluation of staff’s subject files, test, and liaison and collaboration with stakeholders were undertaken. Four student mentors were appointed for the second semester of the year. Dr Jan Van Rensburg’s contract was not renewed for 2014 and his responsibilities were divided amongst the remaining three OCS staff.

MOP handed in a progress report that was asked by the HPCSA about issues pertaining to the accreditation of the MOP programme.

**Risk Management**

A Faculty risk register was compiled during 2009 and was escalated down to individual registers

for each department in 2010. This risk register will once again be updated and rolled out in 2015.

**2.3 Safety, Health and Environment**

Monthly Safety, Health and Environment (SHE) meetings were held. All issues raised were given the necessary attention and the Faculty can report that no serious incidents were reported.

One of the most pressing issues identified during 2014 were the issue of the lifts on the Arcadia Campus and air-conditioners not in a functioning state in classrooms. The lifts in building 3 has been replaced in order to facilitate the safe transport of chemicals.

Safety around the Arcadia campus was once again highlighted as a serious issue The movement of students between the Leseding and Arcadia campus is a concern that might need extra security measures.

**3. STUDENT AWARDS**

**AWARDS RECEIVED BY STUDENTS**

The *Gauteng Department of Agriculture and Rural Development (GDARD)* again awarded an amount of R 826 000-00 to the Department of Biotechnology and Food Technology for 2014; to be utilized for student bursaries. The funds were utilized for *student bursaries*, for academic achieving students as well as financial needy students, in 2014 a total of 25 students were assisted.

The *SAAFoST student day* was hosted by TUT on the 21st of October 2014. This function was well attended by staff from other HE institutions, as well as representatives from industry. The food products developed by the Food Technology students of UJ and TUT were evaluated by judges from industry for scientific content, originality as well as marketability. Food Science students from UP also have the opportunity to offer an oral presentation with regard to the work on products they were involved in during the year.

In addition to this, the department has once again hosted its in-house award ceremony. The best student per subject is identified and receives a certificate as well as a plaque. The ceremony is scheduled on predicate day to ensure that all students are on campus and can attend. Staff and students of the department are invited and have the opportunity to socialize afterwards.

Mr Tumisang Ivan Leso, (student number 213106376), received an undergraduate bursary to study Food Science in 2014. The SAAFoST (South African Association for Food Science and Technology) Foundation awarded the bursary of R 25 000.00 to Mr Leso on merit.

A full time Prestige B Tech Scholarship (TUT) was awarded to Mr TBJ Molelekae (R 35 000.00)

A SAAFoST academic achievers award was also awarded to student J Kongola, amounting R1000.00.

At the GDARD Gala evening in October 2014 (attended by Prof and Dr Marais, Ms Jordaan, Mrs Briel, Mr van Rooi and Ms Booysen), a Biotechnology student, Ms Winnie Gantsho received the award for best student of the year.

The Clinical Technology student Ms Megan Glen received the Chancellor’s Medal for outstanding academic achievement.

Mr Nel, a B Tech Clinical Technology student, received the Dean’s list award with a bursary of R30 000.

Mr Johan Linde (Doctorate category) and Ms Mathapelo Seopela (Masters category) were awarded second place prize winner for oral presentations at the SACI Young Spectroscopists Symposium held at the University of Northwest, Potchefstroom campus.

Mr Solly Motaung (DTech Water Care) under the supervision of Prof JP Maree and Prof AV Kolesnikov received an award as a winner at WISA conference under the category of SAIWA Pressly-Hughes Award WISA 2014. The award is awarded to the best presenter in the Industrial Water and Effluent Category.

Millicent Setumo was awarded the SADTC medal for best N Dip Dental Technology student.

Henry Bantjes was awarded the SADTC medal for best B Tech Dental Technology student.

Larize Pienaar participated in NY in an international competition hosted by American Dance Awards. She achieved an overall 3rd position. At the Acrobatic Federation of SA she was 1st in the contortionist section and 1st runner up overall.

Awards for Biokinetics student research presentations at the bi-annual Biokinetics student conference hosted at the University of Cape Town:

1st place – oral presentation: Loyiso Maqina

1st place – poster presentation: Ayesha Yoosub-Adam

2nd place – best poster presentation: Sean Spencer

3rd place – best poster presentation: Cindy Meyer

Busisiwe Sijora (213489267) - OCS

- Chest-trap youth day womens’ football challenge 2014 – manager of the tournament

- TUT Sports Awards – Best student sport administrator 2014

The following MOP students won awards:

Best practical Student: Dean Davel

Best academic student: Franci Dorfling

Best Overall student: Franci Dorfling

Pierre Harmse, a B-Tech amputee won the OSSUR award. The prize this year is to attend the next South African congress. All expenses, flights, accommodation and registration fees will be paid. This was for the best project presented by B-Tech’s 2014 MOP

**4. STAFF DEVELOPMENT AND CAPACITY BUILDING**

**4.1 Professional Staff Development Opportunities**

The Faculty of Science is totally committed to continuous Academic Professional Development which is evident from the amount of courses and workshops undertaken by its staff. Big impetus is placed on Curriculum Development, Teaching & Learning Assessment and Management and Leadership.

***Curriculum Development and Support (CDS\_HEDS)***

***Portfolio Annual Report***

| **Activity** | **2014** | **Details**  *In this section, please embed all documents that support your data (e.g. Attendance lists).* | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Professional Development activities** | | | | | | |
| Academic orientation of newly appointed permanent staff | | | | | | |
| Permanent lecturing staff (Licence to Teach) | participants registered  participants successfully completing the programme  Contact Session 1 (1st semester):  Contact Session 2 (2nd semester): | | January 2014 | | July 2014 | |
| Number of participants registered | Number of participants successfully completing the programme  Currently: | Number of participants registered | Number of participants successfully completing the programme |
| Jan 2014  Total:   |  |  | | --- | --- | | Sc | 6 |   Contact Session 1: 1st semester   |  |  | | --- | --- | | Sc | 4 | |  | July 2014  Total:   |  |  | | --- | --- | | Sc | 3 |   Contact Session 1: 2nd semester   |  |  | | --- | --- | | Sc | 2 |   Orientation  Programme and SLP |  |
| Part time lecturing staff | participants registered | | 1st semester 2014 | | 2nd semester 2014 | |
| Number of participants registered | Number of participants successfully completing the programme No assignments | Number of participants registered | Number of participants successfully completing the programme  No assignments |
| Date: 6 Feb   |  |  | | --- | --- | | Sc | 2 |   Date: 21 Feb   |  |  | | --- | --- | | Sc | 0 |   Date: 18 March   |  |  | | --- | --- | | Sc | 5 | |  | Date: 4 March   |  |  | | --- | --- | | Sc | 0 |   Date: 9 May   |  |  | | --- | --- | | Sc | 0 | | Date: 5 August   |  |  | | --- | --- | | Sc | 2 |   Date: 7 August   |  |  | | --- | --- | | Sc | 6 |   Date: 27 August |
| Professors programme | participants registered | | 15 April 2014 | |  | |
| |  |  | | --- | --- | | Sc | 8 | | |  | |
| Dean, HOD and Section Head Programme | participants registered | | 11 and 12 March 2014 | |  | |
| |  |  | | --- | --- | | Sc | 6 | | HEDS |  | | |  | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **FACULTY** | **5 March** |  | **28 May** |  | **3 September** |  | **TOTAL** |
| Science | 14 |  | 33 |  | 15 |  | **62** |
| **TOTAL** |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SLP: Curriculum Development and Support | total number of Curriculum Development SLPs presented  total number of participants registered  total number of participants successfully completed the SLP  2014   |  |  | | --- | --- | | Sc | 6 | | Dept |  |  |  |  |  |  |  |  |  |  |  |
| Nr registered | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Nr successfully completed | Please see Faculty Reports for breakdown of participants per department. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| SLP: Assessment and Moderation in Higher Education | 1 total number of Assessment SLPs presented  25 total number of participants registered  total number of participants successfully completed the SLP  2014   |  |  | | --- | --- | | Sc | 6 | | Other | 1 | | Dept |  |  |  |  |  |  |  |  |  |  |  |
| Nr registered | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Nr successfully completed | Please see Faculty Reports for breakdown of participants per department. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Ad hoc |  | |  |  |  |  | | --- | --- | --- | --- | | Recurriculation | 28 Feb | Effective learning | 13 June | | Science |  | Science | 8 | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | | Effective learning | 19 November | Interactive Teaching and Learnings | 2 Dec | | Science |  | Science | 8 | | SDS | 8 |  |  | | | | | | | | | | | | |

\

The main focus for Assistant Deans was on Management and Leadership training. Through Human Resource Division (Tessie Herbst) the following courses/ workshops were arranged and attended externally:

Dr MI Mokgobu became a HELM (Higher Education Leadership and Management Programme) fellow after undergoing a series of training under the auspices of HESA.

Dr MI Mokgobu attended the following courses at GIBS: Mastering Strategy Design, Women as Leaders, Leading and Delivering change (which included change intelligence assessment)

**4.2 Qualification Improvement**

|  |  |  |
| --- | --- | --- |
| ***Name of staff members*** | ***Qualification*** | ***Institution awarded*** |
| Dr Geoff Nokwequ | DTech: Chemistry | TUT |

|  |  |  |
| --- | --- | --- |
| Dr Fannie Machete | PhD: Environmental Management | UNISA |

|  |  |  |
| --- | --- | --- |
| Ms G Lemeko | BTech Office Management and Technology | TUT |

**4.3 Staff Involved In Further Study**

**Department of Animal Science**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| Mr C.J.L du Toit | PhD: Animal Science | University of Pretoria | 2010 | X |  |
| \*Mr. W. H Janse van Rensburg | D-Tech: Animal Science | T.U.T | 2012 | x |  |
| \*Miss D Mansfield | M-Tech: Animal Science | T.U.T | 2012 | X |  |
|  |  |  |  |  |  |

\* Staff member on conditional placement

**Department of Biotechnology & Food Technology**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of staff member** | **Qualification** | **Institution** | **Date of first registration** | **Currently registered Yes/No** | |
| Ms EM Beukes | PhD Food Science | US | 2007 | Y |  |
| Ms E Jordaan | D Tech Biotechnology | TUT | 2010 | Y |  |
| Ms EM Mogale | M Tech Biotechnology | TUT | 2013 | Y |  |
| Mr CF van Rooi | M Tech Food Technology | TUT | 2015 |  | N |
| Mrs B du Plessis | D Tech Food Technology | TUT | 2015 |  | N |

**Department of Biomedical Sciences**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| S Pretorius | M Tech Biomedical Technology | TUT | 2005 | x |  |
| CMR Khabo- Mmekoa | D Tech Water Care | TUT | 2008 | x |  |
| M Swart | M Tech Clinical Technology | TUT | 2010 | x |  |
| B Johnson | M Tech Radiography | TUT | 2011 | x |  |
| C Boshoff | PhD Zoology | UP | 2011 | x |  |
| S Steenkamp-Jonker | M Tech Veterinary Technology | TUT | 2012 | x |  |
| MA Chauke | M Tech Biomedical Technology | TUT | 2012 | x |  |
| L Hazelhurst | PhD Physiological Sciences | Stellenbosch University | 2013 | x |  |

**Department of Chemistry**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| \*Koape LDR | PhD (Chemistry) | UNISA | 2010 | Yes |  |
| Linde JH | D Tech (Chemistry) | TUT | 2013 | Yes |  |
| Mashigo MF | D Tech (Chemistry) | TUT | 2010 | Yes |  |
| Melato FA | D Tech (Chemistry) | TUT | 2010 | Yes |  |
| Mphahlele R | MSc (Materials Engineering) | UP | 2014 | Yes |  |
| Mputumana NA | D Tech (Chemistry) | TUT | 2014 |  | No |
| Vogel A | PhD (Chemistry) | York University, Canada | 2000 |  | No |

\* Staff member on conditional placement

**Department of Crop Sciences**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| Mr ZM Sosibo | M Tech | TUT | 2009 |  | No |
| Dr ME Moshia | M Tech: Nature Conservation | TUT | 2014 | Yes |  |

**Department of Environmental Health**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| Harmse JL | D Tech: Environmental Health | Tshwane University of Technology | 2012 | √ |  |
| Morodi TJ | DPhil: Applied Ethics | University of Stellenbosch | 2010 | √ |  |
| Mudau LS | D Tech: Environmental Health | Tshwane University of Technology | 2009 | √ |  |
| Shirinde JM | PhD: Public Health | University of Pretoria | 2011 | √ |  |

**Department of Environmental, Water & Earth Sciences**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of staff member** | **Qualification** | **Institution** | **Date of first registration** | **Currently registered**  **Yes No** | |
| Mrs L Sikhosana | Postgraduate Diploma : Water Engineering | WITS | January 2012 | Yes |  |
| Mrs J Mankazana | D Tech Water Care | TUT | January 2008 | Yes |  |
| Mrs R Lakhraj-Govender | PhD Environmental Science | WITS | January 2013 | Yes |  |
| Mr P Kotze | M Tech Water Care | TUT | Pending |  | No |

**Department of Horticulture**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| K Prinsloo | D Tech | TUT | 2014 | X |  |
| L Marais | M Tech | TUT | 2013 | X |  |
| SP Dladla | M Tech | TUT | 2015 |  | X |

**Department of Mathematics & Statistics**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| Motsepe KA | DTech (Mathematical Technology) | TUT | 2010 | X |  |
| Grobler PH | M.Tech: (Chemistry) | TUT | 2009 | X |  |
| Khunoana ME | M Sc (Statistics) | UP | 2011 | X |  |
| Ncube CN | PhD (Mathematics) | UNISA | 2010 | X |  |
| Aphane M | PhD (Mathematics) | UNISA | 2009 | X |  |
| Spoelstra H | MTech (Mathematical Technology) | TUT | 2009 | X |  |
| Naidoo M | PhD (Mathematics) | Rhodes | 2009 | X |  |
| Mouton SA | M Tech (Quality) | TUT | 2013 | X |  |
| Jordaan JP | M Tech (Quality) | TUT | 2013 | X |  |
| Bidie J | DTech (Mathematical Technology) | TUT | 2013 | X |  |
| Motlotle TM | PhD (Applied Mathematics) | UNISA | 2014 | X |  |
| Motsima T | PhD (Statistics) | UNISA | 2014 | X |  |
| Motsei JP | DTech (Mathematical Technology | TUT | 2014 | X |  |
|  |  |  |  |  |  |

**Department of Nature Conservation**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of staff member** | **Qualification** | **Institution** | **Date of first registration** | **Currently registered**  **Yes No** | |
| AJ Botha | D Tech | TUT | 2012 | X |  |
| Me Pillai | PhD | WITS | 2011 | X |  |
| Me C Ogilvie | D Tech | TUT | 2014 | X |  |
| Mr K Kotze | PhD | UFS | 2014 | X |  |
| Mr AA Biko’o | D Tech | TUT | 2012 | X |  |

**Adelaide Tambo School of Nursing Sciences**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| Mrs D Beckmann | D Tech Nursing | TUT | 2013 | Yes |  |
| Mrs Z Janse van Rensburg | D Tech Nursing | TUT | 2012 | Yes |  |
| Mrs JJM Jansen van Rensburg | D Tech Nursing | WITS | 2012 | Yes |  |
| Mr ML Pilusa | D Tech Nursing | TUT | 2012 | Yes |  |
| Mrs NG Mafutha | D Tech Nursing | TUT | 2012 | Yes |  |
| Mrs ME Chokwe | D Tech Nursing | TUT | 2011 | Yes |  |
| Mrs EJ Ligthelm | D Tech Nursing | TUT | - |  | No |
| Mrs MG Khutoane | D Litt et Phil | UNISA | 2013 | Yes |  |
| Ms NA Ngwenya | M Tech Nursing | TUT | 2013 | Yes |  |
| Mr GP Matshoge | MTech Nursing | TUT | 2013 | Yes |  |
| Ms SM Mathiki | M Tech Nursing | TUT | 2013 | Yes |  |
| Ms MV Kanyane | B. Cur (Education and administration) | UP | 2013 | Yes |  |

**Department of Pharmaceutical Sciences**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| B Komane- Mofokeng | DTech Pharmaceutical Sciences | TUT | 2012 | Yes |  |
| C Leonard | DTech Pharmaceutical Sciences | TUT | 2010 | Yes |  |
| N Mncwangi | DTech Pharmaceutical Sciences | TUT | 2011 | Yes |  |
| T Mapeka | PhD | WITS | To register in 2015 |  | No |
| C Louw | MTech Somatology | TUT | 2012 | Yes |  |
| T Nkosi | MTech Somatology | TUT | 2014 | Yes |  |

**Department of Physics**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| MK Maremane | PhD | UNISA | Feb 2011 | √ |  |
| S Titus | PhD | UNISA | July 2012 | √ |  |
| J Madonsela | PhD | Utrecht |  |  | √ |
| IJ Ludick | M Tech | TUT |  |  | √ |
| NF Monnye | M Tech | TUT | Dec 2013 | √ |  |

**Department of Sport, Rehabilitation & Dental Sciences**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ***Name of staff member*** | ***Qualification*** | ***Institution*** | ***Date of first registration*** | ***Currently registered***  ***Yes No*** | |
| P Nongogo | PhD: Sport Science | UP | January 2011 | Yes |  |
| CM Snyman | Master’s degree: Public Health | UNISA | January 2011 | Yes |  |
| M. Schmidt | Masters degree: Rehabilitation studies | Strathclyde University Scotland | September 2012 | Yes |  |
| P Boshof | Masters degree: Rehabilitation studies | Strathclyde University Scotland | September 2013 | Yes |  |
| A Strauss | PhD | NWU | 2014 | Yes |  |
| J Jooste | PhD | NWU | Nov 2013 | Yes |  |
| A Kubayi | MA | UJ | 2014 | Yes |  |
| N Rugbeer | MA | UKZN | 2014 | Yes |  |

**4.4 Awards Received By Staff Members**

**Department of Animal Sciences**

Mr. C.J.L du Toit was awarded the David Uys Trophy by the South African Society of Animal Sciences. The Trophy is awarded to a member of the Society for the best scientific article published in the South African Journal of Animal Science in the previous year (2013): C.J.L. du Toit, H.H. Meissner& W.A. van Niekerk. 2013. Direct methane and nitrous oxide emissions of South African dairy and beef cattle. S. Afr. J. Anim. Sci. 43, 320-339.

**Department of Environmental, Water & Earth Sciences**

Members of our departmental staff received awards during the Excellence Awards Ceremony of 28 October 2014; Prof Momba received two awards under the category of the Vice Chancellor Female Researcher of the year 2013 and Women Researcher of the year 2013. Dr Fourie received the award under the category of an External Research income earner for the year 2013. Dr Monyatsi received the Recognition Award for the completion of her Doctoral degree. Furthermore, Prof Jannie Maree and his team were awarded with NSTF-BHP Billiton Award for an individual or a team for an outstanding contribution to SET through research leading to innovation in a Small, Medium or Micro Enterprise (SMME) – sponsored by the Technology and Human Resources for Industry Programme (THRIP), an initiative of the Department of Trade and Industry (**the dti**)

**Adelaide Tambo School of Nursing Science**

Prof SCD Wright: Merit Award Woman Researcher of the Year Faculty of Science 2014

**Department of Pharmaceutical Sciences**

**Dr E Olivier** was the Lecturer of the Year, Faculty of Science (Tshwane University of Technology) for 2013.

**Prof S Combrinck** was joint runner for the Woman Researcher of the Year for the Faculty of Science.

**Debbie Baron:** Improvement of qualification – MTech Somatology

**Guy Kamatou:** Achievement of NRF rating

Boehringer Ingelheim best Pharmaceutical Chemistry paper award at the APSSA conference in Port Elizabeth:

**Vermaak, I., Viljoen, A.M.**, Wiklund-Lindström, S. 2013. *Hyperspectral imaging in the quality control of herbal medicines - the case of neurotoxic Japanese star anise*. Journal of Pharmaceutical and Biomedical Analysis 75: 207-213.

**4.5 Involvement with Committees, Associations, Management of Scientific Councils, Professional, Advisory & Editorial Boards, Etc.**

**Department of Animal Science**

Prof K. A. Nephawe served on the Professional Affairs Committee (PAC) for Animal Science under the SACNASP.

Prof K. A. Nephawe served on the Madzivhandila College of Agriculture Advisory Board; appointed as chairperson of the Academic Committee.

Prof K. A. Nephawe served on the Potchefstroom College of Agriculture Advisory Council.

Prof K. A. Nephawe served on the National Agricultural Research Forum (NARF).

Prof FK Siebrits is a member of the South African Pork Producers Association’s Technical committee for research.

Prof FK Siebrits is a member of the Pig committee of the RMRDT (Red meat research development trust).

Prof FK Siebrits is a member of a pilot committee at the WRC.

Prof FK Siebrits was invited as a member of the Technical committee of the Animal Feed Manufacturers Association (AFMA).

Dr D Luseba has been a board member of Indigenous Knowledge System of South Africa (iIKSSA).

Mr. C.J.L du Toit served in the Milk SA Research group – Appointed: October 2011.

Ms D Mansfield was nominated to serve on the Board of CEEPSA - Council of Equine and Equestrian Professionals of South Africa.

**Department of Biotechnology & Food Technology**

Various professional associations:

* South African Association for Food Science and Technology (SAAFoST)
* Cereal Science and Technology (CST-SA)
* South African Society of Dairy Technology (SASDT)
* Dairy SA (journal)
* South African Society for Microbiologists (SASM)
* As well as networking with AfricaBio, many industrial partners (including but not limited to employers) as well as MoU’s: AfricaBio, GDARD, ARC, NZG and CSIR

**Department of Biomedical Sciences**

Du Toit, D:

* + Chairperson of the Ethics committee of the Medical Research council (MRC)
  + Chairperson of the Animal Ethics committee of the Medical Research council (MRC)
  + Chairperson of the National Health Research Ethics Council of South Africa (NHREC)
  + Member of the task team of Biosafety and Biosecurity (ASSAF)

Motaung, SCKM:

Member of Journal review panels

* + Journal of Ethnopharmacology
  + Journal of Tissue Engineering and Regenerative Medicine
  + Medical Technology Journal South Africa
  + Editorial Board Member of Journal of Orthopaedics (ISSN 2311-5106)

Motaung, SCKM:

* + Member of African Scientific Institute in South Africa
  + Member of the Senate Committee for Postgraduate Studies (SCPS) at Tshwane University of Technology
  + Member of Faculty Committee for Research Innovation (FCRI) at Tshwane University of Technology
  + Member of Faculty Committee for Postgraduate Studies (FCPS) at Tshwane University of Technology
  + Panel member to interview students to be selected for the Fulbright Scholarship
  + Chairperson of Society of Medical Laboratory Technologist of South Africa (SMLTSA) Pretoria Branch

Boshoff, C:

* + Management of South African Association of Veterinary technologists
  + Member of the CPD para-veterinary committee

Hoffmann, WA:

Member of Journal review panels

* + Journal of Adolescence

Hoffmann, WA:

External examiner:

* + Master of Technology dissertation – Durban University of Technology.  Dissertation title: Infective endocarditis at Dr George Mukhari Hospital: Correlating echocardiography findings with intraoperative findings.  Candidate: M Henema
  + Magister Educationis dissertation – University of Johannesburg, South Africa.  Dissertation title: Lecturers’ experience of aggression in a faculty at a university.  Candidate: RR Toerien

Steenkamp-Jonker, S:

* + Chairperson, Animal Research Ethics Committee
  + Member, TUT Senate Committee for Research Ethics
  + Student representative, South African Association of Veterinary technologists
  + Member, Faculty Committee for Library and Information Services (FCLIS)

**Department of Crop Sciences**

*Dr ME Moshia: Tompi Seleka College of Agriculture Advisory Board Member (2013-2015) - Appointed Deputy Chairperson in 2014.*

*Country Representative of the International Society of Precision Agriculture (*[*www.ispag.org/icpa*](http://www.ispag.org/icpa)*)*

*Member of the Land Rehabilitation Society of South Africa*

*Prof P Soundy: Council Member (representing South Africa) of the International Society for Horticultural Science (ISHS).*

*: Former President and current Council Member of the Southern African Society for Horticultural Science (SASHS).*

*: Management Board Member of the SA Journal of Plant & Soil.*

**Department of Environmental Health**

*JL Harmse:* A member of Examination Board of Southern African Institute for Occupational Hygiene

*LS Mudau:* A member of WRC National Sanitation Framework Committee

*JL Bekker:* A member of South African Bureau of Standards (SABS) technical committees for HACCP code of Practice: the implementation and management of a HACCP system, Edible oils, Microbiological evaluation of foods, feeds and beverages and dairy products.

**Department of Environmental, Water & Earth Sciences**

1. Prof R Jansen: sits as a member of the Scientific and Ethics committee of the National Zoological Gardens (Pretoria). He is also a Board member on the Mabula Ground Hornbill Project, Vice Chairman of The African Pangolin Working Group and Deputy Chair: Africa on the IUCN-SSC Pangolin Specialist Group. Within TUT, Prof Jansen sits on the Faculty Committee for Post Graduate studies.

2. Dr CS Fourie is on the steering committees of:

* The South African Geophysical Association (SAGA)
* Geology and Geophysics of Coaltech
* Inkaba yeAfrica
* !Kure Africa and
* Copper Development Association of Africa
* Treasurer of the Pangaea Geophysics and Geodesy Working Group
* Africa Earth Observation Network (AEON).

**Department of Horticulture**

* Mrs R Kleynhans is a committee member of the SABS technical committee (TC1097) involved in the development of standards for African Medicinal plants.
* Mrs K Prinsloo was elected as board member of the Gauteng ILASA.
* Mrs K Prinsloo was elected as a member of the education committee of SACLAP.
* Prof R Slabbert was nominated as an external member of the Quality Review Programme of Department Horticulture at DUT on 26 and 27th August, DUT, and KwaZulu Natal.

**Department of Nature Conservation**

Mr Panagos serves on the African Journal of Range and Forage Science Editorial Advisory Panel. Staff of the department continues to make their presence felt throughout the conservation and allied fraternities with Prof Reilly *ex officio* on council of the Southern African Wildlife Management Association as immediate past president and he also continues to serve on the Council of the South African Council for Natural and Allied Scientific Professions (SACNASP). In this capacity he also chairs the professional advisory committees of SACNASP in the fields of botanical and ecological science. He also serves on the national council of the South African Wingshooter’s Association and is Vice President of the South African Hunters and Game Conservation Association. He has also continued his responsibilities as a Board member of the Southern African Wildlife College and Trustee of the Booysendal Conservation Trust. He has been nominated to the organizing committee of the 9th and 10th International Wildlife Ranching Symposium to take place in 2016 and 2018 in Zimbabwe and South America respectively. Mr Botha serves as editorial advisor for the South African Journal of Agricultural Extension.

Dr. Bartels is a Board member of International Society for Biological and Environmental Repositories (ISBER) as well as the board of Wildlife and Environmental Society of South Africa (WESSA). He was recently appointed as champion of Biobanking for the Research Infrastructure Roadmap of the Department of Science and Technology (DST). He also serves on the International Steering Committee of the Global Genome Biodiversity Network (GGBN).

**Department of Pharmaceutical Sciences**

Prof D R Katerere, Dr C. Tarirai, Dr I. Vermaak and Dr G. Enslin are members of the MCC and serve on various committees.

Prof A Viljoen serves as the associate editor: Journal of Ethnopharmacology, the editor: Journal of Essential Oil Research and the reviewing editor: South African Journal of Botany.

Dr Enslin was elected to the exco of the local branch of the Pharmaceutical Society of South Africa

Dr Kamatou was appointed external examiner until 2015 at Walter Sisulu University.

**Department of Sport, Rehabilitation & Dental Sciences**

Mr Boshoff of Dental Technology is a member of both the Education and CPD Committees of the SADTC.

Ms Schmidt (MOP) has been co-opted in the board and education committee of Occupational Therapy, Medical Orthotics and Prosthetics and Arts Therapy.

Ms Schmidt is monitoring the MOP interns for the HPCSA board

**Adelaide Tambo School of Nursing Science**

| **Staff member** | **External involvement** |
| --- | --- |
| Prof SCD Wright | Editorial Board African Journal of Nursing and Midwifery |
| FUNDISA |
| Prof TS Ramukumba | FUNDISA portfolio and marketing committee member. |
| SSTI: Treasurer of the Arica 4 Chapter |
| Chairperson of the Hillview High School from 2012-2014 |
| Dr Y Havenga | Section Editor: Health SA Gesondheid |
| Dr HC de Swardt | NEA Pretoria EXCO committee member |
| FUNDISA |
| Ms ME Chokwe | SOMSA committee member |
| STTI |

**5. COMMUNITY ENGAGEMENT PROJECTS.**

**DEPARTMENT OF ANIMAL SCIENCE**

Ms D Mansfield is involved as a consultant on tack, equipment and general horse husbandry for the Semonkong Hospital Project 2014 Lesotho Veterinary Outreach Team – Part of the Semonkong Hospital Trust Outreach.

Dr D Luseba is involved in a project funded by NRF through iIKSSA (NRF Grant No 81619) on Food security and hunger coping mechanisms.

**DEPARTMENT OF BIOTECNOLOGY AND FOOD TECHNOLOGY**

Due to time limitations as well as the fact that the programs offered are strictly scientific, it is very difficult to become involved in community engagement. Some of the lecturers are involved in judging the local Science Expo and others are giving small introductions to microbiology at schools for primary pupils (on request). The department assist students with science assignments and Science Expo projects annually, by providing the laboratories, all chemicals, knowledge and time of the lecturers, technologists and technicians.

**DEPARTMENT OF BIOMEDICAL SCIENCES**

The Radiography students and staff have once again - as part of their community involvement - given their support in 2014 to a special “Home of Safety” in Waverley Pretoria. Currently, eight (8) new born babies are taken care of (The South African Police Services make use of this haven to care for the babies).

The students and staff members gave their time on Saturday 20 September 2014, by doing a few tasks at this special home (painting of rooms; washing windows & curtains and assisting with several tasks related to the babies). Furthermore, the TUT Radiography group donated a high capacity fridge/freezer, nebulizers and other essential baby accessories (all together to the value of R 10 000-00), to this house of safety where the need is tremendous, in order to take proper care of these babies coming from the streets.

Dr Motaung presented the topic of stem cells on Phalaborwa FM on the 22 of October 2014.

Dr Motaung was interviewed on ANN7 on the 21st of August 2014 regarding tissue engineering, the answer to organ shortages.

The Department of Biomedical Sciences are committed to community engagement but the structure of some programmes that are laboratory based still stays a challenge with regards to community engagement.

**DEPARTMENT OF CHEMISTRY**

Mrs Mokgadi Hlongwane was involved with a school upliftment project. She helped Napsadi Sec. School in Limpopo to acquire computers from TUT. Department of Assets Management donated 8 computers and she delivered the computers to the school on 23 June. From 23 to 27 June she helped the learners with the Chemistry part of Physical Sciences. In addition, Information regarding applications and bursary was disseminated to the learners and their Life Skills teacher. She also helped the learners with filling in application forms, for enrollment at TUT.

**DEPARTMENT OF CROP SCIENCES**

The Department is involved with community projects at Vukuzenzele in collaboration with Cullinan Diamond Mine, as well as another project with the Pulanala community of Mpumalanga. In 2013, a new project was initiated to cooperate with the Motsuenyane Foundation for Rural Development in Winterveldt and funded by SAB-Miller.

**DEPARTMENT OF ENVIRONMENTAL HEALTH**

Phetogo project is a joint functional industry-university Environmental Health project. The aim of the project is to bridge the gap between academic and industrial Environmental Health programme through community research. Memorandum of Agreement is underway for formalize working relationship with three district municipalities, namely; Bojanala Platinum, Ehlanzeni and Water Berg. Several meetings have been held with some municipalities and the MOU’s will be finalized during 2015 as part of the CEH.

**DEPARTMENT OF ENVIRONMENTAL WATER AND EARTH SCIENCES**

Matjiesfontein primary school: Dr Fourie has initiated a rural school academic development program in this small rural (historical) village in the Karoo. More specifically, two members of the Arcadia TUT library staff spent a few days in the small school library cataloguing and inventorying existing books and a large number of books donated by TUT.

ACER Africa donated to the school new computers for the established computer centre and for the Science Centre inside the vintage train coaches in the Matjiesfontein Transport Museum. The impact these two centres will have on the children of Matjiesfontein will be great in terms of developing these young students ability in reading and information technology.

**DEPARTMENT OF HORTICULTURE**

A pilot study on the effect of vegetable gardening and education was started at Child Welfare Tshwane, Sunnyside (represented by an M Tech student, Mr G Moletsane). The study focus on the effect of vegetable gardening on nutritional knowledge retention and vegetable consumption among Grade 1-4 learners, as a pilot study for the M Tech project. Children were taught principles of nutrition and vegetable gardening. Mr Moletsane completed his study at the schools in 2014.

**DEPARTMENT OF NATURE CONSERVATION**

1. **Ndumo Community Project**

2014 has been a year to remember. The project has managed to assist school learners in 19 schools living around Ndumo Game Reserve to gain some knowledge and understanding of their surroundings through the implementation of environmental education awareness programmes. Each school received 15 environmental sessions at their school. Through these sessions, the school learners were involved in doing something that brings them into contact with reality. The sessions are about, through and for the environment. We also got our Ndumo schools involved with real environmental problems. They did a “Please save our Rhino” walk, many clean up campaigns, we planted trees to celebrate Arbor Week, and the whole community virtually helped us celebrate “World Environmental Day”. Here we had over 700 school learners and I have no idea of how many adults attended. We also held a learner workshop during the June / July school holidays. During this programme, our school learners met “Mandla” the black rhino and “Earthelene” our world. Through these two programmes, the learners were involved in trying to save the rhino and did a mapping exercise. A discussion was also held on the animals of the world and what was happening to them. Our teachers have also attended three teacher facilitation workshops at the EE centre where they were taught how to incorporate EE into their school syllabi. They also were taught how to make a difference and how to motivate their school learners. Our teachers also attended a WESSA ecoschool workshop at Hluhluwe. The project’s environmental clubs were also very successful. Our bird boys have attended interpretive walks with the tourism staff and their clients, and our eco warriors are on a mission to save Ndumo from environmental destruction. They are trying to get the community involved in looking after their environment. The clubs attend educational sessions every Saturday at the Environmental Education Centre. The “Gogo’s knitting Club” have been involved in making some wonderful knitted items i.e. hats, bags, jerseys etc. The Ndumo community project has also renewed the MOU with Ezemvelo KZN Wildlife for another four years.

1. **Environmental Education Awareness Programme in schools**

As in 2013 and since 1996,17 schools in Gauteng have been involved in this outreach project. The allocated schools get an environmental educational awareness programme every Wednesday presented by second year nature conservation students, starting in April each year. Through this initiative our TUT students as well as the schools teachers get trained in environmental education. They need to practice what they preach. Through this programme Gauteng’s school learners are encouraged to become environmentally literate and to make the correct decisions pertaining to their environment, as well as to take ownership for their environmental actions. Each school gets 15 environmental education awareness sessions annually. The schools include children who are sight impaired, hearing impaired as well as the able bodied learners. TUT students are encouraged to become “hands-on” with the environment as well as with their learners. All educational tools are made from recycled material. The education department is also involved in this initiative and the programme is evaluated annually. The lecturer is also involved in developing new environmental chapters in the new school curriculum.

**ADELAIDE TAMBO SCHOOL OF NURSING SCIENCE**

**Mobile clinic in Soshanguve**

Adelaide Tambo School of Nursing Science initiated and manages a mobile clinic in Soshanguve ext. 12 and 13. The mobile clinic was funded by Atlantic Philanthropies from 2009 to 2013. The aim of developing the mobile Primary Health Care (PHC) Community Service in the informal settlement of Soshanguve was to provide community health learning opportunities for the B Tech nursing students of the Adelaide Tambo School of Nursing Science, while serving the community. This PHC service offers healthcare in the disciplines of mother and well-baby care, antenatal care, early childhood development, lifestyle diseases, cancer screening and palliative care.  During 2014:

* 980 student placements at the clinic were possible, and
* 5 712 patient consultations have taken place to date, which will increase to  6 712 by mid -December as we attend to 571 patients on average per month
* The clinic is functioning  well and student teaching is of high quality as 20% of the registered nurses’ time  at the clinic is allocated to student teaching
* Our maximum service delivery for October was 97.14%, and
* the average waiting time for patients during October was 1 hour and 3.49 minutes

During the year activities such as a Fun day for the Elderly, Health assessment day for the Elderly and Men’s cancer screening week was implemented.

The mobile clinic project has been identified as a case study being written up as it was identified by Atlantic Philanthropies as one of the five best out of a total of 16 projects

**Other**

Staff members had the following community engagements:

Ms ME Chokwe is involved in the Maternal Child Health nurse leadership Academy (MCH NLA) of the Sigma Theta Tau International (STTI). She and a midwife from a Community Health Centre in Tshwane District and the midwife’s manager is involved in a project at this clinic. The focus of the project is improving record keeping of the maternity files from ante- through labour, post natal including the baby. The aim is to improve maternity care for these women and in so doing address one of the millennium development goals, namely to maternal and neonatal mortality.

Ms N Mafutha participated in a clinic in Mamelodi’s, rehab centre regarding stroke awareness. She engaged in health promotion on hypertension.

Before being permanently appointed, Ms M de Villiers as a member of the mobile clinic facilitated a support group for elderly women (60 – 82 years of age) in the community (the project has remained within the management of the mobile clinic in 6.1). Women were engaged in hand work such as knitting as form of complementary therapy. This allowed women time to leave their homes and engage with their peers. Many learned new skills which enhanced their self-esteem and sense of hope.

Ms M de Villiers attended a Breast screening awareness day organized by Steve Biko hospital on the 9th of October 2014. During this day, she and four of the second year Oncology nursing students screened the breasts of 95 women and gave them health education regarding breast cancer – signs and symptoms, risk factors and how and when to conduct self - breast examinations. Out of those screened, two referrals were made for further evaluation. Several women were referred for mammograms. The two big mobile clinics (mentioned in 6.1) were made availed for the breast screening.

Dr R de Swardt is and ECXO member of the South African Nursing Education Association and actively involved in workshops to enhance nursing education in South Africa.

**DEPARTMENT OF PHARMACEUTICAL SCIENCES**

LCM Oncology Hospital

Students visit the Hospital twice a week and perform treatments on patients, staff and family members of patients. The students are monitored by a TUT staff member and a LCM staff member.

**DEPARTMENT OF PHYSICS**

The Department of Physics has started two community projects. These are:

1. Fire safety project targeting primary schools and
2. Assisting physics teaching at a secondary school.

**6. CO-OPERATIVE EDUCATION**

More students were prepared for workplace this year which increased the work place readiness of those who were placed. Most of students who registered for work integrated learning were placed in industry and monitored. Improvement still needed on students’ preparation and monitoring.

* 1. **Work Integrated Learning**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | | | | | | **Year** | **Subject Registrations** | **Subject Passes** | **Subject Not Completed** | **Success Rate** | | 2010 | 1,279 | 1,082 | 191 | 84.6% | | 2011 | 1,102 | 936 | 160 | 84.9% | | 2012 | 1,385 | 1,207 | 166 | 87.1% | | 2013 | 1,366 | 1,226 | 134 | 89.8% | | 2014 | 1,373 | 1,252 | 115 | 91.2% | | | |
|  |  |

**Cooperative Education Activities**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COOPERATIVE ACTIVITIES IN FACULTY** | | | | | | | | | |  |
| No of programs | Type of Coop Ed opportunity | Credit Bearing | | Students Registered | Students prepared | Students placed | Students monitored | Students Assessed | Students  Debriefed | Students completed |
|  |  | **Y** | **N** |  |  |  |  |  |  |  |
| Clinical Technology | WIL | y |  | 31 | 31 | 31 | 31 | 31 | 31 | 29 |
| Biomedical Technology | WIL | y |  | 40 | 40 | 40 | 40 | 38 | 38 | 38 |
| Radiography |  | Y |  | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Crop Science | WIL | y |  | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
|  | WIL | y |  | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| Nature Conservation | WIL | Y |  | 68 | 65 | 65 | 68 | 65 | 65 | 55 |
| Fire Technology | WIL | Y |  | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| Industrial Physics | WIL II | Y |  | 28 | 28 | 28 | 28 | 28 | 14 | 28 |
| Environmental Health | WIL | N |  | 52 | 52 | 52 | 22 | 52 | 52 | 52 |
| Dental Assisting | WIL | Y |  | 59 | 59 | 59 | 59 | 59 | 59 | 57 |
| Medical Orthotics & Prosthetics | WIL | Y |  | 61 | 61 | 61 | 61 | 61 | 61 | 60 |
| Veterinary Technology | WIL | Y |  | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| B Tech Nursing | WIL | Y |  | 132 | 132 | 132 | 132 | 132 | 132 | 28 |
| B Tech Oncology Nursing | WIL | Y |  | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| B Tech occupational Health Nursing | WIL | Y |  | 208 | 208 | 208 | 208 | 208 | 208 | 208 |
| Chemistry |  |  |  | 106. | 106 | 106 | 0 | 56 | 0 | 56 |
| Biotechnology |  |  |  | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Food technology |  |  |  | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Horticulture | SM | Y |  | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| Pharmaceutical Sciences |  |  |  | 232 | 232 | 232 | 232 | 232 | 0 | 231 |
| Animal Sciences | WIL |  |  | 90 | 90 | 90 | 78 | 90 | 7 | 83 |
|  | WIL |  |  | 20 | 20 | 20 | 16 | 20 | 6 | 14 |
| Environmental Sciences | WBL | Y |  | 30 | 30 | 30 | 30 | 30 | 14 | 14 |
| Geology | WBL | Y |  | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| TOTAL |  |  |  | 1668 | 1668 | 1668 | 7951 | 1613 | 1196 | 1464 |

**Table 3: Academic Advisory Committees**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Programme** | **Number of meetings for 2014** | **Comments** |
| 1. | B Tech Nursing Science, B Tech Occupational Health, B Tech Oncology | 1 | Fruitful meeting. |
| 2. | B Tech Nursing Science | 1 | Fruitful meeting. |
| 3. | NDip MOP and B-Tech MOP | 1 | Meeting scheduled for May 2015 |
| 4. | NDAR04 | None | There will be 2 meetings yearly from 2015 onwards |
| 5 | MDMX04 | None | There will be 2 meetings yearly from 2015 onwards |
| 6 | NDDX04 | None | There will be 2 meetings yearly from 2015 onwards |
| 7. | Nature Conservation | 1 | None |
| 8. | Game Ranch Management | 1 | None |
| 9. | Ecotourism Management | 1 | None |
| 10. | Fire Technology | 1 | Fruitful meeting |
| 11. | Industrial Physics | 1 | Fruitful meeting |
| 12. | Biomedical Technology | 1 | Fruitful meeting |
| 13 | Horticulture | 0 | Will be held in 2015 |
| 14 | Environmental health | 1 | Satisfied with WIL in the department |
| Total |  | 11 | There is a decline |

**3.3 Overall Assessment of Cooperative Education activities on Table 1, 2 and 3:**

**Table 1:** The Faculty is doing well in achieving its priorities, in 2014 the Departments were focusing on improving student preparation, placement and SETAs involvement. The AgriSETA and CHIETA gave students bursaries and WIL stipend for placed students.

**Table 2:** show that there was great improvement in students’ preparation, placement however the Faculty still has some challenges in monitoring assessment and debriefing. There were 1668 student registered for WIL and 1464 of them completed. In 2014 the Faculty had 88% success rate for WIL.

**The HEMIS data show that 1373 students registered for WIL and 1252 completed. According to HEMIS data the success rate was 91% in 2014 for the Faculty of Science. The hand data differs with HEMIS data in all the Faculties.**

**Table 3:** Show a decline in convened academic Advisory committees. There were only 10 meetings for the Faculty in 2014 compared to 20 meetings in 2013. As a result of a decline in the number of advisory Committee meetings, Heads of Departments were advised to constitute new advisory committees ensuring that they appoint willing and capable participants so that they can have functioning advisory committees. Industry participation in all various programmes in the Faculty is key.

**6.3 Industry Liaison**

**PARTNERSHIP WITH TVET COLLEGES**

|  |  |  |  |
| --- | --- | --- | --- |
| **Department within your institution who is involved in Partnership** | **Name of TVET College** | **Nature of Partnership (Research; staff/student exchange; joint programmes etc)** | **Duration of Partnership** |
| **Biotechnology and Food Technology** | **Tshwane North College** | **Training undergraduate Food Technology students in different baking techniques. Utilizing facilities and expertise knowledge of the TVET** | **Ongoing from 2011** |

**PARTNERSHIP WITH UNIVERSITIES**

|  |  |  |  |
| --- | --- | --- | --- |
| **Department within your institution who is involved in Partnership** | **Name of University** | **Nature of Partnership (Research; staff/student exchange; joint programmes etc)** | **Duration of Partnership** |
| **Adelaide Tambo School of Nursing Science** | **University of Venda, Department of Nursing** | **Research collaboration: Obesity studies** | **Partnership is currently being established** |
| **Adelaide Tambo School of Nursing Science** | **University of Johannesburg** | **Research collaboration on one NRF funded project: A guide for health care providers to assess a child’s capacity to consent to health care and treatment in South Africa** | **2013 - 2015** |
| **Biotechnology and Food Technology** | **WITS** | **Professor Extraordinaire and collaboration with research and lecturing** | **Ongoing from 2008** |
| **Chemistry** | **University of Western Australia – Centre for Exploration Targeting** | **AMIRA-WAXI Project Number P934B** | **3 Years** |
| **Crop Sciences** | **UNISA** | **Research** | **5 years, renewable** |
| **Crop Sciences** | **University of Pretoria** | **Research / WIL** | **Variable** |
| **Crop Sciences** | **UFS** | **Research** | **Variable** |
| **Environmental, Water & Earth Sciences** | **Stellenbosch, Engineering** | **Research, Joint Programme** | **5 Years** |
| **Environmental, Water & Earth Sciences** | **NMMU, AEON-ESSRI** | **Research, Joint Programme** | **5 Years** |
| **Environmental, Water & Earth Sciences** | **UFS, Geology** | **Research** | **5 Years** |
| **Environmental, Water & Earth Sciences** | **UKZN, Geology** | **Research** | **N/A** |
| **Environmental, Water & Earth Sciences** | **University of Pretoria, Geology** | **Research staff & Student exchange** | **5 Years** |
| **Environmental, Water & Earth Sciences** | **University of Cape Town, Geology** | **Research staff & Student exchange** | **5 years** |
| **Environmental, Water & Earth Sciences** | **University of the Free State, Water** | **Research staff & Student exchange** | **5 years** |
| **Pharmaceutical Sciences** | **Sefako Makgatho University** | **Joint programme BPharm, to be phased out in 2018, but replaced with collaboration agreement** | **Since 1998** |
| **Physics** | **UP** | **Joint programmes** | **Ongoing** |
| **Physics** | **UFS** | **Joint programmes** | **Ongoing** |
| **Physics** | **UNISA** | **Research** | **Ongoing** |
| **Sport, Rehabilitation & Dental Sciences**  **(Medical Orthotics and Prosthetics)** | **Durban University of Technology** | **Staff exchange for moderation** | **1 Year** |
| **Sport, Rehabilitation & Dental Sciences** | **North West University** | **Research/Co-supervision of students** | **Ongoing** |

**PARTNERSHIP WITH SETA’S**

|  |  |  |  |
| --- | --- | --- | --- |
| **Department within your institution who is involved in Partnership** | **Name of SETA** | **Nature of Partnership (Research; staff/student exchange; joint programmes etc)** | **Duration of Partnership** |
| **Biotechnology and Food Technology** | **Foodbev SETA** | **Discussion with Seta’s has been initiated to determine the possibility of future collaboration** | **Ongoing from 2012** |
| **Biotechnology and Food Technology** | **Agric-SETA** | **Discussion with Seta’s has been initiated to determine the possibility of future collaboration** | **Ongoing from 2014** |
| **Crop Sciences** | **Agri-SETA** | **Skills Development Act – fund WIL and provide bursaries for 1st and 2nd year students** | **Indefinite** |
| **Environmental Health** | **Agri-SETA** | **Discretionary grants to support WIL of students during abattoir practical training** | **Since 2010 – annual application** |
| **Pharmaceutical Sciences** | **CHIETA** | **Programme offering in Pharmaceutical industry** | **In process, 1 year** |
| **Physics** | **LGSETA** | **Quality Assurance on Fire Courses** | **Ongoing** |
| **Sport, Rehabilitation & Dental Sciences (Officiating & Coaching Sciences)** | **CATHSETA** | **Student bursaries** | **Since 2012** |

**INTERNATIONAL PARTNERSHIPS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Department within your institution who is involved in Partnership** | **Name of International Partner** | **Nature of Partnership (Research; staff/student exchange; joint programmes etc)** | **Duration of Partnership** |
| **Adelaide Tambo School of Nursing Science** | **University of Health and Allied Sciences - Ghana** | **Research: Postgraduate supervision of staff members of the University, partnership of postgraduate programmes; student and lecturer exchanges** | **Partnership currently being established** |
| **Biotechnology and Food Technology** | **UPEC / IUT**  **CRETEIl-VITRY** | **Exchange students and staff**  **4 student for 2nd year internship** | **Ongoing** |
| **Biotechnology and Food Technology** | **Reunion University** | **Exchange students and staff**  **1 student** | **In developmental stage** |
| **Biotechnology and Food Technology** | **National Centre of Africultural Utilization Science, USA** | **Collaborative research on biofuels.** | **Ongoing from 2014** |
| **Chemistry** | **University of the Western Australia Centre for Exploration Targeting** | **Amira-Waxi Project Number P934B**  **Contact person: M Jessel** | **3 years** |
| **Crop Sciences** | **Texas A&M University** | **Research** | **5 years, renewable** |
| **Crop Sciences** | **Gent University** | **Research + Student exchange** | **2 years** |
| **Crop Sciences** | **Wageningen University** | **Research + Student exchange** | **>15 years** |
| **Crop Sciences** | **Cyprus University of Technology** | **Research** | **5 years** |
| **Crop Sciences** | **Universita’ Politecnica Delle Marche** | **Research** | **1 year, renewable** |
| **Environmental Health** | **SNOWS (Scientist network for outcomes on water and sanitation)** | **Research, capacity building, community engagement** | **First phase complete June 2015**  **Second phase start July 2015 for 5 year period** |
| **Environmental, Water & Earth Sciences** | **GFZ-Germany** | **Research** | **5 years** |
| **Environmental, Water & Earth Sciences** | **Archimedes – Germany** | **Research** | **5-years** |
| **Environmental, Water & Earth Sciences** | **UNESCO-IHE in Delft** | **NUFFIC project: Enhancing Institutional Capacity in Water and Wastewater Treatment** | **It will end 31 August 2015** |
| **Pharmaceutical Sciences** | **University of Naples** | **Research** | **Pending – will be for 3 years** |

**PARTNERSHIP WITH SCIENCE COUNCILS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Department within your institution who is involved in Partnership** | **Name of Council** | **Nature of Partnership (Research; staff/student exchange; joint programmes etc)** | **Duration of Partnership** |
| **Environmental, Water & Earth Sciences** | **CGS** | **Research/student exchange** | **5 years** |
| **Environmental, Water & Earth Sciences** | **HartRAO** | **Research/student exchange/joint programme** | **5 years** |
| **Environmental, Water & Earth Sciences** | **HMO – Hermanus** | **Research** | **5 years** |
| **Environmental, Water & Earth Sciences** | **National Zoological Gardens** | **Research staff & Student exchange** | **5 years** |
| **Physics** | **CSIR** | **Joint programmes** | **Ongoing** |
| **Physics** | **NECSA** | **Joint programmes** | **Ongoing** |
| **Physics** | **DPSS (CSIR)** | **WIL** | **Ongoing** |
| **Physics** | **NLC (CSIR)** | **WIL** | **Ongoing** |

**INDUSTRIAL ENGAGEMENT**

**Department of Animal Science**

Ms D Mansfield is a member of (Registration number EQ465) EQASA – Equestrian Qualifications Authority of South Africa

Ms D Mansfield is a member of ECASA Equestrian Coaches Association of South Africa

**Department of Biotechnology & Food Technology**

Students in the Food Technology program frequently engage with industrial and professional members of the food industry community (information elsewhere in report). Factory visits, guest lectures, as well as attending lectures hosted by the various professional associations (e.g. SAAFoST, CST-SA and SASDT) are also arranged for the students to increase their exposure to the relevant industries. Staff and senior students of the department are also involved in giving information sessions to prospective students (high school level) at the annual TUT open day and different career Expo’s – the aim is to increase these activities during 2014. Biotechnology students and staff are also part of the annual exhibition of GDARD held at the Tshwane showground. Further contact with the industry is through the South African Society for Microbiologists (SASM) and networking with AfricaBio, PUB and other role players takes place.

**Department of Crop Sciences**

Dr Gouws was invited by Potato South Africa to participate in the identification of Research related needs for the Potato Industry.

Dr Gouws was invited by Potato South Africa to present a talk on common scab of potatoes at the Petrusburg Farmer’s Day in July 2014.

**Department of Environmental, Water & Earth Science**

TUT, through Dr Fourie, signed a contract with Transnet Engineering to secure 10 Train Coaches for the S&T Train.

An agreement was made through Dr Fourie with Copper Development Association Africa for the refurbishment of a Train Coach for the S&T Train.

Through Prof Jannie Maree, TUT-TCTA/Harmony Gold-Randfontein/DWA signed a contract for construction of R3M AMD treatment demonstration plant at Shaft 8 Randfontein as part of the short to medium term solution to AMD problem in the Western Basin

**Department of Horticulture**

Mrs L Marais, K Prinsloo and Mr SP Dladla were invited to act as judges at the Malanseuns Open days. Senior students were involved with designing and constructing display gardens at Garden World’s Spring Festival as well as at Plantland-The Wilds, supervised by Mrs L Marais. The students from TUT: Department of Horticulture achieved excellent reviews from judges, being awarded a prize for Young Designers Garden.

Collaboration with research is on-going with the Agricultural Research Council. Four M Tech students are involved in research projects in collaboration with the ARC-Roodeplaat and one M Tech and one D Tech student are involved at ARC-Infruitec.

A new MoU for WIL was compiled for 2015-2025 between Department Horticulture and Booysens Nursery.

**Adelaide Tambo School of Nursing Sciences**

Ms NG Mafutha attended a stakeholders meeting on the 17-18 November 2014 of the South African Non-communicable disease Alliance. Meeting to discuss on how non-communicable diseases can be managed more effectively in future. It was resolved that a delegate will make an appointment with the minister of health to present what the Alliance is proposing about non-communicable diseases of which Ms NG Mafutha is part of this delegate.

**Department of Pharmaceutical Sciences**

Prof Katerere met with a team from Mintek to discuss possible collaboration on the AMP project, 27 February 2014. He was accompanied by Dr Abeda Dawood from the NZG and a student.

A delegation from the Medical Control Council was hosted, 25 April 2014. For discussion was how TUT can send BPharm students for Work Integrated Learning and also involved in training of new regulatory staff at MCC. The MCC was Dr Alice Sigobodhla, Ms Silverani Padayachee and Dr Madira Litedu and TUT was represented by Dr Enslin, Mr Nazer and Prof Katerere. It was agreed that a meeting with the registrar would be set up

Prof Katerere hosted Ms Pulane Masebe (DTI) and Dr Skhumbuzo Ngozwana (UNIDO consultant) for discussion son the DTI Working Group on Skills for Pharmaceutical Industry. In attendance were Mr Desmond Nazer and Dr Eugene Olivier, 23 May 2014.

**Department of Environmental Health**

Prof JC Engelbrecht acted as a specialist advisor of the Minister of Environmental Affairs on air quality appeals board for emission licenses appeals by industry.

Dr JL Bekker has been appointed on the South African Bureau of Standards (SABS) technical committee for edible oils.

* SABS/TC 34 – Food products:
* SABS/TC 34/SC 9 - Microbiological evaluation of foods, feeds and beverages
* SABS/TC 34/SC 11 – Animal and vegetable fats and oils.

**7. INSTRUCTIONAL TECHNOLOGY**

With the refurbishment of the classrooms and laboratories on the Pretoria and Arcadia campus significant improvements have been made with regards to the minimum standards necessary to create a more conducive learning environment. Smart boards, Data Projectors and screens have been installed in the newly refurbished venues making it easier and a more interactive teaching experience for larger groups.

The renovation of Dental Technology’s facility’s planning and procurement is progressing well. The President and Vice-President of the SADTC visited the facilities and reported very positively to Council, saying that TUT has world-class facilities, subsequently the Dental Technology program was accredited to take in students for 2015.

In The Department of Chemistry the majority of the classrooms were improved according to the minimum standards of the latest information technology support. The technologically “smarter” teaching and learning classrooms and laboratories have facilitated teaching and learning to take place in an enabling environment which is bound to have a positive impact on success rate in all subjects.

**8. EXTERNAL FUNDING**

[*Special funding received for* teaching and learning. Amounts and names of donors to be provided. Research funds not to be included here.]

**DEPARTMENT OF BIOMEDICAL SCIENCES**

The following external funding was received:

* + Veterinary DHET Science Grant – R1 500 000 for 2014/2015
  + Clinical Technology DHET: Clinical Training Grant 2014/2015 – R622 310
  + Radiography DHET: Clinical Training Grant 2013/2014 – R798 914 and 2014/2015 – R881 719
  + Radiography Infrastructure and Efficiency Fund (DHET) – R1 250 000. Project completed and no IFEF grant received for 2014
  + Biomedical Technology DHET: Clinical Training Grant 2014/2015 – R1 188 907.20.

**DEPARTMENT OF BIOTECHNOLOGY & FOOD TECHNOLOGY**

Currently the department does not have a third stream income. This is something that has been lacking for a number of years and the department aims to address and change this over the short term period. However, a number of lecturers are involved with adhoc projects (collaboration with the CSIR) which contribute financially to the department. Evaluation of current techniques used in antimicrobial testing of nanoparticles for application of the specific CSIR composites is investigated and coordinated by Prof Roux van der Merwe (R 20 000.00 per trial). The department has been approached to perform a 5 week and 10 week shelf life test, and basic sensory evaluation as part of a maize fortification project, to ensure no change in taste occurs over time due to increased vitamin content. The project coordinator is Mr Nigel Sunley, a prominent role player in the food industry as well as an advisory committee member from Sunley Consulting – Technical Consultancy to the Food Industry. In the department, Dr Laura da Silva coordinates the project. The department will receive R10 000.00 (excluding VAT) for the work. In 2015, there will be another project, the details of which have not been discussed yet. In addition, the department has state of the art equipment which is used by internal as well as external users; the latter at a nominal fee. This is a growing need and the department benefits through this initiative.

Funds for research will be discussed under that heading.

**DEPARTMENT OF ENVIRONMENTAL HEALTH**

Annually, the department applies for funding from Agri-SETA for the WIL training of students registered for Food and Meat Hygiene II. This year an amount of R234 000.00 was awarded to TUT. The funds have been utilized to pay IMQAS for the services rendered in terms of student placement and practical training at abattoirs where they have the facilities and meat inspection staff. An application to Agri-SETA for 2015 has already been submitted. However, since students do not pay the levy as per departmental resolution few years ago, it’s becoming a challenge as Agri-SETA does not always pay the full amount as TUT requires more funds than other institution on this matter. For the year 2014, one of our lecturers had to negotiate with IMQAS to allow our students to get a discount but this may not be applicable for the future and may thus affect our students training at IMQAS or related institutions.

**DEPARTMENT OF ENVIRONMENTAL, WATER AND EARTH SCIENCES**

The department received R167 280.00 from the Department of Higher Education via the TDG grant for enhancing the student's learning experience in practical work in order to improve pass rate for practical and theory subjects

**DEPARTMENT OF NATURE CONSERVATION**

South African National Parks Honorary Rangers sponsorship for top students in Nature Conservation with the Game Capture Unit in the Kruger National Park has been ongoing for four years now with an estimated value of R40 000. Additional funding from SANParks also supports this. SANParks provide accommodation, uniform, training and guidance. Honorary Rangers sponsor the student stipend.

CATHSSETA funding was not forthcoming in 2014 but application was made for 2015. Wildlife Ranching South Africa (WRSA) made two scholarships available to the value of R 70 000 and the Stud Game Breeders provided an additional

R 210 000 in scholarships. Last mentioned was presented at a gala event attended by the Deputy President, The Honourable Cyril Ramaphosa.

**Adelaide Tambo School of Nursing Science**

The School is receiving continued funding from the Clinical Training Grant for clinical training of nursing students in the School.

**DEPARTMENT OF PHARMACEUTICAL SCIENCE**

Infrastructure and Efficiency funding of the DHET (round 1) was utilised to upgrade a laboratory for phytochemistry in 2014. The department will take occupation of the newly refurbished laboratory in early 2015.

Funding was received from the Teaching Development Grant for teaching and learning facilitators for BPharm, tutors for somatology and staff development grants for staff improving their qualifications.

**DEPARTMENT OF PHYSICS**

An application, in response of PISA/DST/CSIR call for funding photonics teaching and learning, was made for the purchasing of photonics equipment. The Department of Physics was granted an amount of R400 000.

**SECTION B: KEY PERFORMANCE INDICATORS**

**1. STUDENT OVERVIEW AND DEMOGRAPHICS**

**1.1 Student overview by campus (including Headcount, FTE Enrolments and Passes, Graduation and Success Rates)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| |  | | --- | | **1.1: Student Overview by Campus** | | | | |
| |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **Year** | **Campus** | **Student Headcount** | **Graduates** | **Graduation Rate** | **FTE Enrolled** | **FTE Passed** | **Success Rate** | | 2010 | PRETORIA CAMPUSES | 6,613 | 1,385 | 20.9% | 4,778.870 | 3,522.680 | 73.7% | | SOSHANGUVE CAMPUSES | 6 | 27 | 450.0% | 82.680 | 33.850 | 40.9% | | GA-RANKUWA CAMPUSES | 3 | 7 | 233.3% | 178.380 | 90.320 | 50.6% | | eMALAHLENI CAMPUS | 0 | 0 | 0.0% | 121.600 | 57.500 | 47.3% | | MBOMBELA CAMPUS | 0 | 0 | 0.0% | 47.050 | 19.850 | 42.2% | | POLOKWANE CAMPUS | 0 | 0 | 0.0% | 18.700 | 10.300 | 55.1% | | **Total** | **6622** | **1,419** | **21.4%** | **5,227.280** | **3,734.500** | **71.4%** | | 2011 | PRETORIA CAMPUSES | 6,616 | 1,736 | 26.2% | 4,764.876 | 3,652.500 | 76.7% | | SOSHANGUVE CAMPUSES | 1 | 12 | 1200.0% | 136.908 | 90.676 | 66.2% | | GA-RANKUWA CAMPUSES | 0 | 2 | 0.0% | 196.075 | 110.150 | 56.2% | | eMALAHLENI CAMPUS | 0 | 0 | 0.0% | 90.900 | 48.400 | 53.2% | | MBOMBELA CAMPUS | 0 | 0 | 0.0% | 46.432 | 22.044 | 47.5% | | POLOKWANE CAMPUS | 0 | 0 | 0.0% | 16.500 | 6.300 | 38.2% | | **Total** | **6617** | **1,750** | **26.4%** | **5,251.691** | **3,930.070** | **74.8%** | | 2012 | PRETORIA CAMPUSES | 6,768 | 1,693 | 25.0% | 4,792.353 | 3,639.774 | 75.9% | | SOSHANGUVE CAMPUSES | 1 | 4 | 400.0% | 77.201 | 43.477 | 56.3% | | GA-RANKUWA CAMPUSES | 0 | 2 | 0.0% | 186.325 | 116.875 | 62.7% | | eMALAHLENI CAMPUS | 0 | 0 | 0.0% | 73.634 | 43.545 | 59.1% | | MBOMBELA CAMPUS | 0 | 0 | 0.0% | 44.701 | 30.604 | 68.5% | | POLOKWANE CAMPUS | 0 | 0 | 0.0% | 16.500 | 10.100 | 61.2% | | **Total** | **6769** | **1,699** | **25.1%** | **5,190.714** | **3,884.375** | **74.8%** | | 2013 | PRETORIA CAMPUSES | 6,911 | 1,576 | 22.8% | 4,933.330 | 3,825.190 | 77.5% | | SOSHANGUVE CAMPUSES | 0 | 5 | 0.0% | 66.168 | 34.544 | 52.2% | | GA-RANKUWA CAMPUSES | 0 | 0 | 0.0% | 188.279 | 131.839 | 70.0% | | eMALAHLENI CAMPUS | 0 | 0 | 0.0% | 107.592 | 77.546 | 72.1% | | MBOMBELA CAMPUS | 0 | 0 | 0.0% | 49.048 | 31.842 | 64.9% | | POLOKWANE CAMPUS | 0 | 0 | 0.0% | 13.500 | 8.600 | 63.7% | | **Total** | **6911** | **1,581** | **22.9%** | **5,357.917** | **4,109.561** | **76.7%** | | 2014 | PRETORIA CAMPUSES | 7,330 | 1,669 | 22.8% | 5,189.100 | 4,109.202 | 79.2% | | SOSHANGUVE CAMPUSES | 0 | 1 | 0.0% | 97.064 | 48.071 | 49.5% | | GA-RANKUWA CAMPUSES | 0 | 1 | 0.0% | 221.527 | 158.404 | 71.5% | | eMALAHLENI CAMPUS | 0 | 0 | 0.0% | 113.183 | 81.500 | 72.0% | | MBOMBELA CAMPUS | 0 | 0 | 0.0% | 57.000 | 35.590 | 62.4% | | POLOKWANE CAMPUS | 0 | 0 | 0.0% | 14.700 | 8.600 | 58.5% | | **Total** | **7330** | **1,671** | **22.8%** | **5,692.574** | **4,441.367** | **78.0%** | | | | | |
|  |  |  |  |

The Faculty has seen very positive growth with regards to its student success rate over the last couple of years. Student

success rate for undergraduate studies increased to 78% in 2014. The Faculty is now starting to see the results

from its improvement plans being implemented. The Faculty Success Rate Committee has been established, chaired by

Dr MI Mokgobu. The Committee held four meetings (one per term) in 2014. High Impact subjects were identified per

programme and intervention strategies were put in place. Progress reports were submitted on regular basis with detailed

indicators of improvement. Progress on Teaching Development Grant was also presented per meeting by all

Departmental Representatives. Assistant Dean: Teaching and Learning had a roadshow in 2014, visiting Departments

Discussing challenges faced by Departments with regards to success rate improvement and TDG. Not all Departments

were visited due to student protests, however visits are continuing in 2015.

**1.2 Student headcount by mode of instruction (contact/distance)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | | |  | |  |  |  | | --- | --- | --- | |  | | | | **Year** | **Contact mode** | **Total** | | 2010 | 6,622 | 6,622 | | 2011 | 6,617 | 6,617 | | 2012 | 6,769 | 6,769 | | 2013 | 6,911 | 6,911 | | 2014 | 7,330 | 7,330 | | | | |
|  |  |  |  |  | |  |  |

The student headcount has remained very stable within the Faculty averaging around 6700 for the past 5 years. 2014 has however seen an increase of 419 students compared to 2013.

**1.3 Student headcount by race, gender and disability (D/A)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | | | | | | | | | | | | | | | | | | **Year** | |  | | --- | | **African** | | | | |  | | --- | | **Coloured** | | | | |  | | --- | | **Indian** | | | |  | | --- | | **White** | | | | **Total F** | **Total M** | **Total Disability** | **Total** | | **F** | **M** | **D** | **F** | **M** | **D** | **F** | **M** | **F** | **M** | **D** | | 2010 | 3,321 | 2,222 | 2 | 36 | 27 |  | 16 | 17 | 523 | 460 | 3 | 3,896 | 2,726 | 5 | 6,622 | | 2011 | 3,321 | 2,316 | 6 | 25 | 24 |  | 16 | 21 | 474 | 420 | 5 | 3,836 | 2,781 | 11 | 6,617 | | 2012 | 3,441 | 2,414 | 10 | 23 | 22 |  | 14 | 18 | 447 | 390 | 6 | 3,925 | 2,844 | 16 | 6,769 | | 2013 | 3,592 | 2,435 | 7 | 28 | 20 |  | 14 | 19 | 422 | 381 | 4 | 4,056 | 2,855 | 11 | 6,911 | | 2014 | 3,886 | 2,562 | 9 | 31 | 19 | 1 | 20 | 17 | 437 | 358 | 9 | 4,374 | 2,956 | 19 | 7,330 | |

* **Students from the designated groups has seen an increase from 85.16% in 2010 to 89.15% in 2014.**
* **White students has seen a decline from 14% in 2010 to 10.85% in 2014.**
* **Disabled students increased from 5 in 2010 to 19 in 2014**

**1.4 Number of students in foundation programmes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1.4: Number of Students in Foundation Courses** | | | | | | | **Qualification Headcount** | **2010** | **2011** | **2012** | **2013** | **2014** | | B TECH NURSING SCIENCE (EXTENDED) | 104 | 97 | 113 | 169 | 178 | | N DIP ANALYTICAL CHEMISTRY (EXTENDED) | 243 | 336 | 371 | 328 | 416 | | N DIP BIOTECHNOLOGY (EXTENDED) | 142 | 377 | 400 | 446 | 443 | | N DIP ENVIRONMENTAL SCIENCES |  |  |  | 136 | 200 | | N DIP FOOD TECHNOLOGY (EXTENDED) | 139 | 301 | 451 | 369 | 416 | | N DIP GEOLOGY |  |  |  | 209 | 255 | | N DIP VETERINARY TECHNOLOGY |  |  |  | 146 | 206 | | N DIP WATER CARE (EXTENDED) | 275 | 251 | 334 | 211 | 389 | | | | | |
| Ms Nolufefe Ndzane has been appointed as a coordinator for Foundation programme. This is important in assisting with logistical challenges faced by various Departments and monitoring of teaching in foundation subjects. | | | | |
|  |  |  |  |

**2. FACULTY STUDENT HEADCOUNT ENROLMENTS**

* 1. **Headcount Enrolments by Major Field of Study**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **2.1: Headcount Enrolments by Major Field of Study** | | | | | | | **Major Field of Study** | |  | | --- | | **Headcount Enrolments** | | | | | | | **2010** | **2011** | **2012** | **2013** | **2014** | | BUS/MAN | 61 | 52 | 52 | 49 | 39 | | EDUCATION | 23 |  |  |  | 0 | | OTHER HUM |  |  | 1 |  |  | | SET | 6,538 | 6,565 | 6,717 | 6,862 | 7,291 | | **Total** | **6,622** | **6,617** | **6,769** | **6,911** | **7,330** | | | | | | | | |
|  |  |  |  |  |  |  |

* 1. **Headcount Enrolments by Qualification Type**

The Faculty has reached some stability and will not be able to grow unless additional infrastructure can be added and more staff appointed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **2.2: Headcount Enrolments by Qualification Type** | | | | | |
| **Qualification Type** | |  | | --- | | **Headcount Enrolments** | | | | | |
| **2010** | **2011** | **2012** | **2013** | **2014** |
| Diplomas and Certificates | 4,584 | 4,551 | 4,624 | 4,601 | 4,938 |
| Degrees | 1,748 | 1,730 | 1,811 | 1,977 | 2,055 |
| **Undergraduate Total** | **6332** | **6281** | **6435** | **6578** | **6993** |
| Masters | 200 | 221 | 219 | 243 | 251 |
| Doctoral | 67 | 68 | 82 | 88 | 85 |
| **Postgraduate Total** | **267** | **289** | **301** | **331** | **336** |
| Occasional | 23 | 47 | 33 | 2 | 1 |
| **Total** | **6,622** | **6,617** | **6,769** | **6,911** | **7,330** |

**3. GRADUATION OVERVIEW**

**3.1 Graduates by Major Field of Study**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **3.1: Graduates by Major Field of Study** | | | | | | | **Major Field of Study** | **Graduates** | | | | | | **2010** | **2011** | **2012** | **2013** | **2014** | | BUS/MAN | 22 | 22 | 16 | 31 | 9 | | EDUCATION | 0 |  |  |  | 1 | | OTHER HUM |  |  | 0 |  |  | | SET | 1,397 | 1,728 | 1,683 | 1,550 | 1,661 | | **Total** | **1,419** | **1,750** | **1,699** | **1,581** | **1,671** | | | | | |
|  |  |  |  |

* 1. **Graduates by Qualification Type**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | | | |
| **Qualification Type** | **Graduates** | | | | |
| **2010** | **2011** | **2012** | **2013** | **2014** |
| Diplomas and Certificates | 816 | 977 | 996 | 859 | 889 |
| Degrees | 575 | 724 | 639 | 670 | 736 |
| **Undergraduate Total** | **1,391** | **1,701** | **1,635** | **1,529** | **1,625** |
| Masters | 21 | 38 | 50 | 42 | 39 |
| Doctoral | 7 | 11 | 14 | 10 | 7 |
| **Postgraduate Total** | **28** | **49** | **64** | **52** | **46** |
| Occasional | 0 | 0 | 0 | 0 | 0 |
| **Total** | **1,419** | **1,750** | **1,699** | **1,581** | **1,671** |

* 1. **Graduates by First Order CESM**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **3.3: Graduates by First Order CESM** | | | | | |
| **First Order CESM** | **Graduates** | | | | |
| **2010** | **2011** | **2012** | **2013** | **2014** |
| Agriculture, Agricultural Operations And Related Sciences | 401 | 473 | 496 | 452 | 472 |
| Business, Economics And Management Studies | 22 | 22 | 16 | 31 | 9 |
| Education | 0 |  |  |  | 1 |
| Engineering | 14 |  |  |  |  |
| Health Professions And Related Clinical Sciences | 537 | 745 | 728 | 621 | 710 |
| Law |  |  | 0 |  |  |
| Life Sciences | 132 | 150 | 170 | 168 | 172 |
| Mathematics And Statistics | 13 | 8 | 7 | 12 | 25 |
| Physical Sciences | 300 | 352 | 282 | 297 | 282 |
| **Total** | **1,419** | **1,750** | **1,699** | **1,581** | **1,671** |

**4. RESEARCH AND RESEARCH OUTPUT**

With the growth experienced in the Faculty’s research efforts a new senior appointment was conferred with Dr Shirley Motaung taking up the position as Assistant Dean: Research and Postgraduate studies. Postgraduate students remained stable at 336 compared to 331 in 2013. The number of postgraduate qualifications awarded in 2014 remained steady with 39 Master’s degrees and 7 Doctorates.

**4.1 Publications**

**Accredited research output: Publications (units per PTS)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2010** | | | **2011** | | | **2012** | | | **2013** | | |
| **Units** | **PTS** | **Ratio** | **Units** | **PTS** | **Ratio** | **Units** | **PTS** | **Ratio** | **Units** | **PTS** | **Ratio** |
| 57.60 | 205 | 0.28 | 71.23 | 201 | 0.35 | 63.5 | 202 | 0.31 | 82.5 | 206 | 0.40 |

The fourteen departments are active in research and number of research outputs submitted to the Department of Higher Education and Training not only shows the commitment of the staff, but also shows the interdisciplinary nature of disciplines in the Faculty.

**4.2 International visits**

The visits are under the departmental headings

**4.3 Visiting Researchers**

TUT hosted the first International Conference on Tissue Engineering and Regenerative Medicine (ICTERM). ICTERM brought together more than forty experts, nine of which are global experts, in the field of tissue engineering during the five day-long conference. Speakers included distinguished clinicians and scientists from around the world who work in the areas of: stem cell tissue engineering; cartilage and bone tissue engineering and biomaterials tissue engineering.  The talks covered basic studies through translational efforts and clinical trials, and will address novel topics, discussions on recent advances, challenges and breakthroughs in the field of tissue engineering.

**4.4 Conference Participation**

TUT hosted the first International Conference on Tissue Engineering and Regenerative Medicine (ICTERM). ICTERM brought together more than forty experts, nine of which are global experts, in the field of tissue engineering during the five day-long conference. Speakers included distinguished clinicians and scientists from around the world who work in the areas of: stem cell tissue engineering; cartilage and bone tissue engineering and biomaterials tissue engineering.  The talks covered basic studies through translational efforts and clinical trials, and will address novel topics, discussions on recent advances, challenges and breakthroughs in the field of tissue engineering.

Staff participates in all national and international conferences relevant to their field of expertise and it shows presence in the research community and keep them abreast of new developments in the field. The detail of the conference are listed per department.

**4.5 Funding for research**

The number of grants received for research from external sources shows confidence in the research capabilities of our groups. Funding available from internal sources shows that TUT is committed to develop capacity and the amount that was necessary to support staff on sabbaticals during 2014 almost exceeded R800 000.

Since staff are actively producing research output income, the overall amount of R3 million were spent from allocated sources to support scholarships and other research activities in the Faculty.

Different grants that were received are indicated under the different departmental headings.

**Adelaide Tambo School of Nursing Science**

The School’s research is focused in the Evidence-based Health Promotion in the Community niche area. In 2014, R150 000.00 was earmarked for this niche area. Due to Prof Wright not being present in the School, this money was only made available in December 2014 and will be appropriately allocated for research in 2015. The school has also explored potential collaboration with other Departments with similar research interests that will be pursued further in 2015.

Prof TS Ramukumba was appointed in 1 March 2014. She has initiated plans to enhance undergraduate research and use this to improve the research and publication output of the School and also enhances the research capacity of Staff members in the School. Prof Ramukumba has also initiated collaborative research with the University of Venda.

**PUBLISHED IN ACCREDITED JOURNALS**

RAMUKUMBA, T.S., BEREDA-THAKHATHI, J.E. & CHOKWE, M.E. 2014. Needs of fellows enrolled for the Academic Leadership and Development Academy (ALDA) of the Sigma Theta Tau Lambda-at-Large Chapter, Africa. *African Journal for Physical, Health Education, Recreation and Dance.* Supplement 2 (September), 48-57.

OYEDELE, OA, WRIGHT, SCD & MAJA, TMM. 2014 Community participation in teenage pregnancy prevention using the community as partner model. *International Journal of Nursing and Midwifery*, 6(6), 80-89.

AFFRAM, C.K., WRIGHT, S.C.D.; MWINI-NYALEDZYGBOR, P.P. & ATINDANBILA, S. 2014. Feeding practices of mothers and the nutritional status of their children (under 5 years) in Mamprobi Community – Accra. *Scholars Journal of Arts, Humanities and Social Sciences*, 2(2C),352-358.

DE SWARDT, H.C., VAN RENSBURG, G.H. & OOSTHUIZEN, M.J. 2014. Teaching and facilitation strategies for the professional socialisation of student nurses.  *South African Journal of Higher education.* Teaching and facilitation strategies for the professional socialisation of student nurses, SAJHE 28 (6), 1861–1875

NUGULUWE, BCJ, HAVENGA, Y & SENGANE, MLM. 2014. Violence Experienced By Nurses Working in Acute Care Psychiatric Wards at a Gauteng Hospital. *African Journal of Nursing and Midwifery, 16 (1),* 59–73.

**PUBLISHED IN NON-ACCREDITED JOURNALS**

None.

**ARTICLES / PAPERS IN PRINT OR ELECTRONIC MEDIA**

DE VILLIERS, M., MAREE, J.E. & VAN BELKUM, C. 2014. The influence of chronic pain on the daily lives of underprivileged South Africans. *Pain Management Nursing,* <http://dx.doi.org/10.1016>

WRIGHT, S.C., BIYA, T.T. & CHOKWE, M.E. 2014. The effectiveness of a pregnancy of a pregnancy leaflet to promote health in Tshwane, South Africa. Health South Africa Gesondheid 19(1), <http://dx.doi.org/10.4102/hsag.v19i1.764>

OYEDELE, O.A.,WRIGHT, S.C.D. &MAJA, T.M.M. 2014 Guidelines for Community Participation in Teenage Pregnancy Prevention Based on the Community-as-Partner Mode. DOI: 10.9734/JSRR/2015/13727

**CONFERENCES AND SYMPOSIA**

**Participation at International conferences:**

Ms NA Ngwenya (1x oral) (international conference in South Africa).

Prof TS Ramukumba (2 x oral) (international conference in South Africa).

**Participation at national conferences, symposia, etc.**

Prof TS Ramukumba (Key note address x 1)

Dr Y Havenga (oral x 1)

Dr H.C. de Swardt (Guest speaker x 1)

Ms N Ngwenya (oral x 1)

Ms O Oeydele (Oral x 1) (D Tech candidate)

Ms N Mafutha (Oral x 1)

M Bester (Oral x 1) (M Tech candidate)

**Presentation during a course/ workshop**

Ms JMM Jansen van Rensburg (Oral x 1)

Dr HC de Swardt (Workshop facilitated x 1)

**FUNDING FOR RESEARCH**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source** | **Research activity** | **Amount** | | |
| **2013** | **2014** | |
| NRF | Master’s student | R30000 | R10 000 (unknown as we do not have access to information from Prof Wright) |
| TUT | Niche area | R155000 | R150 000 | |

**Department of Animal Science**

**PUBLISHED IN ACCREDITED JOURNALS**

**Du TOIT, C.J.L.,** MEISSNER, H.H. & van NIEKERK, W.A., 2013. Direct methane and nitrous oxide emissions of South African dairy and beef cattle. *South African Journal of Animal Science,* 43. 320 – 339.

**Du TOIT, C.J.L.,** MEISSNER, H.H. & van NIEKERK, W.A., 2013. Direct greenhouse gas emissions of the game industry in South Africa. *South African Journal of Animal Science,* 43. 376 – 393.

**Du TOIT, C.J. L.,** van NIEKERK, W.A. & MEISSNER, H.H., 2013. Direct greenhouse gas emissions of the South African small stock sector. *South African Journal of Animal Science,*  43. 340 – 361.

**Du TOIT, C.J. L.,** van NIEKERK, W.A. & MEISSNER, H.H., 2013. Direct methane and nitrous oxide emissions of monogastric livestock in South Africa. *South African Journal of Animal Science,* 43. 362 – 375.

PIETERSE E., HOFFMAN, L., **SIEBRITS, F**., GLOY E. & POLAWSKA, E. 2014. The effect of slaughter weight on the carcass characteristics of pork with sex type as co-variable. *Animal Production Science* AN 14183Accepted 25 September 2014.

**LUSEBA, D**. 2013. Effects of sodium selenite and chromium sulphate as metabolic modifiers on stress alleviation, performance and liver mineral contents of feedlot Bonsmara cross steers. *African Journal of Agricultural Research*, Vol. 8(47), pp. 6012-6020.

MAGWEDE, K., TSHISIKHAWE, M.P., **LUSEBA**, **D.,** BHAT, R.B. 2014. Ethnobotanical survey of medicinal plants used in treatment of ticks. *Phyton International Journal of Experimental Botany*, 83: 155-165

MAIWASHE, A., NENGOVHELA, N.B., **NEPHAWE K.A.,** SEBEI J., NETSHILEMA T., MASHABA, H.D., NESENGANI, L. & NORRIS, D. 2013. Estimates of lactation curve parameters for Bonsmara and Nguni cattle using the weigh-suckle-weigh technique. South African Journal of Animal Science, 43, s12 -s16.

SESHOKA, M.M., MPHAPHATHI, M.L. & **NEDAMBALE, T.L**. 2014. Comparison of four different cryoprotectants on freezing Nguni bull spermatozoa evaluated by computer-aided sperm analysis. *Reproduction, Fertility and Development*, 26(1), 140-141.

CHATIZA, F.P., BARTELS, P., **NEDAMBALE, T.L**. & WAGENAAR, G.M. 2013. Sperm–egg interaction and functional assessment of Springbok, Impala and Blesbok cauda epididymal spermatozoa using a domestic cattle in vitro fertilization system. *Animal Reproduction Science*, 143 (1-4), 8-18.

MATSHABA, B., MPHAPHATHI, M.L., SCHWALBACH, L.M., GREYLING, J.P.C. & **NEDAMBALE, T.L.** 2013. Comparison of 4 different diluent agents on cryopreservation of semen from unimproved indigenous South African goats. *Reproduction, Fertility and Development*, 26 (1), 142-142.

**PUBLISHED IN NON-ACCREDITED JOURNALS**

OGLE, S., STEVENS, L., **du TOIT**, C.J.L., BUENDIA, L., SPENCER, S., HARTMAN, M. & WITI, J. 2013. Developing National Vaseline GHG Emissions and Analysing Mitigation Potentials for Agriculture and Forestry using an Advanced National GHG Inventory Software system. Ed: Steven Ogle, Access Books: Acsess-2013-0009-MAV.R2

**NEDAMBALE, T.L**. 2014. Africa’s first livestock Gamete-Tek Cryo-mobile laboratory vehicle fitted with sophisticated reproductive technologies to service the farmers. *The Dairy Mail July*. 116-119.

**NEDAMBALE, T.L**. 2013. High-tech science for delivering services to the farmers by the Agricultural Research Council's Gamete-Tek Cryo- Mobile Laboratory. National Beef Recording and Improvement Scheme. *Newsletter/Nuusbrief.* No 102.31.

**NEDAMBALE T.L.** 2014. The role of small holder farmers in ensuring a food secure South Africa. Living Land SABC 2 Workshop at Noordelike Landbou Skou, 29 May 2014.

**Participation at international conferences, symposia, etc.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Name*** | ***Country*** | ***Duration of visit*** | ***Type of visit*** | ***Presentation\**** |
| Mr. C.J.L du Toit | South Africa | 2 | Symposium | Session Chair |
| Mr. C.J.L du Toit | South Africa | 2 | Symposium | Oral |
| D Luseba | Kenya | 3 days | GALVmed Workshop: profiling legislation on animal health services and products delivery in Central and Western Africa | Invited speaker |

*\*Invited, plenary, keynote, oral, or poster*

**Participation at national conferences, symposia, etc.**

Three oral and eight poster presentations were made at the 47th Annual SASAS Congress held on 6 – 8 July 2014 in Pretoria.

Mr. W Janse van Rensburg attended the AVI Africa symposium held by the South African Poultry Association during 10 to 12 June, held at Emperors Palace, Johannesburg.

Mr. C.J.L du Toit attended a Water Footprint Symposium and workshop hosted at the University of Bloemfontein from 3 to 4 September 2014.

Mr. C.J.L du Toit participated in a Climate Change Monitoring & Evaluation in the Agricultural sector – Livestock – Stakeholder Workshop at the Premier Hotel, OR Tambo, South Africa on the 10th of September.

Mr. C.J.L du Toit Attended the AFMA annual symposium held on the 8th of October at the CSIR, Pretoria.

Prof KA Nephawe attended the Gauteng Department of Agriculture and Rural Development 7th Annual Agricultural Research Symposium, 04 June 2014, Roodevallei Hotel, Roodeplaat. He also served in the adjudication committee for the awards.

Prof K A Nephawe attended the 47th SASAS congress held at University of Pretoria, 6 – 8 July 2014.

Prof KA Nephawe attended the ARC’s Annual PDP Conference and served in the Adjudication Committee for the Awards, 27 June 2014.

**Department of Biotechnology & Food Technology**

All academic staff should be actively involved in research. Qualification improvement plans are aligned with the career focus of the staff member, which has to be relevant to the field or focus of the department. There are a number of procedures and policies in place to assist with this process. Academic staff involved with postgraduate studies may apply for lecturing relief or sabbatical leave in order to conduct research, thereby improving qualifications. Staff obtaining doctoral qualifications; contribute to the supervisory capacity in the department impacting positively on the number of post graduate students able to register in the department. All of the above is formalised and addressed through the newly established PMS (performance management system) that has been officially implemented by TUT.

**Postgraduate Students and Staff Graduating during 2014:**

**M Tech: Biotechnology completed:**

Development and identification of species specific microsatellite markers for bontebok and blesbok. Ms A van Wyk (NZG) – cum laude.

**M Tech: Biotechnology in progress:**

DNA barcoding and phylogenetic analyses as a tool to resolve taxonomic uncertainties within several murid rodent species (Rodentia: Muridae) from Southern Africa. Mr A Phukuntzi (NZG).

Biodegradation rates of synthetic hydrocarbon types. Mr C Knottenbelt (PetroSA).

Biocontrol of *Fusarium* spp. causing disease in pine seedlings. Both B Tech projects and an M Tech project (Ms Ethel Mogale, member of staff).

Screening of bacteria as biocontrol agents against the citrus pathogen *Penicillium digitatum.* Both B Tech project as well as M Tech project (T Manyaapelo, nearly completed).

Filter paper sampling of blood for African horse sickness virus antibody detection and serotyping (T Tshabalala) (ARC).

In addition to these, Students P Manyapye, N Nxumalu, M Mmboyi are also enrolled for research projects towards a M Tech: Biotechnology qualification

Student S Khamabni, Role of microbial siderophores in free-living and symbiotic plant growth promoting rhizobacteria (pgpr)

W. Veldman, Identification and biocontrol of *Fusarium* spp. responsible for mango blossom malformation

**D Tech: Biotechnology**

Ms E Jordaan, completion 2014/2015. Biodiesel production from indigenous microalgae. B Tech projects (six in total, as well as a D Tech project (Ms Erika Jordaan, member of staff)

**M Tech: Food Technology awarded:**

Ms Maphuti Kutu completed her MTech study during 2014. The dissertation was handed in for assessment and both external examiners returned their evaluation reports and recommended a passmark of 77 %. The results have been approved by the Faculty Committee for Postgraduate Studies and have been sent through for ratification by Senate.

**M Tech: Food Technology in progress:**

The incidence of fumonisins in whole grain maize and maize prolamin (zein) proteins. (Z Skosana) (SAGL)

Interactions between Fumonisins in Maize and Lactobacilli used to ferment Mageu (Theresa de Beer) (TUT/SAGL)

In addition to this, students MM Kutu, AB Atanda, OA Oosthuizen and CF van Rooi (staff member) have either registered or will register soon for the M Tech: Food Technology

**D Tech: Food Technology**

2015: B. Du Plessis - Masked fumonisins in maize: formation, bio-accessibility, bioavailability and toxicity

**Commercialisation** of the patented technology for the processing of a probiotic maize-based beverage (Synbo):

The technology was developed in the Dept. of Biotechnology and Food Technology (BFT), Faculty of Science. Discussion were on-going throughout the year between TUT’s commercialisation office (in the Directorate of Research and Innovation) and a mageu manufacturing company based in the North of Pretoria to reach a common ground so that a licensing agreement can be signed for the latter to commercially exploit the technology that was patented by TUT. The **inventors** of the technology, both from the department of Biotechnology and Food Technology, have attended the meetings and provided technical information as and when required by the would-be licensee. The university (TUT) is on the verge granting a license to the Mageu manufacturing company based in the North of Pretoria, South Africa, pending the outcome of the planned industrial scale processing trial to be done on the 1st December 2014.

Arrangements have been finalised and a factory secured in Pretoria East to conduct the industrial scale probiotic maize beverage processing trial for the optimisation of conditions for efficient production of the probiotic maize-based beverage. The probiotic maize-based beverage produced on an industrial scale will be subjected to shelf life and probiotic cell viability investigations, safety and nutritional analyses by the South African Bureau of Standards (SABS). The would-be licensee is awaiting the outcome of the pilot trial and investigations to consider signing of the licence agreement. The outcome of the industrial pilot trial and investigations stated above will guide in redesigning the envisaged *in vivo* efficacy of the probiotic mageu in the nutritional intervention trial against oral thrush in willing participants. This is anticipated to be boosted by the availability of the coordinator of the Nutritional Intervention Trial, Prof SCD Wright, who has been on leave for most of the year 2014.

**Publications:**

**Published In Accredited Journals**

K.T. Ncube, **P.J. Jooste**, P. Soma, E.F. Dzomba and F.C. Muchadeyi. Polymorphism of the Major Histocompatibility Complex and Genetic Structure of Southern African Village Chicken Populations. International Journal of Poultry Science 13 (6): 357-363, 2014

Andile W. Grootboom, Nompumelelo L. Mkhonza, Zodwa Mbambo, Martha M. O’Kennedy, **Laura S. da Silva**, Janet Taylor, John R. N. Taylor, Rachel Chikwamba and Luke Mehlo (2014). Co-suppression of synthesis of major a-kafirin sub-class together with c-kafirin-1 and c-kafirin-2 required for substantially improved protein digestibility in transgenic sorghum. Plant Cell Rep. DOI 10.1007/s00299-013-1556-5

**Nyanzi, R**., Awouafack, M. D., Steenkamp, P., and **Jooste, P**. (2014). Anticandidal activity of cell extracts from 13 probiotic *Lactobacillus* strains and characterisation of lactic acid and a novel fatty acid derivative from one strain. *Journal of Food Chemistry,* 164, 470-475.

**Regnier T**., Combrinck S., **Veldman W**., Du Plooy W. (2014).Application of essential oils as multi-target fungicides for the control of *Geotrichum citri-aurantii* and other postharvest pathogens of citrus. *Industrial Crops and Products*, 61, 151-159.

Bekker T.F., Labuschagne N., Aveling T., **Regnier T.,** Kaiser C.(2014).Effects of soil drenching of water-soluble potassium silicate on commercial avocado (*Persea Americana* Mill.) orchard trees infected with *Phytophthora cinnamomi* Rands on root density, canopy health, induction and concentration of phenolic compounds. *South African Journal of Plant and Soil,* 1-7*.*

Augustyn W., **Regnier T**., Combrinck S. Botha B.M. (2014). Metabolic profiling of mango cultivars to identify biomarkers for resistance against *Fusarium* infection. *Phytochemistry Letters*, In press.

Mashigo, M., Combrinck, S., **Regnier, T.**, Du Plooy, W., Augustyn, W., Mokgalaka, S. (2014).Chemical variations, trichome structure and antifungal activities of essential oils of *Helichrysum splendidum* from South Africa. South African Journal of Botany, In press.

**Jordaan, E.; Roux-van der Merwe M.P., Badenhorst, J**. and Botha, B. Comparative study of the usability of industrial effluents for the mixotrophic algal growth and biodiesel feedstock production. *Journal of Applied Energy*. Submitted: 26 September 2014.

Manyaapelo, **T., Regnier, T.J., Roux-van der Merwe, R. and Badenhorst, J**. Determination of the resistance status of citrus post-harvest pathogens and screening of biocontrol agents against *Penicillium digitatum*. *Crop Protection*. Submitted: 24 November 2014.

VAN DER MERWE, M, HOFFMAN, L.C., JOOSTE. P.J., CALITZ, F.J. 2014. The Hygienic Practices Involved in Three Game Meat Production Systems in South Africa Based on Environmental and other Independent Variables. *J Veterinary Sci Technol* 5: 176. doi:10.4172/2157-7579.1000176

**Chapters in Books**

Activity theory, authentic learning and emerging technologies: The case studies. Emerging technologies. Dick Ng’ambi, Vivienne Bozalek, Daniela Gachago, Jolanda Morkel, Eunice Ivala, Anita Campvell, Sibongile Simelane, **Dorothea Mathudi Dimpe**, Patient Rambe and Aaron Bere.

JOOSTE P.J., ANELICH L., AND MOTARJEMI Y. (2014) Safety of Food and Beverages: Milk and Dairy Products. In: Motarjemi Y. (ed.) Encyclopedia of Food Safety, Volume 3, pp. 285-296. Waltham, MA: Academic Press

**Published In Non-Accredited Journals**

**Regnier, T.,** M Schoeman, M. 2014. An investigation into the current status of blossom malformation in the Hoedspruit area. Part I: Identity of the pathogen. *South African Mango Growers’ Association research Journal.*

**International Visits**

Two (2) conference papers were accepted at the 2nd Annual World Congress of Nutrition and Health, in Taiyuan, China (WCNH). The event took place on 24-26 October, 2014, in Taiyuan, China. Attendance was kindly sponsored by NRF (KIC14080787925):

Conference attended: BIT's 2nd Annual Global Health Conference-2014, China. Antimicrobial and Antioxidant Activity of Extracts from Lactic Acid Bacteria and Characterisation of Lactic Acid and a Novel Fatty Acid Derivative from One Strain.

**R. Nyanzi**, M. D. Awouafack, J. Steenkamp, **P. J. Jooste**, J. N. Eloff

Conference attended: BIT's 2nd Annual Global Health Conference-2014, China. Inhibition of *Candida albicans* by probiotic *lactobacilli* during co-culturing in a maize cereal beverage. **R. Nyanzi, P. J. Jooste,** S. C. D. Wright, J. N. Eloff

New voices in cereal Science and Technology symposium organized by Cereal Science and Technology-SA (CST-SA). Interactions between fumonisins in maize and lactobacilli used to ferment mageu. **T. de Beer, L. da Silva, R. Nyanzi, P. J. Jooste**

**Visiting Researchers**

Dr Thevenet and two colleagues, biologist from the University Paris-Creteil (France), visited the department (and introduced themselves to colleagues from other departments in the Faculty of Science), as part of a collaboration process. This took place 17-18 and 19th of November 2014.

**Participation at international conferences, symposia, etc.**

NYANZI, R. AND JOOSTE, P.J. 2014. Commercialisation of synbiotic beverages with potential health benefits. Oral presentation at the Gauteng Technology Transfer Forum. The Innovation Hub, Pretoria. 25 February 2014

JOOSTE, P.J. (2014) Bound and masked fumonisins in maize products. Project Ref No: TP2011062700007. Oral presentation made at the THRIP Technical Audit Meeting. S A Grain Laboratory, Pretoria. 15 April 2014.

ERASMUS.C., MEYER. H, SKHOSANA. Z., DU PLESSIS. B., JOOSTE. P.J., DA SILVA. L.S, DE BEER. T., SIBANDA. N. 2014. Post Harvest occurrence of free, bound and masked Fusarium mycotoxins in the maize processing chain, with specific emphasis on fumonisins. Oral presentation made at the THRIP Technical Audit Meeting. S A Grain Laboratory, Pretoria. 15 April 2014.

DE BEER, T., DA SILVA, L.S., NYANZI. R. AND JOOSTE, P.J. 2014. Interactions between fumonisins in maize and lactobacilli used to ferment *mageu.* Oral presentation at theNew Voice Symposium of Cereal Science and Technology:SA held on Wednesday 3 September 2014 at the S A Grain Laboratory, Pretoria

SKHOSANA, Z., DA SILVA, L.S., JOOSTE, P J., MEYER, H AND ERASMUS,C. 2014. Optimization of extraction method for fumonisins (free and hidden) in maize. Oral presentation at the New Voice Symposium of Cereal Science and Technology:SA held on Wednesday 3 September 2014 at the S A Grain Laboratory, Pretoria

DE BEER, T., DA SILVA, L. S., NYANZI, R., JOOSTE, P. J. 2014. Interactions between fumonisins in maize and lactobacilli used to ferment *mageu* . Oral presentation at the Annual Research Day of the TUT Faculty of Science, 21 October 2014

JOOSTE, P. J., NYANZI, R. AND ELOFF, J. N. 2014. Inhibition of *Candida albicans* by probiotic lactobacilli during co-culturing in a maize cereal beverage. Oral presentation at the BIT’s 2nd Annual World Congress of Nutrition and Health 2014 , Taiyuan, China. October 24-26 2014

NYANZI,R., AWOUAFACK, M. D., STEENKAMP, J., JOOSTE, P. J., ELOFF, J. N. 2014. Antimicrobial and Antioxidant Activity of Extracts from Lactic Acid Bacteria and Characterisation of Lactic Acid and a Novel Fatty Acid Derivative from One Strain. Oral presentation at the BIT’s 2nd Annual World Congress of Nutrition and Health 2014 , Taiyuan, China. October 24-26 2014

SKHOSANA, Z., KRUGER, J., DA SILVA, L.S., JOOSTE, P J., MEYER, H AND ERASMUS,C. 2014. Missing fumonisins in South African maize: analytical challenges. Poster presentation at the Annual Research Day of the TUT Faculty of Science, 21 October 2014.

**Participation at national conferences, symposia, etc.**

Innovation:

SynBo Beverages developed in Dept. Biotechnology and Food Technology, by Dr Richard Nyanzi and Prof Piet Jooste, won third prize (6-12-2013) and funding (R150 000) in the Gauteng Accelerator Programme’s GAP-Biosciences category in the competition organised by The Innovation Hub Management Company LTD (TIH).

The commercialisation office at TUT’s R&I directorate facilitated the signing of two (2) agreements at TIH geared at ensuring SynBo beverages’ commercialisation.

1) GAP-Biosciences Funding Agreement signed between The Innovation Hub Management Company LTD and TUT.

Maxum Pre-Incubation Programme Agreement signed between The Innovation Hub Management Company LTD and TUT. The agreements are expected to be valid until or will be reviewed again at the end of July 2015.

**Funding For Research**

\*The Maize Trust has granted the department an amount of R150 000-00 per year for the period 2011 to 2013. Outcomes: at least four B Tech students and two M Tech student will be trained in terms of their research projects. \*\* A doctoral student in the department will also be involved in the second phase of the project to start in 2014. Critical knowledge (for SA as well as international impact), will be obtained from the research conducted.

Project Manager (TUT person): Prof P J Jooste

| **Source** | **Research activity** | **Amount** | | | |
| --- | --- | --- | --- | --- | --- |
| **2011** | **2012** | **2013** | **2014** |
| Maize Trust | Fumonisin research activities | 150 000.00 | 120 000.00 | 210 000.00 | 229 997.00 |
| NRF – THRIP |  | 85 000.00 | 200 000.00 |
| THRIP Contribution |  |  | 140 533.00 | 100 000.00 |
| Industry Contribution |  |  | 260 003.00 | 129 997.00 |
| CSIR  Nanotechnology | Microbiological analyses  Prof MP Roux vd Merwe  Dr J Badenhorst |  | 20 000.00 | 20 000.00 | 20 000.00 |
| CRIC | Different staff members | 43 000.00 | 150 000.00 | 100 000.00 | 110 000.00 |
| FRIC | D Tech project | 30 000.00 | 63 000.00 |  |  |
| R&I Directorate / GAP Biosciences | Commercialization of sour maize beverage |  |  | 75 000.00 | 150 000.00 |
| Publications (2011 received in 2013) |  |  | 59 500.00  8750.00 | 39 000.00 | N202 Jooste=R45000.00  Renate=R17000.00  Thierry=R6250.00 |
| **TOTAL** |  | **223 000.00** | **506 250.00** | **644 000.00** | **578 247.00** |

**Department of Biomedical Sciences**

**PUBLISHED IN ACCREDITED JOURNALS**

Bosman, E; Esterhuizen, AD.; Rodrigues FA, Becker P & Hoffmann, WA.  (Accepted; 29 Aug 2014).  The effect of metformin therapy and dietary supplements on sperm parameters in hyperinsulinaemic males.  Andrologia, Online publication (DOI): 10.1111/and.12366 (30 Oct 2014).

Makanjee, CR; Bergh AM & Hoffmann, WA.  (Accepted for publication in May 2015 edition).  Patients’ journey through multi-level diagnostic imaging referrals.  South African Radiographer.

Razwinani M, Tshikalange TE and Motaung SCKM (2014): Antimicrobial and anti-inflammatory activities of Pleurostylia capensis Turcz (Loes) [Celastraceae]. African Journal of Traditional Complementary Alternative Medicine, 11(2): 452-457.

Ssemakalu CC, Ubomba-Jaswa E, Motaung KS, Pillay M. 2014. Influence of solar water disinfection on immunity against cholera-A Review. Journal of Water and Health. Vol 12 No 3 pp 393–398.

SA Adebayo, LJ Shai, MC Cholo, R Anderson AND D Du Toit (2014) Assessment of the pro-inflammatory activity of water sampled from major water treatment facilities in the greater Pretoria region Water SA Vol. 40 No. 2, 1-5.

Kgomotso Welheminah Lebogo, Matlou Phineas Mokgotho, Victor Patrick Bagla, Thabe Moses Matsebatlela, VusI Mbazima, Leshwene Jeremiah Shai and Leseilane Mampuru (2014). Semi-purified extracts of Commelina benghalensis (Commelinaceae) induce apoptosis and cell cyclearrest in Jurkat-T cells. BMC Complementary and Alternative Medicine 2014, 14:65.

Articles under review:

Razwinani M, Tshikalange TE and Motaung SCKM (2014): Antimicrobial and antioxidant activities of four South African medicinal plants. (*Article submitted and under-review to Medical Technology Journal SA*).

Maepa MJ& Motaung SCKM (2014): Induction of collagen type II in porcine articular cartilage by resveratrol (*Article submitted and under-review to Medical Technology Journal SA).*

Maepa MJ& Motaung SCKM (2014): The possible effects of resveratrol on collagen type II in the superficial and middle zone of articular cartilage (*Article submitted and under-review to Indian Journal Medical Research*).

Molai L & Motaung SCKM (2014): The potential role of genistein in ameliorating osteoarthritis and resultant joint damage. (*Article submitted and under-review to Indian Journal Medical Research*).

**PUBLISHED IN NON-ACCREDITED JOURNALS**

Makanjee, CR; Bergh A & Hoffmann, WA.  (2014).  “So you are running between” – A qualitative study of nurses’ involvement with diagnostic imaging in South Africa.  Journal of Radiology Nursing, 33(3):105-115.

Makanjee, CR; Bergh A & Hoffmann, WA.  (2014).  A model for understanding diagnostic imaging referrals and complex interaction processes within the bigger picture of a healthcare system.  Radiography, 20(2):153-157.  Online publication (DOI): 10.1016/j.radi.2014.01.005 (20 Feb 2014).

Nortje, N. & Hoffmann, WA.  (Accepted for publication in December 2014).  Professional consequence for dentists involved in unethical decision-making in South Africa.  Journal of Odonto-Stomatology, 32(Suppl 1):15-22.

**ARTICLES / PAPERS IN PRINT OR ELECTRONIC MEDIA**

Boshoff, CI. First molecular assessment of the African swine fever virus status of Ornithodoros ticks from Swaziland

Carin I. Boshoff,  Armanda D.S. Bastos,  Mzwandi M. Dube,  Livio Heath,

Onderstepoort Journal of Veterinary Research (In print).

1MA Chauke\*, 1LJ Shai, 2MA Mogale. Antibacterial and anti HIV 1 reverse transcriptase activity of selected medicinal plants from Phalaborwa, South Africa.

1MA Chauke\*, 1LJ Shai, 2MA Mogale, 3MP Tshisikhawe, 4MP Mokgotho. Survey on medicinal plant used to treat and manage diabetes mellitus and other diseases in Mashishimale village, Phalaborwa (South Africa).

**INTERNATIONAL VISITS**

Dr Motaung was part of a research group accompanied the Minister of Science and Technology to Brussels to sign an inter-agency agreement on the 11th of March 2014 (*NRF and Research Foundation Flanders (FWO*).

**PARTICIPATION AT INTERNATIONAL CONFERENCES, SYMPOSIA, ETC.**

Hoffmann, WA.  2014.  “Accidental ethicists?! – The role of ethics education in mental health professional development”.  2nd International Conference on Ethics Education, Ankara University, Faculty of Medicine, Ankara, Turkey, 21-23 May 2014.

Coetzee, T, Hoffmann, WA & De Roubaix, M.  2014.  “An evaluation of ethics education curricula offered to undergraduate Health Science students at a South African University”.  2nd International Conference on Ethics Education, Ankara University, Faculty of Medicine, Ankara, Turkey, 21-23 May 2014.

Nortjé, N & Hoffmann, WA.  2014.  “Professional and personal consequence for dentists involved in unethical decision-making in South Africa”.  10th International Dental Ethics and Law Society Congress, Cape Town, South Africa, 5 Sep 2014.

C.I. Boshoff., A.D.S. Bastos., L. Heath, Experimental infection of domestic pigs with African swine fever virus to investigate transmission cycles. STVM-12 & TTP-8 conference, Cape Town, South Africa (Poster).

C.I. Boshoff., A.D.S. Bastos., L. Heath Occurrence and molecular characterization of African swine fever virus in Ornithodoros ticks from selected game parks in South Africa, Global African Swine Fever Research Alliance meeting, 11-14 November, Pretoria, South Africa (Talk).

Shai L J. 2014. Diabetes Research group: Progress report (2010-2014). International Conference on Advances in Plant Sciences, Four Points Hotel, Kuching, Sarawak, Malaysia.

Chauke, A - ICAPS: 2nd International Conference on Advances in Plant Sciences (ICAPS 18 November – 23 November 2014) Presenting an oral paper : Antibacterial and anti HIV 1 reverse transcriptase activity of selected medicinal plants from Phalaborwa, South Africa (Malaysia).

Motaung SCKM: Conference Chair, Convener and Organizer: International Conference on Tissue Engineering and Regenerative Medicine (ICTERM) at the Tshwane University of Technology, Department of Biomedical Sciences in South Africa. 27 – 31st August 2014.

Maepa J & Motaung SCKM: Action of resveratrol in the superficial and middle zone of articular cartilage. International Conference on Tissue Engineering and Regenerative Medicine (ICTERM) at the Tshwane University of Technology, Department of Biomedical Sciences in South Africa. 27 – 31st August 2014.

Mapula Razwinani, Cornelius Ssemakalu & Motaung SCKM: Regulation of collagen type II in articular cartilage by Pleurostylia Capensis crude extract. International Conference on Tissue Engineering and Regenerative Medicine (ICTERM) at the Tshwane University of Technology, Department of Biomedical Sciences in South Africa. 27 – 31st August 2014.

Cornelius Ssemakalu, Mapula Razwinani & Motaung SCKM: Pterocarpus angolensis crude extracts induce the expression of collagen type II in articular cartilage. International Conference on Tissue Engineering and Regenerative Medicine (ICTERM) at the Tshwane University of Technology, Department of Biomedical Sciences in South Africa. 27 – 31st August 2014.

Leah M. Molai & MotaungSCKM: Effects of genistein on tissue engineering of articular cartilage. International Conference on Tissue Engineering and Regenerative Medicine (ICTERM) at the Tshwane University of Technology, Department of Biomedical Sciences in South Africa. 27 – 31st August 2014.

Molaba GM & Motaung SCKM. Expression of collagen type–II in articular cartilage in response to bone morphogenetic protein -7 and resveratrol. International Conference on Tissue Engineering and Regenerative Medicine (ICTERM) at the Tshwane University of Technology, Department of Biomedical Sciences in South Africa. 27 – 31st August 2014.

**PARTICIPATION AT NATIONAL CONFERENCES, SYMPOSIA, ETC.**

C.I. Boshoff, A.D.S. Bastos & L. Heath Assessment of African swine fever status in Kruger National Park, southern Africa. Congress of the South African Association of Veterinary Technologists. October 2014, Eastern Cape (Talk).

Steenkamp-Jonker S, Boshoff CI, King PH: Genetic and Morphological Characterization of *Echinococcus felidis*. Congress of the South African Association of Veterinary Technologists. October 2014, Eastern Cape.

Hoffmann, WA.  Key note address on “Oaths – From Hippocrates and Asclepius to Today”, Annual Oath-taking Ceremony for Final Year Students, Department of Radiography, University of Pretoria, 21 November 2014.

**FUNDING FOR RESEARCH**

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** [NRF, etc] | **Research activity** | **Amount**  **2013 2014** | |
| NRF Thutuka | Medicinal plants and diabetes mellitus | R156 000 | R405 000 |

**Department of Chemistry**

**PUBLISHED IN ACCREDITED JOURNALS**

AUGUSTYN, W. A., REGNIER, T., COMBRINCK, S. & BOTHA, B. M. 2014. Metabolic profiling of mango cultivars to identify biomarkers for resistance against Fusarium infection. *Phytochemistry Letters*. In Press. DOI: 10.1016/j.phytol.2014.05.014

Mphahlele E.N., Le Roux L., Jafta C.J., Cele L.M., Mathe M.K., Nyokong T., Kobayashi N. and Ozoemena K.I., “Carbon nanotube-enhanced photoelecgtrochemical properties of metallo-octacarboxyphthallocyanines”, Journal of Material Science, 49, (2014), 340 – 346.

Maila, M.D., Maree, J.P. and Cele, L.M., “Acid mine water neutralisation with ammonium hydroxide and desalination with barium hydroxide”, Water SA, 40 (3) (2014), 521 – 529.

Malobela, L., Heveling, J., Augustyn, W. and Cele, L.M., "Nickel-Cobalt on Carbonaceous Supports for the Selective Catalytic Hydrogenation of Cinnamaldehyde", *Ind. Eng. Chem. Res.*, **2014**, *53* (36), pp 13910–13919

N Panichev, MM Kalumba, KL Mandiwana, Solid phase extraction of trace amount of mercury from natural waters on silver and gold nanoparticles, Analytica Chimica Acta 813 (**2014**) 52-56.

M. V. Maphoru, J. Heveling, and S. K. Pillai, “Oxidative Coupling of 1-Naphthols over Noble and Base Metal Catalysts”, ChemPlusChem, 79, 99-106 (2014) <http://dx.doi.org/10.1002/cplu.201300307>

L.J. Malobela, J. Heveling, W.G. Augustyn, and L.M. Cele, “Nickel-Cobalt on Carbonaceous Supports for the Selective Catalytic Hydrogenation of Cinnamaldehyde”, Ind. Eng. Chem. Res., 53, 13910-13919 (2014) <http://dx.doi.org/10.1021/ie502143a>

D. Katskov: Low resolution continuum source simultaneous multi-element electrothermal atomic absorption spectrometry: Steps into Practice, Spectrochimica Acta Part B, to be published. Current citation <http://dx.doi.org/10.1016/j.sab.2014.10.011>

Maity A, Bhaumik M, Choi HJ and McCrindle RI. 2014. Composite nanofibers prepared from metallic iron nanoparticles and polyaniline: High performance for water treatment applications, *Journal of Colloid and Interface Science*, 425, 75-82.

Gwatidzo L, Botha BM, McCrindle RI and Combrinck S. 2014. Extraction and Identification of Phytosterols in Manketti (*Schinziophyton rautanenii*) Nut Oil, *Journal of the American Oil Chemists' Society,* (DOI) **10.1007/s11746-014-2417-2.**

Moyo S, McCrindle R, Mokgalaka N and MyburghJ. 2014. Heavy metal partitioning in sediments from rivers flowing through coal fields in Mpumalanga, South Africa, *Clean*, Clean – Soil, Air, Water 2014, *42* (9999), 1–9

Bhaumik M, Choi HJ, Seopela MP, McCrindle RI and Maity A. 2014.  Highly effective removal of toxic Cr(VI) from wastewater using sulfuric acid-modified avocado seed, *Industrial and Engineering Chemistry Research*, 53(3), 1214–1224.

Bhaumik M, McCrindle RI and Maity A. 2014. Enhanced adsorptive degradation of Congo red in aqueous solutions using polyaniline/Fe0 composite nanofibers, *Chemical Engineering Journal,* 260, 716–729.

Regnier, T., Combrinck, S., Veldman, W., du Plooy, W. 2014.  Application of essential oils as multi-target fungicides for the control of *Geotrichum citri-aurantii* and other postharvest pathogens of citrus. *Industrial Crops and Products*, 61: 151-159.

**VISITING RESEARCHERS**

|  |  |  |  |
| --- | --- | --- | --- |
| ***Name*** | ***Country*** | ***Duration of visit*** | ***Purpose of visit*** |
| Gebretsadik M | Ethiopia | 1 year | Postdoc |
| Ogunleye T | South Africa | 8 months | Research Associate |
| Bhaumik M | India | 1 year | Postdoc |
| Ngumbu D | DRC | 6 months | Research Associate |

**PARTICIPATION IN NATIONAL AND INTERNATIONAL CONFERENCES**

**Participation at conferences, symposia, workshops, etc.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Name*** | ***Country*** | ***Duration of visit*** | ***Type of visit*** | ***Presentation\**** |
| Mokgalaka, NS | South Africa (CSIR, Pretoria) | 10-13 February | LC-MS workshop | Training workshop |
| Augustyn WA | Poland | 24-29 May | 9th ISCNP | Oral |
| Augustyn WA | South Africa (Hoedspruit) | 6 August | Mango Symposium | Oral |
| Augustyn WA | South Africa (Parys) | 7-11 September | Conference  (Analitika) | Oral |
| Langa S | South Africa (Durban) | 17-21 August | Conference  IUPAC Conference on Green Chemistry | Oral |
| Maphoru MV | South Africa (Durban) | 17-21 August | Conference  IUPAC Conference on Green Chemistry | Oral |
| Maphoru MV | South Africa (Pretoria) | 9-12 November | CATSA Conference | Poster |
| Mhlongo WT | France | 24 August-13 September | ESONN | Training school |
| Mandiwana KL | Pakistan | 20-22 October | 25th National and 13th International Chemistry Conference | Invited lecture |
| Katskov D | Russia | 15 September to 4 October | CORTEK LTD and State University, Moscow, Russia | Bilateral work visit |
| McCrindle RI | South Africa (Parys) | 7-11 September | Conference  (Analitika) | Oral |
| Seopela M | South Africa (Parys) | 7-11 September | Conference  (Analitika) | Poster |
| Seopela M | South Africa (Potchefstroom) | 11 November | SACI young spectroscopists symposium | Oral |
| Kilumba F | South Africa (Parys) | 7-11 September | Conference  (Analitika) | Poster |
| Oyourou J | South Africa (Parys) | 7-11 September | Conference  (Analitika) | Oral |
| Nkambule CM | South Africa (Stellenbosch) | 30 November to 4 December | Conference SACI Frank Warren | Oral |
| Nokwequ MG | South Africa (Stellenbosch) | 30 November to 4 December | Conference SACI Frank Warren | Poster |
| Linde JH | South Africa (Potchefstroom) | 11 November | SACI young spectroscopists symposium | Oral |
| Combrinck S | Poland | 24-29 May | 9th ISCNP | Oral |

*\*Invited, plenary, keynote, oral, or poster*

ISCNP International Symposium On Chromatography of Natural Products

CATSA Catalysis Society of South Africa

CSI Colloquium Spectroscopicum Internationale

ESOC European Society of Organic Chemistry

SACI South African Chemical Institute National Convention

ESONN European Summer School on NanoSciences and Nanotechnology

**FUNDING FOR RESEARCH**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source** | **Running costs** | **Student Bursaries** | **Bi-lateral Funding** | **Instrumentation** |
| DAAD-NRF |  | R90 000 |  |  |
| NRF | R 80 000 |  |  |  |
| NRF (Rated scientists) | R 445 000 |  |  |  |
| NRF (SA-Germany) |  |  |  |  |
| NRF (Thuthuka) | R 104 600 |  |  |  |
| TUT |  | R50 000 |  | R2 545 885 86 |
| TUT/CRIC (Niche Areas) | R 250 000 |  |  |  |
| TUT/CRIC (PDF) |  |  |  |  |
| TUT/DRIC (M & D support) |  |  |  |  |
| TUT/FRIC | R 25 064 |  |  |  |
|  |  |  |  |  |
| **Total** | **R904 664** | **R140 000** |  | **R2 545 885 86** |

**Department of Crop Sciences**

**PUBLISHED IN ACCREDITED JOURNALS**

BELANE, A.K., PULE-MEULENBERG, F., MAKHUBEDU, T.I. & DAKORA, F.D. 2014. Nitrogen fixation and symbiosis-induced accumulation of mineral nutrients by cowpea (*Vigna unguiculata* L. Walp.). *Crop and Pasture Science* 65, 250-258.

BILL, M., SIVAKUMAR, D., KORSTEN, L. & THOMPSON, A.K. 2014. Efficacy of the combined application of edible coatings and thyme oil to control anthracnose in avocado *(Persea americana* Mill.) during postharvest storage. *Crop Protection* 64, 159-167.

BILL, M., SIVAKUMAR, D., THOMPSON, K.A. & KORSTEN, L. 2014. Avocado fruit quality management during the postharvest supply chain. *Food Reviews International* 30, 169-202.

KANU, S.A., BARNABAS, A.D., PRZYBYLOWICZ, W.J., MESJASZ-PRZYBYLOWICZ, J. & DAKORA, F.D. 2014. Elemental distribution in tissue components of N2-fixing nodules of *Psoralea pinnata* plants growing naturally in wetland and upland conditions in the Cape Fynbos of South Africa. *Protoplasma* 251, 869-879.

KGOPA, P.M., MOSHIA, M.E. & SHAKER, P. 2014. Soil pH management across spatially variable soils. *Journal of Agricultural Science and Technology* 4, 203-218.

MASHEGO S., PETJA, B.M., MOSHIA, M.E. & DIKGWATLHE, S.B. 2014. Maize (*Zea mays* L.) growth and grain yield under conventional and site-specific nitrogen management in a dryland farmng system. *Journal of Agricultural Science and Technology* 4, 602-611.

MOHALE, K.C., BELANE, A.K. &DAKORA, F.D. 2014. Symbiotic N nutrition, C assimilation, and plant water use efficiency in Bambara groundnut (*Vigna subterranean* L. Verdc) grown in farmers’ fields in South Africa, measured using 15N and 13C natural abundance. *Biology and Fertility of Soils* 50, 307-319.

MOKGEHLE, S.N., DAKORA, F.D. & MATHEWS, C. 2014. Variation in N2 fixation and N contribution by 25 groundnut (*Arachis hypogea* L.) varieties grown in different agro-ecologies, measured using 15N natural abundance. *Agriculture, Ecosystems and Environment* 195, 161-172.

MOSHIA M.E., KHOSLA, R., WESTFALL, D.G., DAVIS, J.G. & REICH, R. 2014. Precision manure management across site-specific management zones: Grain yield and economic analysis. *Agronomy Journal* 106(6):2146-2156.

<https://dl.sciencesocieties.org/publications/aj/pdfs/106/6/2146>

MOSHIA M.E., KHOSLA, R., DAVIS, J.G., WESTFALL, D.G. & REICH, R. 2014. Nitrogen mineralization across site-specific management zones. *Journal of Plant Nutrition* (Accepted for publication in August 2013 as Manuscript No.: LPLA-2013-0033).

MOSHIA, M.E., POTO, S.T. & KGOPA, P.M. 2014. Soils of the areas inhabited by a cluster of *Lippia javanica*, *Peltophorum africanum*, *Gymnosporia senegalensis*, and Kleinia longiflora, common African indigenous medicinal plants. *Journal of Agricultural Science and Technology* (Accepted for publication in June 2014 as Manuscript No.: JAST-E14053101).

SELAHLE, M.K., SIVAKUMAR, D. & SOUNDY, P. 2014. Effect of photo-selective nettings on postharvest quality and bioactive compounds in selected tomato cultivars. *Journal of the Science of Food and Agriculture* 94, 2187-2195.

SENYOLO, G.M., WALE, E. & ORTMANN, G.F. 2014. Consumers’ willingness-to-pay for underutilized vegetable crops: the case of the African leafy vegetables in South Africa. *Journal of Human Ecology* 47(3), 219-227.

SHITTU, T.A., JAYARAMUDU, J., SIVAKUMAR, D. & SADIKU, E.R. 2014. Some physicochemical and engineering properties of a nanocomposite film based on chitosan and pseudobohemite alumina. *Food and Bioprocess Technology* 7, 2423-2433.

SIRAKALALA K. & MOSHIA, M.E. 2014. Probability and statistical error of soil sampling on patches assimilated during delineation of precision farming management zones. *Journal of Agricultural Science and Technology* 4, 440-448.

SIVAKUMAR, D. & BAUTISTA-BAÑOS, S. 2014. A review on the use of essential oils for postharvest decay control and maintenance of fruit quality during storage. *Crop Protection* 64, 27-37.

VAN JAARSVELD, P., FABER, M., VAN HEERDEN, I., JANSEN VAN RENSBURG, W. & VAN AVERBEKE, W. 2014. Nutrient content of eight African leafy vegetables and their potential contribution to dietary reference intakes. *Journal of Food Composition and Analysis* 33, 77-84.

YANG, J., LI, J., JIANG, Y., DUAN, X., QU, H., YANG, B., CHEN, F. &, SIVAKUMAR, D. 2014. Natural occurrence, analysis and prevention of mycotoxins in fruits and their processed products. *Critical Reviews in Food Science and Nutrition* 54, 64-83.

**PUBLISHED IN NON-ACCREDITED JOURNALS**

MAMPHOLO, M.B. & SIVAKUMAR, D. 2014. Reducing postharvest losses of traditional leafy vegetables. *Afgriland* July/ August, 54-55.

**ARTICLES / PAPERS IN PRINT OR ELECTRONIC MEDIA**

GOUWS, R. The effect of volatiles from various *Brassica* species on *Streptomyces*. Official electronic publication of Proceedings of Soilborne Symposium 2014.

MAHLANGU, R.I.S., MABOKO, M.M, SIVAKUMAR, D., SOUNDY, P. & JIFON, J. Lettuce (*Lactuca sativa* L.) growth, yield and quality response to nitrogen fertilization in a non-circulating hydroponic system. *Journal of Plant Nutrition* (In Press).

MAMPHOLO, M.B., SIVAKUMAR, D. & VAN RENSBURG, J. Variation in bioactive compounds and quality parameters in different modified atmosphere packaging during postharvest storage of traditional leafy vegetables (*Amaranthus cruentus* L. and *Solanum reflexum*). *Journal of Food Quality* (In Press).

MANYELO, K.W., VAN AVERBEKE, W. & HEBINCK, P. 2015. Fields, roads and streets: petty fresh-produce production and trade in Thohoyandou, South Africa. *In*: Hebink, P. van der Ploeg, J.D. and Schneider, S. (eds). *Rural Development and the Construction of New Markets*. London: Routledge: 131-149. ISBN: 978-0-415-74634-2.

MOSHIA, M.E., KHOSLA, R., DAVIS, J.G., WESTFALL, D.G. & DOESKEN, K. 2015. Precision manure management on site-specific management zones: Topsoil quality and environmental impact. *Communications in Soil Science and Plant Analysis* 46(2), 235-258.

ROMANAZZI, G., FELIZIANI, E., BAUTISTA BAÑOS, S. & SIVAKUMAR,D. Shelf life extension of fresh fruit and vegetables by chitosan treatment. *Critical Reviews in Food Science and Nutrition* (In Press).

SELAHLE, K.M., SIVAKUMAR, D., JIFON, J. & SOUNDY, P. Postharvest responses of red and yellow peppers grown under photo-selective nets. *Food Chemistry* (In Press).

**INTERNATIONAL VISITS**

First International Meeting on Chitosan and its Practical Applications on the Preservation of Agricultural Commodities

Application of chitosan in combination with different postharvest treatments to control postharvest decay. Presented by Sivakumar, D.

National Polytechnic Institute, Center for Development of Bioproducts, (CEPROBI), Mexico.

II Congresso Nazionale della Società Italiana per la Ricerca sugli Oli Essenziali

(S.I.R.O.E.)

ISTITUTO SUPERIORE DI SANITA’

Dipartimento di Malattie Infettive Parassitarie ed Immunomediate

Terni, Italy 14-16 Novembre 2014 Hotel Michelangelo – via dalla Stazione, 63

*Lettura magistrale*

The use of essential oils on the control of postharvest decay in sub-tropical fruit – Avocado. Presented by Sivakumar, D.

Visit to the Department of Agricultural, Food and Environmental Sciences, Universita Politecnica delle Marche Sivakumar D. participated as a speaker at the meeting on “Application of essential oils on the control of postharvest diseases in different postharvest systems’’. She also participated in discussions for joint research collaboration, submission of joint research funding application for EU project with TUT as a part of the consortium, and student exchange programme.

**VISITING RESEARCHERS**

|  |  |  |  |
| --- | --- | --- | --- |
| ***Name*** | ***Country*** | ***Duration of visit*** | ***Purpose of visit*** |
| Dr Silvia Baustisa-Bańios | Mexico | 10 days | Co-supervision of D Tech programme. Joint research publications. Student exchange programme. |
|  |  |  |  |
|  |  |  |  |
| DI Leskovar | USA | 2 weeks in January and one week in November | Discussion with postgraduate students, and participate in Combined Congress 2014. |

**Participation at international conferences, symposia, etc.**

*The Department participated in a number of international conferences in 2014.*

MASHABELA, M.N., SIVAKUMAR, D. & SOUNDY, P. Influence of fruit quality and bioactive compounds in red and yellow bell peppers grown under different photo-selective netting. Poster presented (by D. Sivakumar) at the XXIX International Horticultural Congress: IHC2014, Brisbane, Australia.

MASHABELA, M.N., SIVAKUMAR, D. & SOUNDY, P. Variation in fruit quality and bioactive compounds in HTSP-5 green bell pepper grown under different photo-selective nets. Paper presented (by P. Soundy) at the XXIX International Horticultural Congress: IHC2014, Brisbane, Australia.

PETJA, B.M., MASHEGO, S., MOSHIA, M.E. & DIKGWATLHE, S.B. Satellite derived sensing of growth and productivity of rainfed maize under conventional and variable rate of nitrogen application in the Nebo Plateau, South Africa. 10th International Conference of African Association of Remote sensing of the Environment. 27-31 October 2014, University of Johannesburg, South Africa.

VAN AVERBEKE, W., SANEWE, A. & BACKEBERG, G. Improving livelihoods on smallholder irrigation schemes in Limpopo Province, South Africa. Paper presented (by G. Backeberg) at the 22nd International Congress on Irrigation and Drainage, 14-20 September 2014, Gwangju, Korea.

**Participation at national conferences, symposia, etc.**

The Department participated at *Combined Congress 2014, Grahamstown, from 20 to 23 January. A total of 16 oral papers and nine posters were presented. One visiting professor (D.I Leskovar) from Texas A&M also presented a paper at the Congress.*

*Oral papers:*

AYUBA, J. DAKORA, F.D. & AHIABOR, B.D.K. Evaluation of symbiotic N fixation, carbon assimilation and water-use efficiency of field grown soybean (*Glycine max* L. Merr.) genotypes in Northern Ghana.

BEYAN, S.M., JAISWAL, S.K., WOLDE-MESKEL, E. & DAKORA, F.D. Physiological and molecular characterization of bradyrhizobial isolates of nodulating soybean in Ethiopia.

GYOGLUU, C. JAISWAL, S.K., BOAHEN, S.K. & DAKORA, F.D. Diversity of indigenous rhizobia nodulating tropical *Glycine* cross and non-tropical *Glycine* cross soybean genotypes.

HABINSHUTI, S.J., MASEKO, S.T. & DAKORA, F.D. Effect of plant age on symbiotic performance, carbon accumulation and δ13C of two field-grown common bean (*Phaseolus vulgaris* L.) varieties in Limpopo.

MAHLANGU, R.I.S., MABOKO, M.M., SIVAKUMAR, D. & SOUNDY, P. Lettuce growth, yield and quality in response to nitrogen in a non-circulating hydroponic system.

MASEKO, S.T. & DAKORA, F.D. Symbiotic performance, δ13C and P nutrition as affected by plant age of two *Cyclopia* species of the Cape Fynbos.

MASHABELA, N.M., SIVAKUMAR, D. & SOUNDY, P. Influence of photoselective netting on plant growth and yield in green sweet pepper cultivar HTSP-5.

MSIMBIRA, L.A., JAISWAL, S.K. & DAKORA, F.D. Diversity of rhizobia nodulating groundnut (*Arachis hypogaea* L.) in South African soils.

MUHABA, S.K., WOLDE-MESKEL, E. & DAKORA, F.D. Assessment of N2 fixation by sixteen groundnut (*Arachis hypogaea*) genotypes planted in North-Eastern Ethiopia, using 15N natural abundance.

OTENG-FRIMPONG, R., NTARE, B.R. & DAKORA, F.D. Heritability of N2 fixation and related traits in advanced breeding of groundnut lines from Ghana.

PILUSA, K.A & DAKORA, F.D. Diversity of nodule-forming bacteria isolated from rooibos plants (*Aspalatus linearis* subsp. *linearis*) grown in the Cape Fynbos.

PUOZAA, D.K., AHIABOR, B.D.K. & DAKORA, F.D. Symbiotic performance and water-use efficiency (WUE) of inoculated bambara groundnut (*Vigna subterranean* L. Verdc.) genotypes.

SAMAGO, T.Y., WOLDE-MASKEL, E. & DAKORA, F.D. Performance of common bean in response to inoculation and P application in Ethiopia.

SELAHLE, M.K., SIVAKUMAR, D. & SOUNDY, P. Influence of photo-selective netting on postharvest quality of HTSP-5 green sweet pepper.

ZINGA, M.K., JAISWAL, S.K. & DAKORA, F.D. Phenotypic characterization and 16S RDNA-RFLP analysis of rhizobial strains nodulating common bean (*Phaseolus vulgaris* L.) in Limpopo Province.

ZWANE, J.P., MATHEWS, C. & DAKORA, F.D. Effect of seaweed extract on plant growth and symbiotic performance of selected grain legumes in Nelspruit, Mpumalanga.

*Posters:*

MAFUKATLA, A. CUPIDO, C. & DAKORA, F.D. Variation in soil phosphatase activity of *Wiborgia leptoptera*, *W. mucronata* and *W. sericea* species of the Cape Fynbos

MAKGATO, M.J., MASEKO, S.T. & DAKORA, F.D. Genotypic variation in rhizosphere phosphatase activity of selected groundnut (*Arachis hypogaea* L.) genotypes grown in Mpumalanga and Gauteng provinces.

MAREDI, M.P., MASEKO, S.T., MATHEWS, C. & DAKORA, F.D. Acid phosphatase activity of intra-hole and sole planted cowpea and maize varieties in Nelspruit, South Africa.

MASHELE, N.S., MASEKO, S.T., MATHEWS, C. & DAKORA, F.D. Evaluating symbiotic N2 fixation of field-grown pigeonpea (*Cajanus cajan* L.) cultivars in the Mpumalanga province, South Africa.

MOHAMMED, M., SOWLEY, E.N.K. & DAKORA, F.D. Plant growth, symbiotic performance and water-use efficiency of six cowpea (*Vigna unguiculata* L Walp.) genotypes grown in the Northern Region of Ghana.

MOKOBANE, K.F., MATHEWS, C. & DAKORA, F.D. Phosphorus nutrition of fifteen mungbean (*Vigna radiata* L.) varieties at Nelspruit and Kliplaatdrift in Mpumalanga.

MTHOMBENI, S.P., MASEKO, S.T., MATHEWS, C. & DAKORA, F.D. Soil and organ phosphatase activity by inoculated and uninoculated soybean varieties at Nelspruit and Bronkhorstspruit.

NAAMALA, J., JAISWAL, S.K. & DAKORA, F.D. Physiological and molecular characterization of fast and slow growing rhizobia nodulating soybean [*Glycine max* (L.) Merr] in South Africa.

ORISHABA, H., MASEKO, S.T. & DAKORA, F.D. Symbiotic performance and water-use efficiency of soybean variety PAN1666 grown in farmers’ fields around Belfast and Carolina in South Africa.

*Invited Speaker: Annual Soilborne Disease Symposium hosted by ARC PPRI, Stellenbosch, 9-11 September 2014.*

GOUWS, R. The effect of volatiles from various *Brassica* species on *Streptomyces*.

*Invited Speaker: Agricultural Geographic Information System Symposium, 13-14 November 2014, Karibu Resort, Limpopo Province, South Africa.*

MOSHIA, M.E. Applied geo-spatial information technology in agriculture.

*Invited Speaker: Institute for Food, Nutrition and Well-being (IFNuW).*

SIVAKUMAR, D. How to get the fresh produce ready for marketing.

*Prof D. Sivakumar also participated in the Post-harvest Technology Workshops from 28-29 October 2014 at the Pure Joy Lodge & Conference Centre, Kameeldrift East, Pretoria*

Workshop Two: Small Scale Farmers for sustainable Fresh Produce production and Value-adding. Focus on optimizing of fruit and vegetable production, basic post-harvest handling principles, reducing wastage, ensuring food safety compliance, value-adding and market access.

MOSHIA, M.E. Remote sensing and geographic information system applications in agriculture: a contemporary missionary approach. *6th Extension and Advisory Services Conference, Polokwane, Limpopo Province, South Africa.*

MOSHIA, M.E, KGOPA, P.M., MASHELE, P.V. & MOTSOENENG, T.J. Paradigms, perspectives, and philosophical technique for teaching a practical course in agricultural science. *Faculty of Science Research Day, 21 October 2014. Tshwane University of Technology, Pretoria, South Africa.*

LUKHELE N.P. & MOSHIA, M.E. Site-specific environmental risk assessment for phosphorus runoff on cultivated agricultural fields. *Faculty of Science Research Day, 21 October 2014. Tshwane University of Technology, Pretoria, South Africa.*

VAN AVERBEKE, W. The potential of expanding smallholder irrigation as a contribution to rural development, employment creation and poverty reduction in post-apartheid South Africa. Proceedings of the Action-Dialogue:opportunities, constraints and innovative approaches in small-scale agriculture in South Africa. *Third Carnegy Enquiry: Strategies to overcome Poverty and Inequality, Malmesbury, Goedgedacht, 6-8 August 2014. Report: 1-30.*

*Keynote Address:*

VAN AVERBEKE, W.Improving plot holder livelihood and scheme productivity on smallholder canal irrigation schemes in the Vhembe District of Limpopo Province. *WatIndaba, Limpopo Department of Agriculture, Polokwane, 28 November 2014.*

**FUNDING FOR RESEARCH**

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** [NRF, etc] | **Research activity** | **Amount (R)**  **2013 2014** | |
| NRF Knowledge Development Fund | Precision Agriculture. | ±84 000 | 128 000 (not used) |
| NRF SA/ARGENTINA | Remote Sensing for Agriculture. | ±110 000 | ±110 000 |
| Howard G Buffet Foundation | Identify critical limitations in horticulture crop production, marketing and consumption in South Africa and neighboring regions. | 200 000 | 200 000 |
| Belgian Development Agency | Train six M Tech students on various research fields. | 300 000 | 300 000 |
| NRF Incentive funding | Vegetable production under protection. | 40 000 | 40 000 |
| NRF Incentive funding | Post-harvest technology of fresh produce. | 40 000 | 40 000 |
| South African Avocado Growers Association | Influence of photo-selective shade nettings to improve fruit quality at harvest and during postharvest storage.  Develop new methods of postharvest disease control.  Use plant volatiles in edible coatings or biodegradable films and fumigation. |  | 400 000 |
| VLIR-UOS | Management of home garden soil fertility. |  | 346 000 |
| Emerging researcher Fund (TUT) | Plant pathology. |  | 100 000 |

**Department of Environmental Health**

Academic staff members in the Department are progressing very well with regards to improvement of qualifications. One staff member has completed his doctoral studies (Dr Fannie Machete). Publications in peer reviewed journals also increased and research capacity building workshops are continuously taking place to improve staff research skills. Two workshops were held during 2014 and this initiative was funded through the Medical Research Council (MRC) and SNOWS grants. The appointment of a full time Research Professor in the department has been realized and drive towards research engagement has started already. The Department also obtained a dedicated research laboratory from Crop Science through the initiative of the dean’s office. This laboratory will be mainly used for research purposes within the department as well as specialized undergraduate practical’s. This will also contribute towards facilitating full time post graduate students on Campus.

**PUBLISHED IN ACCREDITED JOURNALS**

Thabethe NDL, Engelbrecht JC, Wright CY, Oosthuizen MA. (2014). Human health risks posed by exposure to PM10 for four life stages in a low socio-economic community in South Africa. *Pan African Medical Journal*, 18:206. In press but available at <http://www.panafrican-med-journal.com/content/article/18/206/full/>

Wolf J, Prüss-Ustun A, Cumming O, Bartram J, Bonjour S, Cairncross S, Clasen T, Colford JM Jr, Curtis V, De France J, Fewtrell L, Freeman MC, Gordon B, **Hunter PR**, Jeandron A, Johnston RB, Mausezahl D, Mathers C, NeiraM and Higgins JP. (2014). Assessing the impact of drinking water and sanitation on diarrhoeal disease in low- and middle-income settings: systematic review and meta-regression. *Tropical Medicine and International Health*, 19(8): 928-942.

Matthew C. Freeman, Meredith E. Stocks, Oliver Cumming, Aurelie Jeandron, Julian P. T. Higgins, Jennyfer Wolf, Annette Prüss-Ustün, Bonjour S, **Hunter PR**, Lorna Fewtrell and Curtis C. (2014).Hygiene and health: systematic review of handwashing practices worldwide and update of health effects. *Tropical Medicine and International Health,* 19(8): 906-916.

Annette Preuss-Usteun, Jamie Bartram, Thomas Clasen, John M. Colford Jr, Oliver Cumming, Valerie, Curtis, Sophie Bonjour, Alan D. Dangour, Jennifer De France, Lorna Fewtrell, Matthew C. Freeman, Bruce Gordon, **Paul R. Hunter**, Richard B. Johnston, Colin Mathers, Daniel Meausezahl, Kate Medlicott, Maria Neira, Meredith Stocks, Jennyfer Wolf and Sandy Cairncross. (2014). Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: a retrospective analysis of data from 145 countries. *Tropical Medicine and International Health,* 19(8): 894-905*.*

**Shirinde J**, Wichmann, Voyi K. (2014). Association between wheeze and selected air pollution sources in an air pollution priority areas in South Africa: a cross-sectional study. *Environmental Health*, 13:32.

**PUBLISHED IN NON-ACCREDITED JOURNALS**

**Shale**, **K**., Mukamugema, J., Lues, J.F.R., and Venter, P., (2014). Possible microbial and biochemical contaminants of an indigenous banana beer “Urwagwa”: A mini review.*African Journal of Food Science*, 8(7), 376-389.

**ARTICLES / PAPERS IN PRINT OR ELECTRONIC MEDIA**

Notices no. 36849 Government Gazette, 20 September (2013). National norms and standards relating to Environmental Health in terms of National Health Act, 2003 (act no 61 of 2003), General notice 943 of 2013, DEPARTMENT OF HEALTH.

**INTERNATIONAL VISITS**

Lutendo Mudau: attended Annual General Meeting for SNOWS in Norwich City, UK hosted by University of East Anglia and DELTAS proposal writing meeting in London, UK hosted by London School Of Hygiene and Tropical Medicine.

**Leon Bekker:** 8th International Congress for Wildlife and Livelihoods on Private and Communal Lands: Livestock, Tourism and Spirit; **Dates**: 7-12 September 2014; **Location**: YMCA of the Rockies, Estes Park, Colorado, USA; **Oral presentation title**: Two papers namely (1) Game (wildlife) meat safety - understanding the game meat supply chain and the roles of role-players in a multifaceted control environment; and (2) The perception of the Millennial Generation (Y-generation) consumer of game (wildlife) meat and game meat safety

**Participation at national conferences, symposia, etc.**

**Leon Bekker** National conference for Environmental Health; **Theme**: “Environmental Health – the cornerstone of preventative and sustainable health care delivery in South Africa”; **Dates**: 27-29 August 2014; **Location**: Boardwalk convention Centre, Port Elizabeth; **Oral presentation title**: Game meat control – understanding the supply chain and the essential control points thereof?

**FUNDING FOR RESEARCH**

|  |  |  |
| --- | --- | --- |
| **Source** | **Research activity** | **Amount**  **2014** |
| NRF | PhD studies for Ms J Shirinde |  |
| NRF | Prof K Shale | R 40 000.00 |
| DHET | PhD studies for Dr F Machete | R 20 000.00 |
| SAPA | D Tech studies for Mr JL Harmse |  |
| MRC | D Tech studies for Ms S Mudau | R90 000.00 |
| MRC | Prof K Shale | R 250 000.00 |
| SNOWS | D Tech studies for Ms S Mudau |  |
| TUT | Dr I Mokgobu |  |
| TUT | Prof K Shale | R350 000.00 |

**Department of Environmental, Water & Earth Sciences**

In 2014, our department had a very successful research and conference output. This research output is presented below. **Thirty four** papers were published in peer reviewed scientific journal during 2014. A total of 26 conferences proceeding were published in 2014

**PUBLISHED IN ACCREDITED JOURNALS**

:Adeniyi, A., Maree, J. P., Mbaya, R. K. K., Popoola, A. P. I., Mtombeni,T., and Zvinowanda, C. M. 2014. HybridICE Filter: Ice Separation In Freeze Desalination Of Mine Waste Waters. *Journal of Water Science and Technology* 69(9): pp 1820-1827.

Adeniyi, A., Maree, J. P., Mbaya, R. K. K., Popoola, A. P. I., and Zvinowanda, C. M. 2014. Performance Comparison Of Hydraulic And Gravitation HybridICE Filters In Freeze Desalination Of Mine Waters. Accepted for publication by *WaterSA*.

Adegbenro, PD, Okonkwo, JO, **Jansen**, R, Forbes, PB, Kotze, A & Rohwe, ER. (2014). Polybrominated diphenyl ethers (PBDEs) in eggs and eggshells of the Southern Ground-Hornbill (*Bucorvus leadbeateri*) and Wattled Crane (*Bugeranus carunculatus*) in South Africa. *Chemosphere* 118:284-292.

Doucouré, C. M., Fourie, C.J.S., Ameglio, L. and De Wit, M.J. (2014). AGEO - Airborne Geophysics Observatory for Earth and Human Resources, Ecosystems and Built Environment. *South African Journal of Science*. Accepted in press.

Du Toit, Z, Grobler, JP, Kotze, A, Jansen, R, Brettschneider, H & Dalton, DL. (2014). The complete mitochondrial genome of Temmincki’s ground pangolin (*Smutsia temminckii*) and the phylogenetic position of Pholidota. *Gene* 551: 49-54

Fourie, C.J.S., Henry, G. and Marè, L. P. (2014). The structure of the Karoo-age

Ellisras basin in the Limpopo Province, in the light of new airborne geophysical data.

*South African Journal of Geology*. 117(2): 207-224.

Kebede K Kefeni, Jonathan O. Okonkwo and Ben M Botha (2014) Concentration of polybromobiphenyl and polybromodiphenyl ethers in home dust: Relevance to socio-economic status and human exposure rate. *Sci Total Environ* 470-471: 1250-1256.

Pietersen, DW, McKechnie, AE & Jansen, R. (2014). Review of the anthropogenic threats faced by ground pangolins Smutsia temminckii in southern Africa. S. Afr. J. Wildlife Research 44(2): 167-178

Pietersen, DW, McKechnie, AE & Jansen, R. (in press). Home range, habitat selection and activity patterns of an arid-zone population of Temminck’s ground pangolins *Smutsia temminckii. African Zoology*

Mambo Moyo, Jonathan O. Okonkwo, Nana M Agyei (2014). An amperometric biosensor on horseradish peroxidise immobilization onto maize tassel-multi-walled carbon nano tubes modified glass carbon electrode for determination of heavy metals ions in aqueous solution (In press).

Mambo Moyo, Jonathan O Okonkwo, Nana Agyei (2014). Optimization of Horseradish peroxidase immobilized on glass carbon electrode based on maize tassel-multiwalled carbon nanotubes for sensitive copper (II) ion detection. *Inter J Electro Chem Sci* 9: 1439-1453.

Mambo Moyo, Jonathan O. Okonkwo, Nana M. Agyei (2014). A Novel Hydrogen Peroxide Biosensor Based on Adsorption of Horseradish Peroxidase onto a Nanobiomaterial Composite Modified Glassy Carbon Electrode. *Electroanalysis* DOI: 10.1002/elan.201300165

Mambo Moyo, Jonathan O. Okonkwo, Nana M. Agyei (2014) Maize tassel-modified carbon paste electrode for voltammetric determination of Cu(II). *Environ Mont & Assess* DOI 10.1007/s10661-014-3739-0

T. B. Chokwe; J. O. Okonkwo L. L. Sibali and E. J. Ncube (2014). Improved derivatization protocol for simultaneous determination of alkylphenol ethoxylates and brominated flame retardants followed by gas chromatography-mass spectrometry analyses. *Water Sci & Technol* doi: 10.2166/wst.2014.144

JBN Mudumbi, SKO Ntwamp, M Muganza & JO Okonkwo (2014). Susceptibility of Raparian Wetland plants to perfluoroctanoic acid (PFOA) accumulation. *Inter J Phytoremediation* DOI: 10.1080/15226514.2013.810574.

JBN Mudumbi, SKO Ntwamp, M Muganza & JO Okonkwo (2014). Perfluorooctanate and perfluorooctane sulfate in South African river water. *Water Sci & Technology* DOI: 10.2166/wst2013.366.

Jose Brandao, Mambo Moyo and Jonathan Okonkwo (2014). Determination of antimony in bottled water and polyethylene terephthalate bottles: a routine laboratory quality check. *Water Sci & Technol*. DOI: 10.2166/wst.2013.187.

Maila MD, Maree JP, Cele LM (2014). Acid mine water neutralization with ammonium hydroxide and desalination with barium hydroxide. *Water SA* **40** (3): 521-527.

Masukume M, Onyango MS, Maree JP (2014) Sea shell derived adsorbent and its potential for treating acid mine drainage, International journal of mineral processing, 133, 52-50

Oluranti Agboola • Jannie Maree • Andrei Kolesnikov, Richard Mbaya • Rotimi Sadiku (2014) Env Chem Lett, Theoretical performance of nanofiltration membranes for wastewater treatment, DOI 10.1007/s10311-014-0486-y

Agboola O, Maree J, Mbaya R (2014) Characterization and performance of nanofiltration membranes, Environ Chem Lett (2014) 12:241–255.

Agboola O, Maree J,Mbaya, R, Zvinowanda CM,Molelekwa GF, Jullok N, Van der Bruggen B, Volodine A Van Haesendonck C, Deposition of toxic metal particles on rough nanofiltration membranes, *Korean J. Chem. Eng*.,DOI: 10.1007/s11814-014-0075-61

Van Schoor, M. and Fourie, C. J. S. (2014). The application of geophysics in South African coal mining and exploration. *Journal of The Southern African Institute of Mining and Metallurgy*114: 1-6

Mkhize N.T., Msagati T.A.M., Mamba B.B. & Momba M.N.B.(2014) Determination of volatile fatty acids in wastewater by solvent extraction and gas chromatography. *Physics and Chemistry of the Earth,* 67–69 (2014) 86–92 *.*

Kamika, Ilunga; Coetzee, Martie; Mamba, Bhekie B.; Msagati, Titus; Momba, Maggy N.B. (2014). "The Impact of Microbial Ecology and Chemical Profile on the Enhanced Biological Phosphorus Removal (EBPR) Process: A Case Study of Northern Wastewater Treatment Works, Johannesburg." *Int. J. Environ. Res. Public Health* 11, no. 3: 2876-2898.

Kamika I & Momba MNB(2014) Microbial Diversity of Emalahleni Mine Water in South Africa and Tolerance Ability of the Predominant Organism to Vanadium and Nickel.  *PLoS ONE* 9(1): e86189. doi:10.1371/journal.pone.0086189. Published online.

I. Kamika & MNB Momba, Effect of nickel to nutrient removal by selected indigenousprotozoan species in wastewater systems, *Saudi Journal of Biological Sciences* (2014), doi: [*http://dx.doi.org/10.1016/j.sjbs.2014.09.010*](http://dx.doi.org/10.1016/j.sjbs.2014.09.010)

Sekar, S., Zintchem, A.A.E.A., Keshri, J., I Kamika & MNB Momba. (2014). Bacterial profiling in brine samples of Emalahleni Water Reclamation Plant, South Africa, using 454-pyrosequencing method. *FEMS Microbiology Letters*, Published online DOI: 10.1111/1574-6968.12557

Kamika, I. & Momba, M.N.B. 2014. Effect of vanadium toxicity at its different oxidation states on selected bacterial and protozoan isolates in wastewater. *Environmental Technology* 35(16): 2075-2085. DOI:10.1080/09593330.2014.893023. Published online

RM Siebrits, K Winter, J Barnes, MC Dent, G Ekama, M Ginster, J Harrison, B Jackson, I Jacobs,A Jordaan, HC Kasan, W Kloppers, R le Roux, J Maree, MNB Momba, AV Munnik, J O’Keeffe, R Schulze,M Silberbauer, D Still & JE van Zyl (2014) Priority water research questions for South Africa developed through participatory processes. *Water SA* 40 (2):199-209.

GZ Teklehaimanot, MAA Coetzee & MNB Momba(2014) Faecal pollution loads in  the wastewater effluents and receiving water bodies: a threat to the communities of Sedibeng and Soshanguve, South Africa. *Journal of Environmental Science and Pollution Research.* Published online DOI 10.1007/s11356-014-2980-

Ramalivhana JN, Obi CL, Samie A, Iweriebor BC, Uaboi-Egbenni P, Idiaghe J.E. & Momba M. N. B (2014) Antibacterial activity of honey and medicinal plant extracts against Gram negative organisms. *African Journal of Biotechnology 13(4): 616-625.*

Adeyemo, F.E., Kamika, I. & Momba, MNB(2014). Comparing the effectiveness of five low cost home water treatment devices for Cryptosporidium and Giardia removal from water sources. *Desalination and Water treatment*. Published on line DOI:10.1080/19443994.2014.960457.

Jitendra Keshri, BBJ Mankazana & MNB Momba(2014) Profile of bacterial communities in South African mine waters using Illumina next-generation sequencing platform. *Applied Microbiology and Biotechnology*: *Accepted*

**CONFERENCE PROCEEDINGS**

Agboola, O, Maree, J., Mbaya, R., 2014.  Characterization and performance of nanofiltration membranes, Environ Chem Lett, vol12, pp.241–255, DOI 10.1007/s10311-014-0457-3

Agboola, O., Jannie Maree, J.,  Richard Mbaya, R., Caliphs Musa Zvinowanda, CM., Molelekwa, GF., Jullok, N., Bruggen, Bvd., Volodine, A.,  Haesendonck, Cv., 2014. Deposition of toxic metal particles on rough nanofiltration membranes, *Korean J. Chem. Eng*., DOI: 10.1007/s11814-014-0075-6.

A Adeniyi, J. Maree, R. K. K. Mbaya, A. P. I. Popoola, T. Mtombeni & C. M. Zvinowanda, 2014. HybridICE® filter: ice separation in freeze desalination of mine waste waters, *Water Science & Technology, doi:10.2166/wst.2014.078.*

Adeniyi A, Maree J P, MbayaR K K, Popoola A P I and ZvinowandaC M (2014) Performance comparison of hydraulic and gravitation HybridIce filters in freeze desalination of mine waters, Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

AgboolaO, MareeJ P, MbayaR, Kolesnikov A and Schoeman J J (2014) Rejection behavior of heavy metals ions from synthetic wastewater containing NiSO4, MgSO4, CoSO4, MnSO4 and FeSO4 salts by a nanofiltration membrane, Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

Bologo V, Maree, J P, Carlsson, F H H, Louw W J (2014) Application of calcium carbonate/hydroxide and barium carbonate for desalination of mine water (ABCD process), Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

Malisa R, Maree J P, Kefeni K K and Hardwick E (2014) Recovery of nitric acid using the resin freeze desalination process, Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

Mohajane G B, MareeJ P, PanichevN and Louw W J (2014) Treatment of alkaline mine water with hydrogen peroxide, Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

Motaung S R, Zvimba J N, Maree J P and Kolesnikov A V (2014) Thermochemical reduction of pelletized gypsum, Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

Mtombeni, T, Maree J P, Zvinowanda C M, Asante J K O and Louw W J (2014) Improved freeze desalination process for recovery of water and salts from brines, Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

Tewo R, K, Maree J P, Kolesnikov A V, Ruto S J and Mohajane G B (2014) The effect of hydrogen sulphide gas on the dissolution of calcium sulphide in the production of calcium carbonate and elemental sulphur. Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

Rukuni T T, Maree J P, Carlsson F H H and Fourie C J S (2014) Investigation of carbonate dissolution for the separation of magnesium hydroxide and calcium sulphate in a magnesium hydroxide-calcium sulphate mixed sludge, Proceedings of the 2014 WISA Biennial Conference, Mbombela, 25-29 May.

L. Baloyi, L Mpenyana & MNB Momba (2014). Synthesis and characterisation of silver nanoparticles impregnated in resin and alginate beads for antibacterial properties. **Oral Presentation**. 5th International conference on Nanoscience and Nanotechnology (NanoAfrica). 30 March to 02 April 2014., Vaal University of Technology,  Gauteng, South Africa.

Mboyi A., Musee N, Zvimba JN & Momba MNB (2014). Toxicity effect of Ag and ZnO engineered nanoparticles on wastewater bacteria: Environmental risks. **Poster presentation,** 4th NanoAfrica conference. 30th March -3rd April, Vaal University of Technology,  Gauteng, South Africa. (Awarded 2nd price).

Momba MNB (2014) Bioremediation Of Polluted Wastewater –Could European Research and Technology Help Developing Countries? **Oral presentation.** The Industrial Technologies 2014 conference, April 9 – 11, 2014.Athens/Greece.

Armand Aimé Eroko A Zintchem, Sudharshan Sekar & MNB Momba (2014). Metagenomics: DNA sequencing of environmental samples from acid mine drainage. **Poster presentation.** *WISA Biennial Conference & Exhibition 25-28 May, 2014 Mbombela, Mpumalanga, South Africa.*

Mboyi A., Musee N, Zvimba JN & Momba MNB (2014). Potential effect of Ag and ZnO engineered nanoparticles on selected wastewater bacteria: **Oral presentation,** WISA 2014 Biennial conference, 25 - 28 May, Mbombela/Mpumalanga,  South Africa

L Baloyi, L Mpenyana & MNB Momba (2014). Drinking water disinfection using silver alginate and silver resin nanoparticle beads: A comparative study. **Oral presentation.** WISA 2014 Biennial Conference. 26-28th of May. Mbombela/ Mpumalanga, South Africa.

Sudharshan Sekar, Aime Eroko & MNB Momba (2014) Metagenomics: DNA sequencing of environmental samples from acid mine drainage. **Poster presentation.** WISA 2014 Biennial Conference. 26-28th of May. Mbombela/ Mpumalanga, South Africa.

GS Groening, MAA Coetze & MNB Momba (2014). Design and operation of a laboratory scale activated sludge plant for the selection of phosphorus accumulating protozoa*.* ***Poster presentation****. WISA 2014 Biennial Conference. 25th to 28th of May 2014, Nelspruit, South Africa.*

Abia ALK, Ubomba-Jaswa E, Ssemakalu CC & Momba MNB (2014) Development of a rapid approach for the enumeration of Escherichia coli in riverbed sediment: Case study, the Apies River, South Africa. **Oral presentation***.International Association of Sediments and water Science (IASWS) conference*, *15-18 July 2014, Grahamstown, South Africa.*

Abia ALK, Ubomba-Jaswa E, du Preez M & Momba MNB (2014) Riverbed sediments in the Apies River, South Africa: determining the extent of microbial contamination and identifying a suitable indicator for measuring microbial quality. **Poster presentation.** *International Association of Sediments and water Science (IASWS) conference*, *15-18 July 2014, Grahamstown, South Africa.*

Kachieng’a, L & Momba, MNB. (2014). Biodegradation of crude oil spill by-products (petroleum) polluted wastewater by selected protozoan isolates. **Oral presentation***. 12th IMWA congress Interdisplinary Response to Mine Water Challenges.* 18 - 22 August 2014, Xuzhou, Jiangsu, China. (printed in the conference proceedings).

Momba MNB (2014) Water and Wastewater Management for the Sustainability of Water Resources-Where is Africa. Public lecture-University of Wisconsin and Milwaukee Global Water Centre. 27 September - 4October. USA.

I Kamika, M Coetzee, BB Mamba, T Msagati & MNB Momba(2014) Effect of Covered and Uncovered Fermenters on the Microbial Diversity and Volatile Fatty Acid in the Enhanced Biological Phosphorus Removal Process: Case-Study in Johannesburg Northern Wastewater Treatment Works. **Oral presentation.** The IWA World Water Congress & Exhibition, 21-26 September 2014. Lisbon/Portugal.

Momba MNB (2014). The challenge of drinking water disinfection in developing  countries. *Key note address during the 2nd symposium on UV disinfection in developing countries*. 6th of November. UNESCO-IHE/Delft. The Netherland.

**INTERNATIONAL VISITS**

Non-conference related international visits were dominated by course-orientated visits to the Netherlands where our staff are sponsored training by NUFFIC in water treatment technologies that is later to be implemented in a revised curriculum in our undergraduate programs.

|  |  |  |
| --- | --- | --- |
| **Staff member** | **Destination** | **Reason for visit** |
| Rakhee Lakhraj-Govender | Granada (Spain) | Attended the International work-conference on Time Series to learn new skills and techniques for research. |
| Lizzy Monyatsi | Netherlands-Delft | Attended a short course at UNESCO-IHE |
| Boitumelo Mankazana | Netherlands-Delft | Attended a short course at UNESCO-IHE |

**VISITING RESEARCHERS**

Prof. Emile Okal,  [Department of Earth & Planetary Sciences](http://www.earth.northwestern.edu/) [Northwestern University](http://www.northwestern.edu/), Illinois, U.S.A in the field of Earth quake Seismology.

Dr. Robert Trumbull, Geophysics Division, GFZ, Germany in the field of deep crustal drilling.

Prof. Tarek Samir Jamil of National Research Centre visited the TUT Water Research Group from 13 to 18 October and participated in a workshop on a Joint Collaborative Project between Egypt and SA.

**Participation at international conferences, symposia, etc.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Staff member** | **Destination** | **Conference name** | **Type of presentation** |
| M Masukume (student) | USA, Philadelphia (30 March – 3 April 2014) | The Twenty-Ninth International conference on solid waste technology and management | Oral |
| Kachieng’a, L | Xuzhou, Jiangsu, China. | *12th IMWA congress Interdisplinary Response to Mine Water Challenges.* | Oral presentation  (printed in the conference proceedings) |
| Momba MNB | Athens/Greece | The Industrial Technologies 2014 conference e | Oral presentation. |
| Momba MNB | USA | USA. Global Water Centre/Milwaukee &University of Wisconsin/Madison, | Public lecture |
| MNB Momba | Lisbon/Portugal | The IWA World Water Congress & Exhibition | Oral presentation |

**Participation at national conferences, symposia, etc.**

Presentations were made by academic members of staff and their post graduate students at five national conferences in 2014.

|  |  |  |  |
| --- | --- | --- | --- |
| **Staff / student** | **Destination** | **Conference name** | **Type** |
| Dr. C.J.S. Fourie | Matjiesfontein | Inkaba yeAfrika -10 | Oral |
| Mr. Louis Beneke (DTech) | Matjiesfontein | Inkaba yeAfrika -10 | Oral |
| Me. Danel van Tonder (DTech) | Matjiesfontein | Inkaba yeAfrika -10 | Oral |
| Mr. Vincent Mabunda (BTech) | Matjiesfontein | Inkaba yeAfrika -10 | Oral |
| Me. Mpho Mogoswane (BTech) | Matjiesfontein | Inkaba yeAfrika -10 | Oral |
| Me. Charmaine Mahlaguame (BTech) | Matjiesfontein | Inkaba yeAfrika -10 | Oral |
| Me. Sharon Rakgalekane (BTech) | Matjiesfontein | Inkaba yeAfrika -10 | Oral |
| Mr. Ian Saunders (MTech) | Matjiesfontein | Inkaba yeAfrika -10 | Oral |
| Prof R Jansen | Skukuza | International Congress on Parasites of Wildlife | Oral |
| Mr Tabani Mtombeni | Mbombela | WISA | Oral |
| Mr Timothy Rukuni | Mbombela | WISA | Oral |
| Mr Tewo Kimutai | Mbombela | WISA | Oral |
| Mr Goodwill Mohajane | Mbombela | WISA | Oral |
| Mr Amos Adeninyi | Mbombela | WISA | Oral |
| Ms Rejoice Malisa | Mbombela | WISA | Oral |
| Ms Vhahangele Bologo | Mbombela | WISA | Oral |
| Ms Dineo Maila | Mbombela | WISA | Oral |
| Ms Shiela Ruto | Mbombela | WISA | Oral |
| Ms Lerato Baloyi | Vaal University of Technology,  Gauteng,  South Africa | 5th International conference on Nanoscience and Nanotechnology (NanoAfrica) | Oral |
| Ms Anza Mboyi | Vaal University of Technology,  Gauteng, South Africa | 4th NanoAfrica conference | Oral |
| Ms Anza Mboyi | Mbombela/Mpumalanga,  South Africa | WISA 2014 Biennial conference | Oral |
| Ms Lerato Baloyi | Mbombela/Mpumalanga,  South Africa | WISA 2014 Biennial conference | Oral |
| Mr GS Groening | Mbombela/Mpumalanga,  South Africa | WISA 2014 Biennial conference | Poster |
| Mr ALK Abia | Grahamstown, South Africa | International Association of Sediments and water Science (IASWS) conference | Oral |
| Mr Aime Eroko | Mbombela/Mpumalanga,  South Africa | WISA 2014 Biennial conference | Poster |

**FUNDING FOR RESEARCH**

|  |  |  |  |
| --- | --- | --- | --- |
| **Staff member** | **Source** [NRF, etc] | **Research activity** | **Amount** |
| Dr Fourie CJS | NRF-NEP | Seismology Network | R10 000 000.00 |
| Dr Fourie CJS | Copper Research Association | Geoscience Train | R250 000.00 |
| Dr Fourie CJS | AEON | Geoscience Train | R550 000.00 |
| Ms Rakhee Lakhraj-Govender | DHET Staff Support Grants (Improvement of Qualification) | PhD climate change research. | R17000 |
| Prof MNB Momba | NRF/DST | SARChI chair in water quality and wastewater management | R1 440 000.00 |
| Prof MNB Momba | TUT | TUT Contribution for SARChI Chair | R 382 500.00 |
| Prof.MNB Momba | NRF | Community Engagement Project | R528 300.00 |
| Prof MNB Momba | NRF | Incentive for Rated Researcher | R40 000.00 |
| Prof. MNB Momba | NRF | SA/Egypt joint collaborative project | R63 300.27 |
| Prof MNB Momba | CSIR/Water Research Commission | Contribution of CSIR for Master and Doctoral students involved in the WRC projects which are under the CSIR leadership | R262 920 |
| Prof. MNB Momba | TUT | TUT contribution to the Niche Area | R 28 000.00 |
| Prof MAA Coetzee | TUT | TUT Emerging Programme Grant | R 100 000.00 |
| Dr L Monyatsi | TUT | TUT Emerging Programme Grant | R 100 000.00 |

**Total funding sourced: R14 024 940.27**

**Department of Horticulture**

Seven new M Tech students were registered, while nine M Tech students re-registered. Post graduate research projects were continued with the ARC-Roodeplaat and ARC-Infruitec, and three Master students will finish their research during 2014 on these collaboration initiatives. A registered D Tech student, M Motsa, won prize for best junior researcher of 2014 at the Faculty Research day 2014. Two students presented oral presentations and one poster at the Faculty Research day. Various other presentations were delivered by postgraduate students (see below).

Publications include one conference proceeding and two scientific papers, one published proceeding, while sixteen oral conference presentations and four posters were presented.

**PUBLISHED IN ACCREDITED JOURNALS**

Two scientific articles were published in accredited journals:

**Steyn, W. P.**, Daneel, M. S. & **Slabbert, M. M.** 2014. Host suitability and response of different vegetable genotypes to *Meloidogyne incognita* race 2 and *Meloidogyne javanica* in South Africa. International Journal of Pest Management 60 (1): 59-66.

**Slabbert, M. M.** & Kruger, G.H.J. 2014. Antioxidant enzyme activity, proline accumulation, leaf area and cell membrane stability in water stressed *Amaranthus* leaves. South African Journal of Botany (95): 123-128.

**PUBLISHED IN NON-ACCREDITED JOURNALS**

Published proceedings:

**Steyn, W.P., Daneel, M.S. and Slabbert, M.M. 2014.** Verification of Meloidogyne incognita race 2 resistance in Amaranthusand Capsicumgenotypes in South Africa. Proceedings of 6th International Congress of Nematology,4-9 May 2014, Cape Sun, Cape Town, South Africa.

**INTERNATIONAL VISITS**

Two lecturers (L Marais and K Prinsloo) visited the Chelsea Flower show in London during May 2014

**PARTICIPATION AT INTERNATIONAL CONFERENCES, SYMPOSIA, ETC.**

Three personnel members attended the International Horticultural Conference in Brisbane, Australia during August, where four oral presentations and two poster presentations were delivered.

**Presentations:**

Abdelgadir, H., Du Plooy, C.P., Prinsloo, G., **Kleynhans, R**. Viljoen, J., Sathekge, R. & Mulaudzi, R. 2014. Effects of cultivation and drying methods on the phytochemical content and biological activity of the cancer bush *Sutherlandia frutescens* L. International Horticulture symposium 17-22 August 2014, Brisbane, Australia.

Lewu, F., Mthiyane, P., Mavengahama, S., **Kleynhans, R**. & Opoku, A. 2014. A correlation study of the phytochemical and morphological characters of *Pelargonium sidoides* DC cultivated in Northern Kwazulu-Natal, South Africa. International Horticulture symposium 17-22 August 2014, Brisbane, Australia.

Ndwambi, D,**Kleynhans, R,** *M*atsiliza-Mlathi, B. 2014. Effect of leaf section position and hormanoe application on bulblet production form leaf cuttings of Eucomis. The 29th International Horticultural Conference, 17–22 August, Brisbane, Australia.

**Slabbert, M. M., Motsa, M.** and Van Averbeke, W. 2014. Germination of selected African leafy vegetables in response to different dormancy pre-sowing treatments. International Horticultural Conference 18-22 August 2014, Brisbane, Australia.

**Posters:**

Mthiyane, P., Mavengahama, S., Opoku, A., **Kleynhans, R**. & Lewu, F. 2014. Morphological characterisation of cultivated *Pelargonium sidoides* DC in the Northern Kwazulu-Natal, RSA. The 29th International Horticultural Conference, 17–22 August, Brisbane, Australia.

**Ndwambi, E. Matziliza-Mlathi, B. & Kleynhans, R**. 2014. Effect of planting time on production of leaf cuttings of Eucomis. The 29th International Horticultural Conference, 17–22 August, Brisbane, Australia.

**PARTICIPATION AT NATIONAL CONFERENCES, SYMPOSIA, ETC.**

Thirteen presentation and two posters were presented nationally.

**Presentations:**

**Motsa, M.M.**, Bester, C., **Slabbert, M. M.** & Adams, R. 2014. Estimation of nuclear DNA content and ploidy level in Cyclopia species (Honeybush) using flow cytometry. 10th Southern African Plant Breeding Symposium. 10-12 March, The Maria Moroka Nature Reserve, Thaba ‘Nchu.

**Motsa, M.M.,** Bester, C. & **Slabbert, M. M**. 2014. Natural fecundity of selected *Cyclopia species.* Faculty of Science Research Day 21st October, Pretoria west. Received Junior Researcher of 2014 award.

**Motsa, M.,** **Slabbert M. M.** & Van Averbeke W. 2014 Seed germination of selected African leafy vegetables. Symposium on the Water Use and Nutritional Value of Indigenous and Traditional South African Underutilised Food Crops for Improved Livelihoods. 18-19 February, Farm Inn, Pretoria.

**Murovhi R**., Gouws, R. & **Slabbert M. M.**  2014**.** Integrated Disease Management for the reduction of potato common scab (*Streptomyces* spp) in production units of South Africa. NRF- Thrip Symposium, August 2014, ARC-VOPI, Pretoria.

**Murovhi R**., Gouws, R. & **Slabbert M. M.** 2014**.** Integrated Disease Management for the reduction of potato common scab (*Streptomyces* spp) in production units of South Africa. ARC-VOPI Research Symposium 11-14 November, VOPI Pretoria.

**Murovhi R**., Gouws, R. & **Slabbert M. M.** 2014**.** Integrated Disease Management for the reduction of potato common scab (*Streptomyces* spp) in production units of South Africa. Potato South Africa Annual  Symposium 5-7 August, Pretoria.

Nemakanga, R., Mofokeng, M.M., Sasa, S.R. & **Kleynhans, R.** The performance of *Sclerocarya birrea* (marula) seedlings to different fertilizers and planting methods in the Limpopo province. IPUF 2014 1-4 July Puthaditjhaba.

**Nghondzweni, T.**, **Slabbert, M. M.** & Gouws, R. 2014. Developing a sanitation model to reduce postharvest decay of potato tubers. Faculty of Science Research Day 21st October, Pretoria west.

**Nghondzweni, T., Slabbert, M. M.** & Gouws, R. 2014. Developing a sanitation model to reduce postharvest decay of potato tubers. Potato South Africa Research Symposium 5-6 August. Khaya Ibhubesi, Parys, Free State.

**Nghondzweni, T., Slabbert, M. M.** & Gouws, R. 2014. Developing a sanitation model to reduce postharvest decay of potato tubers. ARC-VOPI Research Symposium 11-13 November. Roodeplaat, Pretoria.

**Prinsloo, K.** 2014. The way forward in Landscape Technology at Tshwane University of Technology. ILASA Conference, 4 – 5 September, Western Cape.

**Slabbert, M. M**., Sosibo, Z. M. & Van Averbeke, W. 2014. The response of six African leafy vegetables to drought and heat stress. Symposium on the Water Use and Nutritional Value of Indigenous and Traditional South African Underutilised Food Crops for Improved Livelihoods. 18-19 February, Farm Inn, Pretoria.

**Steyn, W.P., Daneel, M.S. and Slabbert, M.M. 2014.** Verification of Meloidogyne incognitarace 2 resistance in Amaranthusand Capsicumgenotypes in South Africa. Proceedings of 6th International Congress of Nematology,4-9 May 2014, Cape Sun, Cape Town, South Africa.

**Poster:**

**Koen, J., Slabbert, M. M.** and Bester, C. 2014. Seed age and colour as factors influencing the germination of honeybush tea (*Cyclopia subternata*) seed. Indigenous Plant Utilizers Forum, UFS Qwaqwa, 30 June – 3 July 2014, Phuthaditjaba.

**Mabizela, G.S.**, Bester, C., Booyse, M., **Slabbert, M.M. 2014.** Planting date and

clonal interaction in rooting of *Cyclopia subternata* cuttings. Faculty of Science Research Day 21st October, Pretoria West.

* 1. **FUNDING FOR RESEARCH**
  + Emerging Researcher Funds (Dr R Kleynhans) - (R100 000.00)
  + KIC funding for Conference attendance (Dr R Kleynhans) - (R20 000.00)

**Department of Mathematics and Statistics**

**PUBLISHED IN ACCREDITED JOURNALS**

Articles by the following staff members were published in accredited journals during 2014:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Author(s)** | **Title** | **Journal** | **Pages** | **Year** | **Accredited** |
| D Georgiou, A Megaritis, SP Moshokoa | Small inductive dimension and Alexandroff topological spaces | Topology and its Applications | 103-119 | 2014 | Yes |
| H Jafari, K Bagherian, SP Moshokoa | Homotopy perturbation method to obtain positive solutions of a nonlinear boundary value problem of fractional order. | Abstract and Applied Analysis | Http:/dx. doi.org/10.1155/2014/919052 | 2014 | Yes |
| 1. I. Fedotov, M. Shatalov, J. Marais | Hyperbolic and Pseudohyperbolic Equations in the theory of vibrations | Acta Mechanica. |  | In press  ( December 2014- January 2015) | Yes |
| . Bychkov P.S., Lychev S.A., Manzhirov A.S.,Fedotov I, , | .,Experimental identification of the growing shells | Problems of Dynamics of deformed bodies Proceedings of VIII International conference | , pp103-107. | 2014, Yerevan, | yes |
| M. Shatalov, A. Demidov, I. Fedotov | Parameters estimation for chemical kinetic’s problems with incomplete information | Theoretical Foundations of Chemical Engineering | Submitted in October 2014 | 2015 | Yes |
| K.A. Motsepe,  M. Shatalov,  S. Joubert | Application of the heun functions to rotor vibratory gyroscope, their numerical computation and accuracy estimation**,** [applied mathematics and computation](http://www.researchgate.net/journal/1873-5649_Applied_Mathematics_and_Computation) (impact factor: 1.35). 07/2014; 239, pp. 47–55 | [Applied Mathematics and Computation](http://www.researchgate.net/journal/1873-5649_Applied_Mathematics_and_Computation) (Impact Factor: 1.35). | Volume 239, pp. 47–55 | 2014 | Yes |
| J. Marais,  I. Fedotov, M. Shatalov | Longitudinal vibrations of a cylindrical rod based on the rayleigh-bishop theory | Afrika Matematika | accepted for publication  in 2014 | 2014-2015 | Yes |
| A. Pete, P. Mathye, I. Fedotov, M.Shatalov | Determination of parameters for cauchy's problem for systems of odes with application to biological modelling | BIO-MATHEMATICS | Submitted after revision in 2014 | 2014-2015 | Yes |
| SV Joubert, MY Shatalov, CE Coetzee | Using Fourier series to analyse mass imperfections in vibratory gyroscopes | Journal of symbolic Computation | Volume 61-62, pp 116-127 | 2014 | Yes |
| SV Joubert, MY Shatalov, TH Fay | On numerically solving an eigenvalue problem arising in a resonator gyroscope | Applied Mathematics and Computation | Volume 246, pp 561 - 571 | 2014 | Yes |
| KA Motsepe; MY Shatalov; SV Joubert | 1. Application of Heun functions to rotor vibratory gyroscope, their numerical computation and accuracy estimation 2. Exact solution for the equation of the vibratory rotor gyroscope in terms of Heun functions | Elsevier Journal of Applied Mathematics and Computation  To be submitted. | 47 - 55 | 2014 | Yes |

**PUBLISHED IN NON-ACCREDITED JOURNALS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Author(s)** | **Title** | **Journal** | **Pages** | **Year** | **Accredited** |
| DN Georgiou, AC Megaritis and SP Moshokoa | A computing procedure for the small inductive dimension of a finite T\_{0}-space. | Computational and Applied Mathematics | Do:10.1007/s403-014-0125-z | 2014 | No |

**Participation at international conferences, symposia, etc.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of staff member** | **Name of conference** | **Place** | **Dates** | **Activity** | **Title** |
| Prof SP Moshokoa | Conference on Topology and its Applications | Nafpaktos, Greece | 01 July to 14 July 2014 | Presented a paper. | Finite spaces: a reduction algorithm for the computation of the small inductive dimension. |
| Prof Igor Fedotov | XIV Pan American  conference on Applied mathematics | Santiago, Chile | March 2014 |  | Hyperbolic and Pseudohyperbolic Equations in the theory of vibrations., |
| Prof Igor Fedotov | ICNAAM 2014 | Rhodes, Greece | September 2014 |  | Parameters estimation of Equations of chemical Kinetics and Mathematical Biology in case of incomplete experimental data, |
| Prof M. Shatalov | The 14th Pan American Congress of Applied Mechanics (PACAM) | Santiago, Chile | 24 -28 March 2014 | Co-author of oral presentation  Co-author of oral presentation | nonlinear quadratic damping and bryan's effect;  .  Hyperbolic and pseudohyperbolic equations in the theory of vibrations |
| Prof M. Shatalov | Proceedings of 21st International Congress on Sound and Vibration (ICSV21), | Beijing/China | July 13 – 17, 2014 | Co-author of oral presentation | Application of the heun functions to rotor vibratory gyroscope, their numerical computation and accuracy estimation |
| Prof M. Shatalov | TIME2014 | Krems, Austria | 1 -5 July 2014 | Co-author of oral presentation | Using Fourier series to control mass imperfections in vibratory gyroscopes;  4 July |
| Maggie Aphane | Topology and its applications | Greece Nafpaktos (Athens University). | 01 – 09 July 2014 | Presented paper | Parallel sequences and continuous maps in symmetric (distance) spaces |
| Prof Joubert | The 14th Pan American Congress of Applied Mechanics (PACAM) | Santiago, Chile | 24 -28 March 2014 | Oral presentation | Nonlinear quadratic damping and Bryan's effect;  25 March. |
| Prof Joubert | TIME2014 | Krems, Austria | 1 -5 July 2014 | Oral presentation | Using Fourier series to control mass imperfections in vibratory gyroscopes;  4 July |
| Kganya Motsepe | 21st International Congress on Sound and Vibration (ICSV21) | Beijing/China | July 13 – 17, 2014 | Presented paper | Application of Heun functions to vibratory rotor gyroscope, their numerical computation and accuracy estimation |
| Hilette Spoelstra | PACAM XIV  Pan American congress of applied mechanics. | Santiago, Chile, South America | 24-28 March 2014 | Delivered a paper | Controlling mass imperfections in a vibratory gyroscope. |

**Participation at national conferences, symposia, etc.**

The following people participated in local events during 2014

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Participant** | **Conference/symposium** | **Place** | **Dates** | **Activity** | **Title** |
| Musiiwa Davhana | Postgraduate seminar (NNMU) | Nelson Mandela Metropolitan University | 11 Sep 14 - 14 Sep 14 | Presentation |  |
| Dr Cliff Kikawa | SASA 2014 | Rhodes University | 27-30 October 2014 | Paper presentation | Parameter Estimation of a mixture of Univariate Gaussian density function: A comparison of the proposed and the maximum likelihood methods |
| Dr Cliff Kikawa | Postgraduate seminar (NNMU) | Nelson Mandela Metropolitan University | 12 -13 September 2014 | Paper delivered | A semi-parametric method for generating time series data |
| Prof SP Moshokoa | Postgraduate seminar (NNMU) | Nelson Mandela Metropolitan University | 12 -13 September 2014 | Paper delivered | On completeness and completions for asymmetric distance spaces, presented on 12 September 2014. |
| Prof SP Moshokoa | SAMS | UNISA | 29October - 31 October 2014 | Paper delivered | Cones and Quasi metric spaces, presented on 31 October 2014 |
| Prof M. Shatalov | NMMU Postgraduate seminar | Port Elizabeth | 12-13 September 2014 | 1 hour plenary lecture by SV Joubert (co-authored with MY Shatalov and student H Spoelstra) | Controlling manufacturing imperfections in a vibratory gyroscope; 13 September |
| Prof M. Shatalov | NMMU Postgraduate seminar | Port Elizabeth | 12-13 September 2014 | Student GT Sedebo presentation  (co-authored with SV Joubert and MY Shatalov) | Isotropic nonlinear damping in the unforced spring pendulum |
| Maggie Aphane | Student symposium | Nelson Mandela Metropolitan University (Port Elizabeth). | 12 – 13 September 2014 | Paper | Common fixed point results for commuting maps in quasi b-metric spaces |
| Maggie Aphane | South Africa Mathematical Society | UNISA (Florida Campus) | 29 – 31 October 2014 | Paper | On completeness and bicompletions of quasi b-metric spaces |
| Dr PH Kloppers | Postgraduate Seminar in Mathematics | NNMU PE | 12-13 September 2014 | Paper | A SEMI-PARAMETRIC BOOTSTRAP ALGORITHM FOR TIME SERIES DATA |
| Dr PH Kloppers | SASA2014 | Rhodes University | 28 - 30 October 2014 | Paper | Parameter estimation for a mixture of two univariate Gaussian distributions: A comparative analysis of the proposed and maximum likelihood methods |
| Prof Joubert | NMMU Postgraduate seminar | Port Elizabeth | 12-13 September 2014 | 1 hour plenary lecture by SV Joubert (co-authored with MY Shatalov and student H Spoelstra) | Controlling manufacturing imperfections in a vibratory gyroscope; 13 September |
| Prof Joubert | NMMU Postgraduate seminar | Port Elizabeth | 12-13 September 2014 | Student GT Sedebo presentation  (co-authored with SV Joubert and MY Shatalov) | Isotropic nonlinear damping in the unforced spring pendulum |
| Getachew Temesgen Sedebo | Postgraduate Seminar in Mathematics | Port Elizabeth ( NMMU) | 12-13 Sept 2014 | Paper presentation | Isotropic nonlinear damping in the unforced spring pendulum |
| Malesela Kekana | Postgraduate Seminar in Mathematics | Nelson Mandela Metropolitan University [Port Elizabeth] | 12-13 September 2014 | Delivered a talk | Series Solutions of Non-linear differential equations using the Adomian decomposition method |

**VISITING RESEARCHERS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Host Institution** | **Name of the visitor** | **Date** | **Activity** |
| Tshwane University of Technology  *(Prof I Fedotov)* | Prof. A. Manzhirov  Institute for Problems in Mechanics (Russian Academy of Science), named after A.Ishlinsky | 12 June - 08 July 2014 | Scientific meetings and discussions. |
| Tshwane University of Technology  *(Prof Moshokoa)* | Prof M Bayram from Yildiz Technical University, Turkey. | 27 October- 04 November 2014. | Presentation  Date:03 November 2014  Title: **Bifurcation Analysis of Uncertain Dynamical Systems**  Collaborative research project is ongoing. |
| Tshwane University of Technology  *(Prof Moshokoa)* | Prof J Sadeghi from Mazandaran University, Babolzar, Iran. | 27 October-06 November 2014 | Presentation:  Date:03 November 2014  Title: Factorisation method in oscillator with the aharonov-Cashier system  Collaborative research project is ongoing. |
| Tshwane University of Technology  *(Prof Moshokoa)* | Prof H Jafari, a visiting professor from Unisa. | 03 November 2014 | Presentation:  Date: 03 November 2014  Title: An iterative method for solving nonlinear functional equations.  Collaborative research is ongoing. |

**FUNDING FOR RESEARCH**

Summary of research funds some of our staff members received during 2014

Research funding

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** [NRF, etc] | **Research activity** | **Amount**  **2013 2014** | |
| Shatalov: NRF Incentive Foundation for Rated Researchers | Research in the field of growing bodies (2011-2012).  Research in theory of vibratory gyroscopes (2011-2012).  Research visit to Moscow, Russia (2012).  Partial funding of visit of Dr M. Tenkam to the World Congress on Engineering (London, 2012) | 40 000 | 40 000 |
| Joubert: NRF | Incentive funding for rated researcher (Mathematical Technology) | R40 000 | R40 000 |
| Fedotov: NRF | Incentive funding for rated researcher (Mathematical Technology) | R40 000 | R40 000 |
| Moshokoa:NRF | Incentive funding for rated researcher (Mathematics) | - | R40 000 |

**Department of Nature Conservation**

In 2014 the Department of Nature Conservation continued with research in industry, centred on its post graduates. Currently five students are registered for their doctorates with 25 registered for master’s degrees. In addition there are a number of prospective students in preparation of their research proposals. Considering that these are all research projects with very few students able to devote all their time to their projects together with the vagaries of ecological fieldwork this testifies to the fortitude of both students and their supervisors. A number of students completed the studies during 2014.

**Accredited Journal articles**

Fourteen papers comprising 9.51 units.

**Shroder, B. & B.K. Reilly.** 2013. A comparison between tick species collected in a controlled and control free area on a game ranch in South Africa. Journal of the South African Veterinary Association 84(1), Art, #907, 5 pages. [http://dx.doi.org/10.4102/jsava v84i1.907](http://dx.doi.org/10.4102/jsava%20v84i1.907).

**BULLOCK, K.L., VILJOEN, F. & KOTZE, J.J**. 2014. Habitat Associations and Impact of Habitat Degradation on Small Mammals in the Heritage Park, North West Province, South Africa. *Navorsinge van die Nasionale Museum, Bloemfontein.* 30(1): 1-17.

**VILJOEN, F., BULLOCK, K.L., PANAGOS, M. & MYBURGH, W**. 2014. Topographical units and soil types prove more efficient for vegetation sample site placement than Land Type units in semi-arid savanna, North West province, South Africa. *African Journal of Range & Forage Science*, 31(1): 49-54.

**Viljoen, J.J**., A. Ganswindt**, C. Reynecke**, A. S. Stoeger & W.R.Langbauer Jr. 2014. Vocal stress associated with a translocation of a family herd of African elephants (*Loxodonta africana*) in the Kruger National Park, South Africa, *Bioacoustics: The International Journal of Animal Sound and its Recording*, DOI: 10.1080/09524622.2014.906320

**MALAN, G.** 2014. Replacing Grasslands with pine plantations on the Karkloof Plateau: the edge effects on down-slope forest understory birds. *South African Journal of Wildlife Research* 44(2): 99–114.

Amar, A., Koeslag, a., **Malan, g**., Brown, m. & Wreford, e. 2014. Clinal variation in the morph ratio of black sparrowhawks in South Africa. *Ibis* 156: 627-638.

**Seoraj-Pillai, N. & Malan, G.** 2014. Characteristics of the alarm calls of buff-streaked chat groups and African stonechat pairs in response to increased distances from surrogate raptors and snakes. *African Zoology* 49: 137-147.

**Canning, G; B. K. Reilly** & A.S. Dippenaar-Schoeman. 2014. The distribution and population status of *Nesiergus insulanus* (Araneae: Theraphosidae:Ischnocolinae) on Frégate Island, Seychelles Arachnology (2014) 16 (4), 116–121.

**Canning, G; B. K. Reilly** & A.S. Dippenaar-Schoeman. (Accepted). Burrow structure and microhabitat characteristics of Nesiergus insulanus (Araneae: Theraphosidae) from Frégate Island, Seychelles. J. Arach. 42:3 000-000.

Pirie T.J., R. L. Thomas**, B.K. Reilly** & M.D.E. Fellowes. 2014. Social interactions between a male leopard (*Panthera pardus*) and two generations of his Offspring. *Afr. Ecol. 2014*. Doi: 10.1111/aje.12154.

Collinson, W.J.; D.M. Parker; R.T.F. Bernard**; B.K. Reilly** & H.T. Davies-Mostert. 2014. Wildlife road traffic accidents: a standardized protocol for counting flattened fauna*. Ecology & Evolution. 2014 1 -12*. Doi: 10.1002/ece3.1097.

**PHAMA JO, M.D. PANAGOS, W.J.MYBURGH**, & M.F. PFAB. 2014.The population status of the endangered endemic plant *Aloe peglerae*: Area of occupancy, population structure, and past population trends. *South African Journal of Botany* 93 (2014) 247–251.

SAMIE, A.; G.A. DZHIVHUHO & **T.C. NANGAMMBI**. 2014. Distribution of the CXCR2 + 1208T/C gene polymorphisms in relation to opportunistic infections among HIV-infected patients in Limpopo Province, South Africa. Genetics & Molecular Research, 13 (3): 7470-7479.

SAMIE A; G.T. MOLOTO G.T. & T.C. **NANGAMMBI.** 2014. Interleukin-7 receptor gene polymorphism +1237 locus and its effect on susceptibility to opportunistic infections among HIV and AIDS patients in Limpopo Province, South Africa. Genetics and Molecular Research 13(4): 8757-8766

GROOM, R.J.; **P.J. FUNSTON** & R MANDISODZA. 2014 Surveys of lions *Panthera leo* in protected areas in Zimbabwe yield disturbing results: What is driving the population collapse. *Oryx. 2014.10.29*

**Miller, S.M. & P. J. Funston**. 2014. Rapid growth rates of lion (Panthera leo) populations in small, fenced reserves in South Africa: a management dilemma. *South African Journal of Wildlife Research*. Vol. 44(1): 43-55.

**Miller, S.M**.; C.K. Harper, P. Bloomer, J. Hofmeyr, & **P. J. Funston**. 2014. Evaluation of Microsatellite Markers for Populations Studies and Forensic Identification of African Lions (*Panthera leo*). *Journal of Heredity* 2014:105(6):762–772. doi:10.1093/jhered/esu054

**Conference Proceedings**

SHORT, A. (ed) 2014. *Grassland Society of Southern Africa and Crocodile River Reserve Workshop: Grassland Management in Gauteng*. 16 March 2014. Contributing authors: Short, A., Carruthers V, **Panagos M**, van Oudtshoorn F, Mudalahothe T & Komen M. Published by the Grassland Society of Southern Africa. (pp 1-29).

**International presentations at conferences**

**REILLY, B.K.** 2014. Game Ranching in South Africa: Conservation or Agriculture. 8th International Congress for Wildlife and Livelihoods on Private and Communal Lands: Livestock, Tourism, and Spirit. Estes Park, Colorado, 7 to 12 September 2014.

**National presentations at conferences**

**BULLOCK, K.L., REILLY, B.**K. & GROBLER, J.P. 2014. Seed dispersal capabilities based on faecal sample analysis of the Samango monkey (*Ceropithecus mitis*) in Magoebaskloof, Limpopo Province, South Africa. Presentation at the 12th Annual Conference of South African, Primate Ecology and Genetics Group 27–29  June 2014 at Glenburn Lodge, Mulderdrift.

**Keynote addresses/invited papers/lectures**

**PANAGOS MD** – invited guest. Reclamation/Remediation one day Workshop hosted by The Canadian Institute of Forestry on the 2nd of October, 2014, Genesee Community Hall, Warburg, Alberta, Canada.

**Posters: International**

**Viljoen JJ , Reynecke HC, Panagos MD,** Langbauer Jr. WR, Ganswindt A. Poster entitled ‘Management implications of African elephant’s seasonal woody dietary selection in South African mesic savannas.’ 8th International Congress for Wildlife and Livelihoods on Private and Communal Lands: Livestock, Tourism, and Spirit. Estes Park, Colorado, 7 to 12 September 2014.

Collinson, W.J.; D.M. Parker; R.T.F. Bernard**; B.K. Reilly** & H.T. Davies-Mostert. 2014. Wildlife road traffic accidents: a standardized protocol for counting flattened fauna. International Conference for Transport Ecology. Sweden.

**National**

**KRYNAUW D.J.**  2014.   The late great Pompom weed invasion in South Africa.  POSTER at the 5th Annual Diamond Route Research Conference,  Johannesburg, October 2014

VAN WYK **A.; D.J. KRYNAUW**  &  D.J. DU PLESSIS.   2014.   Vegetation changes induced by fire on Ezemvelo/Telperion nature reserve.  POSTER at the 5th Annual Diamond Route Research Conference, Johannesburg, October 2014.

**FUNDING FOR RESEARCH**

|  |  |  |  |
| --- | --- | --- | --- |
| **Source** [NRF, etc] | **Research activity** | **Amount**  **2013 2014** | |
| NRF | Rated researcher | R 120 000 | - |
| NRF | Emerging researcher |  | R 100 000 |
| NRF | Thuthuka PhD track |  | R 120 000 |
| Denise James Raptor Fund | Grants |  | R 30 000 |
| Faculty | Faculty research grants |  | R 160 000 |
| DST | Research infrastructure champion |  | R 10 000 |
| GGBN | International Steering group meeting |  | R 27 240 |
| ISBER | Meeting: Canada |  | R 22 000 |
| HCI | Ndumo operations & project |  | R 250 000 |
| External PhD grant |  |  | R 29 000 |
| Fulbright | *Post doc* United States |  | R 400 000 |
| Thuthuka | Research support |  | R 170 000 |

**Department of Pharmaceutical Sciences**

Researchers in the department of Pharmaceutical Sciences were very active, the following are highlights:

January 2014

Else Reeber received a grant for a FAIMER fellowship.

February 2014

Prof David Katerere was part of the MCC Complementary Medicines Committee Information Workshops for Guidelines and Regulations for the registration of Complementary Medicines. The workshops were held on the 7, 11 and 13 of February 2014.

Prof Katerere met with a team from Mintek to discuss possible collaboration on the AMP project, 27 February 2014. He was accompanied by Dr Abeda Dawood from the NZG and a student.

March 2014

Prof Katerere, Prof Viljoen and Dr Vermaak attended the plantLIBRA symposium at the CSIR. This was part of the EU FP7 project.

Prof Katerere attended the MCC / AAPS joint SARI conference held from 11 to 13 March. He was an invited speaker and also chaired a session. His talk was entitled: Drug Transporters – what the regulator should know.

Prof Katerere attended the Egerton University International Conference for Science and Technology at Njoro, Kenya held from 26 – 28 March 2014. He gave a talk entitled: Mycological and aflatoxin contamination of peanuts sold at informal markets in Kinshasa, Democratic Republic of Congo, and Pretoria, South Africa.

April 2014

A delegation from the Medical Control Council was hosted, 25 April 2014. For discussion was how TUT can send BPharm students for Work Integrated Learning and also involved in training of new regulatory staff at MCC. The MCC was Dr Alice Sigobodhla, Ms Silverani Padayachee and Dr Madira Litedu and TUT was represented by Dr Enslin, Mr Nazer and Prof Katerere. It was agreed that a meeting with the registrar would be set up.

Prof Katerere was invited to attend a THRIP meeting by Prof Piet Jooste from Department of Food Biotechnology to advise Theresa de Beer whose project is on interactions between fumonisins and lactobacilli, April 15, 2014

May 2014

Prof Katerere was nominated to be Module Writer for the Association of Commonwealth Universities Structured Training for African Reseachers (STARS) e-learning programme. His module called Getting your work in print: writing and publishing for academic audiences is written under the direction of unit leaders from University of Pretoria, University of Nairobi, University of Cape Town, University of Ghana, and Ebonyi State University  Abakaliki.

Prof Katerere hosted Ms Pulane Masebe (DTI) and Dr Skhumbuzo Ngozwana (UNIDO consultant) for discussion son the DTI Working Group on Skills for Pharmaceutical Industry. In attendance were Mr Desmond Nazer and Dr Eugene Olivier, 23 May 2014.

Dr Enslin, Ms Leonard, Dr Tarirai and Prof Katerere attended the MRC Road Show on new funding opportunities held at the University of Pretoria Faculty of Health Sciences, 22 May 2014.

Two students (Runyararo Chari and Onalenna Nteta) supervised by Prof Katerere took part in the Emory University / Innovation Hub GAP Bioscience Business Basics Workshop, 22 - 23 May 2014.

The Department of Pharmaceutical Science exhibited at the TUT Annual Open Day, 24 May 2014.

Prof Viljoen, Dr Chen, Prof Combrinck and Dr Sandasi presented at the 9th International Symposium on Chromatography of Natural Products, 26 to 29 May, 2014 in Lublin, Poland.

June 2014

Dr Enslin and Mrs Reeber attended a SAAHE conference in Cape Town.

July 2014

Prof Katerere, SA-YSSP Director Dr Priscilla Mensah, SA-YSSP Deputy Dean Prof Martin Ntweaborwa and Dr Dalu Mancama, Head CSIR Biotechnologies Group attended a meeting with DST representatives Anneline Morgan and Phumelele Higgins. This was to discuss the funding for the envisaged Open Source Journal of African Science Technology and Innovation for which Prof Katerere is one of the founding editors. Subsequent meetings were suggested and held with SANBio and ICSU.

August 2014

Prof Katerere was an invited workshop facilitator at the SA Dermatology Society, 21 August 2014. He gave a talk on research for clinicians and then facilitated a session with Dermatology Registrars on proposal writing.

Prof Katerere was an invited speaker at the FIP Bangkonk Conference, 31 August – 3 September 2014. His talk was on Use of technology for Patient Information in the session chaired by Prof Jennifer Dressman on “Technological approaches to improving patient access”.

Prof Combrinck presented at the Analitika Conference, 7-11 September 2014 in Parys, Free State.

September 2014

Dr Enslin, Dr Tarirai and Mrs Reeber presented posters at the APSSA conference in Port Elizabeth.

Prof Katerere presented a paper for the Biodiversity commission at the National IKS Conference, 25 & 26 September 2014. The theme was IKS in South Africa’s 20 years of democracy: Appraisals and Prospects.

October

Prof Katerere was an invited speaker at the Pharmaceutical Society of Zimbabwe (PSZ) Annual Indaba at Victoria Falls, 3 – 5 October 2014. He gave a entitled “Using BCS Biowaivers to register FPPs” and also facilitated one of the townhall discussions.

Prof Katerere was invited to be part of the MRC Research Preparedness Assessment team for their new initiative “Institutional Research Strengthening at 5 Universities”. Along with Dr T Maitin, Prof J. Louw and Mrs P. Joshua (MRC) they toured Universities of Venda, Limpopo, Zululand, Walter Sisulu and Fort Hare.

Prof Katerere was invited to the Medi-Clinic Free State CPD weekend. He gave a talk entitled “From Clinical Practice to Clinical Research”, 25 October 2014

November 2014

Dr Enslin, Dr Olivier and Mrs Reeber organized a AMEE video conference for the faculty, 4 – 6 November 2014.

**PUBLICATIONS IN ACCREDITED JOURNALS**

Ilunga Kamika, Pamella Mngqawa, John P. Rheeder, Snow L. Teffo, and David R. Katerere. 2014. *Mycological and aflatoxin contamination of peanuts sold at informal markets in Kinshasa, Democratic Republic of Congo, and Pretoria, South Africa*. Journal of Food Additives and Contaminants. DOI: 10.1080/19393210.2013.858187

[N. K. K. Boaduo,](http://informahealthcare.com/action/doSearch?action=runSearch&type=advanced&result=true&prevSearch=%2Bauthorsfield%3A%28Boaduo%2C+N+K+K%29)[D. Katerere,](http://informahealthcare.com/action/doSearch?action=runSearch&type=advanced&result=true&prevSearch=%2Bauthorsfield%3A%28Katerere%2C+D%29)[J. N. Eloff , and](http://informahealthcare.com/action/doSearch?action=runSearch&type=advanced&result=true&prevSearch=%2Bauthorsfield%3A%28Eloff%2C+J+N%29)[V. Naidoo](http://informahealthcare.com/action/doSearch?action=runSearch&type=advanced&result=true&prevSearch=%2Bauthorsfield%3A%28Naidoo%2C+V%29). 2014. *Evaluation of six plant species used traditionally in the treatment and control of diabetes mellitus in South Africa using in vitro methods*. Pharmaceutical Biology. doi:10.3109/13880209.2013.869828

Mpumelelo M Nkomo, David R Katerere, Hester HF Vismer, Thomas T *Cruz, Stephane S Balayssac, Myriam M Malet-Martino and Nokwanda NP Makunga. Mar 2014. Fusarium inhibition by wild populations of the medicinal plant Salvia africana-lutea L. linked to metabolomic profiling: the launch of BMC Complementary and Alternative Medicine BMC Complementary and Alternative Medicine, 14:99.*

*.*

Semwal, R., Semwal, D., Combrinck, S., Cartwright-Jones, C., Viljoen, A.M. 2014. *Lawsonia inermis L. (henna): Ethnobotanical, phytochemical and pharmacological aspects*. Journal of Ethnopharmacology, 155(1): 80-103.

David R. Katerere. 2014. Book Chapter. *Commercialization of Ethnoveterinary Botanical Products.* In: [Ameenah Gurib-Fakim](http://eu.wiley.com/WileyCDA/Section/id-302479.html?query=Ameenah+Gurib-Fakim) (Editor). Novel Plant Bioresources: Applications in Food, Medicine and Cosmetic. 552 pages, May 2014, Wiley-Blackwell

[Mupunga I](http://www.ncbi.nlm.nih.gov/pubmed?term=Mupunga%20I%5BAuthor%5D&cauthor=true&cauthor_uid=25285504), [Lebelo SL](http://www.ncbi.nlm.nih.gov/pubmed?term=Lebelo%20SL%5BAuthor%5D&cauthor=true&cauthor_uid=25285504), [Mngqawa P](http://www.ncbi.nlm.nih.gov/pubmed?term=Mngqawa%20P%5BAuthor%5D&cauthor=true&cauthor_uid=25285504), [Rheeder JP](http://www.ncbi.nlm.nih.gov/pubmed?term=Rheeder%20JP%5BAuthor%5D&cauthor=true&cauthor_uid=25285504), [Katerere DR](http://www.ncbi.nlm.nih.gov/pubmed?term=Katerere%20DR%5BAuthor%5D&cauthor=true&cauthor_uid=25285504). [N*atural occurrence of aflatoxins in peanuts and peanut butter from Bulawayo, Zimbabwe*. J Food Prot.](http://www.ncbi.nlm.nih.gov/pubmed/25285504) 2014, 77 (10):1814-8.

Mncwangi, N.P., Viljoen, A.M., Zhao, J., Vermaak, I., Chen, W., Khan, I. 2014. *What the devil is in your phytomedicine? Exploring species substitution in Harpagophytum through chemometric modeling of 1H-NMR and UHPLC-MS datasets.* Phytochemistry 106: 104-115.

Debabrata, A., Enslin, G., Chen, W., Sandasi, M., Mavimbela, T., Viljoen, A.M. 2014. *A chemometric approach to the quality control of Sutherlandia (Cancer Bush)*. Biochemical Systematics and Ecology 56: 221–230.

Tankeu, S., Vermaak, I., Kamatou, G.P.P., Viljoen, A.M. 2014. *Vibrational spectroscopy and chemometric modelling: an economical and robust quality control method for lavender oil*. Industrial Crops and Products 59: 234–240.

Mavimbela, T., Vermaak, I., Viljoen, A.M. 2014. *Differentiating between Agathosma betulina and Agathosma crenulata – A quality control perspective*. Journal of Applied Research on Medicinal and Aromatic Plants 1: e8–e14.

Kasote, D., Suleman, T., Chen, W., Sandasi, M., Viljoen, A., Van Vuuren, S.F. 2014*. Chemical profiling and chemometric analysis of South African propolis*. Biochemical Systematics and Ecology 55: 156–163.

Ahmad, A., Van Vuuren, S.F., Viljoen, A.M. 2014. *Unravelling the complex antimicrobial interactions of essential oils – the case of Thymus vulgaris (Thyme).* Molecules 19: 2896-2910.

Van Vuuren, S.F., Docrat, Y., Kamatou, G.P.P., Viljoen, A.M. 2014. *Essential oil composition and antimicrobial interactions of understudied tea tree species*. South African Journal of Botany 92: 7–14.

Tankeu, S., Vermaak, I., Kamatou, G.P.P., Viljoen, A.M. 2014. *Vibrational spectroscopy as a rapid quality control method for Melaleuca alternifolia Cheel (Tea Tree Oil)*. Phytochemical Analysis 25: 81–88.

Mncwangi, N.P., Vermaak, I., Viljoen, A.M. 2014. *Mid-infrared spectroscopy and short wave infrared hyperspectral imaging – a novel approach in the qualitative assessment of Harpagophytum procumbens and H. zeyheri (Devil’s Claw).* Phytochemistry Letters 7: 143–149

Semwal, D., Semwal, R., Vermaak, I., Viljoen, A.M. 2014*. From arrow poison to herbal medicine - The ethnobotanical, phytochemical and pharmacological significance of Cissampelos (Menispermaceae)*. Journal of Ethnopharmacology 155: 1011-1028.

Viljoen, A.M., Zhou, J., Sandasi, M., Chen, Wei, Khan, I. 2014. *Phytochemical distinction between Pelargonium sidoides (“Umckaloabo”) and P. reniforme through H-NMR and UHPLC-MS metabolomic profiling*. Metabolomics August 1-9.

Sandasi, M., Vermaak, I., Chen, W., Viljoen, A.M. 2014. *Hyperspectral imaging and chemometric modeling of Echinacea - a novel approach in the quality control for herbal medicines.* Molecules 19: 13104-13121.

Vermaak, I., Enslin, G., Idowu, T., Viljoen, A.M. 2014*. Xysmalobium undulatum (Uzara) – review of an antidiarrhoeal traditional medicine.* Journal of Ethnopharmacology 156: 135–146.

Sandasi, M., Vermaak, I., Chen, W., Viljoen, A.M. 2014*. Skullcap and germander: Preventing potential toxicity through the application of hyperspectral* *imaging and multivariate image analysis as a novel quality control method.* Planta Medica 80: 1329-1339.

**PUBLISHED IN NON-ACCREDITED JOURNALS**

Enslin G.M. Report on the Conference of the South African Pharmaceutical Society held in Port Elizabeth in May 2014. 2014. South African Pharmaceutical Jorrnal.

**ARTICLES / PAPERS IN PRINT OR ELECTRONIC MEDIA**

Augustyn, W.A., Regnier, T., Botha, B.M., Combrinck, S. 2014. *Metabolic profiling of mango cultivars to identify biomarkers for resistance against Fusarium infection*. Phytochemistry Letters [in press].

Maree, J.E., Khondkar, P., Kwapong, A., Oyedemi, B.M., Aljarba, T.M., Stapleton, P., Viljoen, A.M., Gibbon, S. 2014. *Bioactive acetophenones from Plectranthus venteri*. Phytochemistry Letters [in press].

Ahmad, A., Viljoen, A.M., Chenai, H.Y. 2014. *The impact of plant volatiles on bacterial quorum sensing*. Letters in Applied Microbiology [in press]

Bassey, K., Viljoen, A., Combrinck, S., Choi, Y.H. 2014*. New phytochemicals from the corms of medicinally important South African Hypoxis species.* Phytochemistry Letters [in press]

Kasote, D., Ahmad, A., Chen, W., Combrinck, S., Viljoen, A.M. 2014. *HPTLC-MS as an efficient hyphenated technique for the rapid identification of antimicrobial compounds from propolis*. Phytochemistry Letters [in press]

Reza Adhami, H., Viljoen, A.M. 2014. *Preparative isolation of bio-markers from the leaf exudate of Aloe ferox (“aloe bitters”) by high performance counter-current chromatography.* Phytochemistry Letters [in press]

**INTERNATIONAL VISITS**

Prof Alvaro Viljoen was an invited speaker at a number of international conferences and in this regard visited Albania,Poland, Turkey, China, Thailand and the USA.

Prof Katerere was an invited speaker at the Pharmaceutical Society of Zimbabwe (PSZ) Annual Indaba at Victoria Falls, 3 – 5 October 2014. He gave a talk entitled “Using BCS Biowaivers to register FPPs” and also facilitated one of the townhall discussions.

**PARTICIPATION IN CONFERENCES AND SYMPOSIA**

**Participation at international conferences, symposia, etc**

Katerere DR. Transporters – what the regulator should know. 11 – 13 March 2014. MCC/AAPS SARI Conference. CSIR International Conference Centre. Pretoria, RSA (invited speaker).

Katerere DR. Mycological and aflatoxin contamination of peanuts sold at markets in Kinshasa, Democratic Republic of Congo, and Pretoria, South Africa. Egerton University International Conference on Science and Technology, 24 – 28 March 2014. (oral)

Katerere DR. Patient leaflets that everyone can understand. 31 August – 3 September 2014. FIP Bangkok Conference. Thailand (invited speaker).

Katerere DR. Using BCS Biowaivers to register FPPs. Pharmaceutical Society of Zimbabwe (PSZ) Annual Indaba, Victoria Falls, Zimbabwe. 3 – 5 October 2014 (invited speaker)

Combrinck, S., Bassey, K. and Viljoen, A. 2014. Are ethnomedicinally important *Hypoxis* species chemically distinct? Oral presentation by S Combrinck. 9th International Symposium on Chromatography of Natural Products, 26 to 29 May, 2014 in Lublin, Poland.

Viljoen, A.M. Where ancient cultures and modern science meets – examples of product development from the African flora. Natural Products and Drug Discovery - Future Perspectives, 13 – 14 November, 2014 in Vienna (Austria). [Invited keynote lecture]

Viljoen, A.M. The opportunities and challenges in transforming ancient knowledge into modern phytomedicines – A South African perspective. World Pharmacology Conference, 13 – 18 July, 2014 in Cape Town (South Africa). [Invited keynote lecture]

Viljoen, A.M. Challenges and opportunities in the globalisation of African traditional medicines – a South African perspective. Annual Meeting of The American Society of Pharmacognosy, 2 – 6 August, 2014 in Oxford, USA. [Invited keynote lecture]

Viljoen, A.M. Looks may be deceiving – exposing taxonomic similarity through chemometric modeling of analytical data. 3rd Annual Meeting of the GP-TCM Research Association & 5th Annual Meeting of the TCM Pharmaceutical Analysis Specialty Committee of WFCMS, 18 – 20 July, 2014 in Nanjing, China. [Invited keynote lecture]

Viljoen, A.M. Chemometrics – a GPS to navigate through the chemical maze. 9th International Symposium On Chromatography of Natural Products, 26 to 29 May, 2014 in Lublin, Poland. [Opening plenary lecture]

Viljoen, A.M. South Africa’s medicinal and aromatic flora – opportunities for science and industry. 8th Conference on Medicinal and Aromatic Plants of Southeast European Countries (8th CMAPSEEC), 19 to 22 May, 2014 in Durres, Albania. [Plenary lecture]

Viljoen, A.M. Challenges and opportunities in the globalisation of African traditional medicines – a South African perspective. 5th International Conference on Natural Products for Health and Beauty (NATPRO 5), 6 to 8 May, 2014 in Phuket, Thailand. [Plenary lecture]

Vermaaki, I., Sandasi, M., Viljoen, A.M., Chen, W. Hyperspectral imaging in the herbal medicines industry: visual quality control. Symposium: NIR Hyperspectral imaging applications and future developments, 19-21 May, 2014 in Umea, Sweden. [Oral presentation].

Vermaak, I., Sandasi, M., Viljoen, A.M., Chen, W. Making the invisible visible: the application of hyperspectral imaging to the quality control of herbal medicines. International Conference on Perspectives in Vibrational Spectroscopy (ICOPVS), 8-12 July, 2014 in Thiruvananthapuram, India [Oral presentation].

**Participation at national conferences, symposia, etc.**

Combrinck, S. Bassey, K.N., Viljoen, A.M. 2014. Phytochemical profiles of

South African *Hypoxis* species. Analitika 7-11 September**,** 2014. Parys, South Africa.

Katerere DR. Currents Issues in IKS and ATM Practice. National IKS Conference, 25 & 26 September 2014.

Katerere DR. From Clinical Practice to Clinical Research, Medi-Clinic Free State CPD weekend 25 – 26 October 2014 (invited speaker)

SSENGOOBA F, DEMANA PH, OLIVIER EI. 2014. Determining the solubility of poorly aqueous soluble drugs and complexes utilising laser nephelometry. 35th Conference of the Academy of Pharmaceutical Sciences. Port Elizabeth. (Poster).

Vermaak, I., Sandasi, M., Viljoen, A.M. Sandasi, M. Visualising quality: the application of hyperspectral imaging to the quality control of herbal medicines. 35th Conference of the Academy of Pharmaceutical Sciences of South Africa (APSSA), 12-14 September 2014, Port Elizabeth [oral presentation].

Katerere DR, Mngqawa P and Ngubeni S. Multi-mycotoxin analysis of maize from rural smallholder farmers in Northern South Africa. Afro-Residue Conference, 25 and 26 November, 2014. Pretoria (oral)

Nteta O, Katerere DR, Dhliwayo K, Dube A, Kamika A. Exposure to heavy metal toxicity in communal diets - Case study on Mopani worms. Afro-Residue Conference, 25 and 26 November, 2014. Pretoria (oral)

**FUNDING FOR RESEARCH**

|  |  |
| --- | --- |
| MRC Diabesity project (Prof DR Katerere) | R50,000 |
| TUT start-up research funds (Prof DR Katerere) | R160,000 |
| NRF Thuthuka (Ms N. Mncwangi) | R298,000 |
| NRF KIC (Ms N. Mncwangi) | R21,000 |
| NRF grant for rated researchers (Prof DR Katerere) | R30,000 |
| TUT Emerging Researcher Grant 2011-2013 (Dr C Tarirai) - annually | R100,000 |
| NRF KIC (Dr C. Tarirai) | R18,788 |
| National equipment program (LECO Pegasus 4D) (AV) | R4 200 000.00 |
| MRC - self initiated research grant (Prof A Viljoen) | R154 000.00 |
| NRF - competitive grant for rated researchers (Prof A Viljoen) | R360 000.00 |
| SARChi (Prof A Viljoen) | R980 000.00 |
| National Research Foundation (NRF). IKS. Development of nutritional formulation (Prof DR Katerere; Dr EI Olivier) | R450,000.00 |
| National Research Foundation (NRF). Competitive Rating Programme. (Prof S Combrinck) | R315 000 |
| NRF (Baatile Komane-Mofokeng) | R231 000 | |
| NRF G (Enslin) | R240 000 | |

**Department of Physics**

Two out of the three registered M Tech: Fire Technology students progressed so well with their studies and are expected to graduate in 2015.

Three staff members (two – PhD and one M Tech) are still actively involved in their studies and are expected to complete in 2015.

**PUBLISHED IN ACCREDITED JOURNALS**

Seven research articles were published in accredited journal in 2014:

An article titled, *“Densification and fracture characteristics of Spark Plasma sintered Copper-CNT-Ruthenium composites; has been published as a conference proceeding:* **Euro PM2014.** *(R. Sule, P.A. Olubambi, I. Sigalas, J.K.O. Asante, J.C. Garrett)*

An article titled, “*Effect of SPS consolidation parameters on submicron Cu and Cu–CNT composites for thermal management” has been published in* **Powder Technology, Vol. 258, (2014) 198-205.** *(R. Sule, P.A. Olubambi, I. Sigalas, J.K.O. Asante, J.C. Garrett)*

An article, “*New experimental molecular stopping cross section data of Al2O3, for heavy ions*” has been published in **Nuclear Instruments and Methods in Physics Research B 332 (2014) 341-345.** (*A. Simon, N. P. Barradas, A. Bergmaier, M. Msimanga, I Bogdanovic, J. Räisänen, T. Sajavaara*).

An article, “*Electronic stopping force of 12C, 28Si and 63Cu ions in HfO2 and SiO2 dielectric films*” has been published in **Nuclear Instruments and Methods in Physics Research B 322 (2014) 54-58** (*M. Msimanga, C. A. Pineda-Vargas, T. Hlatshwayo, C. M. Comrie, H. Ammi, M. Nkosi*).

An article, “*Iodine assisted retainment of implanted silver in 6H-SiC at high temperatures*” has been published in **Nuclear Instruments and Methods in Physics Research B 334 (2014) 101-105** (*T. T. Hlatshwayo, N. G. van der Berg, M. Msimanga, J. B. Malherbe, R. J. Kuhudzai*)

An article, “*Heavy ion elastic recoil detection analysis of AlxOy/Pt/AlxOy multilayer selective solar absorber*” has been published in **Applied Surface Science 298 (2014) 176-181**. (*Z. Y. Nuru, M. Msimanga, C. J. Arendse, M. Maaza*).

An article, “[*Semi empirical formula for electronic stopping power determination of 24Mg, 27Al and 28Si ions crossing Formvar foil in the ion energy domain of LSS theory*](http://www.sciencedirect.com/science/article/pii/S0969806X13005422)” has been published in **Radiation Physics and Chemistry 96 (2014) 205-210**. (*A. Guesmia, H. Ammi, S. Mammeri, A. Dib, C.A. Pineda-Vargas, M. Msimanga, M. Hedibel*).

**ARTICLES / PAPERS IN PRINT OR ELECTRONIC MEDIA**

Two articles are have been submitted for publications:

“*Thermal measurements on epoxy-expandable graphite composite material”* (in POLYMER) (*Joseph Asante , Fortunate Modiba and Bonex Mwakikunga***)**

“*Spark Plasma Sintering of Copper/Ru-CNT composites for thermal management applications” (*in Journal of Composites Science and Technology) (*R Sule, PA Olubambi, I Sigalas,; JK Asante, JC Garrett, WD Roos)*

**INTERNATIONAL VISITS**

*Prof M. Msimanga visited the University of Surrey in Guildford, United Kingdom from 16-20 June 2014 for a research meeting organised by the International Atomic Energy Agency (IAEA). The meeting sought to chart a work plan for the IAEA’s international coordinated research project on “Development of molecular concentration mapping techniques using MeV focused ion beams”. South Africa is represented in this international research project by a collaboration between iThemba LABS and TUT, with M. Msimanga as the SA project leader.*

**Participation at national conferences, symposia, etc.**

Oral presentation by F Modiba (Dr Asante masters student) at the 59th South African Institute of Physics (SAIP) conference held at UJ (8-12 July 2014): “*Thermal measurements on epoxy-expandable graphite composite material” (F Modiba, JKO Asante, BW Mwakunga)*

Oral presentation by R Sule (Dr Asante doctoral student) at the 59th South African Institute of Physics (SAIP) conference held at UJ: “*Influence of SPS parameter on Cu-CNT composites for thermal management*” (*R. Sule, P.A Olubambi, J.K.O Asante, I. Sigalas, J.C Garrett)*

**FUNDING FOR RESEARCH**

|  |  |  |
| --- | --- | --- |
| **Source** [NRF, etc] | **Research activity** | **Amount (R)**  **2012 2013** |
| NRF | Travel Grant | 32 000 |

**Department of Sport, Rehabilitation & Dental Sciences**

**PUBLISHED IN ACCREDITED JOURNALS**

There were 20 articles in total published by the Sport and Exercise Technology and Officiating and Coaching Science (OCS) programmes and all had published in accredited journals.

**INTERNATIONAL VISITS**

Ms Schmidt and Ms Boshof visited Scotland for a residential week and examination at Strathclyde University in Glasgow.

Mr A. Kubayi was invited to present at the African Association for Health, Physical Education, Recreation, Sport and Dance conference (25-27 September 7 2014) in Zimbabwe, Bulawayo and the South African Sport and Recreation Conference (6-8 October 2014) in Potchefstroom, South Africa.

Ms Schmidt, Ms Boshof and Mr Schutze attended the international ISPO congress in Cape Town. All lecturers presented at the congress.

**FUNDING:**

Funding for projects on physical education to the amount of R30 000 was received from the NRF for 2013/2014

**5. TEACHING INPUT UNITS (TIUS) AND TEACHING OUTPUT UNITS (TOUS)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **5: Teaching Input Units and Teaching Output Units** | | | | | | | **Indicator** | **2010** | **2011** | **2012** | **2013** | **2014** | | Teaching Input Units | 19,331.55 | 19,219.05 | 19,371.46 | 20,242.20 | 21,247.90 | | Teaching Output Units | 1,658.50 | 2,016.50 | 1,913.50 | 1,839.25 | 1,967.50 | | | | | | | | |
|  |  |  |  |  |  |  |  |

**6. STAFF PROFILE, QUALIFICATIONS AND RATIOS**

**6.1 General Overview**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **6.1: Staff Headcount by Race and Gender** | | | | | | | | | | | | | | **Year** | **African** | | **Coloured** | | **Indian** | | **White** | | **Total F** | **Total M** | **Total** | | **F** | **M** | **F** | **M** | **F** | **M** | **F** | **M** | | **Permanent** |  |  |  |  |  |  |  |  |  |  |  | | 2010 | 56 | 58 | 1 | 2 | 8 | 1 | 80 | 67 | 145 | 128 | 273 | | 2011 | 63 | 58 | 1 | 2 | 7 | 1 | 83 | 62 | 154 | 123 | 277 | | 2012 | 69 | 70 | 2 | 1 | 7 | 3 | 84 | 58 | 162 | 132 | 294 | | 2013 | 69 | 77 | 2 | 2 | 7 | 3 | 84 | 54 | 162 | 136 | 298 | | 2014 | 76 | 81 | 2 | 2 | 8 | 4 | 84 | 52 | 170 | 139 | 309 | | **Temporary** |  |  |  |  |  |  |  |  |  |  |  | | 2010 | 100 | 130 | 1 |  | 2 | 1 | 96 | 93 | 199 | 224 | 423 | | 2011 | 145 | 172 |  |  | 2 | 3 | 81 | 84 | 228 | 259 | 487 | | 2012 | 153 | 182 |  |  | 2 |  | 79 | 72 | 234 | 254 | 488 | | 2013 | 145 | 156 |  |  | 2 |  | 72 | 66 | 219 | 222 | 441 | | 2014 | 180 | 181 |  |  | 1 |  | 65 | 57 | 246 | 238 | 484 | |  |  |

The Faculty currently employs 793 Permanent and Temporary staff with 535 (**67.47%)** belonging to the designated

groups. This compares well to 2010 when only 51.27% of staff belonged to the designated groups.

(16.2% increase over 4 years.)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **6.2: Number of Staff per Person Category** | | | | | | | | | | | | | **Person Category** | **2010** | | **2011** | | **2012** | | **2013** | | **2014** | | | | **Perm** | **Temp** | **Perm** | **Temp** | **Perm** | **Temp** | **Perm** | **Temp** | **Perm** | **Temp** | | Executive/admin./mgmt. professional | 3 |  | 3 | 1 | 3 |  | 3 |  | 2 |  | | Instructional/research professional | 197 | 178 | 194 | 214 | 203 | 207 | 205 | 171 | 215 | 193 | | Non-professional administration | 48 | 203 | 59 | 239 | 61 | 236 | 64 | 225 | 69 | 263 | | Service | 10 | 1 | 9 | 1 | 9 | 1 | 9 | 1 | 9 | 1 | | Specialised/support professional | 13 | 39 | 11 | 31 | 16 | 43 | 15 | 43 | 13 | 26 | | Technical | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | | **Total** | **273** | **423** | **277** | **487** | **294** | **488** | **298** | **441** | **309** | **484** | |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | **6.3: Instructional/Research Staff per Qualification Type** | | | | | | | | | | | | | | | | |
| **Qualification Type** | **2010** | | | **2011** | | | **2012** | | | **2013** | | | **2014** | | |
| **Perm** | **Temp** | **Total** | **Perm** | **Temp** | **Total** | **Perm** | **Temp** | **Total** | **Perm** | **Temp** | **Total** | **Perm** | **Temp** | **Total** |
| Diplomas and Certificates | 6 | 8 | 14 | 7 | 7 | 14 | 6 | 7 | 13 | 5 | 4 | 9 | 4 | 4 | 8 |
| Degrees | 42 | 47 | 89 | 41 | 58 | 99 | 37 | 53 | 90 | 36 | 34 | 70 | 38 | 26 | 64 |
| **Undergraduate Total** | **48** | **55** | **103** | **48** | **65** | **113** | **43** | **60** | **103** | **41** | **38** | **79** | **42** | **30** | **72** |
| Postgraduate to Masters | 6 | 63 | 69 | 7 | 72 | 79 | 16 | 75 | 91 | 14 | 81 | 95 | 14 | 93 | 107 |
| Honours | 9 | 21 | 30 | 8 | 21 | 29 | 13 | 21 | 34 | 10 | 13 | 23 | 12 | 12 | 24 |
| Masters | 73 | 24 | 97 | 72 | 33 | 105 | 72 | 29 | 101 | 75 | 23 | 98 | 76 | 40 | 116 |
| Doctoral | 61 | 15 | 76 | 59 | 23 | 82 | 59 | 22 | 81 | 65 | 16 | 81 | 71 | 18 | 89 |
| **Postgraduate Total** | **149** | **123** | **272** | **146** | **149** | **295** | **160** | **147** | **307** | **164** | **133** | **297** | **173** | **163** | **336** |
| **Total** | **197** | **178** | **375** | **194** | **214** | **408** | **203** | **207** | **410** | **205** | **171** | **376** | **215** | **193** | **408** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | |  | | --- | | **6.4: Instructional/Research Staff Ratios** | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | **2010** | | | **2011** | | | **2012** | | | **2013** | | | **2014** | | | | **Perm** | **Temp** | **Total** | **Perm** | **Temp** | **Total** | **Perm** | **Temp** | **Total** | **Perm** | **Temp** | **Total** | **Perm** | **Temp** | **Total** | | I/R Staff / Student FTE Ratio | 1:26.9 | 1:80.4 | **1:20.1** | 1:27.7 | 1:69.1 | **1:19.8** | 1:27.2 | 1:70.0 | **1:19.6** | 1:27.4 | 1:77.4 | **1:20.2** | 1:27.3 | 1:79.3 | **1:20.3** | | Support Staff FTE / I/R Staff Ratio | 1:2.7 | 1:0.8 | **1:1.7** | 1:2.4 | 1:0.9 | **1:1.6** | 1:2.2 | 1:1.0 | **1:1.6** | 1:2.1 | 1:0.9 | **1:1.5** | 1:2.3 | 1:0.9 | **1:1.6** | | | | | | | | | | | | | | |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**7. PQM ALIGNMENT TO HEQSF**

**TEACHING AND LEARNING**

* 1. **PROGRAMMES / HEQF**

The Department of Environmental Health did not introduce any new programmes during 2014. However, the Department had a successful internal review (2014 Nov 14) as well as an external audit by the HPCSA (2014 Nov 27) that was planned to review the readiness of the new degree. The Department will be implementing a new Professional Bachelors Degree in Environmental Health in 2015. A proper plan to phase out the current National Diploma and Bachelor of Technology in Environmental Health will be finalized early 2015 for submission to HPCSA and DHET through internal processes.

No new programmes were offered in 2014 by the Department of Pharmaceutical Sciences.

The Bachelor of Pharmacy programme will be offered in 2015 by TUT for the first time. Diploma in Somatology, a category B offering, is nearing completion.

The HEQSF aligned programme to replace the B Tech: Pharmaceutical Sciences, a category C programme, is in the planning phase.

* + 1. **New programmes offered for the first time in 2014**

|  |  |  |
| --- | --- | --- |
| ***Programme code*** | ***Name of programme*** | ***Date of introduction*** |
| BPEH01 | Bachelors Degree in Environmental Health | 2015 |

* + 1. **Existing programmes being phased out in 2014**

|  |  |  |
| --- | --- | --- |
| ***Programme code*** | ***Name of programme*** | ***Phasing out date*** |
| NDBT03 | N Dip: Biotechnology | 2017 |
| NDFT03 | N Dip: Food Technology | 2017 |
| NDEH95 | National Diploma in Environmental Health | 2014 |
| UL (Medunsa) code | BPharm joint with UL Medunsa | 2015 |
| BTFY01 | B Tech: Fire Technology | 2018 |

The phasing out of two national diploma programmes in both Biotechnology and Food Technology commenced in 2011. This was followed by the approval of a four year extended program (for both programs) by Senate. Students on the extended programs show improved academic achievement. As soon as the HEQSF programs are approved to be phased in, the Department of Biotechnology and Food Technology will endeavor to offer the diplomas as extended programs.

The Department of Environmental, Water and Earth Sciences did not phase out any existing programs in 2014. However, the three year diplomas in Geology and Environmental Science are currently being phased out to be replaced by the four year extended programs

* + 1. **Programmes under revision**

|  |  |  |
| --- | --- | --- |
| ***Programme code (if available)*** | ***Name of programme*** | ***Envisaged implementation date*** |
| NDAP04 | National Diploma: Animal Production | 2016 |
| NDEQ04 | National Diploma: Equine Science | 2016 |
| NDBTF1 | N Dip: Biotechnology  (Diploma Biotechnology) | 2016 |
| NDFTF1 | N Dip: Food Technology  (Diploma Food Technology) | 2016 |
| BTBT01 | B Tech: Biotechnology  (Advanced Diploma Biotechnology) | 2017 |
| BTFT02 | B Tech: Food Technology  (Advanced Diploma Food Technology) | 2017 |
| - | Post Graduate Diploma Biotechnology | 2017 |
| - | Post Graduate Diploma Food Technology | 2017 |
| - | Diploma in Environmental Health Assistants | 2017 |
| - | Diploma in Environmental Science | 2017 |
| - | Diploma in Geology | 2017 |
| BTNS13 | B Tech: Nursing Science | 2016 |
| NDSY97 | N Dip: Somatology | 2016 |
| BTSY97 | B Tech: Somatology | 2016 |
| BTPL01 | B Tech: Pharmaceutical Sciences | 2017 |
| BTSY97 | B Tech: Somatology | 2016 |
| - | Dip: Fire Technology | 2017 |
| - | Adv. Dip: Fire Technology | 2017 |
| - | Adv. Dip: Industrial Physics | 2017 |
|  | Post Graduate Dip: Fire Technology | 2017 |
|  | Post Graduate Dip: Industrial Physics | 2017 |
|  | Sport and Exercise Technology | 2017 |
|  | Officiating and Coaching Science | 2017 |
|  | Medical Orthotics and Prosthetics | 2017 |
|  | Biokinetics | 2017 |
|  | Dental Assisting | 2017 |
|  | Dental Technology | 2017 |

The Department of Biotechnology and Food Technology is actively engaged in the re-curriculation process (as prescribed by the HEQC) for programs offered by the department and the progress is according to plan. Program coordinators are Dr L da Silva for the Food Technology programs and Ms E Jordaan for the Biotechnology programs. The ultimate aim for the department is to improve the preparedness of the students for their entry into the different industries. The programs offered by the department contribute to the provision of a highly skilled work force for the Biotechnology and Food industries and form part of the approved institutional and ministerial Program Quality Mix (PQM).

Three new qualifications (Higher Certificate in Water Treatment, Advanced Certificate in Water Treatment and Diploma in Water Science and Technology) were developed and submitted to DHET as Category C programmes by the Department of Environmental, Water and Earth Sciences. Two programs (Higher Certificate in Water Treatment and Diploma in Water Science and Technology) were approved by DHET and will be submitted to CHE by early 2015 to envisage implementation date of 2016.

As part of the HEQF alignment of qualifications the following submissions were made by the Department of Mathematics and Statistics:

* M Tech: Mathematical Technology (MTMN00) was approved as a Category A qualification. Feedback was received from the CHE to change the nomenclature of the qualification to Master of Science in Applied Mathematics. However, this was not approved by DHET.
* D Tech: Mathematical Technology (DTMN00) was approved as a Category A qualification change, to be replaced with the generic Doctor of Philosophy in Science.
* Both the M Tech: Quality (MTQU99) and D Tech: Quality (DTQU99) was submitted as category C qualifications, to be phased out.

The following qualifications were added on the PQM of the institution by the Department of Mathematics and Statistics, with development to be implemented in 2016:

* Advanced Diploma in Quality
* Postgraduate Diploma in Quality.
* New undergraduate and postgraduate programmes are being developed in the department in Applied Mathematics and Mathematics.

The current diplomas in Nature Conservation and Game Ranch Management are under review and revision will continue in 2015.