NEWS@GSU

Gwanda State University Newsletter

Esprit De Corps

June 2021

Teasers

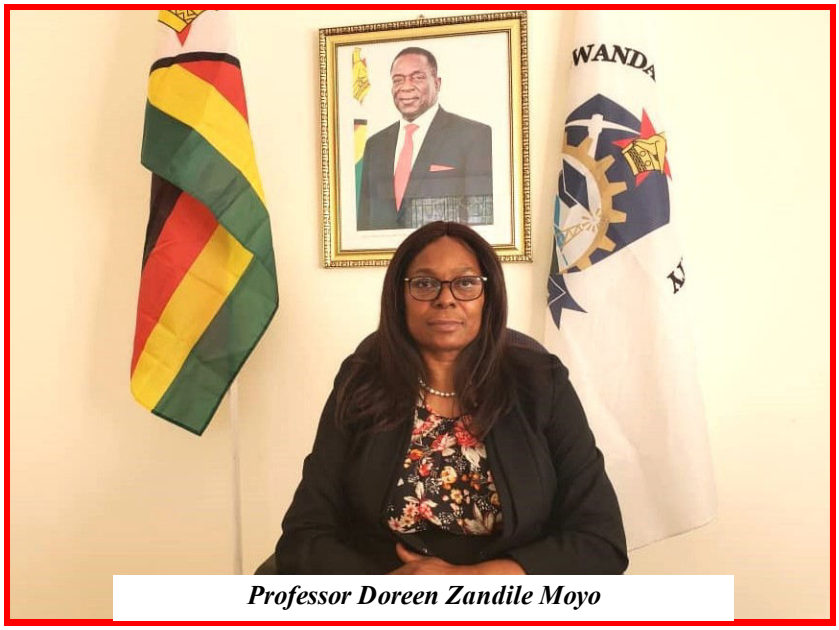
Gwanda State University Welcomes the New Vice-Chancellor

PRESIDENT Mnangagwa has appointed Professor Doreen Zandile Moyo as the new Vice Chancellor of the Gwanda State University (GSU).

Her appointment is with effect from March 1.

Before her appointment, Prof Moyo was Midlands State University (MSU) Pro - Vice Chancellor (Research and Academic Affairs).

Prof Moyo's appointment comes as the nation joins the rest of the world in commemorating the women's month with the Second Republic having made strides in empowering women to top positions in different sectors.



Professor Doreen Zandile Moyo

GSU management congratulated Prof Moyo's appointment and wished her a long and developmental oriented stint at the institution.

"The Gwanda State University Council wishes to announce the appointment by His Excellency, the President of the Republic of Zimbabwe and Chancellor of all State Universities, Cde Dr Emmerson Dambudzo Mnangagwa of Professor Doreen Zandile Moyo as the University's second substantive Vice- Chancellor.

"The appointment, which was effected after consultation with the Minister of Higher and Tertiary Education, Innovation, Science and Technology Development and recommendation by the University Council, is with effect from 1 March 2021," reads the statement.

Prof Moyo is an animal parasitologist and holds a Bachelor of Science Honours degree in Biological Sciences (UZ), Master of Philosophy degree in Veterinary Parasitology and Doctor of Philosophy in Veterinary Parasitology (UZ).

"She is a seasoned academic that has risen through the academic ranks from a Research Assistant in the Department of Biological Sciences (UZ), Research Fellow in the Department of Paraclinical Veterinary Studies (UZ), Lecturer in the Department of Biological Sciences at Midlands State University, Senior lecturer and Associate Professor.

"In 1999 she was a Research Officer in the Institute of Water and Sanitation Development," reads part of the statement.

Prof Moyo joined Midlands State University at its inception in 2000 and has served the University for 21 years in various capacities as founding Chairperson of the Department of Biological Sciences, Executive Dean for Research and Postgraduate Studies and Pro-Vice Chancellor, Research and Academic Affairs. Prof Moyo has published extensively in international refereed journals. She is a peer reviewer of international journals and is also a Zimbabwe Council for Higher Education reviewer. **Cont... PG 5**

Gwanda State University Councillors Inauguration

On Wednesday 9 June 2021, thirteen (13) members were sworn into the Gwanda State University Council. Amongst the dignitaries who witnessed the inauguration was the Minister of Higher and Tertiary Education, Innovation, Science and Technology Development Prof. Dr. A. Murwira and the Permanent Secretary of Higher and Tertiary Education, Innovation, Science and Technology Development Prof F. Tagwira. Council plays an oversight role in the governance and management of the University. Below are some of the pictures during the inauguration.

Mrs Mabel Elaine Mwamuka (Council Chairperson) and Minister Prof. Dr. Amon Murwira

Engineer Sijabuliso Harold Ncube (Vice-Council Chairperson) and Minister Prof. Dr. Amon Murwira

Professor Doreen Zandile Moyo (Vice-Chancellor) and Minister Prof. Dr. Amon Murwira

Ms Stella Nkomo and Minister Prof. Dr. Amon Murwira

Engineer Sydney Mandidi and Minister Prof. Dr. Amon Murwira

Mrs Veronica Mutiro and Minister Prof. Dr. Amon Murwira

Mrs Tilibali Moyo and Minister Prof. Dr. Amon Murwira

Prof Andrew Hlanganiso Siwela and Minister Prof. Dr. A. Murwira

Mrs Priscilla Musundire and Minister Prof. Dr. Amon Murwira

Mr Courage Shonhiwa and Minister Prof. Dr. Amon Murwira

Mrs Priscilla Nkala and Minister Prof. Dr. Amon Murwira

Mr Tendai Clitos Masawi and Minister Prof. Dr. Amon Murwira

Mrs Sithembisiwe Melody Mpofu Ndlovu and Minister Prof. Dr. Amon Murwira

A group picture of the Minister, Permanent Secretary, GSU Council members and some members from the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development

GSU A Provincial Flagship

From left is the Vice-Chancellor Professor Doreen Zandile Moyo, Minister of Monitoring and Implementation of Government Programmes in the President's Office Honourable Jorum Gumbo, The Minister of State for Matabeleland South Provincial Affairs and Devolution Cde Abednico Ncube and other dignitaries during a tour at the Gwanda Town Campus site on Friday 25 June 2021.

GWANDA State University has been identified as a provincial flagship for Matabeleland South.

Speaking during the monitoring of implementation of government projects under the 100—day cycle tour on Friday 25 June 2021 at the Gwanda Town Campus site, the Minister responsible for Monitoring and Implementation of Government Programmes in the President's Office, Honourable Jorum Gumbo indicated that he was keen to see the construction of the University coming to fruition.

"This land needs to be cleared so that construction can take off" Minister Gumbo commented.

He requested the University to highlight major things that are required for the project to kick off.

The Minister of State for Matabeleland South Provincial Affairs and Devolution Cde Abednico Ncube emphasised that it was high time the University establish the Gwanda Town Campus.

He added that the University should consider planning for its future developments and expansion.

The Vice-Chancellor Professor Doreen Zandile Moyo presented the history of the University and future plans for the construction of Gwanda Town Campus.

"The University received funding from the line Ministry of Higher and Tertiary Education, Science and Technology Development and it will use part of the funds to clear the land and construct an access road" the Vice-Chancellor alluded.

She added that the University will start by constructing a multi-purpose building which will house office for administration and lecture rooms.

The Innovation Hub and an Industrial Park shall be constructed at the Gwanda Town Campus.

Gwanda State University has two campuses, one at Epoch Mine in Filabusi and the other one at Gwanda Town.

Official Visit at Gwanda Town Campus

The University will soon be commencing the construction of the Gwanda Town Campus. Ahead of the preliminaries, a GSU team officially visited the main site on Thursday, 24 June 2021 to appreciate the place. Below are some of the pictures during the tour.

Cleared boundary that boarders the University site and Joshua Mqabuko Nkomo Polytechnic

Staff members touring along the western side of the University site.

From left is the Acting Security Officer Mr Mthuthukisi Ncube, Chairperson of Mining Engineering Department Mr Nkosilathi Ndlovu, Acting Director of Physical Planning, Works and Estates Mr Donald Ncube, Information and Public Relations Officer Mr Walter Ndlovu, Acting Librarian Miss Thembelihle Hwalima, Systems Manager Mr Owen Munemo, Dean of Students Mr Nkosilathi Ncube, Lecturer Miss Mufaro Kanganga, Registrar Mr Erasmus Mupfiga and the Vice-Chancellor Professor Doreen Zandile Moyo. Other members not captured on the picture is the Acting Bursar Mr Bhekimpi Ndiweni, Acting Dean of the Faculty of Engineering and the Environment Mr Tumelo Mathe, Acting Dean of the Faculty of Life Sciences Dr Busani Moyo and the Chairperson of Crop Science Department Mr Ndabanye Mathema at the University main Campus site on Thursday 24 June 2021.

From PG 1 She has supervised several Masters and PhD students and is also a PhD thesis examiner. Prof Moyo has been a member of several university committees and also served as a board member of the Global Fund (Zimbabwe), Standing Committee on Natural Resources and Research Council of Zimbabwe International Symposium Organising Committee.

Prof Moyo is a member of professional and academic associations such as the World Association for the Advancement of Veterinary Parasitology and the Southern Africa Research Management Association (SARIMA).

"Gwanda State University Senate, Staff and Students congratulate and heartily welcome Prof Moyo and pledge to support her as she implements the mandate of the University. Congratulations! Amhlophe! Makorokoto!" read the statement.

Source: ***The Chronicle 24 March 2021***

Official visit by the Permanent Secretary of Higher and Tertiary Education, Innovation, Science and Technology Development Professor Fanuel Tagwira at Gwanda State University.

From left is the Dean of Students Mr Nkosilathi Ncube, the Permanent Secretary of Higher and Tertiary Education, Innovation, Science and Technology Development Professor Fanuel Tagwira, the Vice-Chancellor Professor Doreen Zandile Moyo and the Registrar Mr Erasmus Mupfiga on the far right touring the newly renovated student houses.

Gwanda State University is committed to providing adequate and conducive accommodation to staff and students at its Epoch mine campus.

Gwanda State University inherited Epoch Mine infrastructure, which it is upgrading to suit university standards.

To date, the newly renovated 18 blocks with the capacity to accommodate 234 students have been completed. The project is fully funded by the Government through the public sector investment programme (PSIP).

During the official visit by the Permanent Secretary of Higher and Tertiary Education, Innovation, Science and Tech-

-nology Development, Professor Fanuel Tagwira, toured the newly renovated structures and those that were being refurbished. The Permanent Secretary applauded the University for the progress that had been done on the refurbishment of structures.

Speaking during the visit, he indicated that Government was keen to assist the Institution financially in order to finish the refurbishment exercise. The refurbishment will not only provide accommodation but it will also increase lecture and offices spaces.

With the continued support of government, the University is looking forward to constructing new buildings.

Students welcomed back at Campus

Students follow proceedings during their meeting with the new Vice-Chancellor Professor Doreen Zandile Moyo at the Dinning Hall

Due to the containment of the pandemic, although there are sporadic outbreaks, Universities have been allowed to bring students to campus under strict conditions.

Addressing students during a meeting, the Vice-Chancellor of Gwanda State University, Professor Doreen Zandile Moyo assured them that she will steer the University to be a centre of excellence in teaching and research.

“For this to happen the entire University community comprising students, staff and stakeholders need to actively pursue the University”, she said.

She added that students are important stakeholders in the institution and as a University it will strive to ensure that it provides quality education as well as produce holistic graduates that are not only academically qualified but with relevant soft skills and core values as espoused in the University culture.

“Critical thinking skills, analytical skills, honesty and integrity cannot be over emphasised”, she added.

Commenting on the COVID-19 pandemic, the Vice-Chancellor appealed to students to comply with COVID-19 regulations and she indicated that if the University fails to adhere to the laid down preventive protocols, it risks closure.

“It is mandatory that you observe these protocols that include wearing a face mask at all times to cover mouth and nose; regular hand sanitisation or washing hands with soapy water as well as observing social and physical distancing”, she alluded.

Concerning the vaccination programme, students were advised that members of staff received the COVID19 that is meant to protect students and other colleagues.

“We have made an application for vaccines for students but await a response from the Ministry of Health and Child Care. Our desire is to have all students vaccinated”, she said.

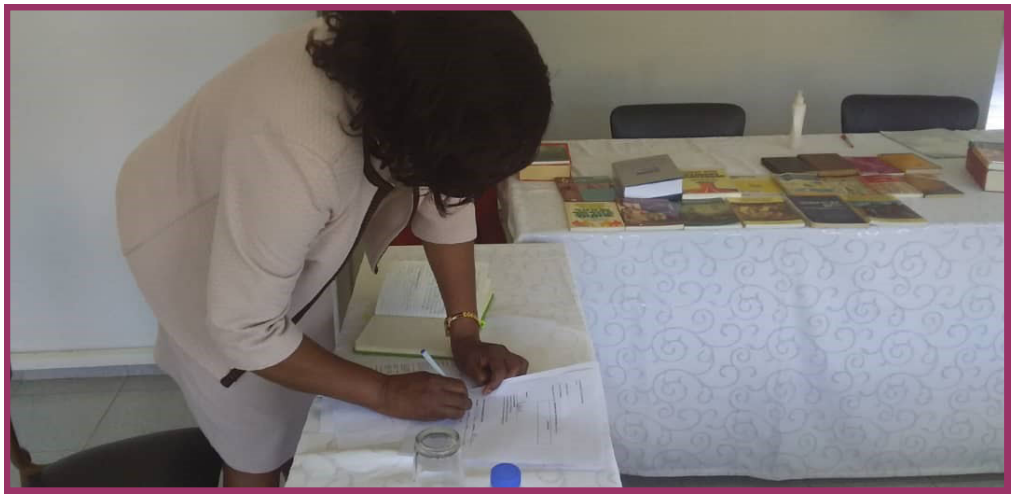
The Acting Librarian, Miss Thembelihle Hwalima on the other note also informed students that the University Library had increased its book collection through subscription to Wiley and Emerald resources.

GSU LIBRARY RECEIVES BOOK DONATIONS FROM AUSTRALIAN AID INTERNATIONAL

The University Library received a donation of books from the Australian Aid International. To date, the library has a physical book collection of 2000 book titles covering engineering, mining, animal science, crop science, metallurgy, marketing, accounting and development studies. The library provides access to information resources and services that support the Education 5.0 mandate of teaching, learning, research, industrialisation and innovation. The Library has a collection of print volumes and provides access to open access resources in electronic format and these are available online on the Library webpage. Below are scenes during the donation of books by Australian Aid International.

The Vice-Chancellor Professor Doreen Zandile Moyo officially receiving a donation of books from the Australian Aid International representative Mr Losper Mpande

From left is the Vice-Chancellor, Professor Doreen Zandile Moyo, Acting Librarian Miss Thembelihle Hwalima, Procurement Officer Mr Lungezweni Magadlela, Dean of Students Mr Nkosilathi Ncube and Mr Losper Mpande from Australia Aid International during the donation of books to the University



The Vice-Chancellor Professor Doreen Zandile Moyo signing a letter of the handover of the books from the Australian Aid International

INDUCTION OF NEW TEACHING STAFF MEMBERS

As part of the University's mandate, new staff members are supposed to be inducted. Induction is a process of introducing a new employee to the company culture and processes with the aim of bringing them up to speed as quickly as possible as well as making them feel socially comfortable and aware of their professional responsibilities. Below are some of the pictures of the new teaching staff members induction workshop which was facilitated by Mr Webb Ndlovu (Lecturer.

BEAREVEMENTS

The University lost two members of Staff in January 2021. The entire University community would like to take this opportunity to express its deepest condolence and at the same time cherish their unwavering support towards the growth and development of Gwanda State University.

Mr Nkosentsha Mpofu Chairperson of Department of Geomatics and Surveying

Mr Freedom Dube Senior Assistant Registrar Human Resources

Information and Public Relations Office, Gwanda State University, Epoch Mine Campus
P. O. Box 30 Filabusi
Contacts: +263 284 2824720/1 Ext 245

Gwanda State University **info@gsu.ac.zw** **@Gwanda State University**

GSU Continues to fight against COVID-19

Gwanda State University has made significant strides in the prevention and containment of Covid-19 infections.

The University amongst other measures is implementing a robust wellness clinic and tests on a daily basis student and staff temperatures and other symptoms. Sanitisation, wearing of face masks and practicing social and physical distancing are strictly enforced.

The University received adequate vaccines for all staff and the majority have already received first and second doses. Unfortunately, three cases were recently recorded in the campus. Relevant authorities such as our parent Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development and the Ministry of Health and Child Care (Filabusi District Hospital) were informed.

The University received assistance in the form of testing kits that has enabled the University to conduct mass testing of staff members and students. No new infections have since been recorded and we are pleased that the measures that were put in place including disinfection of hostels, lecture rooms, offices and other facilities are bearing fruit. The University desires to have all students vaccinated and has since requested for vaccines from the Ministry of Health and Child Care.

Below are some of the pictures showing how the University is containing and preventing the spread of COVID-19 infections

One of the patients getting tested for COVID-19 at the University Clinic

The Vice-Chancellor Prof. DZ Moyo getting vaccinated against COVID-19 at the University Clinic

The Registrar Mr E Mupfiga getting vaccinated against COVID-19 at the University Clinic

The Dean of Students Mr Ncube getting vaccinated against COVID-19 at the University Clinic

Third Stream income generating projects take another shape

Some of the first project broilers at Epoch Mine Campus

GWANDA State University third stream income generating projects have taken another shape following the advent of chicken rearing and growing of crops.

Apart from the newly launched projects, the University is into piggery, cattle and goat rearing. The Institution is looking forward to growing and improving these projects.

Projects do not only serve to generate income but they are also used for practical learning for students in the Animal and Crops Science departments.

This comes at a time when all state Universities are called to be productive through implementation of third stream income generation projects.

This is in line with the education 5.0 mantra which articulates that Zimbabwe's state universities must launch into outcomes-focused national development activities towards a competitive, modern and industrialised Zimbabwe. It is now all about problem-solving for value-creation.

The University is looking forward to implementing other projects like bee keeping, fisheries and mining that are in line with the University's mandate of mining and agriculture.

It is important to note that mining and agriculture play a major role in contributing towards the country's Gross Domestic Production (GDP) and that these are also key economic activities in Matabeleland South.

GSU Inaugural Cleanup Campaign in Pictures

Gwanda State University held its inaugural Clean up campaign on Friday 4, June 2021. All staff and students participated in this clean up campaign. Below are the clean up campaign scenes.

The Registrar and the Vice-Chancellor cleaning in front of the Dinning Hall

Some of the students cleaning at the newly renovated student houses

Some of the staff members cleaning at the Recreational Area

Some of the students cleaning at the student residences section

Staff members cleaning near houses under renovation to increase students and staff accommodation

Collected litter burnt during the clean up campaign

MATHEMATICS CORNER

Mathematics is the science of structure and change. Mathematics is important to the other sciences because it provides rigorous methods for developing models of complex phenomena. Such phenomena include the spread of computer viruses on a network, the growth of tumours, the risk associated with certain contracts traded on the stock market, and the formation of turbulence around an aircraft. Mathematics provides a kind of quality control for the development of trustworthy theories and equations which are important to people in most modern technical disciplines such as engineering and economics. In this study we are going to apply curve fitting technique and technological software to elaborate the application of mathematics in real world sceneries around Gwanda State University. Curve fitting is the process of constructing a curve, or mathematical function, that has the best fit to a series of data points, possibly subject to constraints.

Figure 1: Gwanda State University Sceneries.

The figure 1 shows Gwanda State University sceneries from the campus stand point, our objective is to fit a polynomial curve on the horizon of figure 1.

Data Collection

Curve fitting is the process of finding the curve that best approximates a set of points from within a set of curves. The least squares method does this by minimising the sum of the differences bet -

-ween the actual and predicted values. The linear least squares method, which is used here, restricts the set of curves to linear combinations of a set of basis functions. To fit a polynomial, the basis functions are the 'monomials' 1, x, x 2 , x 3 , and so on, up to a certain degree. Polynomials are often used because they have such a simple form. Now, let's consider figure 2 as our data collection platform.

Figure 2: Gwanda State University Sceneries picture of MS Publisher with highlighted horizon.

First we copy and paste figure 1 on Ms Publisher so as to pool our datasets, use your computer mouse place it on top of the horizon directly below One on the horizontal top scale and take your vertical reading on your vertical scale.

Repeat the process for an interval 0.5 along the curve to obtain table 1, note that we marked 3 on the vertical scale as our point of reference.

Table 1: Dataset

x	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5
y	16.75	16.8	15.71	12.99	11.42	10.25	8.99	9.99	11.71	13.28	14.28	14.71	14.99	15.28	15.71	15.57	16.85	18.57	20	21.43	21.43	21.43
y top down	3.25	3.2	4.29	7.01	8.58	9.75	11.01	10.01	8.29	6.72	5.72	5.29	5.01	4.72	4.29	4.43	3.15	1.43	0	-1.43	-1.43	-1.43
y down up	16.75	16.8	15.71	12.99	11.42	10.25	8.99	9.99	11.71	13.28	14.28	14.71	14.99	15.28	15.71	15.57	16.85	18.57	20	21.43	21.43	21.43

Note that the point of origin is on the top right corner and y top down are vertical readings to the negative direction. Hence, to fix the orientation of the origin we transform our point of reference by translation from an arbitrary point say 20 using the equation y=20 - (x_value)

Pictorial View (Graphing)

Copy and create table 1 on Ms Excel, then Select the data you want to plot in the scatter chart. Click the Insert tab, and then click Insert Scatter (X, Y) or Bubble Chart to obtain figure 3. To fit a polynomial on our dataset we Click on one of the data points on the graph. This will highlight all the points. Right click, then click "Add trendline." To obtain figure 4 Click the "Polynomial" radio button. Change the Order to 2. Click "Display Equation on chart" at the bottom of the pop up window, and then press "Enter."
Your equation will now show on the chart. Therefore, this fits a polynomial of order 2 (Quadratic) to our dataset given by $y = 0.2438x^2 - 1.7955x + 15,623$ with $R^2 = 0.8234$ which implies that this quadratic curve can fit accurately $82,34\%$ of our data. Thus, this curve a good fit to our data but can when get a better fit?

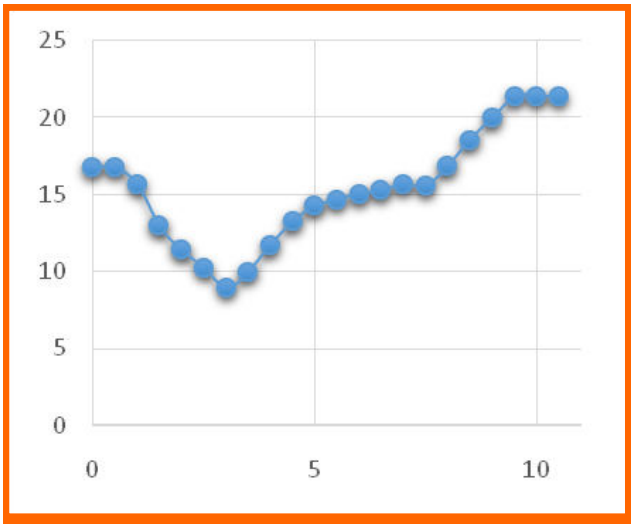


Figure 3: Scatter Plot

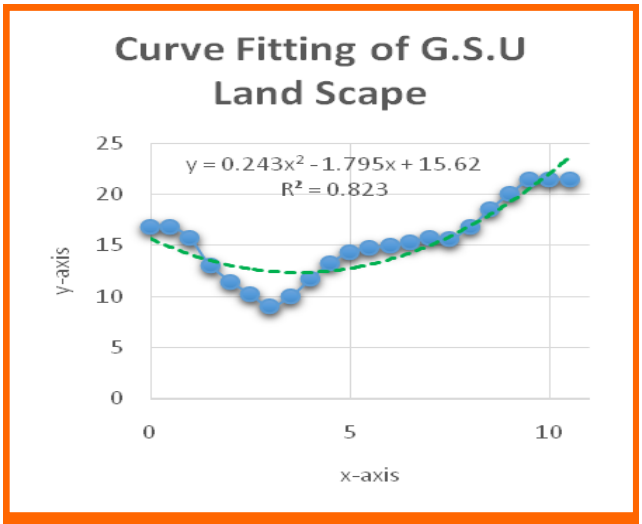


Figure 4: Scatter Plot with trend line

We repeat the process of fitting a trendline, Click on one of the data points on the graph. This will highlight all the points. Right click, then click "Add trendline." To obtain figure 5 Click the "Polynomial" radio button. Change the Order to 6. Click "Display Equation on chart" at the bottom of the pop up window, and then press "Enter." Your equation will now show on the chart. Therefore, this fits a polynomial of order 6 to our data points given by $y = -0.002x^6 + 0.0625x^5 - 0.751x^4 + 4.1127x^3 - 9.4446x^2 + 4.7296x + 16.672$ with $R^2 = 0.9869$ which means that this curve can fit accurately 98.69% of our data. Therefore, this curve is the best bit compared to quadratic curve.

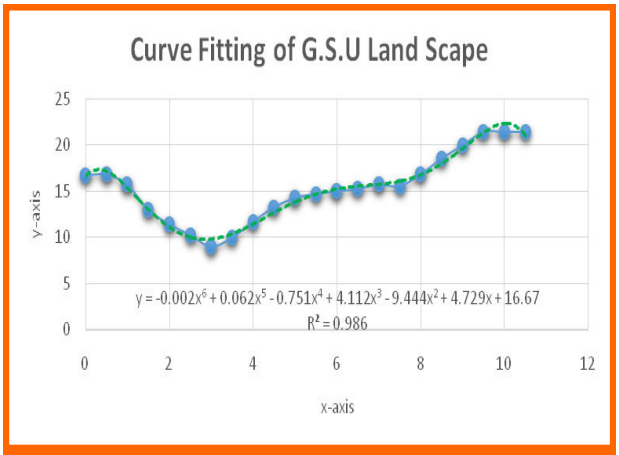


Fig 5: Curve fitting GSU Sceneries a Polynomial Order 6

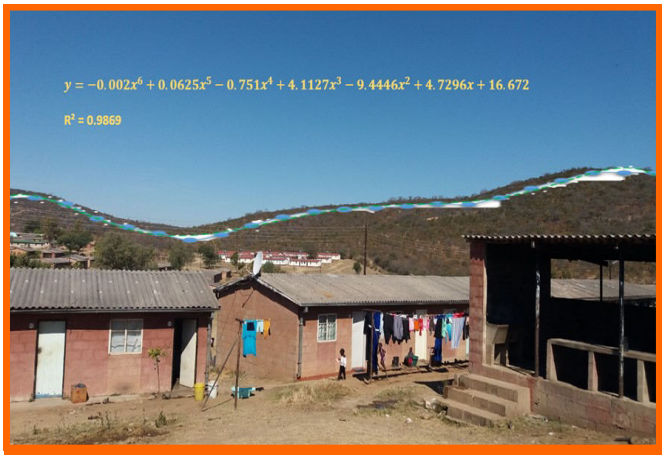


Fig 6: Gwanda State University Sceneries with Trend line.

After merging figure 1 and results from figure 5 we obtain a clear view of how good our model approximate our problem.

Conclusion

Fitted curves can be used as an aid for data visualization, to infer values of a function where no data are available, and to summarize the relationships among two or more variables. However, you have to have a reasonably representative model of your system to start with, and a reasonably accurate initial estimate of your parameter set (at least with respect to orders-of-magnitude) in order to get a reasonable fit. Another, great method for estimating parameter and fitting data is Neural Networks.

Topic: Applied Mathematics
Author: Meshach Ndlovu, Lecturer, Gwanda State University

WHAT IS COVID-19?

COVID-19 is a mild to severe respiratory illness that is caused by a coronavirus (*Severe acute respiratory syndrome coronavirus 2* of the genus *Betacoronavirus*), is transmitted chiefly by contact with infectious material (such as respiratory droplets) or with objects or surfaces contaminated by the causative virus, and is characterised especially by fever, cough, and shortness of breath and may progress to pneumonia and respiratory failure.

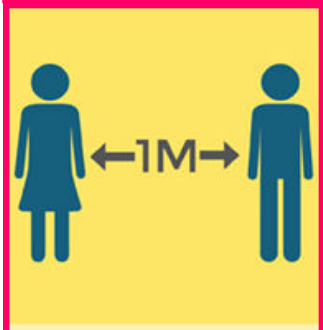
You can be infected by breathing in the virus if you are within close proximity of someone who has COVID-19, or by touching a contaminated surface and then your eyes, nose or mouth.

NEW COVID-19 VARIANTS

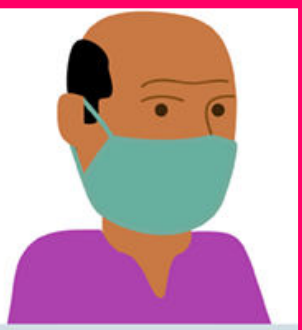
Viruses constantly change through mutation. When a virus has one or more new mutations it's called a variant of the original virus. Currently, several variants of the virus (SARS-CoV-2) that causes coronavirus disease 2019 (COVID-19) are creating concern globally. These variants include:

- **Alpha. (B.1.1.7) (Kent variant).** This COVID-19 variant appears to spread more easily and might have an increased risk of hospitalization and death.
- **Beta (B.1.351) (South African Variant).** This variant appears to spread more easily. It also reduces the effectiveness of some monoclonal antibody medications and the antibodies generated by a previous COVID-19 infection or COVID-19 vaccine.
- **Gamma (P.1) (Brazilian Variant).** This variant reduces the effectiveness of some monoclonal antibody medications and the antibodies generated by a previous COVID-19 infection or a COVID-19 vaccine.
- **Epsilon (B.1.427).** This variant appears to spread more easily. It reduces the effectiveness of antibodies generated by a previous COVID-19 infection or COVID-19 vaccine.
- **Epsilon (B.1.429).** This variant appears to spread more easily. It reduces the effectiveness of antibodies generated by a previous COVID-19 infection or COVID-19 vaccine.
- **Delta (B.1.617.2) (Indian Variant).** This variant appears to spread more easily. It might reduce the effectiveness of some monoclonal antibody treatments and the antibodies generated by a COVID-19 vaccine.

HOW CAN I PREVENT COVID-19?



Stay at least one metre away from people, and even further when indoors.



Wear a face mask around others.

Avoid places that are crowded, confined or involve close contact with others, especially indoors.

Wash your hands regularly or use an alcohol-based hand sanitiser.

Get a COVID-19 vaccine when you're offered it.

Keep rooms well ventilated when you're inside with other people.

Cough or sneeze into a tissue or your elbow. Throw the tissue away and wash your hands after.

Stay at home and call your health worker if you're unwell.