

# UB NEWS LETTER



## October - December 2021

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# The End of 2021 with New Status

In this edition, there is special news about the changing status of Universitas Brawijaya (UB) from a Public Service Agency (BLU) to a State University Legal Entity (PTNBH). The new status is based on Indonesia Government Regulation Number 108 Year 2021 dated October 18, 2021 concerning State Universities as Legal Entities of Universitas Brawijaya, which mandates UB to manage academic and non-academic fields autonomously. Previously, UB has university and faculty senate, now it has changed to university academic senate (SAU). Now, there is a new organ called the university trustee assembly (WAU). What and how, you can read UB Newsletter, quarterly edition of October – December 2021.

There are six interesting news selected, one of them is news about five students of Chemical Engineering find alternative batteries with substitution of environmentally friendly materials. At current conditions, most of them still use fossil fuels in vehicles, especially conventional cars that produce carbon dioxide gas through the combustion process. Other news is the development a precision agriculture system based on the Internet of Thing (IoT) for melon cultivation, with the name Drip Irrigation System. UB Tech and ATP team, developed a technology that uses a watering method with a drip system model which is controlled based on the water content of the growing media.

There is also news no less interesting, namely four UB student make an air purifier equipped with a virus killer, called AIRings, a sterilizer tool that can be used in closed places and public transportation. This tool can help reducing the spread of the Covid-19 virus in a closed room, by being attenuated while still in the air. AIRings is a combination of HEPA filters which are used as air purifiers in aircraft cabins. In addition to HEPA filter, this tool also uses UV-C lamp that can kill viruses.

News about international cooperation is UB becomes a pioneer or pilot project for developing a digital halal certification system for MSMEs in Indonesia. The system aims to archive documents from processing to issuing certification. By archiving documents through the digital system, MSMEs that will carry out halal certification management will find it easier to see the evaluation results of each activity process that has been carried out.

Three lecturers of Faculty of Cultural Studies UB, is success to design literature learning media that is accessible for students with visual impairments. This activity develops an accessible multisensory storybook based on the principles of accessibility and universal design learning. This product has advantages in terms of appearance, function, and content. In terms of appearance, this product is equipped with Braille narration which is placed on the left side of the page, making it easier for blind learners to access the book. In terms of function, this book is equipped with features that can optimize tactile sensory input and audio that can be utilized by blind learners.

In this edition, it will end with news about two UB students reaping extraordinary experiences while participating in the Teaching Campus Program sharing their experiences at the Elementary School or SDN 38 Kelingkau, Sambas Regency, West Kalimantan. The condition of the school only has two classrooms with cement floors and an office with wooden floors. Therefore, students who were assigned to teach at SDN 38 Kelingkau, held additional lessons to catch up.

Finally, the editorial team wishes you a Merry Christmas 2021 and a Happy New Year 2022.

# UB is Confirmed as Legal Entity State University



UB Rector and Vice Rectors at UB PTN-BH Conference, Wednesday, (27/10/2021).

Universitas Brawijaya (UB) has been confirmed as a Legal Entity State University (PTN-BH) through the Government Regulation Number 108 of 2021. This regulation was signed by President Joko Widodo on October 18, 2021. Thus, UB becomes the 14th university in Indonesia with PTN-BH status.

UB Rector, Prof. Dr. Ir. Nuhfil Hanani AR., MS in a press conference on Wednesday (27/10/2021) conveyed that with the change in UB's status from PTN-BLU to PTN-BH, UB has full autonomy to manage academics, finances, and institutional bureaucracy.

In the field of academic, with the status of PTN-BH, UB has the flexibility to formulate regulations in the academic field, such as opening new study programs.

"Of course, we will improve the study programs that are needed by the community in the future, and refer to international study programs. Because UB is not designed for national students only but also for foreign students. This new study program will still be accredited by BAN-PT, even international accreditation," explained the Rector.

In terms of finance, UB still gets the allocation of APBN funds, and can build a business entity that is managed independently.

"PTN-BH are authorized to generate income for university by establishing companies such as incorporated companies, hotels, collaborating with companies, selling technological innovations, or others," said the rector.

The Rector ensures that PTN-BH does not have an impact on the commercialization of education.

This was confirmed by the Vice Rector for General Administration and Finance, Prof. Drs. Gugus Irianto, MSA., Ph.D. He said that state universities with the status of BH, BLU, and Satker adhere to the non-profit principle.

"Even though UB currently has higher flexibility compared to BLU, UB still pays attention to the applicable rules. We cannot manage state-owned organizations on our own. But still obey the principles and rules," said Prof. Gugus.

In addition to the Rector and Vice Rector 2, this press conference was also attended by the Vice Rector for Academic Affairs Prof. Dr. dr. Aulanni'am, DES, Vice Rector for Student Affairs, Prof. Dr. Drs. Abdul Hakim, M.Si, and the Vice Rector for Planning and Cooperation, Prof. Dr. Ir. Moch. Sasmito Djati, M.S.

With this change in legal status, Prof. Sasmito hopes that UB will be more enthusiastic in forming a business entity.

"Currently, there are three types of business entities in UB, namely health business entities, academic business entities, and non-academic business entities. This really supports UB, and can have an impact on the increasing number of scholarships that can be given to students," he said.

Meanwhile, in terms of institutional bureaucracy, Prof. Sasmito said that UB will prepare regulations according to the rules of PTN-BH in the near future, such as the election of the University Academic Senate (SAU) and the Board of Trustees (MWA).

Meanwhile, in the long term, it will be arranged according to what has been stated in the strategic plan, namely GIRAFFE, which stands for Government, Innovation, Reputation, Alumnus, Faculty, Fund, and Efficiency.

"The competition will be tougher, but we are ready. We also continue to improve the quality of human resources by conducting innovative research, which is internationally recognized," he said.

At the end of the event, the Rector hopes that by becoming a PTN-BH, UB can achieve its vision of becoming a world-class university.

"Currently UB has been recognized in international rankings. Even from 12 rankings of Times Higher Education by Subject, UB is included in 7 world ranking subjects, and we are targeted to become a university with 500+ world rankings in 2025. Therefore, PTN-BH is expected to increase UB's competitiveness both nationally and internationally," he concluded. *[Irene/ Humas UB/Trans. Iri]*

# FCS UB Lecturers Create Accessible Story for Blind Learners

Literature is a source of literacy to improve critical and creative thinking skills. However, not all readers can enjoy literary works optimally, one is readers with visual impairments or blind people.

Along with SLB Lawang, through the Learning Innovation Fund Assistance program and Assistive Technology for Students with Special Needs in Higher Education in 2021 organized by the Directorate of Learning and Student Affairs, Directorate General of Higher Education, Ministry of Education and Culture, Dr. Ive Emaliana, M.Pd., Alies Poetri Lintang Sari, SS, M.Li., and Irene Nany Kusumawardani, S.Hum., M.Li., three lecturers of the Study Program of English Language Education (SPELE) Faculty of Cultural Studies (FCS) University Brawijaya (UB) design literature learning media that is accessible for students with visual impairments, especially in SPELE FCS UB.

This activity develops an accessible multisensory storybook based on the principles of accessibility and universal design learning. This product has advantages in terms of appearance, function, and content. In terms of appearance, this product is equipped with Braille narration which is placed on the left side of the page, making it easier for blind learners to access the book. In terms of function, this book is equipped with features that can optimize tactile sensory input and audio that can be utilized by blind learners.

This book was also developed using the collage method



The practice of using accessible literary learning media for students with visual impairments

with materials that represent visual information using supporting materials such as sand, yarn, cotton, cloth, wood, and so on. The purpose of using these materials is to support their sensory tactics. Meanwhile, in terms of content, this product contains the legend of Malang City with the title 'Sumber Biru – The Fountain of Power'.

"The title was chosen because the story is based on the legend of the formation of Sumber Biru in Malang City, East Java," said Irene.

Irene added that this activity also developed an inclusive multisensory storytelling video based on the principles of accessibility and universal design learning, especially for learning media in literature-themed courses.

The Multisensory Story Telling Video product uses a method that adapts the flow of imagination. Imagism is a flow that stimulates mental images for readers. This method gives rise to sharp images. This product helps blind

learners get a detailed and specific picture. Oral narrative in audio media is designed to be very detailed and clear so that it gives rise to an appropriate visual representation. Blind learners can understand the content of the story through the description of the words that are described in detail.

"It is hoped that this prototype can be applied to other literary readings to facilitate literacy needs in an inclusive and general scope," explained Irene. [DTS]



The Team of FCS UB Lecturers with SLB Lawang and the Prototype of the Book 'Sumber Biru – The Fountain of Power'

# UB Develops IoT Based Melon Cultivation System

Universitas Brawijaya (UB) developed a precision agriculture system based on the Internet of Thing for melon cultivation, with the name Drip Irrigation System, which is currently being applied to Melon Agro Techno Park, Jatikerto, Malang Regency, East Java.

The result innovation from Eka Maulana, S.T., M.T., M.Eng together with UB Tech and UB ATP team, developed a technology that uses a watering method with a drip system model which is controlled based on the water content of the growing media.

“Logically, when the soil is dry, the drip system is active. What is the water content in the media, when the drip system is active, data and information related to the mechanism are sent via IoT connection. In principle, only water with added nutrients has been applied,” said Eka, who is the team’s supervisor.

Eka explained that the system can not only be used for irrigation but can also be used for other detections including nutritional needs, lighting, temperature, and humidity of melon garden green house.

“In the process, the drip irrigation system works according to the nutritional needs of each plant to be irrigated. So it’s not just from how much its irrigates the plants, but according to the age of the plants. The control of this system is monitored in terms of time and data variables that have been recorded properly,” said Eka, who also serves as one of the lecturers.

Manager of Agriculture and ATP Development, Suyadi, SP., MP said the process of providing nutrients through water that is flowed into the media on plants periodically is given according to the needs of the plant.

“It can be done as much as 5 to 10 times in a day. So with that technology, we don’t need to manually provide the nutrition. We can leave it to do the other work, because it will automatically turn on the drip machine and flow nutrients to the planting media according to the plant’s



UB Develops IoT Based Melon Cultivation System

needs,” said Suyadi

Suyadi admitted that IoT makes work easier since the machine will automatically turn on when the planting media already needs nutrients.

“So there is no nutritional deficiency. Because if we do it manually, we still use our instincts when plants need nutrients,” he said.

The application of the drip system turned out to give maximum results on melon plants.

“The fruit yields can be better and ideal, because the availability of nutrients is stable. Because if the nutrition is unstable, the growth of melon is not optimal, the fruit can break or the sweetness level will be low,” he said.

Suyadi added, Melon which is cultivated using drip irrigation system is in premium quality, starting from the taste, net or netted skin that is neatly arranged, and the ideal weight compared to conventional melons.

“The market is exclusive, so the taste is definitely different from what is sold in the conventional market. In Jatikerto, there are several types of rock, golden, and honey,” he said. (OKY/Irene/Haumas UB/Trans. Iis)

# UB Initiates Digital Halal Certification System for MSME in Indonesia



Universitas Brawijaya (UB) becomes a pioneer or pilot project for developing a digital halal certification system for MSMEs in Indonesia. The system aims to archive documents from processing to issuing certification.

The Head of Reverse Linkage Project Team, Dr Hagus Tarno added that by archiving documents through the digital system, MSMEs that will carry out halal certification management will find it easier to see the evaluation results of each activity process that has been carried out.

“MSME that will apply for Halal Certification through Universitas Brawijaya, we will direct them into a system and when they enter assistance they can monitor what documents must be prepared and filled out. Then, when they enter the certification process, there will be another system to make sure business owners know where the process has gone. Is it returned or continues to be certified,” said Hagus Tarno.

Hagus added, in the near future there has been an offer from the Department of Cooperatives and MSME of Malang Regency to assist 100 business owners who will arrange halal certification in UB.

“There has been an offer, we will try to identify and apply it to the MSMEs that we will assist,” said Hagus Tarno.

This effort of developing halal digital system has received funding from Serunai Malaysia and the Islamic Development Bank (IsDB) of US\$ 2.06 million for two years (November 2021-November 2023).

Meanwhile, the process of signing the Letter of Intent (LoI) between the three parties (UB, IsDB, and Serunai Malaysia) was carried out on Sunday (11/14/2021) in a zoom meeting.

“The Letter of Intent (LOI) will soon be followed up with the Tri-Party Agreement IsDB, UB and Serunai. It took the right time to jointly carry out the signing of the project,” he said.

If the system developed is already running, it can be developed

for other universities.

Meanwhile, Vice Rector IV for Planning and Cooperation, Prof. Dr. Ir. Moch. Sasmito Djati, M.S. said that UB will support the project which is currently being developed.

According to him, halal concept is not only about food but also all systems such as pharmacy and tourism.

Universitas Brawijaya (UB) is known as a pioneer in incubating critical aspects of Halal value chain since 1987.

The concept of Halal certification in Indonesia originated from the efforts of Dr. Ir. Tri Susanto, a lecturer in Food Technology, Department of Agricultural Technology, Faculty of Agriculture at Universitas Brawijaya at that time.

Since then, the scientific products developed at UB have become a formal guideline for the Muslim community in Indonesia in creating awareness of the importance of Halal and have catalyzed the development of Halal Ecosystem as today.

The initiation of Reverse Linkage Project was originally intended for Halal Product Assurance Agency (BPJPH) the Ministry of Religion at the suggestion of the then Head of BPJPH.

However, along with its development, the Directorate of Foreign Policy and International Development Cooperation of the Ministry of BAPPENAS which has good relations with the Center for Study of South-South Cooperation (PKKSS) UB agreed to propose to the Islamic Development Bank (IsDB), so that there would be a transfer of beneficiaries from BPJPH to UB.

Considering UB’s long history that has been recognized nationally, making UB as the best choice of beneficiary receiver in the Reverse Linkage Project for the Development of the Digital Halal Ecosystem in Indonesia to the next phase of evolution by utilizing digital technology. (OKY / Humas UB/ Trans. lrs).

# FT Students Change Coconut Shells into Electric Car Batteries

Five students of Chemical Engineering Universitas Brawijaya (UB); Aditya Bayu Pratama, Akmal Estu Wijaya, Dyah Nurfitri Solikhah, Erina Azahra Amalia and Prisma Ardaneswari Khairina with the guidance of Supriyono, S.T., M.T. find alternative batteries with substitution of environmentally friendly materials.

Looking at current conditions, most of them still use fossil fuels in vehicles, especially conventional cars that produce carbon dioxide gas through the combustion process.

Carbon dioxide is a light-catching substance so that it can increase the temperature on the earth's surface by 1.5°C per year. If there is an increase in CO<sub>2</sub> concentration, it is certain that global warming will occur so that it has an impact on unstable climate. At the end, it will cause natural disasters in various regions of the world. In view of this, there have been many innovations to reduce the amount of carbon dioxide emissions, one of which is by optimizing the use of electric cars.

Seeing that 60% electric car components are batteries, so the battery used today is a rechargeable lithium ion (can be recharged). Lithium-ion batteries have a long cycle life, large storage capacity and are of course environmentally friendly. But it has the disadvantage of being expensive.

Therefore, the research team used the substitution of abundant material, good surface area and pores and derived from coconut shell waste (biochar) to be used as graphite substitute in lithium-ion battery anodes.

According to the research team, the replacement of materials that were originally graphite into coconut shell biochar can economically reduce the price of expensive lithium-ion batteries, even having a high specific storage capacity (372 mAh/g) and being able to produce high energy density battery cells (0.1 A/g). On the other hand, the large pore structure of the coconut shell has the potential to improve the performance of lithium-ion batteries.

"This innovation that we are researching strongly supports the Sustainable Low Carbon Development program, because lithium-ion batteries are highly recommended for use in electric cars with many advantages. In addition, our innovation is also able to realize



a zero emission program in Indonesia in the next few years," said Aditya Bayu Pratama.

Aditya added that his team wants to modify the components in the lithium-ion battery so that it has the potential to improve battery performance and be able to reduce the price of expensive lithium-ion batteries so that it will be more economical.

Therefore, he and his four colleagues carried out performance tests and simulations on batteries before being applied as anode components for lithium-ion electric car batteries, because they were able to estimate the optimal distance and speed for electric car batteries to be developed.

It is hoped that the research developed can contribute to Indonesia in terms of optimizing the use of electric cars and providing solutions in the production and commercialization of Lithium-ion batteries that have a larger electric storage capacity and improve battery performance. In the future, this will help the renewable energy sector due to the shift in dependence on the transportation sector scheme from fossil-based energy to renewable electrical energy.

The team led by Aditya Bayu Pratama (Chemical Engineering 2020) together with his four colleagues will later fight for 2021 Tanoto Student Research Award (TSRA) in October 2021. The Tanoto Student Research Award itself is a research program and student scientific work held in collaboration with Tanoto Foundation and Universitas Brawijaya. [Humas UB/Trans. Iir]

# UB Students

## Teaching Program at the 3T Elementary School

In Campus Teaching Program Batch II of the Ministry of Education, Culture, Research and Technology of the Republic of Indonesia, there are as many as 115 UB students who were selected. There are two UB students who reap extraordinary experiences while participating in the Campus Teaching Program and share their experiences in 3T Elementary School (Frontier, Outermost, and Least Developed).

They are Muhammad Ikilil Zaki from English Education, Faculty of Cultural Studies and Celine Endang Sitanggang from the Faculty of Law (FH).

In the campus teaching batch II, Ikilil served at SDN 38 Kelingkau, Sambas Regency, West Kalimantan.

At first, Ikilil did not think that the school he was going to was far behind compared to the area where he lived.

“I come from the 3T area, I thought that my elementary school was already quite least developed in terms of education, but there are still some which are less qualified than my previous school,” he said.

Ikilil added, because of the 68 km long access to SDN 38 Kelingkau, plus the condition of the road that had to be traversed instead of asphalt roads, he finally decided to take the nearest rented house from the school.

“From renting house to school is about 15 km, like it or not because I happen to have lectures every Tuesday, so on Monday after teaching I will definitely go to the nearest district city to get internet access,” he said.

The condition of SDN 38 Kelingkau is arguably less than adequate, there are only two classrooms that have cement floors. The rest includes the office are boarded.

“At SDN 38 Kelingkau, students experience learning loss or



academic setbacks, there are 3rd graders who cannot recognize letters and there are 5th graders who are not yet fluent in simple summation,” he said.

Therefore, to anticipate this, Ikilil and three of his friends who were assigned to teach at SDN 38 Kelingkau, held additional lessons to catch up.

Meanwhile, Celine Endang Patricia Sitanggang, a student of FH UB who teaches at SD Tunas Bangsa Bontang, East Kalimantan, conveyed that the school where

she teaches is very dirty since it is not used during the pandemic.

“The number of classrooms is very limited, so that teaching 1,2,3 graders is in one room sometimes. The number of students from grades 1-6 is 28 people. The first few weeks of teaching made me confused because they were very lack in literacy and numeracy, so it really trained my patience and sparked my enthusiasm to find learning methods that were suitable for them,” said Celine.

Therefore, to strengthen student literacy, Celine provides additional lessons outside of school material.

“Usually on Thursday and Friday I strengthen literacy and numeracy so that I study outside the material since the students at this school are not yet fluent in reading and arithmetic,” he said.

Despite having many challenges in Campus Teaching program, Ikilil and Celine experience many benefits and lessons that can be learned, one of which is that education is the most important and luxurious thing since not everyone can get it.

“Elementary school education is the first step for children. When they were in elementary school they couldn't read and count but were always pressured by just giving homework, so the students wouldn't develop,” said Ikilil closing the interview.

The Campus Teaching Program is included in the Independent Learning Independent Campus (MBKM) activity. The Campus Teaching Program which was attended by Muhammad Ikilil Zaki and Celine Endang Patricia Sitanggang is the second batch in 2021. The second batch of Campus Teaching Program starts on August 2 and ends on December 17, 2021.

In the Campus Teaching program, students will be placed in schools that match their domicile.

“In addition to gaining experience, they will learn a lot of soft skills that they don't get in lectures. On campus teaching, they will gain experience of leadership and collaboration with others. Basically, the Campus Teaching program educates students to have many things,” said the Coordinator of Campus Teaching Program 2021 Batch II from UB, Ismatul Khasanah, S.Pd., M.Pd., M.Ed., Ph.D. (*Humas UB/Trans. In*).

