CORE IDEOLOGIES OF THE FACULTY OF

SCIENCE
Vision

A world-class engaged and transdisciplinary African Faculty of Science that responds to socio-economic and environmental challenges in society.

Mission

To offer a diverse range of life-changing pure and applied science-based learning, teaching, research, training, innovation, engagement and transformational experiences, which develop excellent graduate- and staff attributes for sustainable futures.

Impact Statement

A sustainable, ethical, engaged and transdisciplinary 21st century African Faculty of Science in the service of society.
VALUES

- Diversity
- Excellence
- Ubuntu
- Social Justice and Equality
- Integrity
- Environmental Stewardship
- Responsibility
- Safety and Wellness
BRAND PROMISE

Discovering, Educating and Engaging to Change the World
# GRADUATE ATTRIBUTES

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
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<tbody>
<tr>
<td>In-depth disciplinary knowledge as the foundation</td>
<td>and platform for pursuing transdisciplinary knowledge</td>
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<tr>
<td>Literacy, numeracy and abstract thinking skills</td>
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<td>Social awareness, responsible citizenship, service to society</td>
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<td>Environmental stewardship for a sustainable future</td>
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<tr>
<td>Ethical, accountable, integrity</td>
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<td>Adaptive expertise and collaboration in networks and partnerships</td>
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<td>Creativity, innovation, and entrepreneurship</td>
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<td>Computational and programming skills</td>
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<td>Complex problem-solving and critical thinking ability</td>
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<td>Intra- and inter-personal skills</td>
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<td>Strong communication skills</td>
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Strategic Priorities, Goals, Objectives, and Activities

- LEARNING AND TEACHING (L&T)
- RESEARCH, TRAINING, AND INNOVATION (RTI)
- ENGAGEMENT AND PARTNERSHIPS
- RESOURCE STEWARDSHIP
- TRANSFORMATIVE STRUCTURES, SYSTEMS, AND PROCESSES
- STUDENTS AND STAFF ACCESS AND SUCCESS
1. Learning and Teaching (L&T)

- **Strategic Priority**
  - To create a conducive environment for students and staff to pursue a diverse range of life-changing science education experiences which will change our local communities and the world for the better.

- **Strategic Goals (SGs) for Learning and Teaching**
  - **SG1:** Expand, renew and Africanise the curriculum to make it relevant and responsive.
  - **SG2:** Understand our students so that we can learn how to facilitate their success and create a Learning & Teaching (L&T) environment that enables them to succeed.
  - **SG3:** Create an environment that enables L&T staff (including laboratory assistants, technicians, tutors and demonstrators) to succeed.
  - **SG4:** Embed the use of technology to enhance L&T in order to move towards completely blended L&T.
  - **SG5:** Create a culture of scholarship of L&T (Science Education Research, and Engagement)
  - **SG6:** Promote and protect the Basic Sciences.
Strategic Objectives (SOs) and Activities (SAs) to achieve the Strategic Goals (SGs)
**SG1: Expand, renew and Africanise the curriculum to make it relevant and responsive.**

- **SO1**: Create a programme to co-ordinate all L&T matters.
  - SA1: Establish a portfolio to coordinate and implement the strategic Priority for L&T

- **SO2**: Expand the curriculum with relevant new niche areas and disciplines.
  - SA1: Expand and renew the curriculum to include the new Streams and programmes in the new Faculty of Science Structure

- **SO3**: Review and renew the current curriculum to fit the 21st century African Faculty of Science

- **SA1**: Re-curriculate and re-stream the BSc and BSc extended programmes and all other programmes within the Faculty of Science to modernise and Africanise the science curriculum and align it with graduate attributes.
**SG2:** Understand our students so that we can learn how to facilitate their success and create a Learning & Teaching (L&T) environment that enables them to succeed.

**SO1:** Conduct a research study on who our students are.

**SA1:** Use the current Faculty of Science data to create reports about our students and their academic performance, including from high school Grade 11, their undergraduate studies and Honours.

**SA2:** Institute Faculty engagement with the students to understand the attributes they bring with them to university and the challenges they face.

**SO2:** Create an enabling environment for students to succeed.

**SA1:** Develop and implement programmes to enable student success.

**SA2:** Monitor and evaluate student success – success planning needs to be in collaboration with the Faculty of Science success coach.

**SA3:** Integrate the Faculty of Science success coach with the Faculty of Science management team.

**SA4:** Institute a formal tutor/demi programme.

**SA5:** Implement better coordination of service modules and how to cap them – address their size and shape – and establish a service modules framework to facilitate the coordination of service modules in collaboration with other faculties.
**SG3**: Create an environment that enables L&T staff (including laboratory assistants, technicians, tutors, and demonstrators) to succeed.

**SO1**: Create an enabling environment for L&T staff.
- **SA1**: Survey L&T staff to identify the factors that inhibit them from performing optimally
- **SA2**: Review the current workload model and come up with an appropriate fit-for-purpose model for the Faculty of Science staff.

**SO2**: Create developmental programmes for L&T staff.
- **SA1**: Develop a developmental programme for L&T staff. This should include addressing challenges with online assessment, including academic integrity of students
- **SA2**: Develop a developmental programming for lab technicians, tutors, and demonstrators.

**SO3**: Incentivise excellent performance by L&T staff.
- **SA1**: Identify and recommend high performing L&T staff for Faculty, institutional and external awards.
SG4: Embed the use of technology to enhance L&T in order to move towards completely blended L&T.

1. SO1: Create an enabling environment for technology enhanced L&T.
   • SA1: Establish a digitalisation unit to oversee the adoption and use of technology in the Faculty.
   • SA2: Determine the status of use of technology in the Faculty for L&T and identify opportunities to improve this.
   • SA3: Establish a Data Science and Scientific Computing Forum.

2. SO2: Create developmental and training programs in the use of technology in L&T.
   • SA1: Establish eTeaching developmental and training programmes for staff.
   • SA2: Establish eLearning developmental and training programmes for students.

3. SO3: Create support structures for eLearning and eTeaching in L&T.
   • SA1: Digitalise, modernise and refurbish the L&T spaces as well as the teaching laboratory spaces.
   • SA2: Digitalise the Faculty processes and systems in the L&T portfolio.
   • SA3: Make provision for students and staff to access suitable and current technology.
**SG5:** Create a culture of scholarship of L&T (Science Education Research, and Engagement).

- **SO1:** Create an enabling environment for the scholarship of L&T.
  - **SA1:** Establish a Science Education Forum.
  - **SA2:** Incentivise publication on science education topics.
  - **SA3:** Establish developmental programmes to support the scholarship of L&T.
**SG6: Promote and protect the Basic Sciences.**

**SO1:** Create an enabling environment for the Basic Sciences to flourish.
- **SA1:** Establish L&T programmes and initiatives that advance the Basic Sciences. This can include a forum for the newly proposed Institute for Theoretical and Computational Sciences.
- **SA2:** Grow the size and shape of the Basic Sciences in relation to other service programmes.

**SO2:** The creation of the foundation of Basic Sciences in the curriculum.
- **SA1:** Embed the Basic Sciences identity in the re-curriculation. This can be motivated by creating an awareness, interest and appreciation is the basic sciences, such as an astronomy outreach programme (this is only an example, see the engagement section below).

**SO3:** Create Streams and Programmes based on the Basic Sciences.
- **SA1:** Establish Basic Sciences Streams and Programmes before Applied Sciences Streams and Programmes.
- **SA2:** Establish Streams that lead to multiple pathways across Clusters, academic departments, programmes and trans faculties. One such stream that can be created is a forum for the Institute of Theoretical and Computational Sciences (see the research component below), one of the aims of which is to assist the shaping of the curriculum by emphasis if theory, protect the basic sciences, as well as emphasizing its importance.
### SWOT ANALYSIS

#### Strengths
- University internet infrastructure is good most of the time and being continuously improved on.
- Moodle/Unitube have proved to be a capable and suitable interface for academic content and the infrastructure in place can support it.
- COVID-19 has shown that the academic staff in the Faculty are willing and able to adapt to new ways of doing things.
- Staff are willing to share their expertise.
- Humanising pedagogy is practised – the individual student really does have a voice that is being heard and responded to – not only in terms of modules and content; also, in the wider context.
- Excellent support received from L&T Collab.
- The positives of online assessments is that we are forced to reflect and improve on our methods of assessment.
- The online resources developed are a huge “value add” to what we offer students.

#### Weaknesses
- Internet and technology access outside of the University is patchy; on-campus (e.g., in res) is not always stable.
- Better understanding, communication and unity between the disciplines is required, especially as far as L&T is concerned. Inter alia, this will guard against students playing departments off against each other.
- There is no standard approach to actively monitor and timeously respond to the (in)effectiveness of L&T (staff think they are doing what is required/do students agree?/plagiarism is very much alive/online L&T has brought in a new dimension that caught us on the back foot/online assessments are not reliable at all).
- Job descriptions have rapidly evolved to require of academics to be creative in the online delivery of material and academic support – this is difficult as the requisite expertise is severely lacking.
Opportunities

- Being forced to go online has been a challenge but also an important opportunity that will be a permanent part of L&T.
- Technology-assisted learning
- Digitalisation Unit to advance online L&T.
- Embrace the use of technology to enhance L&T (informed by the 4IR, online learning and teaching and eLearning).
- Increase transdisciplinary engagement.
- Develop online tools and expertise to enable L&T.
- Use online materials developed to address challenges associated with capping of registrations and/or overcrowded venues.
- Use online materials developed to provide faster paced offerings of modules (so that students can independently complete their studies in a shorter time if they have the academic ability to do so).
- Use online materials developed to offer distance learning on a permanent basis.
- Grow online assessment opportunities (cut down on assessment venues / invigilators / specific timetabled slots required).
- COVID-19 has proven that there is still huge value in “brick and mortar” institutions like ours. 1) Learning is not only content – it is also social interaction with peers and staff 2) Many of our students simply do not stay in environments conducive for online learning – this includes devices, connectivity as well as physical environment. Identify and maximise the balance between on campus/brick and mortar engagements and online interactions.
- Adapt/develop academic offerings to provide for new types of careers emerging in the 4IR.

Threats

- Finance.
- Infrastructure – both space and equipment.
- Students coming into the University (in terms of academic preparedness).
- Student ethics.
- Staff burnout and turnover (replacing senior retirees with inexperienced junior staff).
- Lack of quality control in terms of module offerings.
- Lack of communication between admin and academic departments, often leading to students being negatively impacted. More burden on academic staff regarding admin, which was otherwise carried out by other persons or entities.
- Accountability and responsibility of some students in terms of general behaviour.
- Constraints placed on the academic year (teaching days).
- The financial impact of COVID-19 on the economy as well as individuals is a threat for a few years to come 1) Government funding of universities; 2) Ability of parents/carers to pay fees; 3) Bursaries from Seta (dependent on levies from companies; 4) shift in the economy and thus job market.
2. Research Training and Innovation (RTI)

- **Strategic Priority**
- Develop a transdisciplinary African-rooted research and scholarship culture that is innovative, engaged, ethical, and sustainable.
Strategic Goals (SGs) for Research, Training, and Innovation

**SG1:** Grow pure and applied research excellence, knowledge and outputs.

**SG2:** Improve the local, national and international research profile of the Faculty.

**SG3:** Strengthen basic/fundamental research and promote scientific progress.

**SG4:** Postgraduate and postdoctoral research development and innovative undergraduate teaching.

**SG5:** Develop a culture of innovation and entrepreneurship.
Strategic Objectives (SOs) and Strategic Activities (SAs) to achieve the Strategic Goals (SGs)

**SG1: Grow pure and applied research excellence, knowledge and outputs.**

- **SO1:** Strengthen the current, relevant research directions and programmes and introduce new relevant research niche areas.
- **SA1:** Establish a coordinating portfolio for Research, Training & Innovation (RTI) in the Faculty.
- **SA2:** Establish and develop new niche research areas such as Space Science, Atmospheric and Oceanographic sciences, Computational and Data Sciences, Biosciences and Biotechnology, Science Education, Science and Technology in Society, Science Communication, Sustainability Sciences. Theoretical physics (also for possible collaboration with academic staff in the Department of Mathematics)
- **SA3:** Review and reimagine the current and relevant research directions and research themes. Provide opportunity for collaboration of academic staff from various departments, when applicable.
SO2: Increase ethical, impactful and relevant research outputs.

- SA1: Analyse research and publication outputs annually for monitoring and staff development initiatives.
- SA2: Develop research performance management systems within the Faculty and its departments and entities. Question from Dr Hajierah David is: Can this be aligned to the institutional Performance Management system HR is wanting to reintroduce – it seems there will be PMS at Faculty and Institutional levels, which will greatly increase administrative loads online managers, without added administrative support?
- SA3: Reward and incentivise excellence and performance in research and innovation.

SA4: Develop a system of measuring impact
- **SO3**: Create a research culture within the Faculty.
  - **SA1**: Establish a research mentorship programme with associated monitoring and evaluation tools.
  - **SA2**: Create an inspiring and conducive environment for science advancement and collaborative research. This can include interesting talks/seminars in a topic/discipline which overlaps at least two academic departments.
  - **SA3**: Incentivise interdepartmental and interfaculty collaborations and Faculty-wide forums, such as a forum for the Institute for Theoretical and Computational Sciences.
  - **SA4**: Establish a framework to monitor ethics and values adherence, and attributes compliance.
**SO4**: Mobilise resources for research and innovation.
  - **SA1**: Review the research funding incentive model and develop a fit for purpose model.
  - **SA2**: Market various funding opportunities for researchers.
  - **SA3**: Review the current space and infrastructure for researchers and make and implement the desired recommendations to create a productive research culture in the Faculty.
SG2: Improve the local, national and international research profile of the Faculty.

SO1: Develop a marketing plan and strategy for the Faculty’s research, training and innovation.

• SA1: Establish the Faculty’s RTI brand in line with the Core Ideology.
• SA2: Develop a recruitment and funding strategy for postgraduate students and researchers.
• SA3: Develop an international RTI plan to attract international staff and students.

SA4: Develop a strategy for Africa partnerships in RTI.
SO2: Develop a partnership programme in Research, Training & Innovation (RTI).
  - SA1: Establish a system of identifying and pursuing potential partnership, locally, nationally and internationally.
  - SA2: Market some of our exclusive research facilities and commensurate expertise as satellite laboratories for industry research partnerships.
- **SG3**: Strengthen basic/fundamental science research and promote scientific progress.

- **SO1**: Promote and protect basic/fundamental science research.
  - **SA1**: Strengthen the undergraduate curriculum and postgraduate programmes through research.
  - **SA2**: Establish institutes, centres and units that promote and protect the basic/fundamental sciences, such as the Institute of Theoretical and Computational Sciences, Centre for Advanced Scientific Computing, and the Institute for Advanced Studies.
  - **SA3**: Establish Faculty-wide programmes that support the basic sciences.

- **SO2**: Deepen the understanding of science and fundamental research and its role in society.
  - **SA1**: Create an awareness and advocacy programme on the basic sciences and their importance in society and sustainable development.
- **SG4:** Postgraduate and postdoctoral research development and innovative undergraduate teaching.
- **SO1:** Develop induction and training programmes for postgraduate students.
  - **SA1:** Establish a postgraduate forum.
  - **SA2:** Establish research training programmes for postgraduate students.
  - **SA3:** Establish an induction programme for postgraduate students.
  - **SA4:** Establish a developmental programme for postdocs to become the next generation of academics.
- **SO2:** Develop Research Experience Programmes for undergraduates.
  - **SA1:** Establish flagship research experience programmes for undergraduates.
  - **SA2:** Include research activities in the undergraduate curriculum.
  - **SA3:** Incorporate science communication into undergraduate research programmes.
  - **SA4:** Incentivise research at the undergraduate level.
- **SG5**: Develop a culture of innovation and entrepreneurship.
- **SO1**: Develop entrepreneurship training programmes.
  - **SA1**: Establish a student and staff research entrepreneurship programme.
  - **SA2**: Embed entrepreneurship in the science curriculum.
  - **SA3**: Incentivise innovation and bring in avenues for resources.
SWOT ANALYSIS

STRENGTHS

• Comprehensive University.
• Geographic Location Well Positioned In Africa.
• Large Number Of Research Associates And Emeritus Professors (But Poorly Coordinated).
• Hrtem.
• Entities.
• Centres, Such As The African Centre For Coastal Palaeoscience, And The Ocean Sciences Campus, Which Put The University On The Map With Regard To These Research Areas

WEAKNESSES

• Silent Majority (Workload Norms).
• Low Level Of Collaboration.
• Weaker Students.
• Staff Development.
• Attraction Of Postdocs And Support.
• Succession Planning.
• Lack Of Space And Infrastructure.
• Not Enough Teaching Relief Support And Coordinated Staff Development, Especially For Full Time Staff Who Are Busy With Msc And Phd Degrees.
• Institutional Support (Hr, Finance).
### OPPORTUNITIES

- Massive capacity that needs mobilisation.
- Inter-faculty collaborations – especially with Health Sciences/Medical School.
- International groups.
- Geographic location for research.
- Improve staff development.
- Attraction of postdocs and support.
- Entities.
- Link with government via MOUs.
- E-software.

### THREATS

- COVID-19.
- 4-1R.
- Funding for postdocs and research projects.
- Growing research with limited infrastructure.
- Change in numbers (size and shape).
- Depleting resources.
- Space.
- CMR and AEON.
- Coordination and governance of entities.
- Teaching taking over research, which can occur in a department where there are too many service modules.
3. Engagement and Partnerships

Strategic Priority

Develop a transformative engagement culture within the Faculty of Science to proactively engage with society for the mutual benefit of all parties in a sustainable manner.
### Strategic Goals (SGs) for Engagement and Partnerships

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<th>Action</th>
<th>SG1: Create the necessary conditions for a culture of engagement to thrive in the Faculty of Science.</th>
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<tr>
<td>Develop</td>
<td>SG2: Develop knowledge and skills exchange between the Faculty of Science, our partners, stakeholders and wider society.</td>
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<tr>
<td>Develop</td>
<td>SG3: Develop the Faculty brand, and expand and advance partnerships with local, national, African and international stakeholders to strengthen the Faculty’s footprint.</td>
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<tr>
<td>Embed</td>
<td>SG4: Embed cultural, socio-economic and environmental stewardship as a Faculty culture and practice.</td>
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<tr>
<td>Integrate</td>
<td>SG5: Integrate engagement into L&amp;T and research within the Faculty of Science to improve citizen science scholarship</td>
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Strategic Objectives (SOs) and Strategic Activities (SAs) to achieve the strategic Goals (SGs).

**SG1:** Create the necessary conditions for a culture of engagement to thrive in the Faculty of Science.

- **SO1:** To create a programme to coordinate engagement and partnership matters.
  - **SA1:** Establish a portfolio to coordinate and implement the Strategic Priority for Engagement and Partnerships.
  - **SA2:** Develop a framework for monitoring and evaluation of Engagement and Partnerships in the Faculty of Science.
  - **SA3:** Reward and incentivise excellence and performance in engagement.

- **SO2:** Provide support for success in engagement and partnerships in the Faculty.
  - **SA1:** Create platforms for engagement that enable the Faculty to engage with different stakeholders.
  - **SA2:** Create and provide resources for engagement activities in the Faculty.
  - **SA3:** Enable transformative and passionate leadership to lead engagement in the Faculty.

- **SA4:** Create and establish the Faculty Engagement Committee.
- **SO2**: Develop Faculty industry engagement programme.
  - **SA1**: Establish a framework for Faculty and industry engagement.
  - **SA2**: Establish work integrated learning experience programmes and opportunities for our students relevant to the future of work in partnership with the public and private sector.

- **SO3**: Develop a Faculty of Science citizen engagement programme.
  - **SA1**: Establish a Science Shop that will serve as a Faculty of Science Hub of Convergence to enable skills exchanges.
  - **SA2**: Establish indigenous science knowledge systems in partnership with African indigenous communities as part of the Science Shop/Faculty of Science Hub of Convergence within the decolonisation of science project.
**SG3:** Develop the Faculty brand, and expand and advance partnerships with local, national, African and international stakeholders to strengthen the Faculty’s footprint.

- **SO1:** Develop the Faculty of Science’s marketing strategy locally, nationally and internationally.
  - **SA1:** Establish a coordinated marketing and communications strategy in the Faculty.
  - **SA2:** Establish a Faculty alumni association.
  - **SA3:** Reimagine and produce a Faculty newsletter.
  - **SA4:** Establish a coordinated student and staff recruitment programmes, including a strategy to attract talented maths and science students into the Faculty.

- **SO2:** Develop the Faculty’s Africa and internationalisation strategies.
  - **SA1:** Develop an African and internationalisation strategy within the Faculty.
  - **SA2:** Audit the current Africa and international networks and collaborations in the Faculty and align with the African and internationalisation strategy.
  - **SA3:** Support and develop platforms and programmes to enable Faculty members to engage with institutions and new partners on the African continent.

- **SO3:** Develop collaborations and partnerships between the Faculty and its stakeholders.
  - **SA1:** Establish a framework for collaboration and partnerships in the Faculty of Science.
SG4: Embed cultural, socio-economic and environmental stewardship as a Faculty culture and practice.

- **SO1**: Create awareness of the need to balance cultural, socio-economic and environmental impacts for a sustainable future.
  - **SA1**: Establish an awareness programme on cultural, socio-economic and environmental stewardship issues.
  - **SA2**: Use science communication to bring these critical issues into public awareness.
  - **SA3**: Embed cultural, socio-economic and environmental stewardship issues and their response to the Sustainable Development Goals in the new curriculum.
  - **SA4**: Make these topical issues visible in all our spaces alongside our Values and our graduate and staff attributes.
  - **SA5**: Monitor and evaluate the adherence to these topical issues alongside the adherence to the Values as well as compliance to graduate and staff attributes.
SG5: Integrate engagement into L&T and research within the Faculty of Science to improve citizen science scholarship.

**SO1**: Embed engagement in the academic agenda.
- **SA1**: Establish an engaged L&T programme.
- **SA2**: Establish science communication as part of the Faculty curriculum.
- **SA3**: Establish an engaged research programme.

**SO2**: Provide support for engaged L&T and engaged RTI.
- **SA1**: Provide avenues for resourcing engaged L&T and engaged RTI.
- **SA2**: Incentivise and reward engaged L&T and engaged RTI.
OPPORTUNITIES

- More outreach to the wider community in order to bring about an interest in science in general.
- Demystify certain scientific concepts
- Showcase the Faculty for public good.
- Establish strong and healthy partnerships with various stakeholders.
- Address major challenges facing science and society.
- Gain society’s trust in science.
- Instil a culture of evidence-based decisions and evidence-based communications.

THREATS

- Society does not trust science.
- There is so much misinformation out there.
- Pandemics such as COVID-19 and natural disasters.
- A lack of engagement resources.

SWOT ANALYSIS

STRENGTHS

- Being situated in one of the poor provinces of the country, we have the potential to engage in teacher training and general outreach to the community.
- Make online and blended learning possible.
- Making certain services available to the general public, such as the psychology clinic.
- Engagement with the wider community in innovation, such as INOVENTON.

WEAKNESSES

- Overcrowded lecture venues.
- Not all students and people in the wider community have the necessary equipment, such as laptops, required for engagement in a blended and online format.
4. Resource Stewardship

- **Strategic Priority**
  - Strategically manage and grow faculty resources to ensure fit-for-purpose Learning and Teaching (L&T), Research, Training and Innovation (RTI), and Engagement and Transformation

- **Strategic goals (SGs) for Resource Stewardship**
  - **SG1**: Strategically manage and sustainably grow Faculty infrastructure.
  - **SG2**: Optimise the size and shape of the Faculty.
  - **SG3**: Provide products, services, solutions and skills in support of digitalisation.
  - **SG4**: Strategically manage and sustainably grow the income streams.
  - **SG5**: Optimise human resources in support of the size and shape, and the strategic objectives of the Faculty.
Strategic Objectives (SOs) and Strategic Activities (SAs) to achieve the Strategic Goals (SGs)

- **SG1**: Strategically manage and sustainably grow Faculty infrastructure.
  
  - **SO1**: Create a co-ordinated programme for Faculty infrastructure.
    - **SA1**: Establish a portfolio to coordinate and implement the Strategic Priority of resource stewardship.
  
  - **SO2**: Provide fit-for-purpose L&T, research and training, and engagement equipment.
    - **SA1**: Service and maintain existing equipment and replace ageing and outdated equipment with modern equipment.
    - **SA2**: Coordinate access to equipment in departments, entities, etc, within NMU.
    - **SA3**: Facilitate access to national and international infrastructure.
  
  - **SO3**: To ensure access to fit-for-purpose learning and teaching, and research spaces.
    - **SA1**: Carry out an audit and financial analysis of the L&T and research and training, and engagement spaces (considering external facilities available).
    - **SA2**: Carry out small scale renovation and repurposing, and modernisation of spaces.
    - **SA3**: Large-scale growth (in terms of space) to accommodate undergraduate and postgraduate growth (labs and teaching venues) as well as engagement spaces.
SG2: Optimise the size and shape of the Faculty.

- **SO1**: To sustainably grow the size and shape of the Faculty.
  - **SA1**: Carry out an audit of programmes for growth in student numbers.
  - **SA2**: Monitor and evaluate the growth in the Faculty.
  - **SA3**: Introduce tracking systems for programmes as well as service modules in order to be able to deliver within the limits of the faculty resources to ensure quality.
  - **SA4**: Establish mechanisms to control the shape and size of our undergraduate programmes from programmatic to modular levels, including service to other faculties.
  - **SA5**: Sustainably grow the postgraduate student numbers through the provision of resources.
  - **SA6**: Phase out outdated programmes and phase in new niche areas that are relevant to the 21st century (taking into account the comprehensive nature of the Faculty as well as our aspirations to become a transdisciplinary Faculty).
  - **SA7**: Ensure that staffing, equipment and space are aligned with the size and shape of the Faculty.
**SG3:** Provide products, services, solutions and skills in supporting digitalisation.

- **SO1:** To digitalise spaces and invest in technology enabled platforms (e-Infrastructure)
  - **SA1:** Establish a digitalised environment with access to relevant hardware and software.
  - **SA2:** Provide necessary computing platforms and access opportunities for science students and staff.
  - **SA3:** Establish a digitalisation unit to coordinate digitalisation in the Faculty.

- **SO2:** To invest in human capital to provide specialist support (human capital)
  - **SA1:** Invest in e-technologists and establish a Digitalisation Unit.
  - **SA2:** Establish a training programme for academics, tutors and demonstrators, and support staff in digital platforms.
SG3: Provide products, services, solutions and skills in supporting digitalisation.

- **SO1**: To digitalise spaces and invest in technology enabled platforms (e-Infrastructure)
  - **SA1**: Establish a digitalised environment with access to relevant hardware and software.
  - **SA2**: Provide necessary computing platforms and access opportunities for science students and staff.
  - **SA3**: Establish a digitalisation unit to coordinate digitalisation in the Faculty.

- **SO2**: To invest in human capital to provide specialist support (human capital)
  - **SA1**: Invest in e-technologists and establish a Digitalisation Unit.
  - **SA2**: Establish a training programme for academics, tutors and demonstrators, and support staff in digital platforms.
**SG4:** Strategically manage and sustainably grow the income streams.

- **SO1:** To create faculty financial management systems.
  - **SA1:** Review the current finance systems and produce a fit for purpose system.
  - **SA2:** Monitor and evaluate programmes for financial viability.

- **SO2:** To grow the third-stream income.
  - **SA1:** Identify, expand and support programmes and initiatives for third stream income.
  - **SA2:** Forge links with industry for RTI, and engagement.

- **SO3:** Resources mobilisation and advancement.
  - **SA1:** Partner with Strategic Resource Mobilisation Office (SRMO) for external funding opportunities.
  - **SA2:** Identify internal and external sources to generate and grow income streams.

- **SO4:** To align with national systems of innovation.
  - **SA1:** Identify national systems of innovation and pursue opportunities and partnerships to leverage resources
SG5: Optimise human resources in support of the size and shape, and the strategic objectives of the Faculty.

- **SA3**: Increase salaries for newly/to-be-appointed academics to be more competitive with other universities.
- **SO1**: To recognise, develop and retain talent.
  - **SA1**: Provide capacity development initiatives for young and emerging Faculty staff.
  - **SA2**: Establish developmental programmes for academics and PASS staff.
  - **SA3**: Formalise a system for demonstrators and tutors.
  - **SA4**: Encourage staff to register with professional bodies.
  - **SA5**: Structure succession planning in departments and entities, including leadership and management training.
  - **SA6**: Establish an awards and recommendation committee to bring recognition and opportunities as incentives to staff.
- **SO2**: To attract and optimally engage a diverse staff complement.
  - **SA1**: Utilise the employment equity targets in recruitment processes.
  - **SA2**: Actively attract and head-hunt talented equity candidates.
- **SO3**: To encourage and reward innovation and engaged scholarship
  - **SA1**: Encourage private work in line with NMU policy, in the spirit of engagement, and influence an FMC approval process during declaration of private work.
  - **SA2**: Nominate staff for institutional, national and international awards

- **SO4**: To facilitate training and the strengthening of managers for leadership and managerial roles that are adaptive and responsive to the dynamic academic and administrative environment.
  - **SA1**: Carry out assessment of current line managers’ needs and requirements for leadership and management training.
  - **SA2**: Facilitate induction and on-boarding of new managers for leadership and management training.
SWOT ANALYSIS

STRENGTH
- Some sections are well resourced with high end equipment.
- Capex and NRF-NEP are good processes to replace ageing and new infrastructure.
- Good track record of attracting third stream income.
- Qualified staff.
- Committed staff.
- Good researchers.

WEAKNESSES
- Some sections are not well resourced in terms of equipment.
- e-Infrastructure is low to non-existent in some sections.
- 2-years of SRAC funding for new programmes.
- Lack of Capex support to fund replacement of external grant-funded equipment.
- Not enough diversity of staff.
- Lack of equipment maintenance budget.
- Technical staff to handle high end equipment.
- Overloaded teaching demands.
- Lack of mentoring of junior staff.
- Lack of promotion opportunities for technicians.
- HoD term (3 years).
- Unfavourable RAM.
- Policy directives on software.
- Space challenges.
- Contract teaching staff (LRA risk).
- Policy for replacement of academic staff.
OPPORTUNITIES
• Pool of staff that can be mentored towards research.
• Internal promotion system to balance seniority.
• Leverage on the DST/NRF SARChI Chairs for new areas within Faculty (Biotechnology, Space Science, Data Science, and Atmospheric Sciences).
• Access to international grants.
• 4-IR.

THREATS
• Dwindling funding at national level (DSI, DHET, NRF, etc).
• SA economy.
• COVID-19.
5. Transformative Structures, Systems, and Processes

Strategic Priority

- To develop, implement and maintain structures, systems and processes that optimise the functioning of the Faculty of Science.
Strategic Objectives (SOs) and Strategic Activities (SAs) to achieve the Strategic Goals (SGs)

Create

SG1: Create a transformative culture that enhances diversity and inclusivity in the Faculty and upholds excellence.

SO1: Create a platform for transformative structures, systems and processes.

• SA1: Establish a portfolio to coordinate transformative structures systems and processes.
SO2: Create a diverse and inclusive curriculum that is adaptive and responsive.

- **SA1**: Review the curriculum and implement diversification and inclusivity in the curriculum coverage.
- **SA2**: Initiate remedial mechanisms that enhance diversity and inclusivity at all levels.
SO3: Develop a SWOT analysis on transformative culture within the Faculty and look for opportunities to address the threats and weaknesses.

SA1: Assess the Faculty’s current demographic profile across all levels (e.g., Clusters, departments, research units & entities) and Initiate remedial mechanisms that enhance diversity and inclusivity at all levels. Source HR and on-ground data compilation

SA2: Periodically conduct climate surveys on transformation culture within the Faculty
**SG2:** Establish transformative systems, processes and policies that support, enhance and streamline academic, administrative and management functions within the Faculty.

- **SO1:** To improve and ensure that administrative systems, capacity and processes support responsive academic function.
  - **SA1:** Review all current Faculty systems and processes and come up with fit for purposes systems and processes.
  - **SA2:** Review all faculty policies, guidelines and procedures and come up with fit for purpose policies, guidelines and procedures.
  - **SA3:** Strengthen Faculty administrative policies that link and inform University policies.
**SG3**: To have an organisational structure that supports the strategic and transformational priorities of the Faculty.

- **SO1**: Review the organisational structure of the Faculty
  - **SA1**: Periodically monitor and evaluate the recently developed organisational structure.
Strategic Objectives (SOs) and Strategic Activities (SAs) to achieve the Strategic Goals (SGs)

SG1: Create a transformative culture that enhances diversity and inclusivity in the Faculty and upholds excellence.

SA1: Establish a portfolio to coordinate transformative structures systems and processes.
### SWOT ANALYSIS

#### STRENGTHS
- New organisational structure
- Review and re-assessment of strategic and transformational priorities
- Flattening of management structure
- Current and new staff can be trained to tackle new and challenging academic landscapes
- Some of the current processes are adequate to address current administrative and management functions

#### WEAKNESSES
- New structures may not be implementable currently
- Financial and human resource implications
- Mechanisms and means required for implementing SO have human resources implications
- Certain academic, administrative and financial policies fall out of the purview of the faculty
- Lack of understanding and knowledge of existing processes
- Processes and workflow for academic changes are currently manual or conducted via email, which is not an integrated and coordinated method and therefore communication problems sometimes occur
- Poor leadership training and induction systems for new line managers
- Management and leadership roles not rewarded as a pathway toward promotion
OPPORTUNITIES

- Potential for inter- and intra-discipline articulation
- Potential for new programs and research directions
- Possibility of developing and installing electronic media infrastructure that would address short comings in current operations
- Potential to improve IT system articulation with processes that enable and advance administrative, academic and functional data acquisition and processing

THREATS

- Lack of financial and human resources to undertake administering of new changes
- Low capability of current online infrastructure to effectively respond to rapid academic and administrative requirements under adverse changes to environmental hazards
- Lack of appropriate training by staff to the use of electronic media to offer diverse academic delivery offerings that maintain academic quality and integrity
- Implementation of workflow software without undergoing a thorough gap analysis first
- Use of non-adaptive software with exorbitant annual user licence fees
- Lack of willing and capable people to take on leadership roles
- Management and leadership roles not rewarded as a pathway toward promotion
6. Students and Staff Access and Success

- **Strategic Priority**
- To provide efficient systems and structures to ensure access to the Faculty of Science for students and staff (future and current); to make available a conducive learning and working environment that promotes success.
Strategic Goals (SGs) for Students and Staff Access and Success.

**SG1:** Provide an efficient and transparent process for access into the Faculty.

**SG3:** Provide an efficient process for student and staff progression within the Faculty.
Strategic Activities (SAs) to achieve the Strategic Goals (SGs)

- **SG1**: Provide an efficient and transparent process for access into the Faculty.
  - **SO1**: Create a user-friendly and humanising recruitment process for all students and staff.
    - **SA1**: Develop a diverse, inclusive and targeted recruitment process for students and staff.
    - **SA2**: Develop a new streamlined online student application system that notifies all stakeholders (admissions, finance, accommodation, staff and applicants) about where the process is until the final outcome.
    - **SA3**: Develop a new HR online staff application system that notifies all stakeholders (HR, Faculty Resources portfolio, Faculty Office, the department or entity involved, and applicants) about where the process is until the final outcome.
    - **SA4**: Establish communication processes and frameworks between academic departments and the relevant admissions and recruitment departments to ensure effective sharing of information to optimise the student recruitment and admissions process.
    - **SA5**: Establish communication processes and frameworks between the Faculty Office, academic departments, entities and HR to ensure effective staff recruitment and onboarding processes.
SG2: Provide access to a safe, secure, enabling, healthy environment for Faculty students

- **SO1**: Promote a Faculty-wide culture and practise of health and safety awareness and systems.
  - **SA1**: Develop a Health and Safety training programme for the Faculty of Science
  - **SA2**: Establish a Faculty risk committee to work with the Faculty SHE Committee in identifying and mitigating health risk factors that could compromise well-being and academic performance.

- **SO2**: Provide reasonable measures and facilities to accommodate differently enabled students and staff.
  - **SA1**: Differently enabled students and staff to be identified.
  - **SA2**: Establish mechanisms and resources to enable access for differently enabled students and staff.

- **SO3**: Promote a culture of wellbeing within the Faculty.
  - **SA1**: Develop a system to identify threats to the wellbeing of Faculty students and staff.
  - **SA2**: Recommend and create awareness about the available resources to keep our students and staff healthy.
  - **SA3**: Create ‘time out’ allowances between the busy learning and teaching schedules through the Faculty events calendar, timetabling and scheduling of meetings.
  - **SA4**: Create and support an enabling environment for social events and change management programmes that promote wellbeing and social cohesion in the Faculty
**SG3:** Provide an efficient process for student and staff progression within the Faculty.

**SO1:** Create a system to identify and address areas of student and staff under performance.
- **SA1:** Adopt RADAR to identify at-risk students in the Faculty.
- **SA2:** Establish and implement intervention strategies to empower at-risk students in collaboration with the Undergraduate Studies Portfolio.
- **SA3:** Develop and implement a staff performance framework to track and monitor performance in order to

**SO2:** Provide access to development, mentorship and in-service training programmes for all students and staff.
- **SA1:** Develop mentorship and in-service training programmes for academic and PASS staff as well as managers.
- **SA2:** Develop mentorship and in-service training programmes for demonstrators and tutors and adopt the Success Coaching programme for Faculty of Science students.
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<th>Create</th>
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| SO3: Create an enabling environment for multiple career paths for students and staff in the Faculty of Science Faculty.  
  • SA1: Develop career pathways for students, academic and PASS staff. | • SO4: Reward excellence and outstanding performance in the Faculty  
  SA1: Establish a rewards and recognition committee in the Faculty to develop various opportunities to reward excellence in the Faculty. | SO5: Provide Faculty members with the necessary resources to succeed  
  • SA1: Develop an adequate and realistic resourcing model for the Faculty. |
## SWOT ANALYSIS

### STRENGTHS
- Skilled staff.
- Humanising pedagogy.
- Varied teaching strategies (flexibility).
- Staff can work remotely and on campus – via platforms like Teams and Moodle.

### WEAKNESSES
- Weaker students.
- No mentorship programmes.
- Staff development in terms of online teaching.
- Staff development in general.
- Succession planning.
- Lack of space and infrastructure
- Administrative support.
  - Exams, HR, admissions
- No moderation of online content.
- Communication from management to on the ground staff.
- Not all staff and students buy into discussions around Faculty matters.
- Financial aid office.
- Understaffed.
OPPORTUNITIES

- Improve staff development.
- Improve existing online teaching platforms.
- Develop new online teaching platforms.
- Service courses can move online.
- Develop online moderation.
- Identify mentors and implement a mentorship programme.
- Engage more students and staff in Faculty matters.

THREATS

- COVID-19.
- Many of our students are financially poor (geographically the EC is financially poor).
- Funding.
- Lack of personal computational devices (primarily among students).
- Lack of internet infrastructure.
- Humanising pedagogy at the expense of lecturers.
- Poor online material could compromise standards.
- Vacant posts lead to understaffing.
- Student funding schemes.
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