



## ACTIVITY REPORT

**ACTIVITY TITLE:** MindaCELLs Research Presentation on Solar, Wind, and True Electrical Energy Mix Modelling

**DATE:** November 13, 2021

**VENUE:** Online Zoom

**PERSON/INSTITUTION HEADING THE ACTIVITY:** Mindanao CELLS

### 1. Head of the Activity: Mindanao CELLS

#### Heading the activity

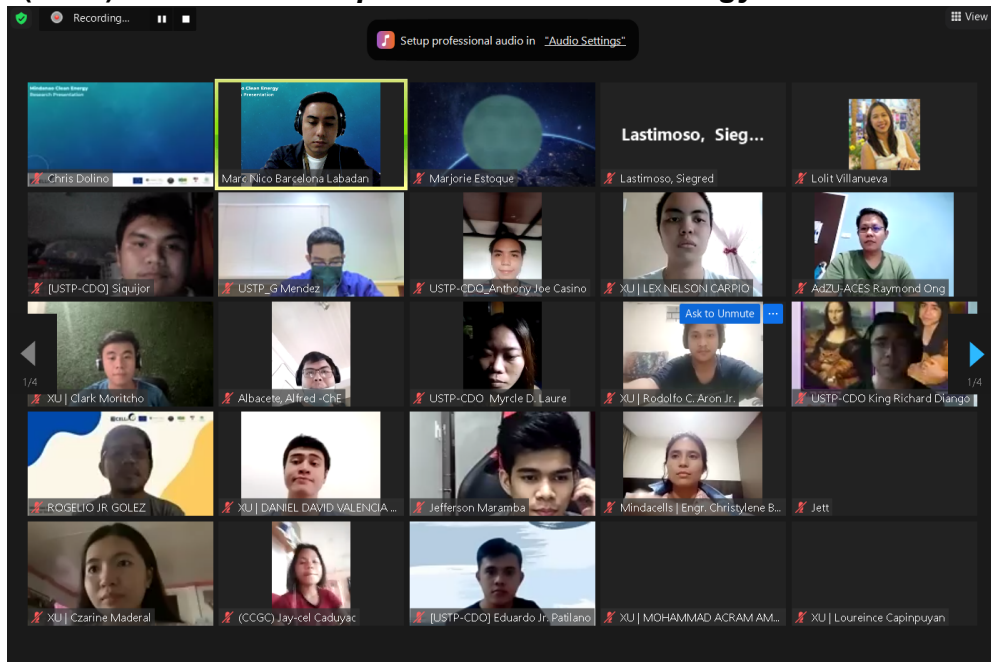
| NAME                     | DESIGNATION               | OFFICE        |
|--------------------------|---------------------------|---------------|
| Dr. Rogelio C. Golez Jr. | Project Leader            | XU MindaCELLs |
| Julemer Ann G. Aying     | Project Manager           | XU MindaCELLs |
| Siegred Lastimoso        | Project Monitor           | XU MindaCELLs |
| Marc Nico B. Labadan     | Admin Assistant           | XU MindaCELLs |
| Cherry Mae Selma         | Finance Officer           | XU MindaCELLs |
| Lolit M. Villanueva      | Component Leader          | XU MindaCELLs |
| Marjorie Anne Estoque    | Junior Research Assistant | XU MindaCELLs |
| Aristeo L. Abecia        | Junior Research Assistant | XU MindaCELLs |
| Engr. Christopher Dolino | Junior Research Assistant | XU MindaCELLs |
| Engr. Rojien Morcilla    | Junior Research Assistant | XU MindaCELLs |

#### For Participants Attendance:

- **96 (33.4%)** from **University of Science and Technology of the Philippines;**
- **80 (27.9%)** from **Xavier University Ateneo de Cagayan**
- **51 (17.8%)** from **Capitol University**



- **42 (14.6%) from Community College Gingoog City**
- **19 (6.6%) from Saint Joseph Institute of Technology**



## OBJECTIVES OF THE ACTIVITY:

- At the end of the activity, student participants are able to
  - Understand the Study on 3 year Solar Energy prediction for Additional On- Grid Electrical Power Source using Artificial Neural Network: Long –Short Term Memory
  - Understand the Study on Wind Energy Forecasting for Future Renewable Energy Source using Artificial Neural Network Radial Basis Function Network.
  - Understand the Overview of Energy Mixt and the Study on Assessment and the Evaluation of the True Electrical Energy Mix of Cagayan de Oro

## 2. OUTPUT OF THE ACTIVITY:

Activity report and Documentation  
List of participants and Evaluation results

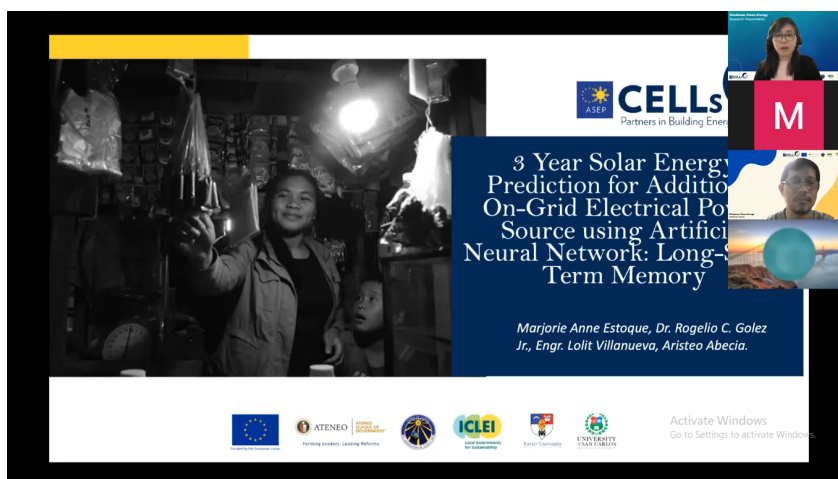


### 3. HIGHLIGHTS OF THE ACTIVITY

Before the start of the activity, there are ASEP-CELLs video loop for the participants to watch and provide information to the participants about ASEP-CELLs in the Philippines and Mindanao.

The Program started with Dr. Rogelio giving the Welcoming remarks

Then proceeded to the 1st Presentation, 3 year Solar Energy prediction for Additional On- Grid Electrical Power Source using Artificial Neural Network: Long –Short Term Memory By Ms. Marjorie Estoque



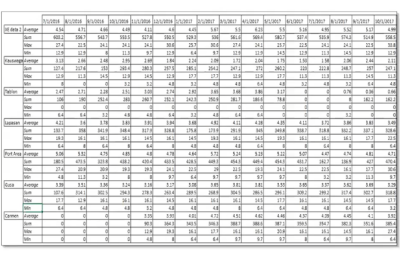
She gave the Introduction and Overview about Solar Power as a provider of clean energy, and how Forecasting Solar Irradiance plays a vital role in the penetration, collection and generation of power in the energy grid.

She then explained the objective of the study; to come up with a stochastic mathematical model that will forecast the monthly average of solar radiation in Cagayan de Oro City, Philippines using Artificial Neural Network (ANN) to have a computation to the future level of solar radiation.

Also determining the performance of the neural network architecture model when using the Long-Term Short Memory Algorithm and to use the data for solar resource assessment on the proposed potential solar power plant in Cagayan de Oro City.

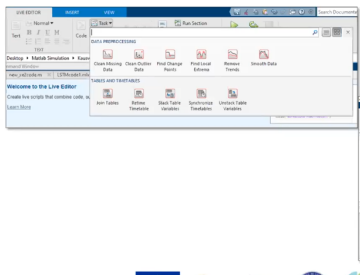
The scope of the study; predicts 3-year solar radiance of 8 weather stations of Cagayan de Oro City (Carmen, Depot, Gusa, Iponan, Kauswagan, Puerto, Tablon and XU)

### Raw Data on Excel Format



Activate Windows  
Go to Settings to activate Windows.

### Cleaning of Raw Data

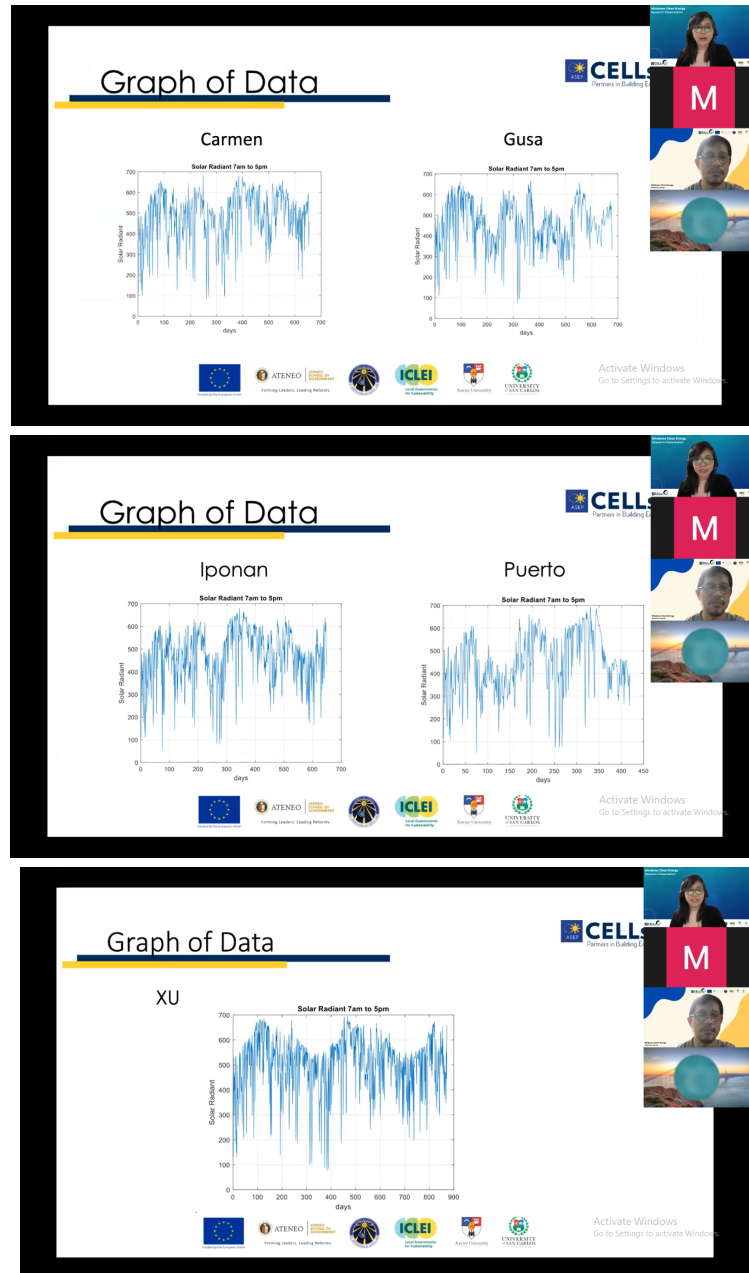


- We used MATLAB software to clean the missing data.

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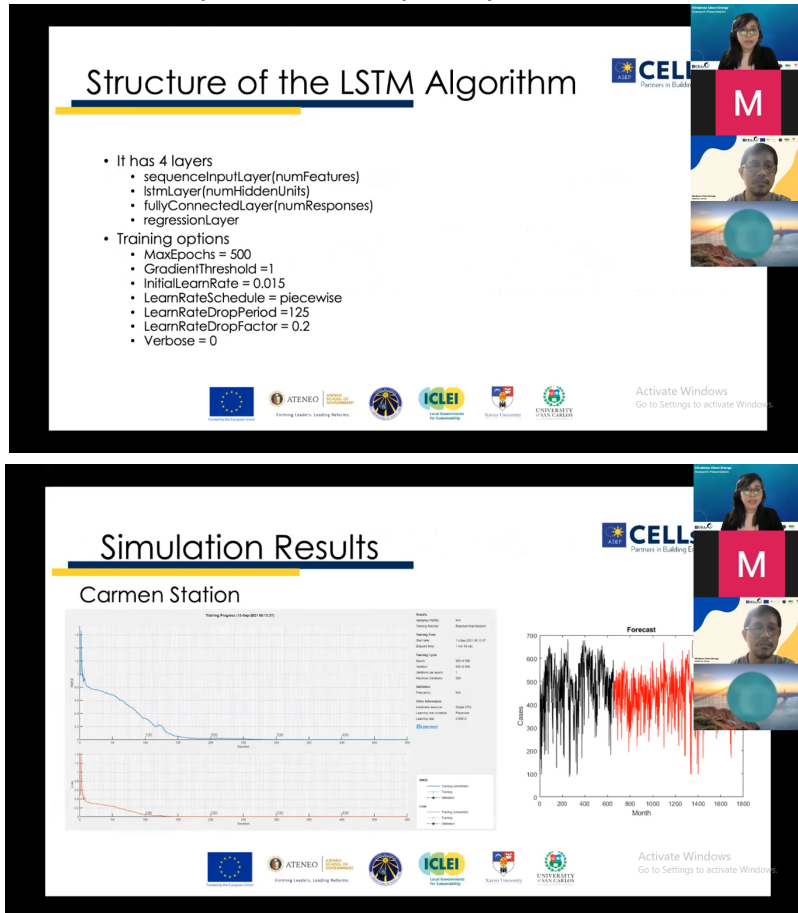
She explained specifically how they gathered and Cleaned the data using MATLAB software.





She presented the graph of the cleaned raw data from the different Weather stations. Most of the weather stations have reach approximately 700 data sets, with XU weather station as the highest data sets of 900

Their methods involved Artificial Neural Network (ANN) to ascertain the amount of the solar energy present in CDO, specifically Long Short term memory (LSTM) algorithm. She then explained to the participants what is LSTM and ANN method.

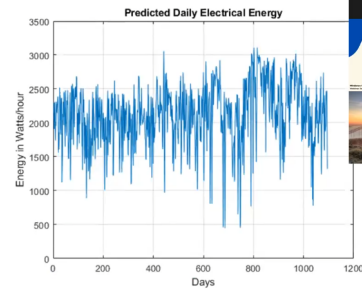
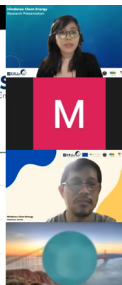


She showed the simulation results using the cleaned data- and it proves that the simulation was accurate and reliable.

In order to predict the average electrical power that each weather stations can deliver, they had to use the Solar Panel Model and used computations. She also showed the formula and Conversion of Solar Energy to Energy Power and showed the graph of the results.

## CARMEN WEATHER STATION

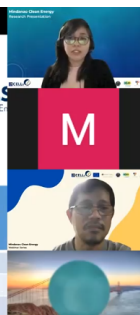
- Average Power per panel
  - 213.2W
- Average Energy per panel for 10-hours daily Solar Radiant energy
  - 2.13kWh

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## SUMMARY OF FORCASTED AVERAGE POWER

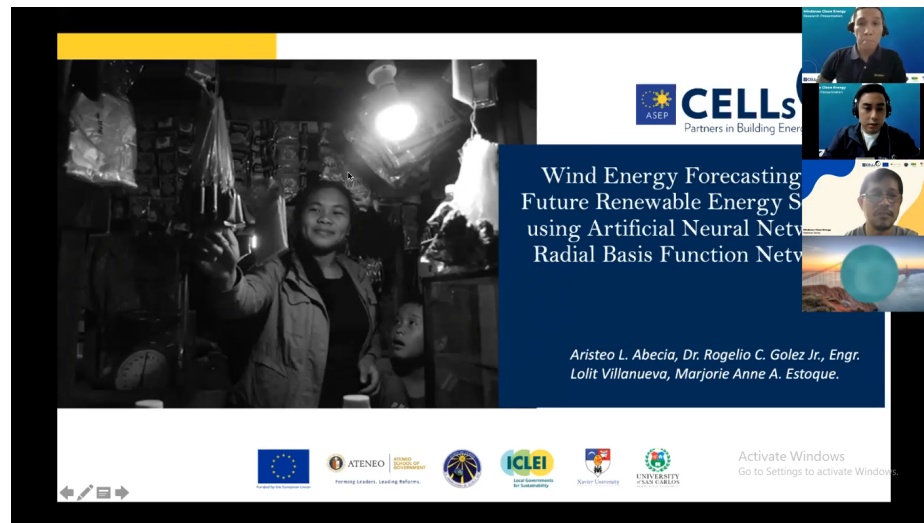
| Weather Station           | Average Power per panel | Average Energy per panel for 10-hour daily Solar Radiant |
|---------------------------|-------------------------|----------------------------------------------------------|
| Carmen Weather Station    | 213.2 W                 | 2.13kWh                                                  |
| Depot Weather Station     | 188.09 W                | 1.88kWh                                                  |
| Gusa Weather Station      | 191.45 W                | 1.91kWh                                                  |
| Iponan Weather Station    | 198.17 W                | 1.98kWh                                                  |
| Kauswagan Weather Station | 208.54W                 | 2.085kWh                                                 |
| Puerto Weather Station    | 204.75 W                | 2.05kWh                                                  |
| Tablon Weather Station    | 205.43 W                | 2.05kWh                                                  |
| XU Weather Station        | 213.21 W                | 2.13kWh                                                  |



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Summary of conclusion; in this study it was identified potential areas to put up solar farms basing from results; The highest average power are from XU, Carmen and Kauswagan weather station which have the potential to generate optimal electrical Solar Energy.

2nd presentation by Aristeo L. Abecia. on “Wind Energy Forecasting for Future Renewable Energy Source using Artificial Neural Network Radial Basis Function Network.)”



He gave the Introduction and Overview about Wind energy becoming the world's fastest growing renewable energy source, and Wind Energy Conversion to generate power for isolated regions.

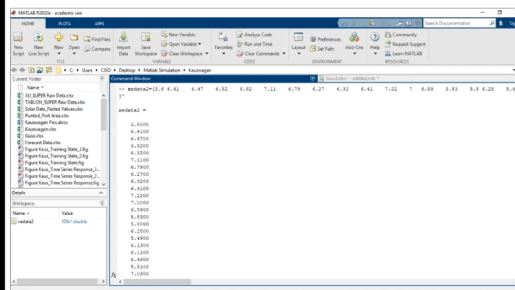
He then explained the objective of the study; to come up with a Neural Network Architecture model that will forecast the wind speed and wind power in Cagayan de Oro City Philippines, to provide viable information to the city government to help innovate in using wind speed as one of the potential source of energy in the city.

- To determine the performance of the NNA model when using radial basis function neural network
- Test and validate the efficiency
- To use data for wind resource assessment

Scope of the study; to predict 3-year weekly wind data from existing wind speed data from eight weather stations from Cagayan de Oro City. (Carmen, Depot, Gusa, Iponan, Kauswagan, Puerto, Tablon and XU)

He explained specifically how they gathered and Cleaned the data using MATLAB software.

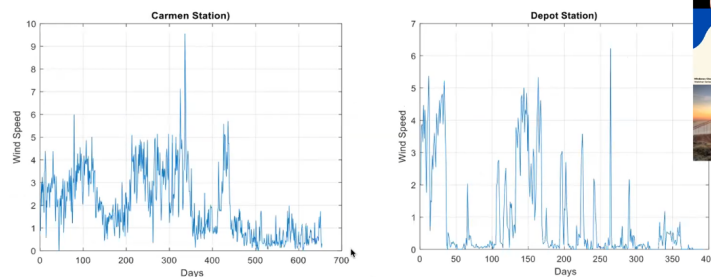
## Cleaning the Raw data



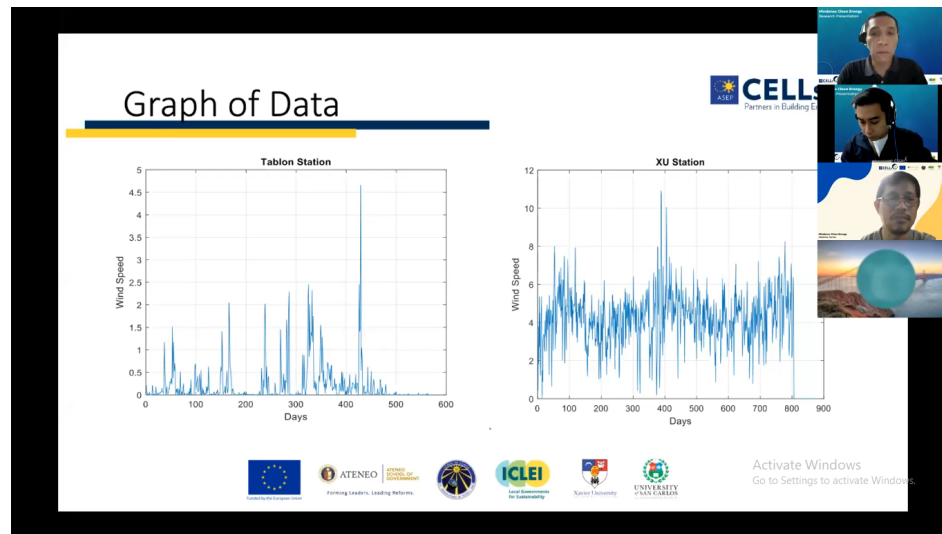
The figure shows that the data from XU data is being processed in the Matlab. However, there are missing data from the generated raw data because of the deficiency of weather instrument and inevitable mitigating factors such as but not limited to electricity brownouts, weather conditions especially during tropical storms, etc.

He presented the graph of the cleaned raw data from the different Weather stations. Some of the weather stations have reach approximately 700 data sets but most ranged from 400-600 data sets, with XU weather station as the highest data sets of 800

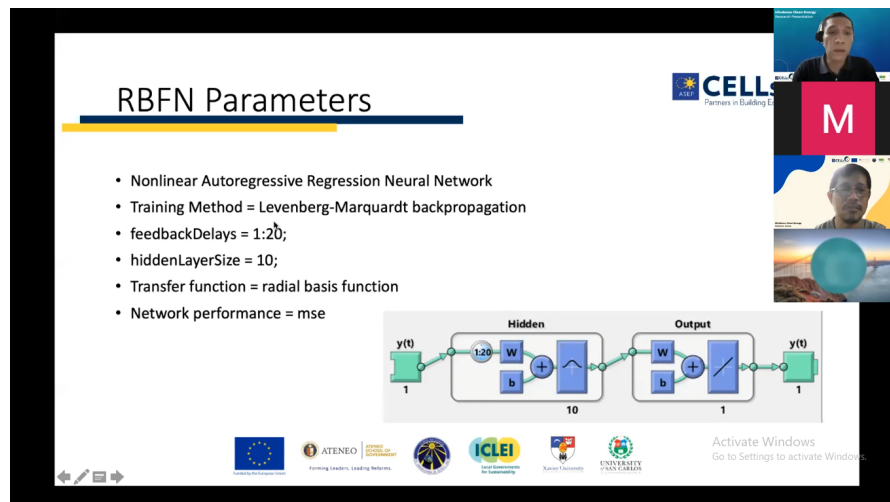
## Graph of Data

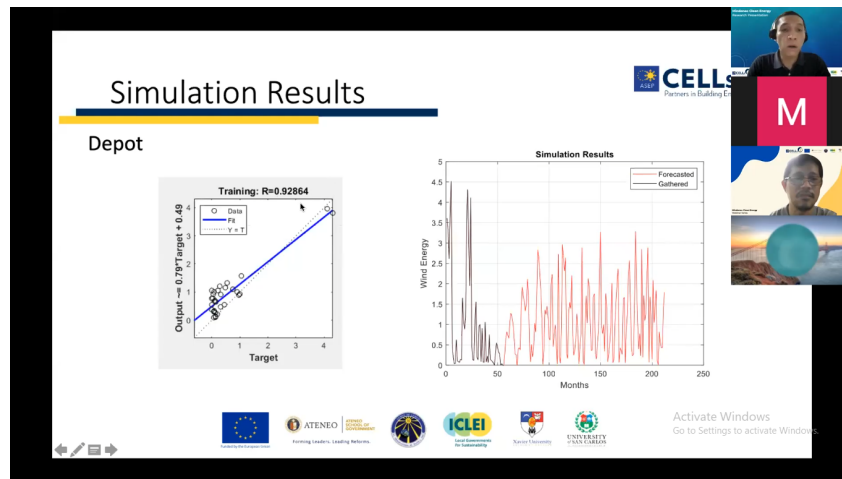




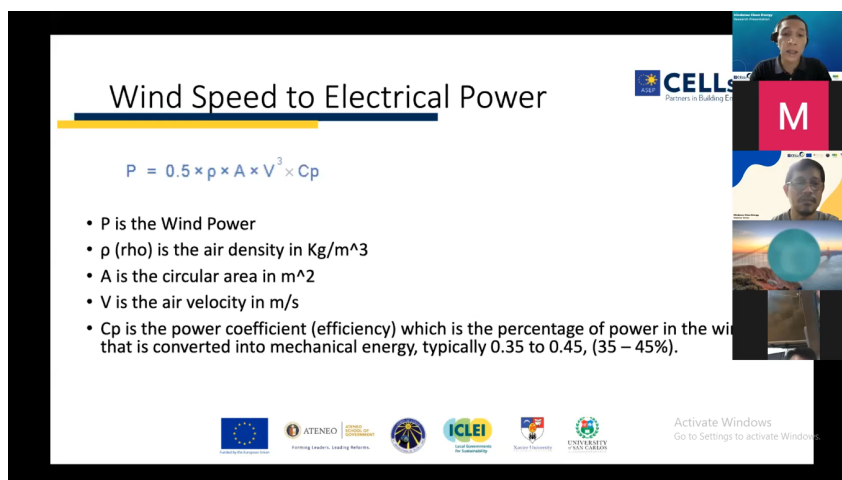


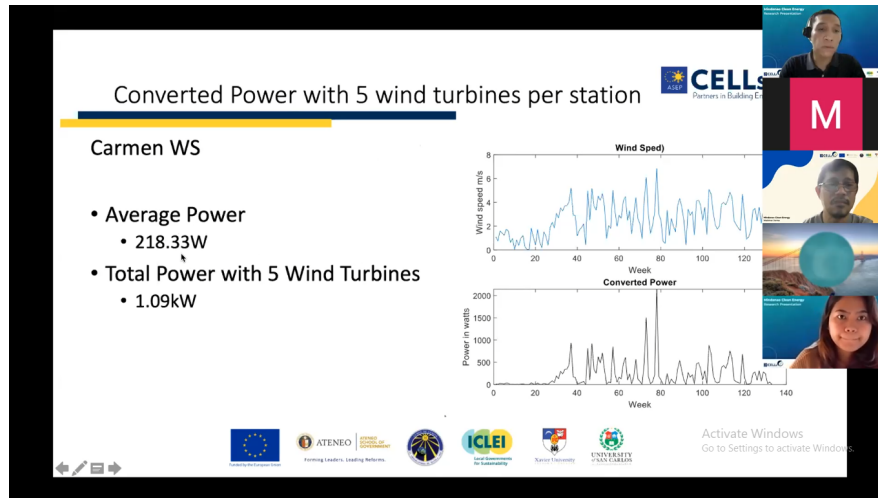
The Method they used is Artificial Neural Network (ANN) to forecast the wind velocity of 8 weather stations; ANN is a mathematical model with a massive parallel distributed processor composed of simple processing units. Radial Basis Function Network (RBFN) an ANN that utilizes radial basis functions being an activation utility. It contains an output as a linear combination of radial basis functions of the inputs and neuron parameters. He then further explained how the method and functions are utilized in the study.



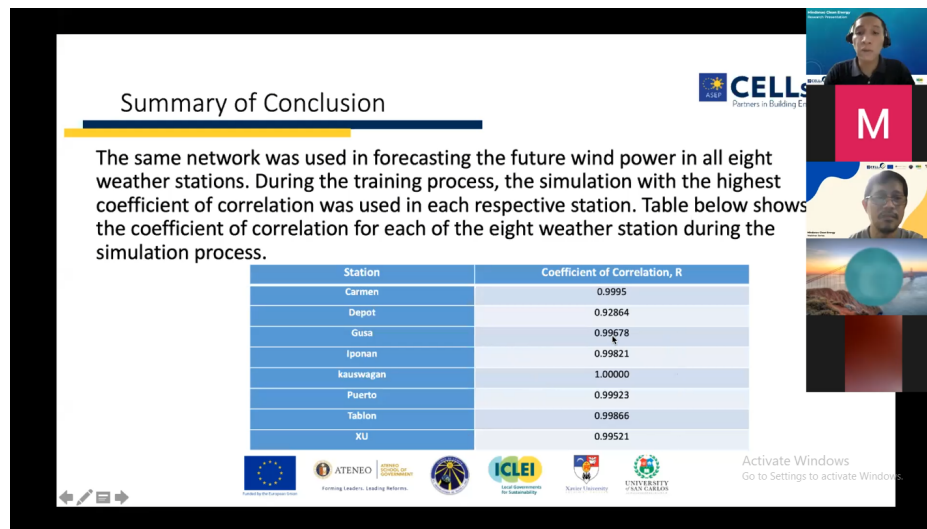


He showed the simulation results; the graph showed that they have accurate forecasted data especially on the graph of Kauswagan.





He also discussed about the conversion formula for Wind Speed to Electrical Power; then used the formula for the weather stations.



Summary of conclusion; in this study it shows that Kauswagan has the almost perfect correlation then based on the weekly forecasted wind data, the predicted electrical power that can be collected on each station was conducted using a sample specification of the wind turbine that may be used by each of the eight weather stations.

- Then it is shown that in the study that using a Radial Basis Function Neural Network can be used to predict the future wind power on

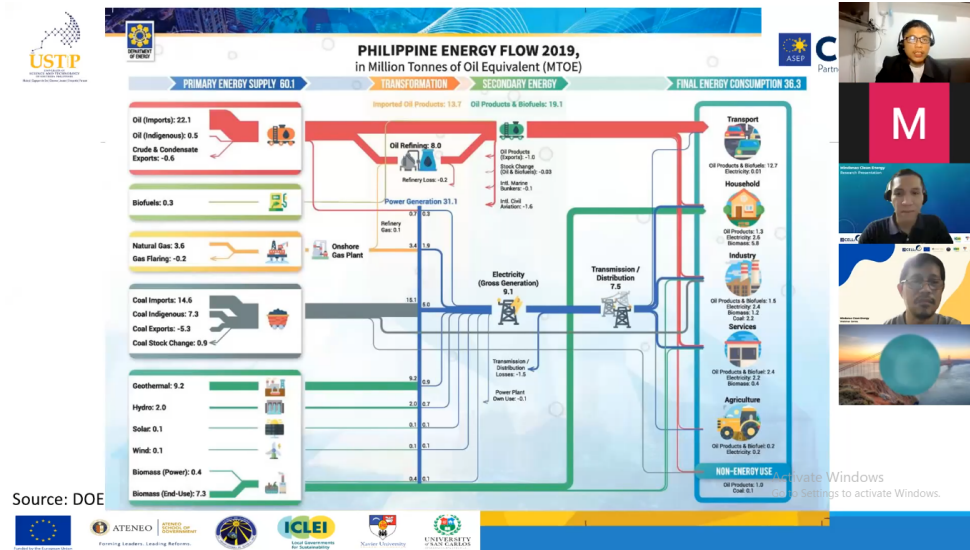
several locations within Cagayan de Oro City. These forecasted wind energy can be converted into electrical energy and can be used as a basis in planning the feasibility of installing wind turbines in some weather stations in the city.

Then provided some examples of solar and wind farms available in the Philippines.

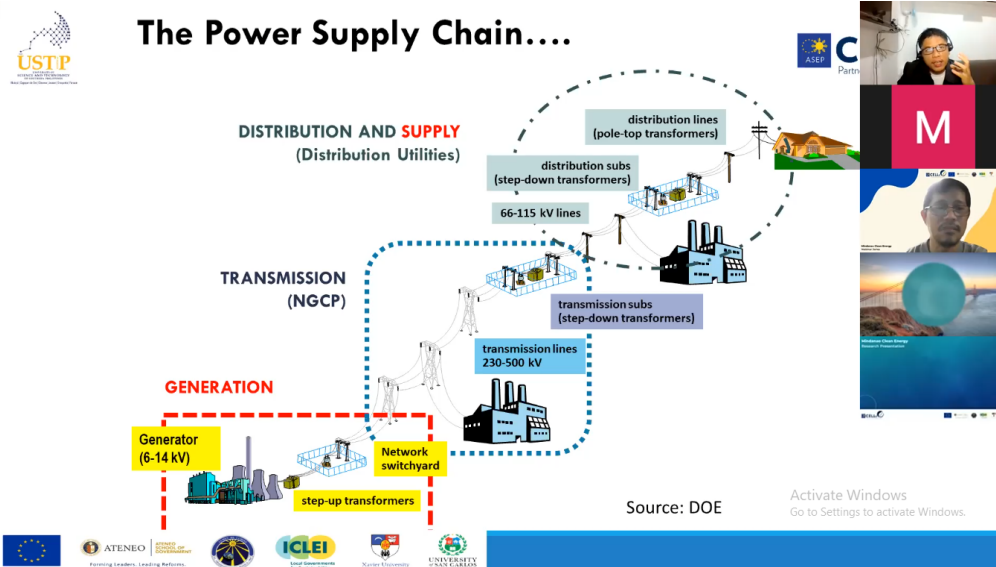


3<sup>rd</sup> presentation presented by Engr. Rojien Morcilla, He did an Overview of Energy Mix then proceeded to the study on the Assessment and the Evaluation of the True Electrical Energy Mix of Cagayan de Oro

He discussed about Energy Mix and its variables, like the availability of usable resources domestically or the possibility of importing , the extent and type of energy needs to be met; Policy choices determined by historical, economic, social, demographic, environmental and geopolitical factors.

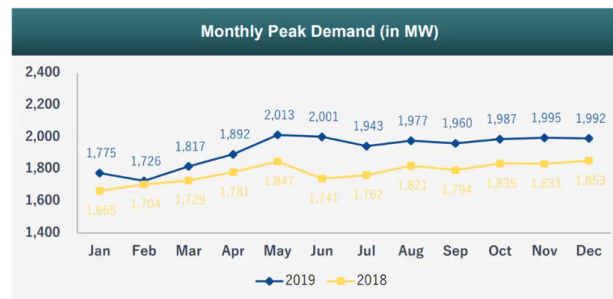


He discussed about the Philippine Energy Flow 2019, how Each Different Energy Source are transformed by power plants into secondary energy to supply Energy Demand. He discussed about the Electrical energy mix and showed the pie chart sample of data of Power Generation Mix from 2015 (source from DOE); presented data on the Power supply chain, Power and Energy demand.





## Power and Energy Demand



Source: NGCP

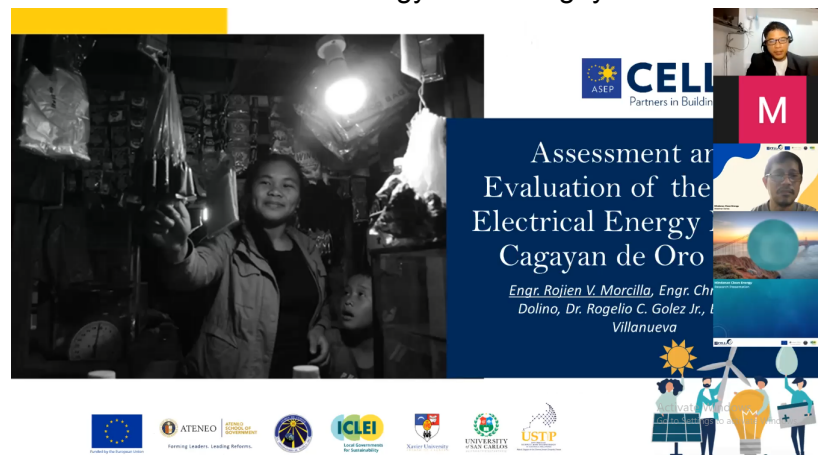
Figure 11. 2018 vs. 2019 Peak Demand, Mindanao

Source: DOE

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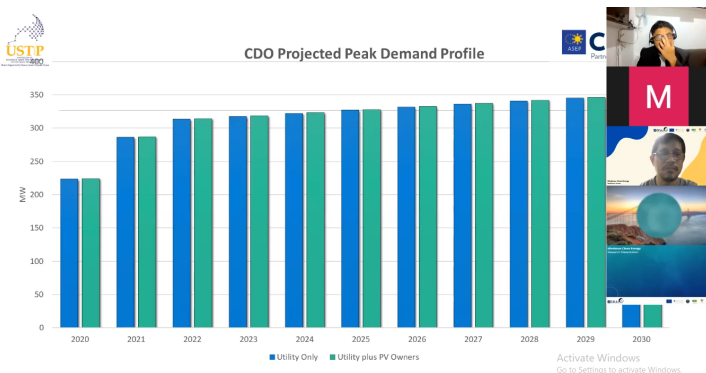
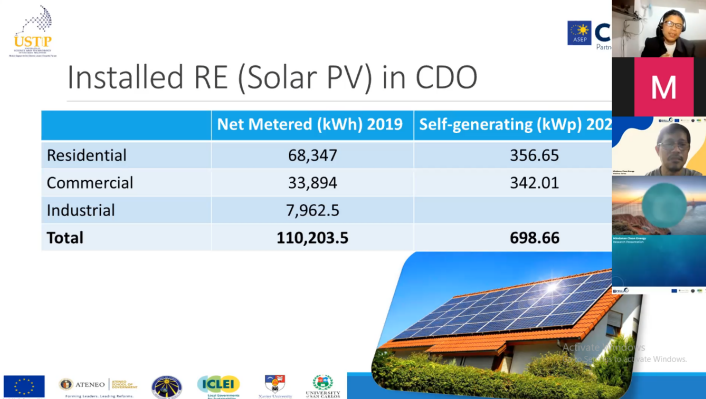
He then transitioned the presentation to the study on Assessment and the Evaluation of the True Electrical Energy Mix of Cagayan de Oro .



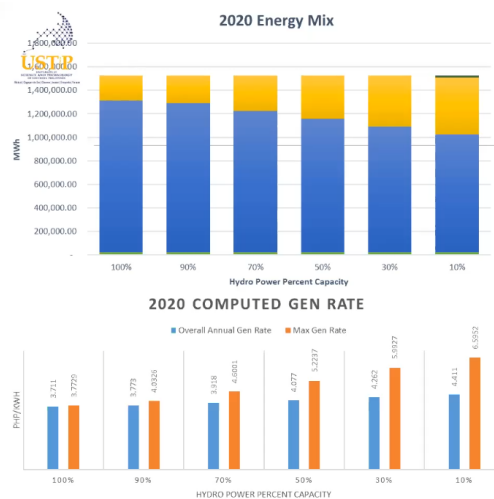
The objective of this study is to determine the demand and supply Cagayan de Oro City power consumers who has an Renewable energy facilities in their establishment;

- then calculate the electrical energy demand of Cagayan de Oro with electrical energy demand of the customer owned Renewable Energy Facilities;
- then evaluate the status quo electrical energy mix and the true electrical energy mix when the renewable energy facility is operating.

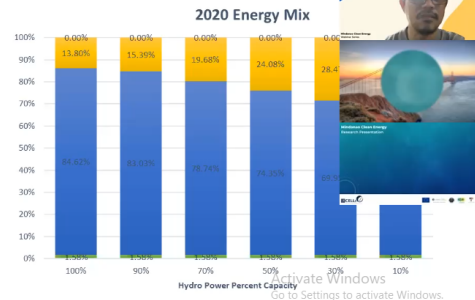
he presented the 4-year gathered data on the Installed RE (solar PV) in CDO and using that historical data they forecasted the additional demand projections then generated a 10-year demand profile.



then they identified what would be the mix status quo; they have observed that using the PSAs and the other sources of data gathered- that Cagayan de Oro is reliant on Hydro energy; they have also analyzed and forecasted the Hydro Computed Gen rate.



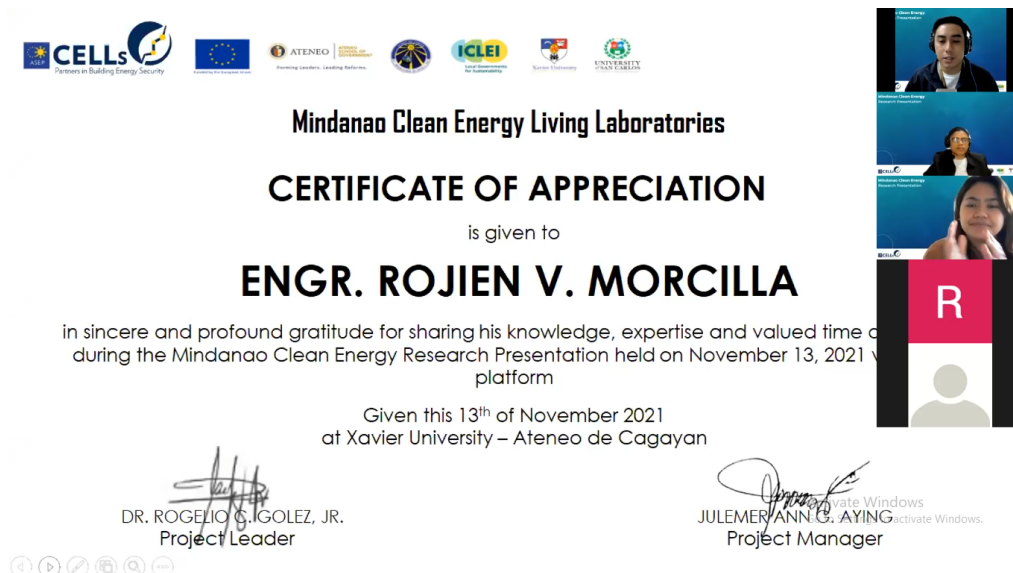
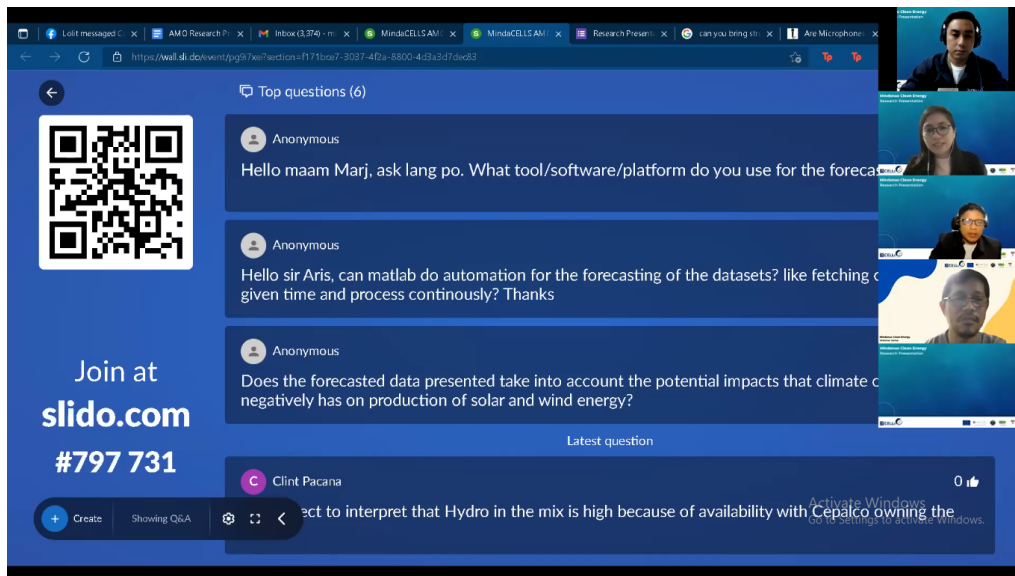
## Status Quo



He discussed about their initial findings and Conclusion;

- o Cagayan de Oro City Customer Owned Renewable Energy (Solar PV) installations maybe growing however its capacity is still on small that it may not affect the overall energy mix
- o Analysis shows a very small effect on the computed generation rate with the existing trend of Renewable Energy (Solar PV) installations in the City
- o Current energy mix of the City is dominated by Hydro Energy however due to the seasonal characteristic of Hydro Power, energy mix may be dominated by coal and diesel power during dry months thus increasing the generation rates on this period.
- o With the projections of demand and supply, it was observed that coal power may dominate the energy mix in the next 10 years, thus generation rates may double in this periods
- o New Power Sources are needed during peak periods and in the next 10 years for Cagayan de Oro City. This is an opportunity for Renewable Energy Sources which may also affect the generation rate for the City.

After his presentation we proceeded to the Open Forum, the participants were able to give interesting and engaging questions; most of them were technical questions regarding the platform/software and the generated data from the study. Chancellor from USTP also engaged in the open form and the panel was able to answer these questions and have accomplished the participant's understanding of the studies.



After the Awarding of speakers- the Closing remarks was given by Dr. Rogelio Golez Jr.

Figure 2 shows the total number of students participated per institutions.

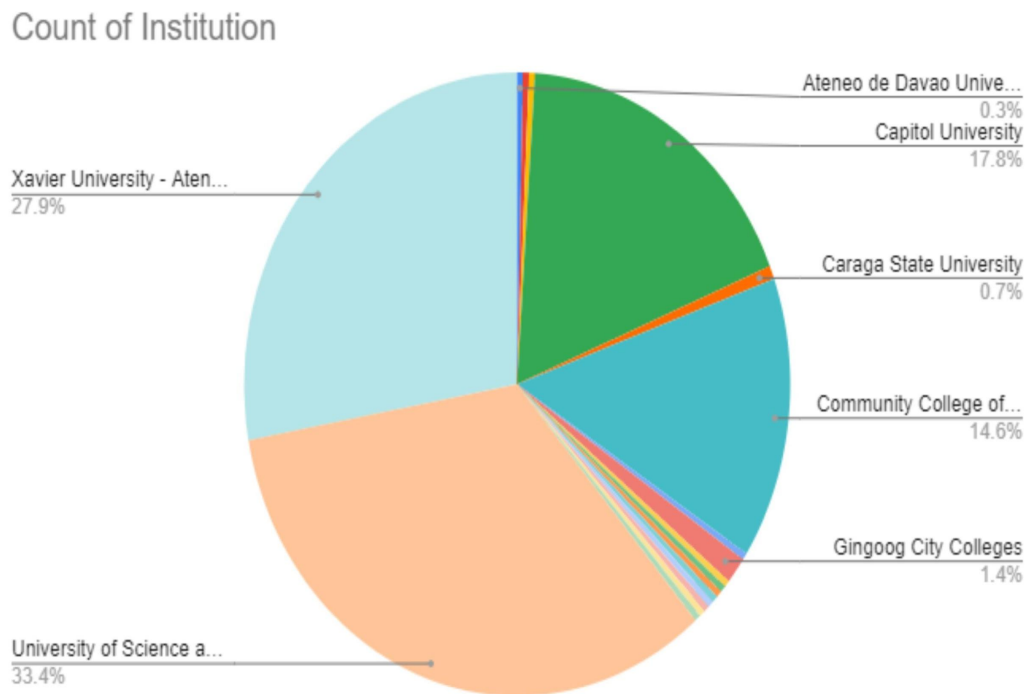


Figure 2 Bar charts of number of students per institutions participated  
According to the Chart from the Research Presentation, Among the total number of participants (288):

- **96 (33.4%)** from **University of Science and Technology of the Philippines;**
- **80 (27.9%)** from **Xavier University Ateneo de Cagayan**
- **51 (17.8%)** from **Capitol University**
- **42 (14.6%)** from **Community College Gingoog City**
- **19 (6.6%)** are representatives from institutions ( **Saint Joseph Institute of Technology, Ateneo de Davao, Ateneo de Zamboanga, Bukidnon State University, Mindanao Daily, Liceo de Cagaya University, Phinma College, Mindanao State University**)



Count of Affiliation

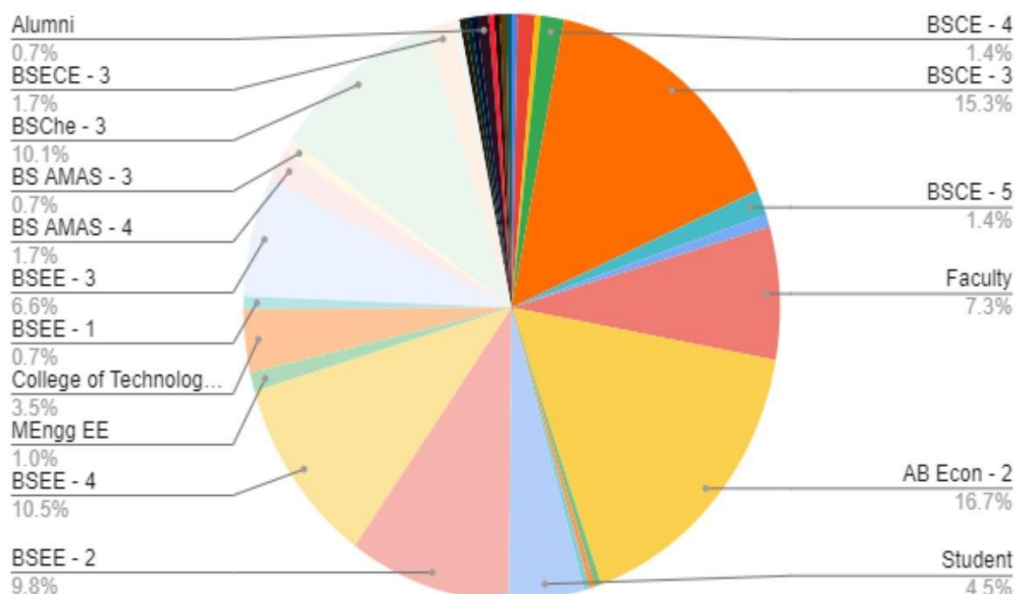


Figure 3 Pie Chart of students per courses and level

Below is the percentage of student participants per course or affiliation:

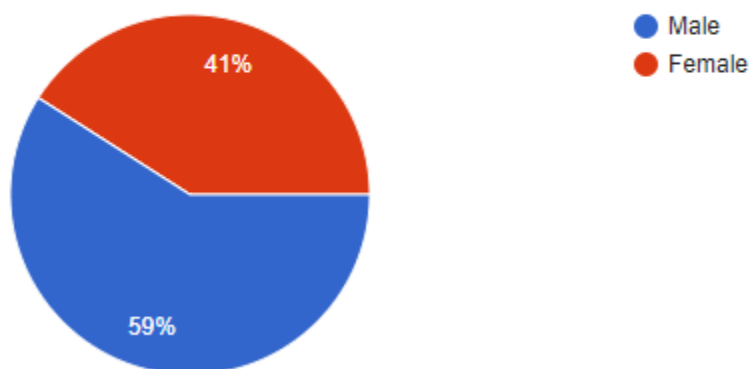
- **79(27.6%) are 1st-4th year Bachelor of Science in Electrical Engineering Students;**
- **52(18.1%) are 1st-5th year Bachelor of Science in Civil Engineering Students;**
- **29(10.1%) are 3<sup>rd</sup> year Bachelor of Science in Chemical Engineering Students;**
- **48(16.7%) are 2<sup>nd</sup> year Bachelor of Arts in Economics**
- **8(2.4%) are 3<sup>rd</sup> and 4<sup>th</sup> year Bachelor of Science in Applied Mathematics**
- **21(7.3%) are Faculty**
- **10(3.5%) are Students from the College of Technology**
- **12(4.5%) are Students who have not specified their Course**
- **29(9.8%) are Students from ( Senior High School, Junior High School, Law Students, Nursing, and staff from various institutions)**



There are 59% male and 41% female participants.

## Gender

288 responses



## 4. ISSUES/CHALLENGERS/RECOMMENDATIONS:

| Issues/ challenges                                                                                                                          | Recommendations/ agreements                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>There are more students unable to enter the zoom due to unexpected number of student entry.</li></ul> | <ul style="list-style-type: none"><li>zoom account adjustment</li></ul> |

## 5. NEXT STEPS:

- Preparation of FGD
- Activity report and documentation of the event

Prepared by:

Endorsed by:

21



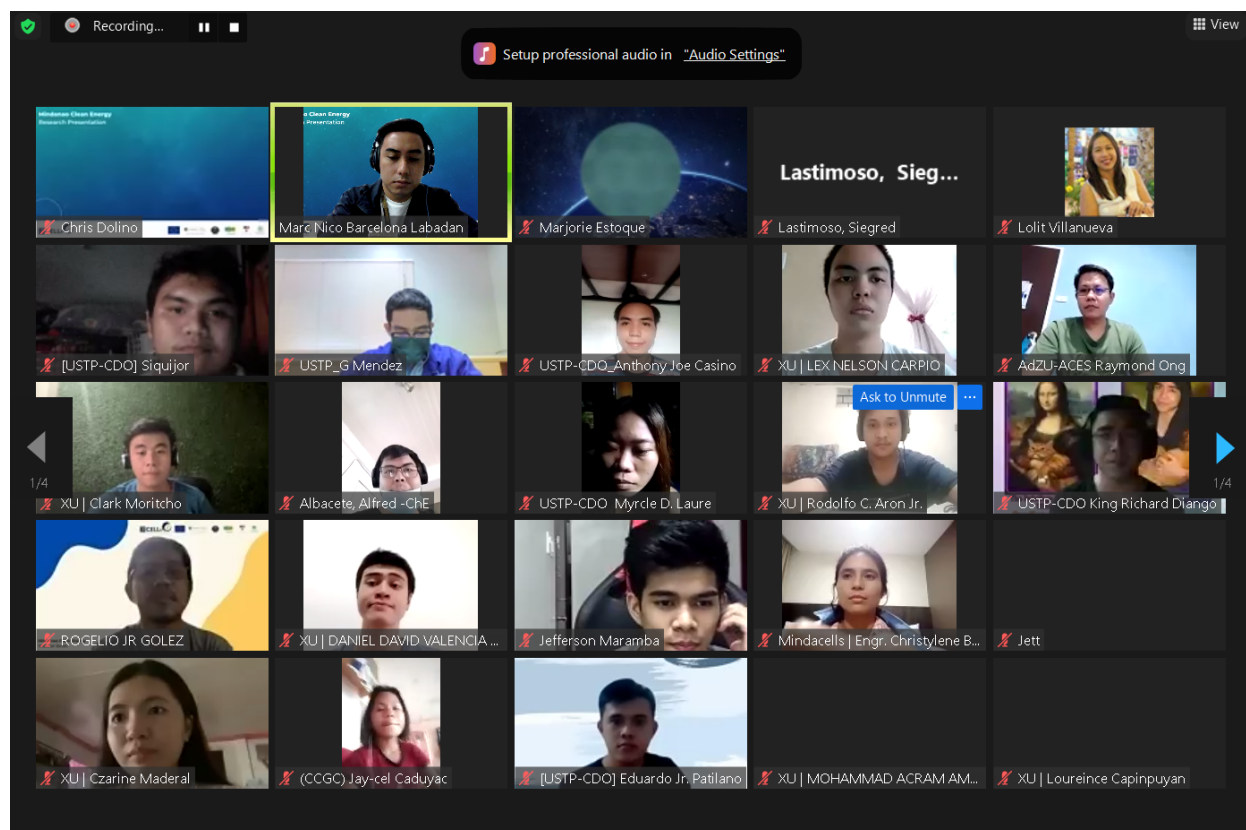
  
**Marc Niso B. Labadan**  
Admin Assistant

  
**Julemer G. Aying**  
Project Manager

  
**Dr. Rogelio C. Golez Jr.**  
Project Leader

## APPENDICES

### APPENDIX A. Online zoom picture with the participants.





Zoom Meeting

Recording... [Pause] [Stop]

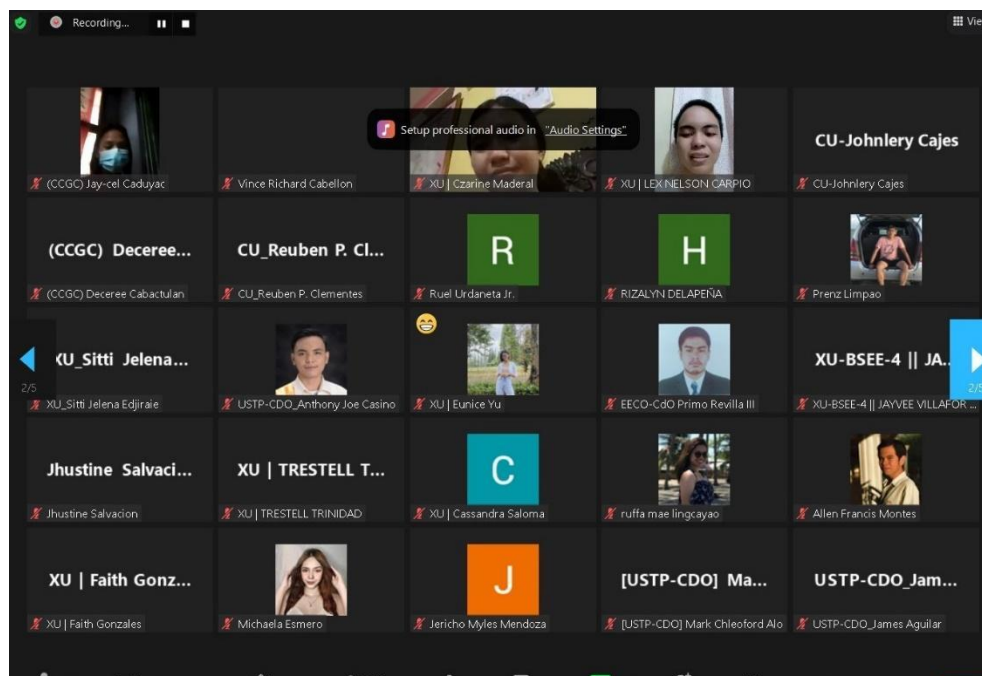
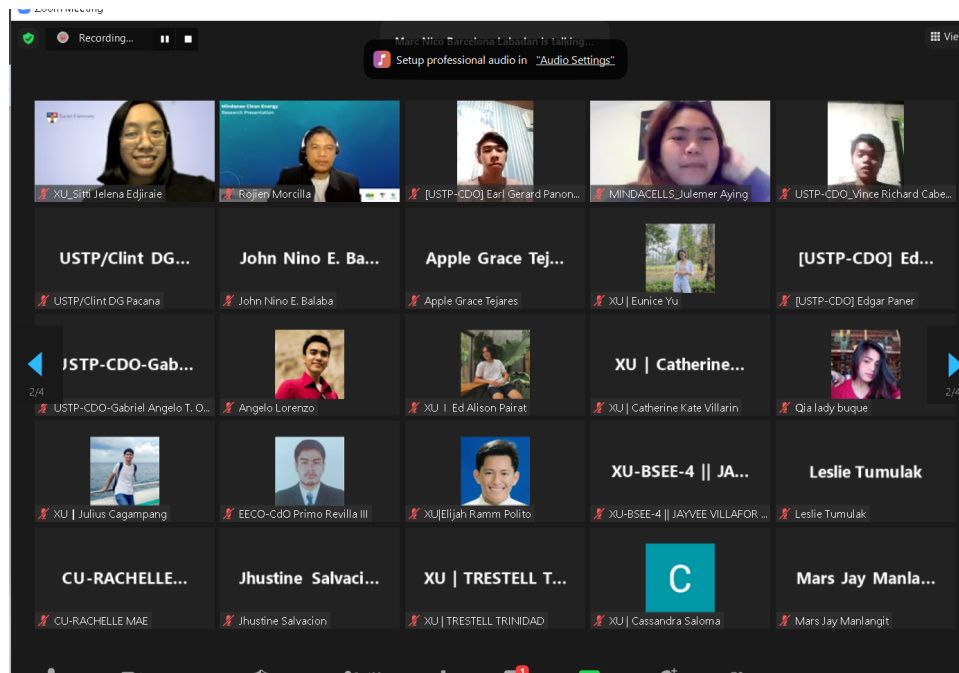
Marc Nico Barcelona Labadan is talking...

Setup professional audio in "Audio Settings"

|                                                                                                                |                                                          |                                                                                                           |                                                                                                                 |                                                                                                               |
|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <br>ruffa mae lingcayao       | <b>Gwyneth Dorot...</b><br>Gwyneth Dorothy Imam          | <br>Allen Francis Montes | <b>XU   Faith Gonz...</b><br>XU   Faith Gonzales                                                                | <br>Michaela Esmero        |
| <br>Jericho Myles Mendoza     | <b>[USTP-CDO] Ma...</b><br>[USTP-CDO] Mark Chleoford Alo | <b>USTP-CDO_Jam...</b><br>USTP-CDO_James Aguilar                                                          | <br>XU   Pearl Angel Piloton | <br>XU   Avegail S. Loreda |
| <br>Michael Edward Gumatas    | <b>marvin L. minoza</b><br>marvin L. minoza              | <b>Rhendil O'Neil...</b><br>Rhendil O'Neil Villegas                                                       | <br>Chris Aliwanag           | <b>Caryl Apa</b><br>Caryl Apa                                                                                 |
| <b>XU   Cherilyn Ca...</b><br>XU   Cherilyn Caseros                                                            | <b>Don Kim Lapeña</b><br>Don Kim Lapeña                  | <b>XU   Joara Dala...</b><br>XU   Joara Dalagan                                                           | <b>XU   Jed Aquino</b><br>XU   Jed Aquino                                                                       | <br>XU   Aira             |
| <br>XU   Chester Paul Rajal | <b>XU   Ivan Iligan</b><br>XU   Ivan Iligan              | <b>CU_JHAY CLIFO...</b><br>CU_JHAY CLIFORD I. ROSAL                                                       | <b>CU_Emata, Jun...</b><br>CU_Emata, Jun Clark S.                                                               | <br>XU   Ace Cabili      |

3/4 [Previous] [Next] 3/4

Microphone [Up] [Down] Video [Up] [Down] [Share] 100 [Up] [Down] [Bar Chart] [Chat] 1 [Screen Share] [Up] [Down] [Smiley Face] [More] [End]







## APPENDIX B. List of participant's name, course and institutions.

| Name                        | Designation | Organization              |
|-----------------------------|-------------|---------------------------|
| Masing, Marvin N.           | BSCE - 4    | Capitol University        |
| Hinampas, Leobert T.        | BSCE - 3    | Capitol University        |
| Tangapa, Kaycee H.          | BSCE - 4    | <b>Capitol University</b> |
| Maramba, Jefferson V.       | BSCE - 4    | <b>Capitol University</b> |
| Lingcayao, Ruffa Mae B.     | BSCE - 3    | <b>Capitol University</b> |
| Mejorada, Francis Kaye C.   | BSCE - 3    | <b>Capitol University</b> |
| Rosal, Jhay Clifford, I.    | BSCE - 3    | <b>Capitol University</b> |
| Fullo, Glorylourd Joana C.  | BSCE - 3    | <b>Capitol University</b> |
| Hagonao, Clyde G.           | BSCE - 3    | <b>Capitol University</b> |
| Emata, Jun Clark S.         | BSCE - 5    | Capitol University        |
| Pol, Heather Reen G.        | BSCE - 3    | Capitol University        |
| Sarsalejo, Marsthinie O.    | BSCE - 3    | Capitol University        |
| Paragoso, Rachelle Mae, B.  | BSCE - 3    | Capitol University        |
| Collados, Gerald G.         | BSCE - 3    | Capitol University        |
| Montes, Allen Francis A.    | BSCE - 3    | Capitol University        |
| De La Vega, Rhea Vanessa B. | BSCE - 3    | Capitol University        |
| Abao, Jessa E.              | BSCE - 5    | Capitol University        |
| Santos, Jessa Ruth, B.      | BSCE - 3    | Capitol University        |
| Villareal, Joel E.          | BSCE - 3    | Capitol University        |
| Tejares, Apple Grace        | BSCE - 3    | Capitol University        |



|                                 |          |                    |
|---------------------------------|----------|--------------------|
| Aliwanag, Chris, A.             | BSCE - 3 | Capitol University |
| Narciso, Shandee M.             | BSCE - 3 | Capitol University |
| Edol, Justin R.                 | BSCE - 3 | Capitol University |
| Lumindas, Jie B.                | BSCE - 3 | Capitol University |
| Pinote, Carla T.                | BSCE - 3 | Capitol University |
| Navajo, Cristy Jane N.          | BSCE - 3 | Capitol University |
| Sabulbero, Chelsea Neves Peliño | BSCE - 5 | Capitol University |
| Paje, John Kenneth G.           | BSCE - 3 | Capitol University |
| Villaruz, Raye Kris J.          | BSCE - 3 | Capitol University |
| Ganzan Ian Benedict E           | BSCE - 3 | Capitol University |
| Tajale, Jay Dem L.              | BSCE - 3 | Capitol University |
| Floresca, Czny Fer              | BSCE - 3 | Capitol University |
| Meñoza, Mc Niel John A.         | BSCE - 3 | Capitol University |
| Amores, Paul Harry B.           | BSCE - 3 | Capitol University |
| Muit, Daniel Dave Llamis        | BSCE - 3 | Capitol University |
| Dagatan, Rudy Z.                | BSCE - 3 | Capitol University |
| Sarip, Rainida B.               | BSCE - 3 | Capitol University |
| Cena, Diana Rose B.             | BSCE - 3 | Capitol University |
| Adante, Dimple M.               | BSCE - 3 | Capitol University |
| Longcob, Joymee D.              | BSCE - 5 | Capitol University |
| Almacen, Andrio Gabriel, L      | BSCE - 3 | Capitol University |
| Clementes, Reuben P.            | BSCE - 3 | Capitol University |
| Cajes, Johnlery T.              | BSCE - 3 | Capitol University |



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|-------------------------------|-------------|-----------------------------------|
| Mujeres, Shenna Mae, Camerino | BSCE - 3    | Capitol University                |
| Dosdos, Mary Jane D.          | BSCE - 3    | Capitol University                |
| Tangapa, John Adel H.         | BSCE - 3    | Capitol University                |
| Panhay, Ian Earl L.           | BSCE - 3    | Capitol University                |
| Agbalog, Arbien John, B.      | BSCE - 3    | Capitol University                |
| Muyco, Tiffany Jel M.         | BSCE - 3    | Capitol University                |
| Lerasan, Rafael John G.       | BSCE - 3    | Capitol University                |
| Comendador, Ray Niño          | SHS - 4     | Capitol University                |
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| Bual, Cristal Joy L.          | AB Econ - 2 | Community College of Gingoog City |
| Buque, Qia lady Mae B.        | AB Econ - 2 | Community College of Gingoog City |
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| Buque, Qia lady Mae B.        | AB Econ - 2 | Community College of Gingoog City |
| Marquez, Nova Belia S.        | AB Econ - 2 | Community College of Gingoog City |
| Buque Qia Lady Mae B.         | AB Econ - 2 | Community College of Gingoog City |
| Mandin, mark Anthony D.       | AB Econ - 2 | Community College of Gingoog City |
| Bual, Cristal Joy L.          | AB Econ - 2 | Community College of Gingoog City |
| Bruce, Mary Joy A.            | AB Econ - 2 | Community College of Gingoog City |
| Vertudez, Rommel Jr. C.       | AB Econ - 2 | Community College of Gingoog City |
| Ladao, Claudine B.            | AB Econ - 2 | Community College of Gingoog City |
| Iñiego, Jane Sayre            | AB Econ - 2 | Community College of Gingoog City |
| Burdago, Rowe Carollo         | AB Econ - 2 | Community College of Gingoog City |
| Cabactulan Deceree Subrabas   | AB Econ - 2 | Community College of Gingoog City |



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| Cabillon, Rina Mae B.       | AB Econ - 2      | Community College of Gingoog City                               |
| Galvizo Jr. Arnold H.       | AB Econ - 2      | Community College of Gingoog City                               |
| Lilay, Ritchel              | AB Econ - 2      | Community College of Gingoog City                               |
| Dela Silva, Virly A.        | AB Econ - 2      | Community College of Gingoog City                               |
| Bandibas, Pinky S.          | AB Econ - 2      | Community College of Gingoog City                               |
| Caduyac, Jay-cel, Macaldo   | AB Econ - 2      | Community College of Gingoog City                               |
| Cabactulan Deceree Subrabas | AB Econ - 2      | Community College of Gingoog City                               |
| Sanchez Ivy Dawn            | AB Econ - 2      | Community College of Gingoog City                               |
| Palarca, Jiselle P.         | AB Econ - 2      | Community College of Gingoog City                               |
| Caingles, Meola A.          | AB Econ - 2      | Community College of Gingoog City                               |
| Salugsugan Honey Decoy      | AB Econ - 2      | Community College of Gingoog City                               |
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| Abad, John Ralph T.         | AB Econ - 2      | Community College of Gingoog City                               |
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| Ursabia, Benn Melchizedek B   | BSEE - 3                  | University of Science and Technology of Southern Philippines |
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| Alo, Mark Chleoford N.      | BSEE - 4 | University of Science and Technology of Southern Philippines |
| Taghap, Edsel Jay O.        | BSEE - 4 | University of Science and Technology of Southern Philippines |
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| Gabut, Israel L             | BSEE - 4 | University of Science and Technology of Southern Philippines |
| Patilano, Eduardo Jr., O.   | BSEE - 4 | University of Science and Technology of Southern Philippines |
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| Limpao, Prenz R.            | BSEE - 2    | University of Science and Technology of Southern Philippines |
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| Ugsid, Darwin Vincent C.    | BSEE - 3    | University of Science and Technology of Southern Philippines |
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| Nazareno, Kim Jesuit J.     | BSEE - 4    | University of Science and Technology of Southern Philippines |
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| Harun, Raiyan Manzur Bin D. | BSEE - 4    | University of Science and Technology of Southern Philippines |
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| CAJILLA, JEMARIE CRIS T       | Faculty     | Xavier University - Ateneo de Cagayan                        |
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| Tagupa, Hannah Erica G.       | Student     | Xavier University - Ateneo de Cagayan                        |
| BISUÑA, FRANCIA, A            | Student     | Xavier University - Ateneo de Cagayan                        |
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| Sipin, Jeremy James, M.       | Student     | Xavier University - Ateneo de Cagayan                        |
| Pelayo, Kyrie G.              | Student     | Xavier University - Ateneo de Cagayan                        |
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| Pailagao, Francine Norvic, Y. | BSChe - 2   | Xavier University - Ateneo de Cagayan                        |
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| Cutaran, Charles Javen, S.       | BSEE - 2  | Xavier University - Ateneo de Cagayan |
| Edjiraie, Sitti Jelena, T.       | Nursing 1 | Xavier University - Ateneo de Cagayan |
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| DIZON, ROLEBERT B.               | Faculty   | Xavier University - Ateneo de Cagayan |
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| Enerio                           | BSChe - 3 | Xavier University - Ateneo de Cagayan |
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| BANTUAS, DAN KHALIL T.           | BSECE - 3 | Xavier University - Ateneo de Cagayan |
| Laguindab, Amal Haya G.          | JHS - 3   | Xavier University - Ateneo de Cagayan |
| Angelo Lorenzo                   | Student   | Xavier University - Ateneo de Cagayan |
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| Deligero, Hannie Aingeal Gianine | BSECE - 3 | Xavier University - Ateneo de Cagayan |



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| Nambatac, Arjay, E                   | BSChe - 3   | Xavier University - Ateneo de Cagayan |
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| Sevillena, Wyatt Jarvis, T.          | BSECE - 3   | Xavier University - Ateneo de Cagayan |
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