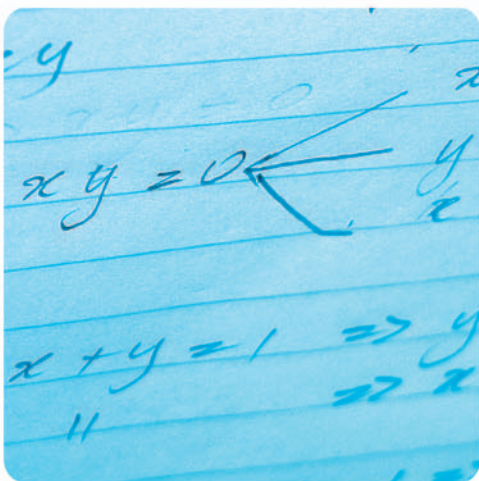
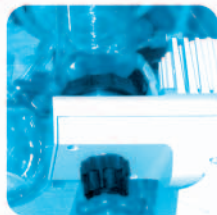


Faculty of Natural and Agricultural Sciences

Report 2008



Faculty of

**Natural and
Agricultural Sciences**

Report 2008

Issued by

Faculty of Natural and Agricultural Sciences
University of the Free State

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Preface

From the Dean's Office

In 2008 the Faculty of Natural and Agricultural Sciences once again lived up to its vision to be acknowledged as a faculty that is at the forefront of the practice of natural and agricultural science where the highest levels of quality and credibility are reflected.

During the year the faculty not only remained one of the leaders in training and career development in the natural and agricultural sciences, but it also made a concerted effort to enlarge its international footprint and to establish itself internationally. This is evident in the visits of staff from the faculty to universities such as the USA-based University of Minnesota and Virginia Polytechnic Institute and State University (Virginia Tech) and the extension of international agreements between the University of the Free State (UFS) and these institutions. The faculty also had the privilege of hosting a high-level delegation from the University of Minnesota on the Main Campus in Bloemfontein in August 2008.

The turmoil in the international markets firstly led to very high oil prices, which spilt over to the grain markets and high food prices. This, in turn, led to high inflation levels and therefore high interest rates. Eventually the exchange rate also deteriorated against the major currencies. In the latter part of the year the whole situation was turned upside down with the collapse of the financial markets. The faculty did not escape this and the price of equipment for which orders were placed sky rocketed. Innovative skills had to be applied to remain on track with our equipment strategy.

Although 2008 was an exceptionally difficult year for the UFS and the institution had to bear the brunt of the Reitz video and the reaction of the national and international community, the faculty still managed to perform and expand its core business.

The faculty offers multi-disciplinary and holistic courses to send skilled and capable students into the South African workplace and to empower the labour force. Our general and extended programmes are continuously assessed and improved in order to improve our throughput rates and quality of teaching.

The staff at the faculty worked tirelessly this year to broaden our product offering and to provide our students with the best quality teaching in the country. I applaud their efforts of expanding capacity, developing programmes and strengthening re-



Prof. Herman van Schalkwyk.

lationships both within and outside the faculty and the university.

I also want to applaud the staff and students of the faculty with their achievements this year – whether it is on a personal level, in their capacity as staff member of their respective department/centre or for the faculty. To mention a few:

- Ms Estelle Heideman HIV/Aids coordinator of the Lengau Agricultural Development Centre, received a bursary to participate in a leadership programme in the United States of America (USA), which trains female leaders in South Africa who contribute to the prevention of HIV at a local, regional and national level;
- In the Department of Agricultural Economics, Prof. Johan Willemse, known for his contribution towards agriculture, was appointed on the non-executive board of Absa;

Staff in the dean's office



The staff working in the dean's office are, from the left, front: Ms Stefanie Naborn, Manager: Marketing and Liaison, Ms René Bloem, Secretary, Prof. Neil Heideman, Vice-Dean: Faculty of Natural and Agricultural Sciences; back: Mr Clasia Claassen, Assistant Administrative Officer, Mr Johan Kruger, Faculty Manager, Ms Lorinda Rust, Secretary, and Ms Mitzie Cloete, Typist/Clerical Assistant.

- Prof. James du Preez, Departmental Chair of the Department Microbial, Biochemical and Food Biotechnology, received the silver medal for exceptional published research awarded at the biennial conference of the South African Society for Microbiology hosted in Graham's Town. It was only the seventh time since 1986 that the medal was awarded;
- A study of the UFS about how the change in the packaging of DNA with cellular development is influenced by the expression of genes, in which Prof. Hugh Patterson played a leading role, was published in a leading peer-reviewed scientific journal *Proceeding of the National Academy of Sciences* of the USA (PNAS). The PNAS journal has an impact factor of 10, which means that studies published in this journal are referred to by ten other scientific studies within the scope of two years;
- Prof. Riaan Luyt, professor in Chemistry and head of the Natural Sciences Programme at the Qwaqwa Campus, received an honorary medal from the Polymer Institute of the Slovak Academy of Sciences during a conference hosted in the High Tatras mountains of Slovakia;
- Prof. Maryke Labuschagne from the Department of Plant Sciences was the recipient of the National Science and Technology Forum's (NSTF) research capacity-development award. A team consisting of Prof. Jan van der Westhuizen and Dr Susan Bonnet from the Department of Chemistry, Prof. Kenneth Swart and Prof. Thinus van der Merwe from FARMOVS-PAREXEL also

received the innovation award for an outstanding contribution to science, engineering and technology by either an individual or a team over the last ten years from the NSTF;

- Prof. Maryke Labuschagne received a second prestigious national award for her research when the 2008 Cereal Science and Technology - SA's (CST-SA) Award for research and development was awarded to her; and
- Prof. Ivan Horak, extraordinary professor at the university's Department of Zoology and Entomology, became the third person in the history of the UFS to receive the D.Sc. degree.

In closing I would like to thank the faculty's lecturing staff for their support and enthusiasm during the past year. However, none of these achievements would have been possible without the interest and hard work of the administrative staff.

During 2008 we have all worked together to live up to the faculty's motto: "There is no substitute for excellence!" This report covers the activities of the faculty in 2008. It is a reflection of a year's commitment from a team of highly skilled academic and support staff.

Prof. Herman van Schalkwyk
Dean: Faculty of Natural and Agricultural Sciences
University of the Free State

Faculty news

Successful visit from delegation of the University of Minnesota

A senior delegation from the University of Minnesota in the United States of America (USA) paid a very successful visit to the University of the Free State (UFS) in May 2008 to explore ways of strengthening already existing ties between the two institutions.

Teacher training, capacity building in health sciences and student preparedness were among the areas of cooperation that were investigated, within the context of the Strategic Academic Cluster initiative of the UFS. Poverty reduction strategies were also a strong focus area.

The Faculty of Natural and Agricultural Sciences has had a cooperation agreement with the University of Minnesota's Department of Applied Economics since 2002 and the exchange of staff



During the visit are, from the left: Prof. Herman van Schalkwyk, Dean: Faculty of Natural and Agricultural Sciences at the UFS, Prof. Robert Jones, Senior Vice-President: System Academic Administration at the University of Minnesota, Dr Meredith Quiad, Associate Vice-President and Dean: International Programmes, University of Minnesota, Prof. Teuns Verschoor, Acting Rector of the UFS and Prof. Ezekiel Moraka, Vice-Rector: Student Affairs at the UFS.

has been taking place on a regular basis. This agreement will be expanded and both institutions are now exploring the possibility of

applying it across faculties. Both institutions have committed seed funding to formalise the cooperation agreement.

50 years of Agriculture celebrated



The faculty celebrated 50 years of the teaching of agriculture at the UFS in November 2008. Part of the celebrations was a seminar with the theme "Challenges in a changing agricultural environment". Some of the guest speakers are, from the left: Mr Corwyn Botha, Chairman: Agri Business Chamber and Managing Director of the Cape Agri Group, Mr Motsepe Matlala, President of NAFU, Mr Hans van der Merwe, Executive Head: Agri SA, Prof. Herman van Schalkwyk: Dean: Faculty of Natural and Agricultural Sciences at the UFS, and Mr Sugar Ramakarane, Head: Department of Agriculture, Free State Province.

Winners of NSTF awards assist with recruitment of students



Here are, from the left: Dr Martin Ntwaeaborwa, senior lecturer at the Department of Physics and finalist in the category for black researchers, Prof. Kenneth Swart, FARMOVS-PAREXEL, Prof. Maryke Labuschagne, head of Plant Breeding at the UFS's Department of Plant Sciences and female recipient of the award for the development of research capacity over the past five to ten years, and Prof. Jan van der Westhuizen, Department of Chemistry at the UFS; front: Ms Kedibone Aphane, MRC. Prof. Swart and Prof. Van der Westhuizen were the leaders of the team who received the award for the development of innovation by a corporate organisation or institution.

Representatives of the South African Medical Research Council (MRC) visited the UFS to recruit students who want to study in the fields of sci-

ence, engineering and technology. To assist with the recruitment, the winners of awards made by the National Science and Technology Forum (NSTF) earlier this year,

made presentations to create an interest amongst students. The UFS had four finalists of whom two were the winners in their respective categories.

Young scientists learn what faculty can offer



Young science lovers gathered in Sasolburg for the annual Sasol TechnoX in August 2008. The faculty's exhibition captured the learners' attention through an interactive representation of the application fields of science. Delegates from the Departments of Mathematics and Applied Mathematics, Chemistry, Zoology and Entomology, as well as UFS Marketing stood ready to answer the questions of the 20 832 learners who attended the event. Pictured here is Theo Viljoen, M.Sc. student in Forensic Entomology, sharing interesting facts regarding insects with learners.

Two UFS academics appointed on the Land Bank Board



Prof. Herman van Schalkwyk (left), Dean: Faculty of Natural and Agricultural Sciences, and Mr Theo Potgieter from the UFS School of Management were appointed on the Land Bank Board in March 2008. Prof. van Schalkwyk was appointed as Director and Deputy Chairperson and Mr Potgieter as Director of the Board. The appointments were made by the Minister of Agriculture and Land Affairs, Ms Lulu Xingwana, and are effective for a period of four years.

UFS extends exchange agreement with USA university



Here are, from the left, front: Dr SK de Datta, Vice-Rector: International Affairs, VT, Prof. Herman van Schalkwyk, Dean of the Faculty of Natural and Agricultural Sciences, UFS, Dr Martin Ntwaeaborwa, senior lecturer at the Department of Physics, UFS; back: Prof. Jim McKenna, Department of Crop, Soil and Environmental Affairs, VT, Prof. Izak Groenewald, Director of the Centre for Sustainable Agriculture and Rural Development at the UFS and responsible for the faculty's international liaison, Dr Michael Bertelsen, VT's international office, Dr Aldo Stroebel, Head: Internationalisation at the UFS and Dr Liesel Herselman, senior lecturer at the Department of Plant Sciences, UFS.

A delegation from the faculty visited the Virginia Tech University (VT) in the USA in June 2008 to confirm and extend the existing student exchange agreements between the two institutions.

During the visit the agreement, which started in 1997, was extended for the next five years. More than 150 students from both institutions have already taken part in this exchange agreement and it is the most successful student exchange agreement that VT is involved in. Although agricultural students from the UFS initially took part in the agreement, it was extended to other departments in the faculty and also to the rest of the UFS.

Itjoriseng Project launched



The faculty launched the Itjoriseng Project on the Main Campus in Bloemfontein in March 2008. The aim of the project is to improve the skills of teachers in the subjects Mathematics and Physical Science for Grades 10–12. "Itjoriseng" is the Sotho word for "sharpen yourself". At the launch were, from the left: Mr Mzamo Jacobs, Director: Curriculum Development for Further Education and Training, Free State Department of Education, Mr Johan Kruger, Faculty Manager, Ms Elna Marais, Chief Education Specialist: Curriculum Development, Free State Department of Education, and Prof. Herman van Schalkwyk, Dean: Faculty of Natural and Agricultural Sciences at the UFS.

2007 Faculty report launched

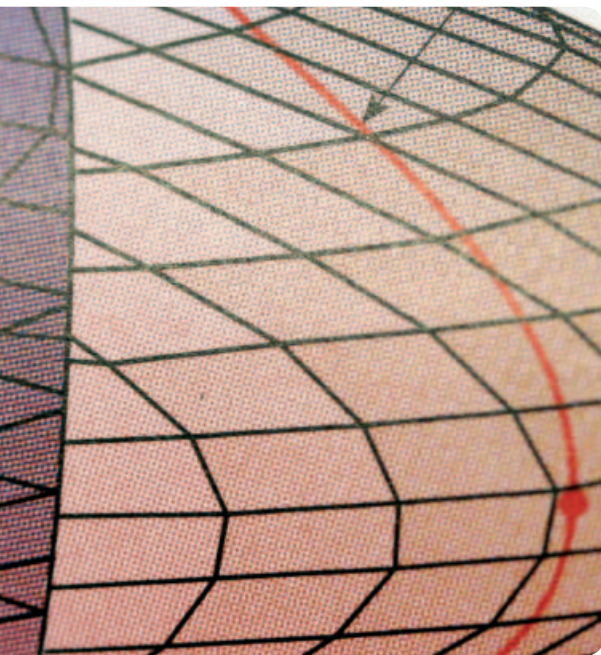


The faculty once again produced another report in which the various departments and centres highlighted their activities for 2007. The report was so well received that a second edition had to be printed. Here are some of the departmental chairpersons during the launch of the report in June 2008.

Department of

Mathematics and Applied Mathematics

"Members of staff are actively involved in research and have excelled in their respective fields" - Prof. Alain Clout.



Overview

The Department of Mathematics and Applied Mathematics offered a wide range of courses, at both undergraduate and postgraduate level. Many of the staff members were actively involved in research and community service.

Among the various accomplishments obtained in their respective fields, the outstanding research achievements of Prof. Johan Meyer were acknowledged by the management of the University of the Free State (UFS) who promoted him to the rank of Senior Professor in March 2008.

Prof. Schalk Schoombie, in collaboration with Mr Christiaan Venter,



Prof. Alain Clout.

continued with a project funded by the National Research Foundation (NRF) on the use of computational adaptive dynamics in the modelling of evolution and adaptive processes in population modelling.

Furthermore, Prof. Schoombie, in collaboration with Prof. Eben Maré of the Department of Mathematics and Applied Mathematics at the University of Pretoria, continued his investigation of non linear instabilities induced by spurious high frequency components in the numerical solution of certain non linear ordinary differential equations. In particular, the effect of using third and fourth order Nyström methods on the Van der Pol equation was

investigated. A research article on this topic was published in the Society for Industrial and Applied Mathematics' (SIAM) *Journal of Numerical Analysis*.

Prof. Johan Meyer paid a research visit to Prof. J Szigeti at the University of Miskolc in Hungary in May 2008 as well as to Prof. W-F Ke at the National Cheng Kung University in Tainan, Taiwan in November 2008. Prof. Meyer gave two invited lectures. The first one took place at the Alfréd Rényi Institute of Mathematics, Budapest, Hungary in June, and the second was given in November at the Nelson Mandela Metropolitan University in Port Elizabeth, South Africa.

Prof. Meyer received a research visit from Prof. CJ Maxson of Texas A&M University in the United States of America (USA) in April 2008.

Prof. Alain Clout continued his fundamental research on the topic of partial derivatives of non-integer orders and their applications in groundwater modelling. He and his colleagues, Mr Willem van Wyk and Dr William Rae of the Department of Medical Physics at the UFS, presented some of their results at the congress of the South African Association of Physicists in Medicine and Biology (SAAPMB) in June 2008. The presentation was awarded the prize for the most insightful presentation.

Prof. Thomas Acho was the external examiner for two M.Sc. dissertations, namely, the work of Mr KB Mfumadi entitled "Variation

Viscosity Arterial Blood Flow: Its Nature and Stability” and the dissertation of Mr T M Kgasago on the subject: “Modelling the Transmission Dynamics of Infectious Diseases with Vaccination and Temporary Immunity”. Both candidates were from the University of Limpopo.

Prof. Acho was also invited by the editor of the *Journal of the American Mathematical Society* to act as a reviewer for one of their articles.

In the area of community service, Prof. Johan Meyer and Mr Christiaan Venter were closely involved in the activities offered by the Nautilus Mathematics Project. ■



Staff members of the department during a meeting with Prof. Herman van Schalkwyk, Dean: Faculty of Natural and Agricultural Sciences.



Prof. CJ Maxson (right) of Texas A&M University in the United States of America visited the department in April 2008.

Research outputs

Research articles

Schoombie, S.W. 2008. High frequency induced instability in Nystrom methods for the van der Pol equation. *SIAM Journal of Numerical Analysis* 46(3): 1147-1165.

Groenewald, N.J., Juglal, S. & Meyer, J.H. 2008. Prime ideals in group near-rings. *Algebra Colloquium* 15(3): 501-510.

Conference contributions

Schoombie, S.W. 2008. *Doing non linear analysis with Ron Mitchell.*

Paper delivered at the South African Symposium on Numerical and Applied Mathematics (SANUM 2008), Stellenbosch, South Africa. 26-28 March.

Van Wyk, W.P., Rae, W.I.D. & Cloot, A. 2008. *Fractional order calculus in medical imaging processing.* Paper delivered at the 48th Annual Congress and Winter School of the South African Association of Physicists in Medicine and Biology (SAAPMB), Durban, South Africa. 24-28 March.

Staff

Main Campus:

Professors: Profs Johan Meyer, Schalk Schoombie, Dana Murray, Alain Cloot

Associate Professor: Prof. Thomas Acho

Senior Lecturer: Dr Hubertus Bargenda, Ms Julia van Niekerk

Lecturers: Dr Samantha Dorfling, Mr Christiaan Venter, Ms Ansa Kleynhans

Temporary Lecturers: Mss Magrietha Theron, Martie Calitz, Anita Swart, Marina Botha

Administrative Officer: Ms Marinda Venter

Qwaqwa Campus:

Associate Professor: Prof. Jo Schröder

Lecturer: Mr Patrick Mbambo

Temporary Lecturers: Messrs Nallapan Sebastian, Neo Tsosane, Ms Christa Faber

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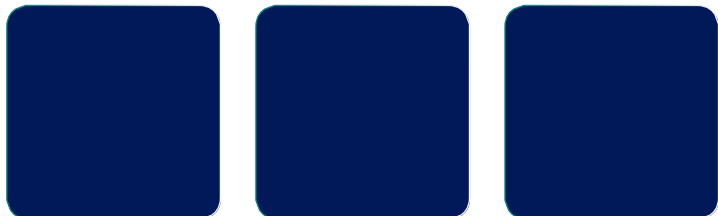
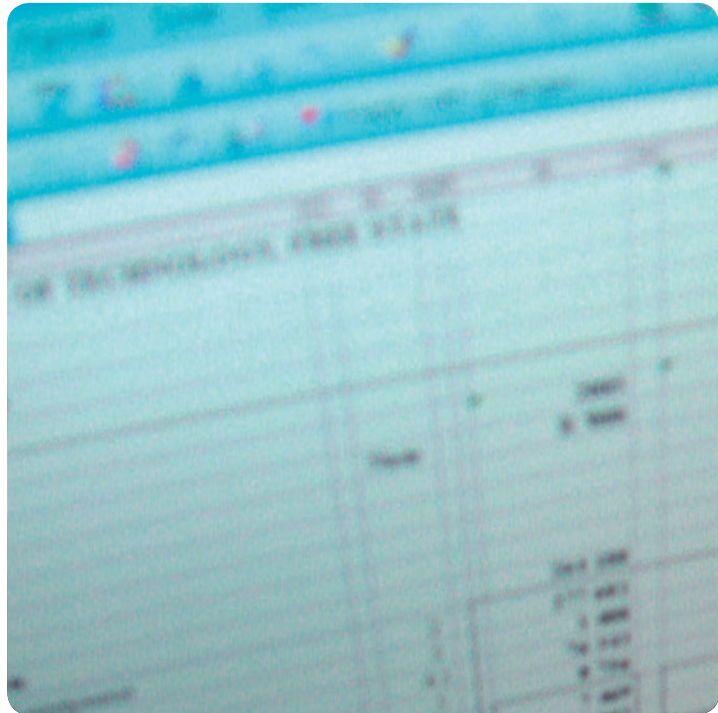
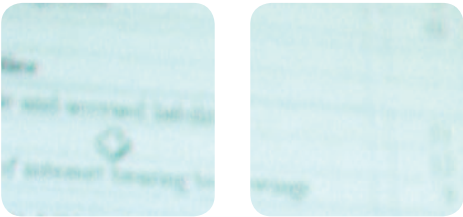
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Statistical data

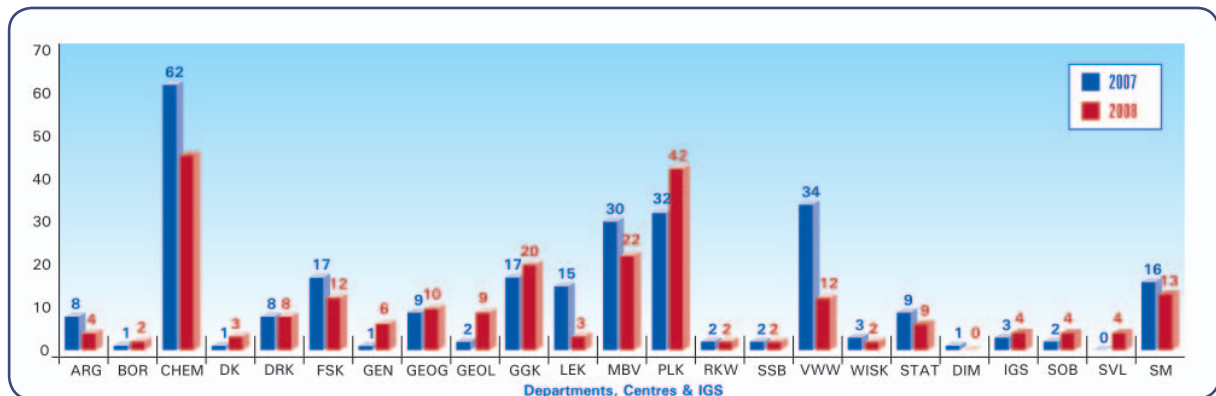


Research outputs: 2007-2008

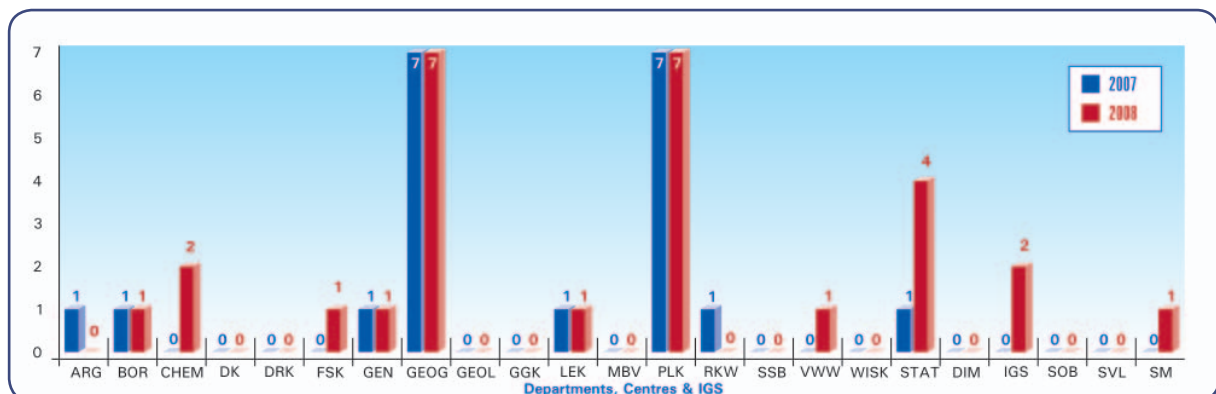
List of abbreviations

Abbreviation	Name	Abbreviation	Name
ARG	Department of Architecture	GGK	Department of Soil, Crop and Climate Sciences
BOR	Department of Quantity Surveying and Construction Management	IGS	Institute for Groundwater Studies
SOB	Centre for Environmental Management	LEK	Department of Agricultural Economics
CEM	Department of Chemistry	MBV	Department of Microbial, Biochemical and Food Biotechnology
SM	Centre for Microscopy	PLK	Department of Plant Sciences
SVL	Centre for Sustainable Agriculture and Rural Development	RKW	Department of Computer Science and Informatics
DK	Dean's Office	SSB	Department of Urban and Regional Planning
DRK	Department of Zoology and Entomology	SRB	Disaster Management Training and Education Centre for Africa (DIMTEC)
FSK	Department of Physics	VWW	Department of Animal, Wildlife and Grassland Sciences
GEN	Department of Genetics	STAT	Department of Mathematical Statistics and Actuarial Science
GEOG	Department of Geography	WISK	Department of Mathematics and Applied Mathematics
GEOL	Department of Geology		

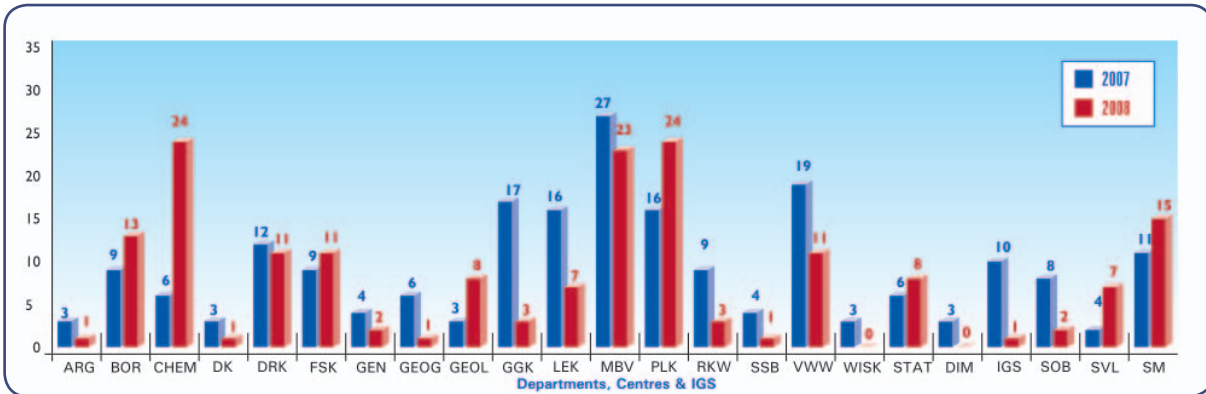
Accredited articles



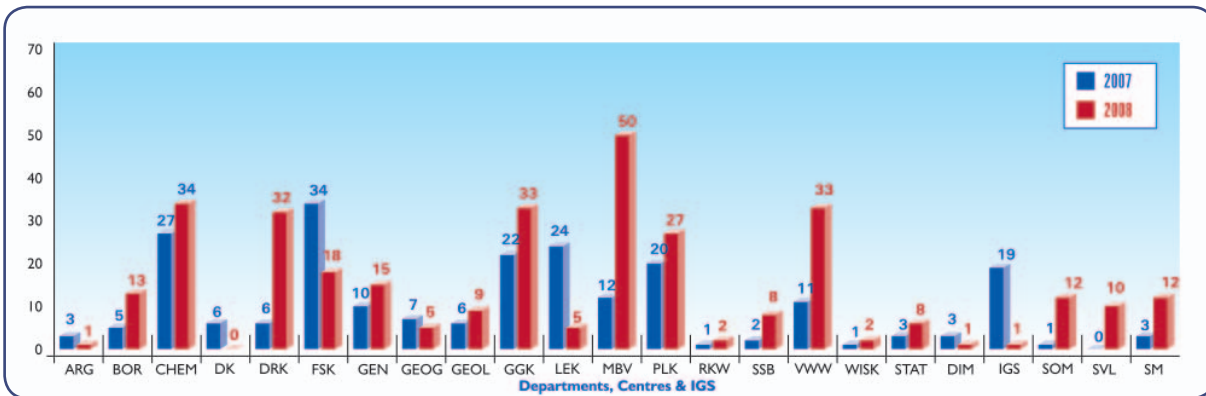
Books



International conferences



Local conferences



Student figures: 2007-2008

Student figures

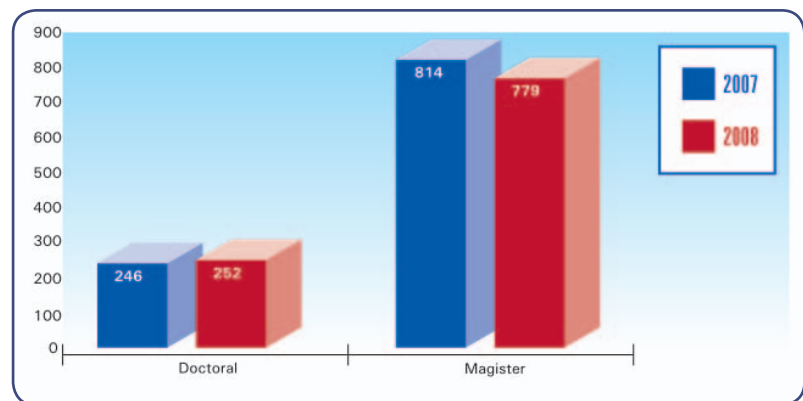
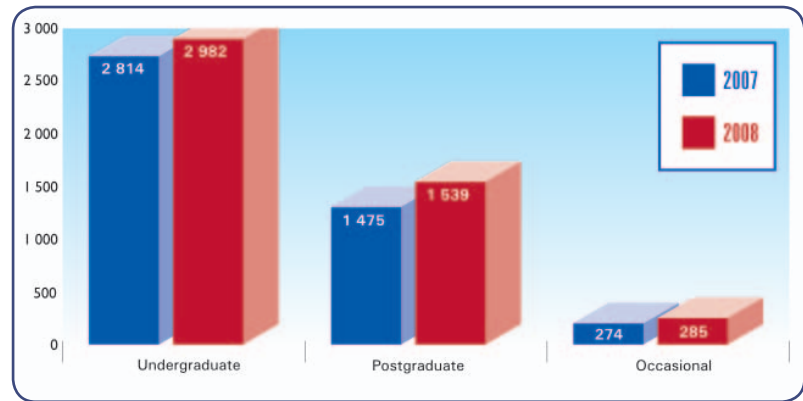
Year	Description	Black	Coloured	Asian	White	Total
2007	Undergraduate	1492	66	38	1218	2814
	Postgraduate	710	41	40	684	1475
	Occasional	230	6	2	36	274
*TOTAL		2432	113	80	1938	4563
2008	Undergraduate	1667	51	37	1227	2982
	Postgraduate	755	40	43	701	1539
	Occasional	260	5	1	19	285
* TOTAL		2682	96	81	1947	4806

International students

Nationality	Year	Year
	2007	*2008
Angola	2	0
Asian countries	20	24
Botswana	17	23
Democratic Republic of the Congo	0	1
European countries	9	10
Lesotho	118	144
Malawi	3	5
Mauritius	2	3
Mozambique	4	7
Namibia	54	65
North America	15	5
Other African countries	47	69
South America	1	0
Swaziland	5	6
Zambia	7	7
Zimbabwe	48	60
Total	352	429

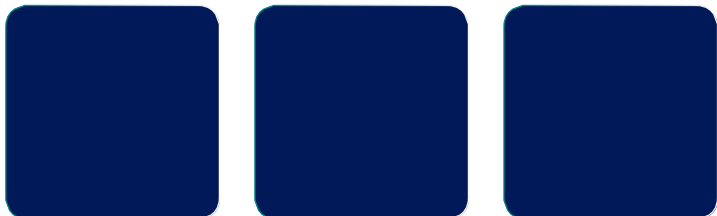
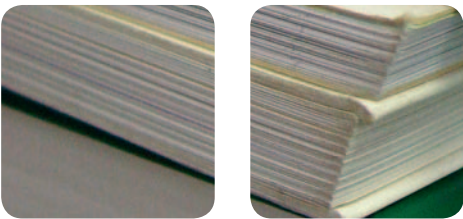
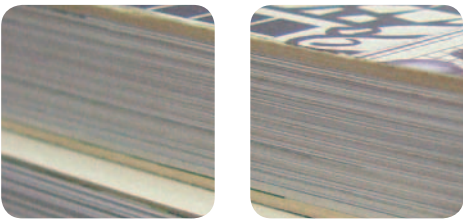
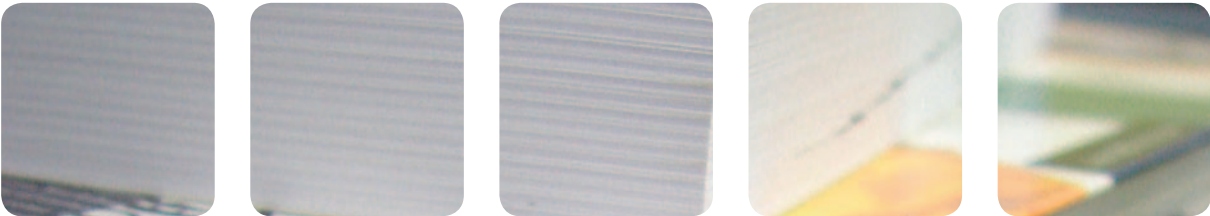
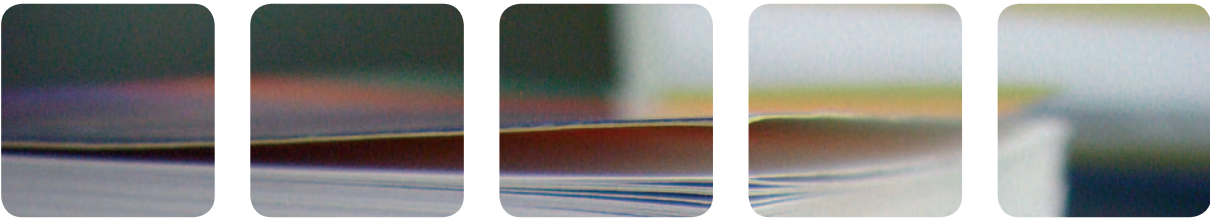
*2008 Final HEMIS figures not available

Comparison for the Faculty of Natural and Agricultural Sciences





Glossary



Glossary

A

AACC -	American Association for Cereal Chemists
AACE -	Association for the Advancement of Cost Engineering
ADF -	Amsterdam Density Functional Programme
ADG -	Average Daily Grain
AEASA -	Agricultural Economics Association of South Africa
AEON -	the African Earth Observation Network
AGU -	American Geophysical Union
AI -	Artificial Insemination
ARC -	Agricultural Research Council
ARV -	Antiretroviral
ASC -	Architecture Student Conference
ASAQS -	Association of South African Quantity Surveyors
ASOCSA -	Association of Schools of Construction of Southern Africa

B

BBSRC -	Biotechnology and Biological Sciences Research Council
BMBF -	Federal Ministry of Education and Research, Germany

C

CAA -	Commonwealth Association of Architects
CANSA -	Cancer Association of South Africa
CAB -	Centro de Astrobiología
CED -	Centre for Education Development
CePHMa -	Centre for Plant Health Management
CHESD -	Centre for Higher Education Studies and Development
CHPC -	Centre for High Performance Computing
CIDB -	Construction Industry Development Board
CIOB-SA -	Chartered Institute of Building, South Africa
CSIR -	Council for Scientific and Industrial Research Organisation
CSTA -	Cereal Science and Technology Association
CUT -	Central University of Technology

D

DiMTEC -	Disaster Management Training and Education Centre for Africa
DMISA -	Disaster Management Institute of Southern Africa
DRRW -	Durable Rust Resistance in Wheat
DST -	Department of Science and Technology
DWAF -	Department of Water Affairs and Forestry

E

ECA -	European Crystallographic Association
EGIC -	Economic Growth and International Competitiveness
EMSA -	Environmental Management Systems Association
EMS -	Environmental Management Systems
EPWP -	Expanded Public Works Programme

F

FAO -	Food and Agricultural Organisation
FETWater -	Framework Programme for Research Education and Training in Water
FMP -	Facilities Management Programme
FSRDPP -	Free State Rural Development Partnership Project
FTIR -	Fourier Transform Infra Red Spectrometer

G

FGAP -	Facility for Genomics and Proteomics
GIS -	Geographical Information Systems
GMO -	Genetically Modified Organisms
GRDM -	Groundwater Resource Directed Measures
GSSA -	Grassland Science Society of South Africa
GSSA -	Geological Society of South Africa

H

HCI -	Human-computer Interaction
HRTEM -	High Resolution Transmission Electron Microscopy

I

IAMA -	International Food and Agribusiness Management Association
IAU -	International Astronomical Union
ICACS -	International Conference on Atomic Collisions in Solids
ICCC -	International Conference on Coordination Chemistry
ICEC -	International Cost Engineering Council
ICRISAT -	International Crops Research Institute for the Semi-Arid Tropics
ICSU -	International Council for Science
IDC -	Industrial Development Corporation
IGC -	International Geological Congress
IGS -	Institute for Groundwater Studies
IMWA -	International Mine Water Association
INCRoP -	Insects on New Crops Programme
IPMP -	Intensive Project Management Programme
ISI -	International Statistical Institute
ISME -	International Society for Microbial Ecology
IT -	Information Technology
IUMS -	International Union of Microbiological Societies

L

LPI -	Lunar and Planetary Institute
LRAD -	Land Redistribution for Agricultural Development

M

MCEE -	Minnesota Council on Economic Education
MDC -	Maputo Development Corridor
MEC -	Member of the Executive Council
MNS -	Material and Nanosciences Cluster
MOU -	Memorandum of Understanding
MRC -	Medical Research Council
MSA -	Masters in Sustainable Agriculture
MSSA -	Microscopy Society of Southern Africa
MUCPP -	Mangaung University Community Partnership Programme

N

NAMC - National Agricultural Marketing Council
 NASA - National Aeronautics and Space Administration
 NASSP - National Astrophysics and Space Science Programme
 NBN - National Bioinformatics Network
 NCEE - National Council for Economic Education
 NDF - Neutral Detergent Fibre
 NECSA - Nuclear Energy Corporation of South Africa
 NERPO - National Emergent Red Meat Producers Organisation
 NGO - Non-Governmental Organisation
 NRF - National Research Foundation
 NSTF - National Science and Technology Forum
 NWGA - National Wool Growers' Association

O

OECD - Organisation for Economic Cooperation and Development

P

PAQS - Pacific Association of Quantity Surveyors
 PDMS - Provincial Disaster Management Centre
 PRT - Protein Research Trust

R

RDP - Redress and Development Programme
 RIBA - Royal Institute of British Architects
 RICS - Royal Institute of Chartered Surveyors
 RIEP - Research Institute of Education Planning
 RMMA - Red Meat Abattoirs Association
 RPO - Red Meat Producers Organisation
 RTPI - Royal Town Planning Institute

S

SA - South Africa
 SAAPMB - South African Association of Physicists in Medicine and Biology
 SAB - South African Breweries Limited

SABC - South African Broadcasting Corporation
 SACAP - South African Council for the Architectural Professions
 SACPCMP - South African Council for the Property Valuers Profession
 SACPLAN - South African Council of Planners
 SACQSP - South African Council for the Quantity Surveying Profession
 SADC - Southern African Development Community
 SAFA - South African Feedlot Association
 SAFEFE - South African Foundation for Economic and Financial Education
 SAFOI - South African Fryer Oil Initiative
 SAIA - South African Institute of Architects
 SAIM - Society for Industrial and Applied Mathematics
 SAISC - Southern African Institute of Steel Construction
 SANBI - South African National Biodiversity Institute
 SANCID - South African Commission on Irrigation and Drainage
 SANPAD - South African Netherlands Research Programme on Alternatives in Development
 SANSA - South African National Survey of Arachnida
 SAPOA - South African Property Owners Association
 SAPPS - Symposium of the South African Pecan Producers Association
 SAQA - South African Qualifications Authority
 SASA - South African Statistical Association
 SASHS - Southern African Society for Horticultural Sciences
 SASM - South African Society for Microbiology
 SAWMA - South African Wildlife Management Association
 SAWSS - Southern African Weed Science Society
 SCM - Scientific Computing and Modeling
 SEG - Society of Economic Geologists
 SEM - Scanning Electron Microscope

SLE - Senior Lecturer Equivalent
 SSSSA - Soil Science Society of South Africa
 SWMA - Southern African Wildlife Management Association

T

TEM - Transmission Electron Microscope
 THRIP - Technology and Human Resource for Industry Programme

U

UCT - University of Cape Town
 UEC - Unit for Earth Construction
 UFS - University of the Free State
 UJ - University of Johannesburg
 UK - United Kingdom
 UN - United Nations
 UNESCO - United Nations Educational, Scientific and Cultural Organisation
 UNU - United Nations University
 UP - University of Pretoria
 USA - United States of America
 USAID - United States Agency for International Development
 UWC - University of the Western Cape

W

WCAP - World Conference on Animal Production
 WITS - University of the Witwatersrand
 WRC - Water Research Commission

