



Participant/Institution: GODIANA PHILIPO/Nelson Mandela African Institution of Science and Technology

My time at the Stellenbosch University (SU) for student exchange program

(4th February, 2019 to 13th April, 2019)

1. Arrival

I arrived in South Africa in the evening of 3rd February, 2019 and I was well received by my hosts at Cape Town International Airport who drove me to Stellenbosch university and finally to my area of residency. The journey was enjoyable and I didn't face any challenges along the way. I also successfully register with the Stellenbosch University International offices the following day.

2. Accommodation

I stayed at Idas Valley Stellenbosch, where I booked the place prior to going to South Africa (in January) as the student residences were fool booked during that time. I enjoyed every day I spent there. The services were good and the Land lord was so friendly and ready to help you anytime.

3. Work and classes

During my stay, I attended three short courses on the Smart grid course. The courses includes Overview of smart grid, Renewable Energy Technology and Integrated Demand side management. Through these courses I was able to learn a lot on smart grid modules being the biggest objective of the DAMOC project. I was able to understand the overview of smart grid especially in the context of the changing power system, renewable energies and their challenges in integrating them to the grid, how smart grid increases the penetration of renewable energies, the role of storage systems, substation automation, mini-grids and micro-grids. I also did machine learning programming which is very essential for smart grids and communication within the smart grid.

I also get a chance to visit the Palmiet pumped hydro storage (fig 1) as part of the class work on renewable energy technology. One interesting thing I learned about this Palmiet pumped

hydro storage is how it takes part as a peaking power plant in South Africa. I did lab experiment on heat pumps (fig. 2) and managed to do a group project on designing a hybrid renewable energy to supply a small village.

I also did a course on integrated demand side management which is a very important course for my final year research.

I did a little bit on data analysis on load forecasting, python programming studies and coding of a micro controller.

In general, I have really get a lot of knowledge from this program that I did not have before. Thank you to the DAMOC project, Thank you to my host university (SU) and thank you to my home university (NM-AIST).



Figure-1: Palmiet Hydro Power Plant



Figure -2: Water pump experimental setup

4. Free time and social life

I enjoyed a lot of different activities in my free time and also get to learn some South African culture through the food and visiting different historical places like the aquarium, Table Mountain, the Cape wheel and Strand beach. One of the activities I enjoyed most is moving in the cape wheel. Doing it for the very first, it was scary in the beginning but got used to it and it was really an adventure worthy trying. I also went hiking once at the Stellenbosch Mountain with my friends and experienced some really nice views from there. Some other time I and my colleagues were shopping around different malls and trying some German food and drinks on the way.



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Development of a **H**Armonized **M**ODular **C**urriculum for the Smart Grid

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figure-3: Aquarium

Figure 4: Cape wheel and table mountain



I also got a chance to attend the international food festival which was organized by the SU international office, where I enjoyed food from different nations and got to learn different cultures through dances and stories.

5. Conclusion

Generally this exchange programme has been very useful to me in many aspects. The courses that I attended are very useful in my research and this will help me to be a helping hand to my fellow student at NMAIST concerning the knowledge that I have got. I have really set up the foundation on my Smart Grid journey and got even more interests of continuing with it for my PhD level too. I am grateful for the chance and my sincere gratitude goes out to everyone in the DAMOC team from both Nelson Mandela African Institution of Science and Stellenbosch University.