UNIVERSITY OF NATAL

GRADUATION / DIPLOMA CEREMONY

1993

THURSDAY 22 APRIL

18:00

DURBAN

THE CHANCELLOR

"Chancellor" is an office that goes back to Antiquity: the original *cancellarius* regulated access to the Roman Tribune. In medieval times, the office became associated with the heads of the writing departments of early kings. Because so few people were literate, a chancellor was automatically learned. This explains why the heads and spokesmen of the early universities were also accorded the title. More recently, the office has become largely symbolic, and the real executive head of a university is, in fact, its vice-chancellor.

Archbishop Hurley is the fifth Chancellor of the University of Natal. His predecessors were: The Honourable D G Shepstone (1949-1966), Dr G G Campbell (1967-1973), Dr B A Armitage (1973-1983), and the Honourable R N Leon QC (1983-1992).

THE MACE

The Chancellor's Mace generally referred to as "the Mace", is used on ceremonial occasions presided over by the chancellor and is regarded as the Chancellor's "staff of office". It symbolises the University's protection of its Chancellor.

The use of the mace as a symbol of authority has a long history. The head of a copper mace, which apparently dates back to the 12th Century before Christ, has been excavated at Beyce Sultan in Asia. In the early centuries, churchmen who went to war often carried a mace in preference to a sword. One side of the mace-head was beautifully decorated with the owner's emblem and on the other side was a large knob which served as a weapon, and was always round so that the church law never to shed blood was always carefully observed! In the early centuries the mace was a symbol of the king's authority. During the power struggle between the king and the Commons in the 13th Century, the king gave the speaker the mace as a symbol of his indemnity against arrest.

The Mace was designed by Mr G H Atkins, senior lecturer in sculpture in the University's Department of Fine Arts, was made in England and was first used at the 1970 graduation ceremonies.

THE ARMORIAL BEARINGS (See front cover)

The armorial bearings of the University of Natal were awarded by the College of Arms in London.

The two black wildebeest come from the arms of the Province of Natal. They are shown in full course to symbolise movement and progress. The two open books represent the universal heritage of knowledge and the two centres of the University, Durban and Pietermaritzburg. The five-pointed star represents the land of Natal discovered and named on Christmas Day in 1497. Stella Aurorae, star of the dawn, symbolises the role of the University in dispelling the darkness of ignorance and evil.

ACADEMIC DRESS

The wearing of gowns by judges, ministers, teachers and scholars is an ancient and impressive custom. When the graduating students at universities receive their diplomas or degrees, they, too (and perhaps, for some, only this once in their lives), wear the caps and gowns of this long tradition. By wearing the ancient regalia, they hold hands with students past and students present.

In modern times the standard cap and gown are almost universally worn. Of all the components of the costume, the hood conveys the greatest amount of information: it makes clear the level of the degree, the faculty in which it was given, and the institution which awarded it.

PROGRAMME

The Chancellor constitutes the congregation

WELCOME TO GUESTS
The Acting Vice-Chancellor

PRESENTATION OF FELLOWS OF THE UNIVERSITY OF NATAL
The Deans of Faculties

PRESENTATION OF DOCTORAL GRADUANDS
The Deans of Faculties

HONORARY DEGREE
The Orator presents the Honorary Graduand
Emmanuel Apostolos Zaloumis
for the degree of
DOCTOR OF SCIENCE

ADDRESS
Dr E A Zaloumis
B D S (Witwatersrand)

THE UNIVERSITY OF NATAL CASOC CHOIR
Yekani Umona, Nenzondo ..... R T Caluza
Umdudo KwaXhosa ..... M Mahlangeni

PRESENTATION OF GRADUANDS AND DIPLOMATES
The Deans of Faculties

The Chancellor dissolves the congregation

THE UNIVERSITY OF NATAL CASOC (Creative Arts Society) CHOIR
Conductor : Sikelela Msibi (University of Natal music student)

The congregation is requested to stand while the academic procession enters and leaves the hall.

The congregation is also requested to remain seated until the conclusion of the ceremony.

Only officially authorised persons are permitted to take photographs during the ceremony.

Refreshments will be served in the upper gallery at the conclusion of the ceremony.

OFFICERS

Chancellor	The Most Reverend D E Hurley, OMI, DD Archbishop Emeritus of Durban *ThL (Rome), STL (Rome)*
Vice-Chancellor and Principal	J V Leatt *BA (Rhodes), BA(Hons), PhD (Cape Town)*
Chairman of Council	C van der Pol *BSc, PhD (Witwatersrand)*
Acting Deputy Vice-Chancellor and Vice-Principal, Durban	J R van Dellen *MB BCh (Witwatersrand), FRCS (Edinburgh), PhD (Witwatersrand)*
Deputy Vice-Chancellor and Vice-Principal, Finance and Technical Services	B M Gourley *CTA (Witwatersrand), MBL (Unisa), CA (SA)*
Deputy Vice-Chancellor and Vice-Principal, Pietermaritzburg	D A Maughan Brown *BA (Cape Town), MA (Cantab), DPhil (Sussex)*
Registrar	B X de Wet *MA (Pret), DLitt et Phil (Unisa), HED (Pret)*
President of Convocation	J M Pet *PrEng, BScEng (Natal), MSAACE*
Orator	P J H Scholtz *BA(Hons), PhD, HED (Natal)*

DEANS OF FACULTIES

Engineering	L W Roberts *PrEng, MScEng (Natal), PhD (London)* *DIC, MSAIMechE, MASME*
Science	A D M Walker *MSc (Rhodes), PhD (Cantab), FRSSAf*

MR CHANCELLOR

I HAVE THE HONOUR TO ANNOUNCE THE ELECTION OF SARP

ADALI AS A FELLOW OF THE UNIVERSITY OF NATAL

MECHANICAL ENGINEERING

SARP ADALI

Hammond, Michael Graham, *BSc (Unisa) PhD (Natal)* ..... Cell Biology
Thesis : Human lymphocyte antigens.

DOCTOR OF PHILOSOPHY IN THE FACULTY OF SCIENCE

Discipline

Baldellou, Maria Isabel, *MSc (Barcelona)* ..... Psychology
Thesis : Implications of the multimale troop structure in vervet monkeys (*Cercopithecus aethiops pygerythrus*).

Dettman, Charles David, *BSc(Hons)* ..... Cell Biology
Thesis : Animal model studies on the antelope schistososmes *Schistosoma margrebowiei* and *S leiperi* with particular reference to their proposed role in limiting the distribution of human intestinal schistosomiasis.

Gray, Dereck Johnathan, *MSc (UPE)* ..... Mathematics
Thesis : On purity relative to an heriditary torsion theory.

Jordens, Olav, *BSc(Hons)* ..... Mathematics
Thesis : Congruence lattices of models with application to ordered sets.

Melville, Stuart William, *MSc* ..... Computer Science
Thesis : A practical investigation of meteor-burst communications.

MR DEPUTY VICE-CHANCELLOR

I HAVE THE HONOUR TO REQUEST THAT YOU READ THE

FELLOWSHIP CITATION FOR SARP ADALI

MECHANICAL ENGINEERING

SARP ADALI

Hammond, Michael Graham, *BSc (Unisa) PhD (Natal)* ..... Cell Biology
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Melville, Stuart William, *MSc* ..... Computer Science
Thesis : A practical investigation of meteor-burst communications.

MR CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE AWARD OF THE

FELLOWSHIP OF THE UNIVERSITY OF NATAL IN RECOGNITION

FOR DISTINGUISHED CONTRIBUTIONS IN THE FIELD OF

MECHANICAL ENGINEERING

SARP ADALI

Hammond, Michael Graham, *BSc (Unisa) PhD (Natal)* ..... Cell Biology
Thesis : Human lymphocyte antigens.

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Melville, Stuart William, *MSc* ..... Computer Science
Thesis : A practical investigation of meteor-burst communications.

FELLOWS OF THE UNIVERSITY OF NATAL

(See page 13)

FACULTY OF SCIENCE

Hellberg, Manfred Armin, *BSc(Hons) (Cape Town) PhD (Cantab) FRSSAf*
Awarded for distinguished contributions in plasma physics.

FACULTY OF ENGINEERING

Adali, Sarp, *BScEng (Ankara) PhD (Cornell) MASME*
Awarded for distinguished contributions in mechanical engineering.

DOCTORAL GRADUANDS

DOCTOR OF SCIENCE

Discipline

Hammond, Michael Graham, *BSc (Unisa) PhD (Natal)* ..... Cell Biology
Thesis : Human lymphocyte antigens.

DOCTOR OF PHILOSOPHY IN THE FACULTY OF SCIENCE

Discipline

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Jordens, Olav, *BSc(Hons)* ..... Mathematics
Thesis : Congruence lattices of models with application to ordered sets.

Melville, Stuart William, *MSc* ..... Computer Science
Thesis : A practical investigation of meteor-burst communications.

MR CHANCELLOR

Electronic guidance of automated vehicles is of great importance in a modern industrial environment. James Asbury developed an infra-red navigational system to provide a wire-less technique for communication between the central control and on-board computers, thereby enabling a manufacturing plant product to be moved without human involvement. He is to be commended for his resourcefulness and creativity in addressing the current needs of the manufacturing industry by developing and implementing an effective technique for materials handling. His work will be of value to practising engineers in the manufacturing industry.

MR CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN THE FACULTY OF ENGINEERING

JAMES HUBERT ASBURY

GRADUANDS

MASTER OF SCIENCE

Discipline

Bailey, Grant Drue, *BSc(Hons)* ..... Geographical & Environmental Sciences
Thesis : A landscape ecological investigation of trampling impact sensitivity in the Silverglen Nature Reserve, Durban.

Barratt, Samantha Anne, *BSc(Hons)* ..... Cell Biology
Thesis : The utilisation of plant tissue culture systems to investigate and evaluate plant herbicides.

Bates, Michael Francis ..... Environmental Biology
Thesis : The Herpetofauna of the Orange Free State with special emphasis on biogeographical patterning.

Blakeway, Felicity Clare, *BSc(Hons)* ..... Cell Biology
Thesis : Development of *in vitro* Culture Systems for *Eucalyptus grandis*.

Boon, Richard Graham Campbell, *BSc(Hons) HDE* ..... Environmental Biology
Thesis : An avifaunal study of Pigeon Valley Park as a biogeographic island in an urban area with special reference to the Natal Robin (*Cossypha natalensis* Smith).

Boycott, Richard Charlton, ... Environmental Biology
Thesis : A herpetofaunal survey of Swaziland.

Caldeira, Paulo Silvestre, *BScEng* ..... Physics
Thesis : A satellite and ground based study of fine structure in VLF whistlers.

* **Clemmett,** Susan Joy, *BSc(Hons)* ..... Chemistry
Thesis : An investigation of acetone-photosensitised DNA kinetics.

Douglas, Rodney Malcolm ..... Environmental Biology
Thesis : Investigations into the ecology of the herpetofauna of Florisbad Research Station, Orange Free State, South Africa.

Garisch, Mark Edwin, *BSc(Hons) HDE* ..... Cell Biology
Thesis : Serodiagnosis of cysticercosis using a monoclonal antibody.

Godefroy, Susan Jessica, *BSc(Hons)* ..... Chemistry
Thesis : The polycyclic aromatic hydrocarbon content and mutagenicity of the residue from cane burning and vehicle emissions.

* = Degree awarded *cum laude*

MR CHANCELLOR

Three distinct areas of research related to automated guided vehicles were covered by the work of Glen Bright. These were the guidance system, the communication techniques, and path planning optimisation. The guidance system, based on the recognition of fluorescent lights above the guide-path, received favourable comment from examiners, as did his use of infra-red transmissions for fine guidance during docking manoeuvres. He has made a valuable contribution to the integration of guidance and control systems using both hardware and software. This will assist in the future development of automated guided vehicle systems.

MR CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN THE FACULTY OF ENGINEERING

GLEN BRIGHT

MR CHANCELLOR

With the advent of new digital technology, many of the analogue circuits in radio transmitters and receivers can now be replaced with digital signal processing hardware and software. Alan Carter developed optimized algorithms for these new generation radio transceivers. He received international recognition for this work which includes the development of a multirate AM demodulator, a low sampling rate FM demodulator and a single sideband automatic frequency control system. All his designs are now successfully incorporated in a commercial transceiver.

MR CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN THE FACULTY OF ENGINEERING

ALAN JAMES AUCHMUTY CARTER

MR CHANCELLOR

Radio communications equipment is widely used today. Central to its functioning is the high power radio frequency amplifier, the design of which relies heavily on engineering experience and measurement. Gary Hoile studied existing design methodology and set about deriving computational techniques to enhance the process. A novel means of modelling key components in the amplifier has been devised, receiving high commendation from examiners. Arising from this work, high power amplifiers can now be developed using computer aided techniques.

MR CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN THE FACULTY OF ENGINEERING

GARY ALEC HOILE

Discipline

Pekrides, Hercules, *MSc* ..... Physics
Thesis : Numerical cavity-resonance modelling of impulse excited Pi 2 pulsations in the magnetosphere.

Schütte, Sabine Silke, *MSc (Gottingen)* ..... Geology
Thesis : Ongeluk volcanism in relation to the Kalahari manganese deposits.

van Vuuren, Gary Wayne, *MSc* ..... Physics
Thesis : The influence of rotating and locked magnetic islands on edge transport in the Tokoloshe Tokamak.

Watt, Derek Alexander, *MSc HDE (Witwatersrand)* ..... Cell Biology
Thesis : Aspects of nitrate uptake by *Chlamydomonas reinhardtii* (Chlorophyta) Dangeard.

DOCTOR OF PHILOSOPHY IN THE FACULTY OF ENGINEERING

Discipline

Asbury, James Hubert, *MScEng* ..... Mechanical Engineering
Thesis : Communication, mapping and navigational aspects for a free-ranging, automated guided vehicle.

Bright, Glen, *MScEng* ..... Mechanical Engineering
Thesis : Guidance techniques, data transfer processing, path planning and computer aided control for automated guided vehicles.

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Carter, Alan James Auchmuty, *MScEng* ..... Electronic Engineering
Thesis : Optimized digital signal processing algorithms applied to radio communications.

Hoyle

Hoile, Gary Alec, *BScEng* ..... Electronic Engineering
Thesis : Computer-aided design of RF MOSFET power amplifiers.

HONORARY GRADUAND

(See page 14)

Zaloumis, Emmanuel Apostolos, *B D S (Witwatersrand)*

* **Govender,** Anesh, *BSc HDE (UDW)* ..... Environmental Biology
Thesis : Biology and population dynamics of the King Mackerel (*Scomberomorus commerson*, Lacepede, 1800) off the coast of Natal.

Jaaback, Katherine Margaret, *BSc(Hons)* ..... Applied Geology
Thesis : A two-dimensional hydrodynamic model for the St Lucia estuary mouth.

Kemp, Lynley Claire, *BSc(Hons)* ..... Environmental Biology
Thesis : The effect of sun and shade on the leaves of four coastal tree species.

* **Kriste,** Angela Gayle, *BSc(Hons)* ..... Chemistry
Thesis : Immunological studies of thymine dimer quantitation.

Kuppen, Mogamberi, *BSc(Hons)* ..... Physics
Thesis : The establishment of a ground based lidar system to study atmospheric aerosols at Durban.

Lortan, Darren Brendan, *BSc(Hons)* ..... Applied Mathematics
Thesis : Conformal motions in Bianchi I spacetime.

Loureiro, Guy Marchand *BSc(Hons) HDE (Cape Town)* ..... Computer Science
Thesis : Speech recognition and blackboard expert systems.

Moollan, Warren Charles, *BSc(Hons)* ..... Chemistry
Thesis : The determination of activity coefficients at infinite dilution using gas liquid chromatography.

* **Moopanar,** Selvandren, *BSc(Hons)* ..... Applied Mathematics
Thesis : On Stephani universes.

Naidoo, Ramsamy, *BSc (Unisa) BSc(Hons) (Natal)* ..... Applied Mathematics
Thesis : Cosmological models and the deceleration parameter.

Paramusar, Nabendra *BSc(Hons) (UDW)* ..... Applied Mathematics
Thesis : The application of the multigrid algorithm to the solution of stiff ordinary differential equations resulting from partial differential equations.

Pietersen, Kevin John, *BSc(Hons)* ..... Geology
Thesis : Richards Bay Zircon.

Pillay, Povananthiran, *BSc BEd (Unisa)* ..... Chemistry
Thesis : Synthesis and characterization of high temperature ceramic superconducting materials.

Powell, Alan Roy, *BSc(Hons)* ..... Computer Science
Thesis : Application of backpropagation-like generative algorithms to various problems.

* = Degree awarded *cum laude*

* **Roberts,** Michael Austin, *BSc(Hons)* ..... Cell Biology
Thesis : Studies in the regulation of nitrate reductase during *in vitro* differentiation of *Nicotiana tabacum* L. var. Samsun.

Sewambar, Soraya, *BSc(Hons)* ..... Mathematical Statistics
Thesis : The theory of option valuation.

* **Smithdorf,** Vivienne, *BSc(Hons)* ..... Mathematics
Thesis : On the integrity of domination in graphs.

* **Sweby,** Deborah Lee, *BSc(Hons)* ..... Cell Biology
Thesis : Effects of nitrogen nutrition on salt-stressed *Nicotiana tabacum* var. Samsun *in vitro*.

Turner, Audrey Michelle, *BSc(Hons)* ..... Geology
Thesis : Zinc-lead mineralization at Pering Mine in the Griqualand-West sub-basin - an isotopic study.

Whitecross, Stuart James, *BSc(Hons)* ..... Geology
Thesis : The geology of Gravelotte Emerald Mine, North Eastern Transvaal.

Zunckel, Mark, *BSc(Hons) (Pret)* ..... Physics
Thesis : Ozone profile changes above Pretoria: 1965 to 1991.

MR CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE DEGREE OF

MASTER OF SCIENCE IN ENGINEERING

Deacon, Mark Philip, *BScEng* ..... Civil Engineering
Dissertation : Modelling extreme flood hydrographs by way of a conditional bivariate distribution function.

de Wet, David Louis, *BScEng* ..... Agricultural Engineering
Dissertation : Assessment of impacts of feedlots on water quality in the Mgeni catchment.

Dorman, Gary Anthony, *BScEng* ..... Electronic Engineering
Dissertation : An application specific IC (ASIC) for a digital radio.

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Zunckel, Mark, *BSc(Hons) (Pret)* ..... Physics
Thesis : Ozone profile changes above Pretoria: 1965 to 1991.

MASTER OF SCIENCE IN ENGINEERING

Discipline

Apostolou, Apostolos, *BScEng* ..... Mechanical Engineering
Dissertation : A flexible robotic cell for arc welding with micro-computer control.

* **Brodie,** James Roger, *BScEng* ..... Agricultural Engineering
Dissertation : Size assessment of stacked timber using machine vision.

* **Buchinger,** Kenneth, *BEng (Pret)* ..... Electronic Engineering
Dissertation : Acoustic baffle design.

Deacon, Mark Philip, *BScEng* ..... Civil Engineering
Dissertation : Modelling extreme flood hydrographs by way of a conditional bivariate distribution function.

de Wet, David Louis, *BScEng* ..... Agricultural Engineering
Dissertation : Assessment of impacts of feedlots on water quality in the Mgeni catchment.

Dorman, Gary Anthony, *BScEng* ..... Electronic Engineering
Dissertation : An application specific IC (ASIC) for a digital radio.

* = Degree awarded *cum laude*

Durose, Christopher Robert, *BScEng* ..... Mechanical Engineering
Dissertation : The environmental behaviour of a steel surface laser alloyed with CrB_2.

Entzinger, Alexander, *BScEng* ..... Mechanical Engineering
Dissertation : Computer controlled simulation with an electro-hydraulic test system.

Govender, Kessie, *BEng (UDW)* ..... Electronic Engineering
Dissertation : Digital analysis of vibration and nonlinear systems.

Haliburton, Peter Don, *BScEng* ..... Civil Engineering
Coursework and Dissertation : Car ownership forecasting for the Durban region.

Hemme **Hemme**, Alexander Wilhelm Maria, *BScEng* ..... Electrical Engineering
Dissertation : A software platform for a transputer based embedded real-time system for motion control applications.

Hofmann, Jan, *BScEng* ..... Mechanical Engineering
Dissertation : Low temperature thermal energy storage utilising shell and tube technology.

Kaiser, Ivan, *BScEng* ..... Mechanical Engineering
Dissertation : Tip clearance gap flow measurements in an annular cascade with a rotating endwall.

Matthews, Colin Steven, *BScEng* ..... Civil Engineering
Dissertation : Least-cost steel roof trusses suitable for community halls.

McLaren, Ian Ross, *BScEng* ..... Civil Engineering
Coursework and Dissertation : A proactive traffic signal timing technique for Durban's central area.

* **Meyer**, Benjamin Shane, *BScEng* ..... Electrical Engineering
Dissertation : A transputer-based digital controller with high performance I/O for motion control applications.

Naidoo, Logan Venketes, *BScEng* ..... Electrical Engineering
Dissertation : An interactive graphical environment for motion control systems design.

Ozaytekin, Ibrahim Hakki Suat, *BScEng (Istanbul)* ..... Mechanical Engineering
Dissertation : Minimum cost design of hybrid composite cylinders and rotating discs with temperature dependent properties.

Ozker, Kerem Ziya, *BScEng (Istanbul)* ..... Mechanical Engineering
Dissertation : Three-dimensional finite element analysis of an E-type coupler knuckle.

* = Degree awarded *cum laude*

* **Pickering**, Mark William, *BScEng* ..... Electrical Engineering
Dissertation : Field oriented speed control of an induction motor using a current source inverter.

Randelhoff, Mark Charles, *BScEng* ..... Electronic Engineering
Dissertation : A reconfigurable distributed process control environment for a network of PC's using ADA and NETBIOS.

Rigby, Bruce Spencer, *BScEng* ..... Electrical Engineering
Dissertation : Predicting and measuring the torsional behaviour of parallel turbogenerators.

Robere

* **Rubbers**, Philippe, *BScEng (Witwatersrand)* ..... Mechanical Engineering
Dissertation : Simultaneous partial control of conventional machine tools by microcomputer.

Strode, Jonathan Ronald Francis, *BScEng* ..... Electronic Engineering
Dissertation : Electrical characteristics of multi-chip module interconnects.

Sugden, Michael Barrie, *BScEng* ..... Civil Engineering
Dissertation : An investigation into the flow and pressure of particulate solids in silos.

Thomas, Darryll Howard, *BScEng* ..... Civil Engineering
Coursework and Dissertation : Sensitivity of Transyt (version 8/SA).

Voortman, William James, *BScEng* ..... Chemical Engineering
Dissertation : An evaluation of the technical feasibility of removing ammonium nitrate from aqueous effluents with electrolysis.

Wickham, John Campbell, *BScEng* ..... Civil Engineering
Coursework and Dissertation : An investigation into the incidence, frequency and factors affecting red light violations at two selected intersections in Durban.

Woodward, Duncan Roger, *BScEng* ..... Electrical Engineering
Dissertation : A transputer-based, high speed, embedded controller for AC motor drives.

Zartmann, Mark, *BScEng* ..... Agricultural Engineering
Dissertation : Soil water utilization of eucalypts under irrigation.

* = Degree awarded *cum laude*

BACHELOR OF SCIENCE (HONOURS)

		Discipline
#	**Barbour,** Graham David, *BSc*	Mathematics
	Bester, Rae, *BSc*	Geology
	Blake, Earl, *BSc*	Chemistry
	Bricknell, Bradley Colin, *BSc*	Chemistry
	Combrinck, Charlene Edwina, *BSc*	Chemistry
	Cox, Shannon Margaret, *BSc*	Cell Biology
*	**Crompton,** Keith Ewart, *BSc*	Computer Science
	de Chasteigner Dumée, Jean-Dominique, *BSc*	Computer Science
	Deenadayalu, Nirmala, *BSc (UDW)*	Chemistry
*	**Dormer,** Lee Anne, *BSc*	Physics
	Duigan, Barbara Lynn, *BSc*	Physics
	Early, Deborah Angéline, *BSc*	Cell Biology
*	**Erdey,** Deon Phillip, *BSc*	Cell Biology
*	**Garfield,** Bradley, *BSc (UDW)*	Environmental Biology
*	**Gopal,** Umesh Bhagwandas, *BSc (Witwatersrand)*	Computer Science
	Govender, Maganthran Ganesan, *BSc (UDW)*	Chemistry
	Govinder, Keshlan Sathasiva, *BSc*	Applied Mathematics
*	**Graham,** Michelle Anne, *BSc*	Environmental Biology
	Gray, Greer Jillian, *BSc*	Physics
	Green, Kevin Wayne, *BSc*	Cell Biology
	Hlongwane, Hlengiwe Princess, *BSc*	Computer Science
*	**Hope,** Belinda Anne, *BSc*	Cell Biology
	Ivins, Gregory John, *BSc*	Engineering Geology
	Jacobs, Irene Audrey, *BSc HDE (Cape Town)*	Chemistry
	Khan, Emraan, *BSc (Witwatersrand)*	Engineering Geology
	King, Georgina Maria, *BSc*	Engineering Geology
*	**Kistan,** Trevor, *BSc*	Computer Science
	Leuci, Rio, *BSc*	Environmental Biology
*	**Maharaj,** Santosh Mothilall, *BPaed (UDW) BEd (Unisa)*	Chemistry
*	**Mahomed,** Hamdani Ahmed, *BSc*	Chemistry
	Mban, Meera, *BSc*	Chemistry
*	**McGee,** Jennifer Jane, *BSc HDE*	Chemistry
#	**Moodley,** Bavanisha, *BSc*	Mathematical Statistics
	Moollan, Roland William, *BSc*	Chemistry
	Naidoo, Nesan, *BSc*	Chemistry
#	**Naidoo,** Robert, *BSc*	Mathematical Statistics
	Ogle, Andrew Moses, *BSc*	Geology
	Patrick, Barry Gordon, *BSc*	Geographical & Environmental Sciences
	Phahla, Synod Thamsanqa, *BSc (UDW)*	Computer Science
	Pillay, Premlin, *BSc (Cape Town)*	Mathematical Statistics
	Preen, Darryl Richard, *BSc*	Computer Science
	Reddy, Anusha, *BSc*	Mathematical Statistics
*	**Roberts,** Sianne Lindsay, *BSc*	Chemistry
#	**Rose,** David Michael, *BSc*	Mathematical Statistics
	Seppings, Kerry Ann, *BSc*	Environmental Biology
	Shaw, Michael John, *BSc*	Geology
	Shayi, Leshoene Joseph, *BSc (UNIN)*	Chemistry
#	**van Alten,** Clint Johann, *BSc*	Mathematics
	van Reenen, Marius Frederick, *BSc (Witwatersrand)*	Engineering Geology
	Warne, Russell Hylton, *BSc*	Environmental Biology
*	**Weerts,** Steven Paul, *BSc*	Environmental Biology
	Welgemoed, Clinton Gerald, *BSc (Witwatersrand)*	Engineering Geology
	Wolhuter, Wendy Alison, *BSc*	Environmental Biology

* = Degree awarded *cum laude*
\# = Degree awarded *summa cum laude*

BACHELOR OF SCIENCE (PHARMACY)

Bohm, Britta
Chami, Covini
\# **Foster,** Candy Tillard (Pharmacology, Pharmaceutical Chemistry, Pharmaceutics, Pharmacy Practice)
Haumann, Tracy-Lon
Henning, Michele
Kalideen, Anusha
Klebe, Loretta
McCall, Ashley-Ann
Mistry, Mineshbhai
Naidu, Naleeni
Palombo, Marc David
Panchpersadh, Anusha
Parker, Warren James
Parusnath, Umesh
Pershad, Nisha Devi
Plen, Jeannine Shelley
Ragavaloo, Presocion
Ramdhani, Jainthee
Rohrmann, Bettina
Singh, Sharon
Sumpton, Heath Thomas
Swinny, Jerome Dominic
* **Wilson,** Deborah Anne (Pharmacology, Pharmaceutical Chemistry, Pharmaceutics, Pharmacy Practice)

MR CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE DEGREE OF

BACHELOR OF SCIENCE IN ENGINEERING

[illegible], Yogavelli
Hitchcock, Clive Alexander
\# **Hutton,** Bruce Clive
Jackson, Wendy Sue
\# **Jensen,** Craig Robert Carl
Kean, Lee Shaun
Pillay, Raman
Pillay, Yogandaree
Sankar, Prakash
Stocken, Richard Alexander
van der Merwe, Shawn
* **Weston,** Steven John

(Civil Engineering)

Bredberg, Carl Axel
Carcenac, Richard Anthony Edouard
Cromhout, Lionel Jack
Cutten, Mark Edward
Davis, Michael Raymond
Eldridge, Craig Anthony
Farah, Steven Francis
Froise, Derek Andrew
Gokal, Kiran Kantilal
Goods **Goodes,** Ian Howard
Groom, Anton James
Hamilton, Leanne
Jackson, Bradley Druce
Knight, Michael Anthony
\# **Leibnitz,** Andrew Max
Minkley, Craig Michael
Mitchell, Gareth William
Mowat, Craig Stephen Gordon
Norbert, Matthew
Norcott, Steven Joe
Pather, Neresh
Ramsarup, Shaun Haridev
Raw, Peter John Vause
Reddy, Krishna Veerabagu
Reddy, Yoganathan Sivalingam
Richardson, Graham Edward
Ross, Steven Mark
Ryding, Daniel Philip Kelso
Streatfield, Mathew John
Theron, Don Rayner

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\# = Degree awarded *summa cum laude*
Major subjects which candidates have passed in the first class are shown in brackets after their names

BACHELOR OF SCIENCE (PHARMACY)

Bohm, Britta
Chami, Covini
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Henning, Michele
Kalideen, Anusha
Klebe, Loretta
McCall, Ashley-Ann
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Palombo, Marc David
Panchpersadh, Anusha
Parker, Warren James
Parusnath, Umesh
Pershad, Nisha Devi
Plen, Jeannine Shelley
Ragavaloo, Presocion
Ramdhani, Jainthee
Rohrmann, Bettina
Singh, Sharon
Sumpton, Heath Thomas
Swinny, Jerome Dominic
* **Wilson,** Deborah Anne (Pharmacology, Pharmaceutical Chemistry, Pharmaceutics, Pharmacy Practice)

BACHELOR OF SCIENCE IN ENGINEERING

(Agricultural Engineering)

Kondlo, Nicholas Simphiwe

(Chemical Engineering)

Beemiah, Desmond
* **Bullock,** Pauline
Canning, Andrew John
Clarence, Clinton James
Day, Brian Jonathan
* **Dewhurst,** Joseph William
Dlamini, S'Balo Odecious
Foster, Kerris Campbell
Gnanasagaran, Yogaveni
Hitchcock, Clive Alexander
\# **Hutton,** Bruce Clive
Jackson, Wendy Sue
\# **Jensen,** Craig Robert Carl
Kean, Lee Shaun
Kohler, Charles Brian
Latchman, Akash
* **Lund,** Grant James
MacIntyre, Rory Clyde
Maharaj, Rajesh
Naidu, Oliver
Ndlovu, Mthokozisi
* **Palmer,** Bradley Regan Leonard
Pillay, Raman
Pillay, Yogandaree
Sankar, Prakash
Stocken, Richard Alexander
van der Merwe, Shawn
* **Weston,** Steven John

(Civil Engineering)

Bredberg, Carl Axel
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Cromhout, Lionel Jack
Cutten, Mark Edward
Davis, Michael Raymond
Eldridge, Craig Anthony
Farah, Steven Francis
Froise, Derek Andrew
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Goodes, Ian Howard
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Minkley, Craig Michael
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(Electrical Engineering)

Alston, David Leonard
Beckmann, Roderick Michael
Beyer, Olaf
Chathury, Ashendra Sewkumar
Cooper, Andrew Conrad
Dzivhani, Dovhani Rex
Egumbo, Kosmas Heinrich
Fatooros, Luke Donald
Froise, Noel Edwin
Gordon, Brian James
Govender, Krishnan Shunmugam
\# **Lilje,** Peter
Muller, Darryl
Muller, David Martin
Orbin, Donald Richard Hector
Reddy, Kesavan
Saint, Andrew Thomas
* **Semple,** Keven John
Sibeko, Mandla Chaucer Ornold
Singh, Hariram
Singh, Omchand
Stead, Graham David
Walker, Luke Carl
Wewege, Anthony Wayne
Williams, Andrew Kenneth

(Electronic Engineering)

Barbour, Ross Newton
Baylis, Mark Leighton
Benitha, Sharon
Budke, Gregory Stafford
Burton, Bruce
Cowley, David
Cozac, Radu Viorel
Cremer, Karen Anne
Dougal, Gordon Rex Paterson, *MB ChB (Rhodesia)*
du Toit, Anton Pieter
Fish, Mervin
Fredanus van Gelder, Jonathan Mark
Gangadayal, Devendra
Goldenberg, Carina Emanuela
Govender, Kriyanundan
Green, Roslyn Leigh
Horsley, Gavin Peter Lovell
Jamieson, Renier Edward
Jarvis, Alan Lawrence Leigh
Kilburn, David James
Ledingham, Neil
Leppan, Craig Donovan
Lunt, Russel William
Maharaj, Mehendra Omarsunker
Mansfield-Scaddan, Alexis John
Moodley, Kovilan
Moopanar, Pradhavin
Müller, Hans Alfred
Mustard, Shane
Naidoo, Bashan
Padayachee, Kovilyn
Paijmans, Antony
Paterson, Douglas James
* **Pearson,** David Stratford
Pillay, Anandhan
Roberts, Stuart Charles
Sanjith, Ravin
Savo, Roberto
\# **Schlenter,** Craig Charles
Soffe, Robert Bruce
* **Story,** Peter John
Sydenham, Michael John
Tarboton, Lisa Rosalind
Wallace, Ursula Helen
Webb, Michael

(Mechanical Engineering)

Akaloo, Vinesh
Bass, Nicholas John
Bechoo, Praveen
Beckley, Anthony Paul
Bhikha, Rajendra Dayaram
Biggs, Bryan William
Blom, Benjamin
Clausen, Duncan Alexander
de Lange, Darryl Grant
\# **du Plessis,** Claude
Eksteen, Jan Adriaan Hendrik
Ephraim, Rodney Neville
Gallow, Steven Roger
Geddie, Donald Prior
* **Gratwicke,** Michael Courtney
Gubb, Wayne
Heher, Douglas Walter
Khan, Mohamed Salim
Kirkham, Sean Alan
Lawlor, Warren Kennedy
Lister, Adrian John
Mathebula, Dumisani Joseph
McGregor, Roger Malcolm
Meyer, Carl
Montague, Neville Craig
Moodley, Ravigasen Varda
Naidoo, Devandran
Nhlabathi, Vusumuzi Joel
Nicolin, Andrew Louis
Nordengen, Andrew Trevor
Pearse, Keith Alan
* **Pillay,** Marcus Julian
Rajkumar, Rajhev Lalmohan
Rawlins, Haydn Shaun
Rebelo, Rogerio Paulo Gomes
Rieth, Olaf
Robinson, Tobin Giles
Sapsford, Mark Colin
\# **Singh,** Subash
* **Smith,** Trevor Lloyd
Sparg, Derek Grant
Stewart, Ray William
\# **Strong,** Bruce William
Sum Yuen, Jean Pierre
Thomson, Wayne James
* **Turner,** Andrew Iver
Wallis, Giles Robert
Wen, Fu-Cheng John
Wilhelm, Oliver

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\# = Degree awarded *summa cum laude*

MR CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE DEGREE OF

BACHELOR OF SCIENCE IN LAND SURVEYING

Adams, Jillian Claire
Backler, Warren Robert Cameron
Bailey, Leigh-Anne
Barnabas, Rodrick Raphael
Bechan, Upasna
Blair, Sharon Ann
Braum, Deborah Jean
Bridgmohan, Avesh
Brigg, Craig Stuart
Bullock, Stephen Edward Tinley
Carson, Brett Peter
Castleden, Jean Lynne
\# **Cave,** Tracy Gail (Computer Science, Mathematical Statistics)
Chauke, Hlamalane Irene
Cheesman, Penelope Sue
Chetty, Neville
Chetty, Rochelle
Cinamon, David
\# **Collier,** Andrew Blaine (Physics)
Daya, Bhavyata
Daya, Pratiba
de Graaf, Philip Jan Howell
du Plessis, Steven
Duma, Justice Mthandeni
* **Elliott,** Grant Bruce
Glock, Christina
Govender, Kanthasegrie
Govender, Megandhren
Griffin, Glen
Hannweg, Karin Fiona
Harkness, Timothy
Hart, Malcolm Norwood
Haskins, David Rodney
Hatcher, Brendon John
Haycock, Carl Anthony
Hickman, Jacqueline Catharina Lena
Hounsome, Robin Simon
Hudson, Robert Gregory
Ingouville, Natalie Anne
Lea, Kathryn Mary
Light, Stephen Michael
Lushaba, Mazwendoda Maxwell
Manjoo, Ismail
Marimaatoo, Kaila
Meyer, Kevin Alan
Misra, Shanil
Mthethwa, Sifiso Thandwa
Naicker, Morgantheran
Naidoo, Pamela
Naiker, Nersen Ramachandran
Nell, Adrian Robert
Ngidi, Eric Kunzima
Ngidi, Mduduzi Jordan
Ngubane, Veronica Xolile
Paschke, Ronald Thomas
Pellow-Jarman, Charmaine Patricia
Penter, Mark Gavin
Perumal, Pragladan
Perumal, Thiloshni
Petrie, Suzanne Michelle
Phelan, Kathryn
Philip, Andrew Thomas
* **Pinkney,** Brent (Chemistry)
Prentice, William
Quick, Rodney Burton
Radebe, Octavia Nontuthuzelo
Revaprasadu, Neerish
Ribbink, Karl Mark
\# **Richard,** Angus Charles (Mathematics, Applied Mathematics)
Ruscoe, Christopher Peter
Russell, Alan John
Schuhmann, Tonya Marianne
Seedat, Mashooda
Singh, Tanuja
Skordis, Gina Maria
Smith, Dawn Fredricka
Soffiantini, Jacqueline Caroline
Stanghon, Craig Scot
\# **Swart,** Christine Scott (Physics, Mathematics)
Tiedemann, Christian
Todd, Reginald Paul Edward
Tonkinson, Bronwen Kirsteen
Tursan d'Espaignet, Jacques Alain
\# **Tweddle,** Andrew John (Mathematics, Mathematical Statistics)
van der Walt, Bryan Anthony
van Staveren, Johan Walther

N. B.

DEGREES WILL NOW BE CONFERRED IN ABSENTIA

PTO

BACHELOR OF SCIENCE IN LAND SURVEYING

Agar, John Nils Shelton
Bikitsha, Esther Tumeka
Davies, Colin John
George, Cornel Ashley
Latsky, Michael Steyn
Mohlatlole, Seshoahle Nathaniel
Norton, Ross
Presmeg, Christopher Raymond, *BSc (Unisa)*
Scott, John Law
Tack, Gregory Paul
van Zyl, Phillip Edward

BACHELOR OF SCIENCE

Adams, Jillian Claire
Backler, Warren Robert Cameron
Bailey, Leigh-Anne
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Bechan, Upasna
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Hickman, Jacqueline Catharina Lena
Hounsome, Robin Simon
Hudson, Robert Gregory
Ingouville, Natalie Anne
Lea, Kathryn Mary
Light, Stephen Michael
Lushaba, Mazwendoda Maxwell
Manjoo, Ismail
Marimootoo, Keila
Mathura, Dilkash
* **Mawhinney,** Bryan Eric (Computer Science)
McCulloch, Laura Ann
Mehta, Minothi Madhuker
Meijer, Ingrid Denise
Meyer, Kevin Alan
Misra, Shanil
Mthethwa, Sifiso Thandwa
Naicker, Morgantheran
Naidoo, Pamela
Naiker, Nersen Ramachandran
Nell, Adrian Robert
Ngidi, Eric Kunzima
Ngidi, Mduduzi Jordan
Ngubane, Veronica Xolile
Paschke, Ronald Thomas
Pellow-Jarman, Charmaine Patricia
Penter, Mark Gavin
Perumal, Pragladan
Perumal, Thiloshni
Petrie, Suzanne Michelle
Phelan, Kathryn
Philip, Andrew Thomas
* **Pinkney,** Brent (Chemistry)
Prentice, William
Quick, Rodney Burton
Radebe, Octavia Nontuthuzelo
Revaprasadu, Neerish
Ribbink, Karl Mark
\# **Richard,** Angus Charles (Mathematics, Applied Mathematics)
Ruscoe, Christopher Peter
Russell, Alan John
Schuhmann, Tonya Marianne
Seedat, Mashooda
Singh, Tanuja
Skordis, Gina Maria
Smith, Dawn Fredricka
Soffiantini, Jacqueline Caroline
Stanghon, Craig Scot
\# **Swart,** Christine Scott (Physics, Mathematics)
Tiedemann, Christian
Todd, Reginald Paul Edward
Tonkinson, Bronwen Kirsteen
Tursan d'Espaignet, Jacques Alain
\# **Tweddle,** Andrew John (Mathematics, Mathematical Statistics)
van der Walt, Bryan Anthony
van Staveren, Johan Walther
Vather, Bremavishnu
Velayudan, Nirmala
Vermaak, Kim
Whiting, Stephen
Wright, Matthew Douglas

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Major subjects which candidates have passed in the first class are shown in brackets after their names

MADAM VICE-CHANCELLOR

I HAVE THE HONOUR TO PRESENT FOR THE

POSTGRADUATE DIPLOMA IN ENGINEERING

UNIVERSITY FELLOWSHIPS

University Fellowships have been instituted in order to give special recognition to members of the permanent academic staff for distinguished work of special merit in their chosen fields. The standard of the work is judged primarily by publications and the contribution these have made in the particular field. Public presentation of work in the performing and fine arts may be regarded as equivalent to research and publications.

Manfred Armin Hellberg

Plasmas are energetic ionised gases which are important in laboratory processes such as controlled thermonuclear fusion and in astrophysics. Manfred Hellberg returned from Cambridge in the late sixties since when he has become Professor and Head of the Department of Physics at this University. He brought a powerful background in theoretical plasma physics and leadership skills which showed how a South African laboratory could contribute to experimental knowledge of plasmas without enormous expense. His Plasma Physics Research Institute involves a large team of experimentalists and theoreticians and is an important centre for both theoretical and experimental work.

He is a leading theoretical physicist in waves and non-linear plasma theory in laboratory plasmas. He has served on the Editorial Board of the British journal Plasma Physics and Controlled Fusion and on the Editorial Advisory Panel of the Institute of Physics (London) for their series of books in plasma physics. He has been on the international organising committee of International Conferences on Plasma Physics. He has served on the commission for plasma physics of the International Union for Pure and Applied Physics and on the Council of the South African Institute of Physics. He is a Fellow of the Royal Society of South Africa.

He is widely respected for his many other services to the University, especially on the University Research Committee.

Sarp Adali

Professor Adali is one of South Africa's leading engineers. He holds a Bachelor's degree in Engineering from the Middle East Technical University in Ankara, Turkey, and a doctorate from Cornell University in Ithaca, New York. He joined the University of Natal as Professor of Solid Mechanics in the Department of Mechanical Engineering in 1984. He has since then, on several occasions, held appointments as a visiting professor at American Universities. He has become an international leader in the field of optimal design using composite materials and is also active in structural control and vibration damping, areas of major importance in the design of lightweight stable components and structures. He has established strong international links with other international researchers, and together with members of his research group has even set up links with researchers in the former Soviet Union.

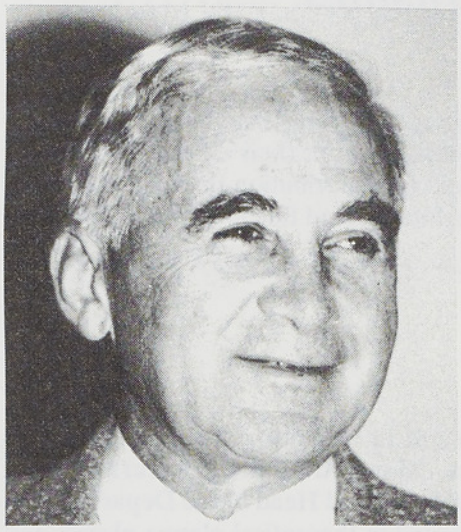
Professor Adali has published over sixty papers in some of the best internationally refereed journals, presented twelve at international conferences and was invited to write two chapters in specialist books. He is a member of the editorial Board of an international journal on composite structures. His research activities have earned him the Foundation for Research Development category ranking of Comprehensive Support.

DIPLOMATES

POSTGRADUATE DIPLOMA IN ENGINEERING

Allopi, Dhirenchand

Polychronopoulos, George, *BScEng*



CONFERMENT OF THE DEGREE OF

DOCTOR OF SCIENCE

HONORIS CAUSA, UPON

EMMANUEL APOSTOLOS ZALOUMIS

Emmanuel (Nolly) Zaloumis was born in Livingstone, in what was Northern Rhodesia, and was educated at Michaelhouse School, Rhodes University, where he spent a year studying for the BSc degree, and the University of the Witwatersrand, where he studied Dentistry, qualifying in 1955.

After qualifying he set up practise as a Dental Surgeon in Livingstone. There he was appointed a Trustee of the Victoria Falls Trust and became an Associate Member of the Livingstone Museum, and an Honorary Game Ranger for the Northern Rhodesian Game Department.

In 1964 he settled in Natal, setting up Practise in Durban, where he and his family have remained ever since. He rapidly became involved personally in a wide spectrum of conservation interests and has taken a strong leading role in the Sub-Continent with non governmental organisations within conservation.

He has held senior offices in a large number of major conservation and wildlife organisations, including the Wildlife Society of South Africa, of which he was Vice President from 1973-81, and President from 1981-89; the South African Association for Marine Biological Research, of which he was Executive Chairman from 1981-87; and the South African Wildlife Management Association, of which he became President in 1978. He has served on the executive committees of more than fifteen major organisations concerned with conservation and wildlife; on many of these his participation is on-going.

He has received many awards, including the Natal Conservationist of the Year (Wildlife Society - 1981), the Natal Hunters Association Conservation Award (1986), the Rotary Community Service Award (1985), the Rotary International Paul Harris Fellowship Award for Services to Conservation (1990) and the Wildlife Society Gold Medal Award (1990).

He has been actively involved in Wetland Conservation and Waterfowl Research, and has published various papers on what has been a special interest of his.

The University of Natal pays tribute to Dr Nolly Zaloumis, for his role in the conservation of the environment for the future of the country and its people.

HISTORY

From modest beginnings in February 1910, when 57 students were enrolled in the newly established Natal University College in Pietermaritzburg, the University of Natal has grown into a nationally and internationally respected institution. Lectures were originally held in Maritzburg College. The first university building (now referred to as the Old Main Building) was built on land donated by the Pietmaritzburg Corporation and was opened in August 1912.

In Durban, meanwhile, the Natal Technical Institute had been founded in 1907 and by the end of World War I was offering university-level courses in engineering and commerce. These courses were taken over by the Natal University College in 1922, and were ultimately housed in the Howard College building on the Durban campus. The erection of the building was made possible by the generosity of a Durban man, T B Davis, who wished to honour the memory of his son, Howard, who had been killed in the battle of the Somme.

At the outset, the Natal University College had offered the courses of the University of the Cape of Good Hope. In 1918, it became a constituent college of the University of South Africa. But in 1949, because of rapid growth in student numbers, the range of courses offered, and the achievements and opportunities in research, independent university status was granted. The legislation under which the University was established in 1910 imposed no racial restrictions on student admissions. This made it possible, in 1936, to start classes for "non-Europeans", and in 1951 the Medical School, accepting African, Indian and "Coloured" students, was established in Durban's Umbilo Road.

But by now, the Nationalist Government was in power and the architects of apartheid were hard at work. A government ruling that white undergraduate students be barred from the Medical School was the first major inroad by the State into the University's autonomy. Worse was to follow. In 1957, a Bill was introduced in Parliament which provided for the removal of the Medical School from the University's control, and for the exclusion of "non-white" students from the University's other faculties. Academic staff and the Medical School threatened to resign, and the University Council and Senate criticised the State for this assault on university autonomy and academic freedom. The Bill was withdrawn, only to be replaced two years later by the notorious Extension of University Education Act in terms of which ministerial permission was required for a student not classified white to register in any faculty other than the Medical School.

In spite of this harassment, the University of Natal had by 1960 developed into the largest university centre for African, Indian and "Coloured" students in Africa south of the equator. The University also committed itself to a protracted fight to recover the right to admit students on merit, regardless of race.

In 1983, the permit system laid down in the 1959 Extension of University Education Act was replaced by the so-called "quota system", under which the Minister of Education could determine quotas relating to student admissions. The University's protest based on its long standing objection to State interference in its admission policy, was loud and protracted - and successful. No quotas were imposed; and the University has seen rapid growth in the admission - on merit - of African, Indian and "Coloured" students. In its 1989 Mission Statement the University unequivocally committed itself to serve all sections of the community through excellence in scholarship, teaching, learning, research and development.