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MESSAGE OF THE PRESIDENT **TRANSFORMING THE** NATION THROUGH WORLD-CLASS EDUCATION **TECHNOLOGY IS** Ζ THE FUTURE MAPÚA MAKATI MOVES TO A NEW LOCATION WITH $\mathbf{0}$ BIGGER, ECOLOGICALLY SUSTAINABLE FACILITIES MAKING LEARNING $\Delta \Delta$ A CONVENIENT AND EXCITING EXPERIENCE WITH DIGITAL EDUCATION **GOING FURTHER WITH** 46 INTERNATIONAL **EXPERIENCE: MAPÚANS** GEARED FOR WORLD OF PRACTICE TO THE TOP: A MAPÚAN'S JOURNEY TO BOARD EXAMS DOMINANCE DÖ MAPÚA BOOSTS 66 **RESEARCH PUBLICATIONS** IN 2019 AND BEEFS **RESEARCH CAPACITY WITH** MORE PARTNERSHIPS WHY RESEARCH MATTERS ΙΝ ΜΑΡÚΑ

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Message of the President

I must now say that we

have opened up all these

unrivalled opportunities

to our students in order

successful entry into and

progression in the world

to greatly heighten

the likelihood of their

of work, which is our

primordial concern"

country.

In order to implement said curricula, we have blended faceto-face and digital means. The online component uses a learning management system (LMS) called Blackboard. To complement this LMS, Mapúa has subscribed to huge electronic databases of educational materials (Wiley Plus and Cengage). All Mapúa courses are now on blended mode. This is the major innovation and impact of Mapúa's digital learning initiative. Additionally, where thought to be effective and convenient in attaining desired learning outcomes, fully online versions of individual lessons, whole courses, and even entire programs have been deployed. Online classes are held on the day itself when classes are suspended, due to inclement weather for example, in order to avoid having to hold make-up classes in the weekend. We call this Digital Day. In some courses students may avail themselves of fully online sections in order to avoid the morning and evening rush hours. We call this Digital Rush. Working students need not physically come to school if they enroll in Mapúa's fully online master's degree programs. With all these features, Mapúa has arguably the largest scale implementation of digital education in the country.

Thus, if you join us at Mapúa, you will have the opportunity of immersing yourself in a very rich outcomes-based and digital education environment. In addition, you will also have the opportunity to:

Obtain a degree from a QS world-ranked university that Mapúa is;

Gain global exposure through international plant visits, OJTs, and even research internships at Mapúa's numerous foreign partners;

Do undergraduate research, be published in internationally peerreviewed journals, and possibly invent something upon which you can build a business;

Join the ranks of alumni who, according to 2017 jobstreet.com data, have the highest average salary in most job categories; and

Be part of a university that has an enviable record of topnotchers and passers in board exams, that has the most number of CHED Centers of Excellence in engineering, and that has been granted university status and autonomy by CHED by virtue of the high level of quality of its education and research.

I must now say that we have opened up all these unrivalled opportunities to our students in order to greatly heighten the likelihood of their successful entry into and progression in the world of work, which is our primordial concern as I said in the beginning of this message

Junsed Jr. le Dr. REYNALDO B. VEA PRESIDENT

Most of all, Mapúa wants a successful launch of the careers of its graduates.

Towards this end, we have listened closely to local industry to understand what competencies they need at present and into the foreseeable future. We have also diligently studied the demands of global industry. We have distilled all these requirements and made them the desired learning outcomes of our academic programs. We have then proceeded to design our academic programs very tightly, from the curriculum down to individual lessons, in order to fully attain these outcomes. The foregoing process is the main feature of an approach called outcomes-based education (OBE), the large-scale implementation of which Mapúa is the acknowledged leader in this

Be a graduate of an ABET-accredited program;

Obtain Coursera microcredentials from prestigious US universities on top of your Mapúa diploma;

Undergo on-the-job training (OJT), with the possibility of eventual employment, in Mapúa's many industry partners, including its sister companies in the Yuchengco group and its allies in the Ayala group;

So if you imagine a big future for yourself, come study with us!

TRANSFORMING THE NATION THROUGH WORLD-CLASS EDUCATION



Advancements and breakthroughs have become much sought-after goods in today's irreversible movement towards globalization. Industries operate on the global scale thus challenging them to innovate and break barriers for growth and sustainability. International connections have become essential. A pool of skilled and industry-ready professionals has become a necessity. In the advent of globalized economies, various sectors, including academe, are challenged to cope with these demands.

To breed professionals who will succeed and thrive anywhere in the constantly evolving world has always been the goal of Mapúa. In realizing this vision, the University continues to adhere to its belief that a strong educational foundation keyed to global standards is a must-have.

Leading educational reforms

In 2006, ahead of all other schools in the Philippines, Mapúa University adopted the outcomes-based education (OBE) in its programs' curricula.



This initiative is now a byline in the Philippine educational system and has become the second major reform designed to advance the system of education in the country, next to the K to 12 Education Program.

OBE is a learner-centered approach that outlines the principles and expectations of Mapúa for its students and faculty members to abide by. This framework allows students to understand what is expected of them and teachers, of equal note, to know what they need to teach in the duration of the programs.

"The most basic need we are trying to satisfy for our undergraduate students is the successful launch of their careers. In order to do so, it is imperative that we deeply understand the abilities that industry and society want to find in Mapúa graduates. These abilities become the desired learning outcomes of our academic programs. We design our curricula, down to the lesson level, very tightly, so that our students achieve these outcomes," said Dr. Reynaldo B. Vea, President and Chief Executive Officer of Mapúa.

A University ranked and rated by QS

Since the implementation of OBE, local and international accolades for the University have soared, and one of its most outstanding recognitions is its inclusion in the Quacquarelli Symonds (QS) Asia University Rankings Top 500 Universities for 2019 and 2020.



The most basic need we are trying to satisfy for our undergraduate students is the successful launch of their careers. In order to do so, it is imperative that we deeply understand the abilities that industry and society want to find in Mapúa graduates."

"Mapúa's inclusion in the QS Asia University Rankings is a very big milestone for the University. It gives us a measure of our quality education in relation to other universities of the region based on the various criteria of OS." said Dr. Bonifacio T. Doma. Jr., Executive Vice President for Academic Affairs of Mapúa.

The QS Asia University Rankings capture university performance using the following criteria: academic reputation, employer reputation, faculty and student ratio, international research network, citations per paper, papers per faculty, staff with PhD, proportion of international faculty, proportion of international students, proportion of inbound exchange students, and proportion of outbound exchange students. It helps students identify leading universities in Asia through its annual publication of university rankings.

In 2020, Mapúa has moved up from being a 3-Star to a 4-Star institution under the QS Intelligence Unit's (QSIU) QS Stars Rating System, further strengthening its academic reputation. It received a 5 Stars rating for social responsibility, facilities, and employability,

4 Stars for program strength, inclusiveness, and teaching, and 3 Stars for academic development and internationalization categories.

Globally accredited programs

Mapúa also received recognitions from international accrediting bodies after OBE's implementation. In 2010, Mapúa became the first school in Southeast Asia to receive accreditation from the Engineering Accreditation Commission (EAC) of the US-based ABET. Three of its engineering undergraduate programs were accredited by ABET-EAC followed by five more programs the following year. Two of its computing programs also received accreditation from the Computing Accreditation Commission (CAC) of ABET.

ABET accreditation signifies that Mapúa's engineering and computing programs meet the quality standards to produce graduates prepared to enter the global workforce. Graduates of these programs are qualified for careers in multinational companies, which often require graduation from an ABET-accredited program. Besides being qualified for board examinations locally, ABET accreditation also enables graduates of Mapúa to seek a license in the United States, where licensure for engineering and surveying professions is regulated at the state level. Further boosting the global qualification of Mapúa's engineering programs is the new recognition received by the University's Civil Engineering program from the United Kingdom's Institution of Civil Engineers (ICE). ICE is an independent professional association for civil engineers in the UK. It is based in London and has over 92,000 members, of whom three guarters are located in the UK, while the rest are located in more than 150 other countries. With ICE's recognition, Mapúa's Civil Engineering graduates will no longer need to apply for an academic assessment to gain an ICE professional qualification.

To date, the University has the most number of ABET-accredited programs for a single campus in the Philippines, with 11 engineering programs, namely, Biological Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Electronics Engineering, Environmental and Sanitary Engineering, Industrial Engineering, Manufacturing Engineering, Materials Science and Engineering, and Mechanical Engineering; and three (3) computing programs, namely, Computer Science, Information Systems, and Information Technology (www.abet.org).



Mapúans with other foreign students at Kumoh National Institute of Technology for their welcome party as students of its exchange program during the fall semester of 2017.

Aside from accreditations received from ABET, Mapúa also received accreditations from the Philippine Technological Council-Accreditation and Certification Board for Engineering and Technology (PTC-ACBET). It is the umbrella organization of the 13 professional engineering organizations in the country and a provisional member of the Washington Accord, which promotes outcomes-based standards in engineering education worldwide.

Mapúa University currently has eight engineering programs with full accreditation by the PTC-ACBET: Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Electronics Engineering, Environmental and Sanitary Engineering, Industrial Engineering, and Mechanical Engineering programs.

Graduating from a PTC-ACBET-accredited program, once it obtains full signatory status, is a formal eligibility requirement to become a member of the International Professional Engineers (IntPE) register. Graduates of the program may receive credit in seeking registration or licensure in the jurisdiction of another signatory member. With the said membership, engineers gain better opportunities for employment abroad, thus expanding the market of one's expertise.



▶ In the photo are the 20 participants of Mapúa's 2019 REILE (Renewable Energy Innovation and Leadership Experience) program during their plant visit at Tarlac Solar Power Plant. The group was accompanied by two officers of PetroEnergy Resources Coproration, Mapúa's partner from the industry, two faculty members, and four officers of the power plant.

Meanwhile, three of the University's computing programs are also accredited by the PCS (Philippine Computer Society) Information and Computing Accreditation Board (PICAB). It is a provisional signatory member of the Seoul Accord, which is the counterpart of the Washington Accord in the field of Information Technology. Mapúa's PICAB-accredited programs include Computer Science. Information Systems, and Information Technology.

International programs and linkages

Mapúa also offers international programs to ensure its students' global professional readiness and competitiveness. Mapúa consistently forges

linkages and partnerships with various companies and universities abroad for its international programs: student exchange, English camp, dual-degree programs, international summer camp, international plant visits, international on-the-job trainings, and research internships.

Hong Kong.

Continuously expanding its global connections as an international institution, Mapúa has also been recently recognized by the ASEAN University Network -Quality Assurance (AUN-QA) as an associate member. AUN is an international organization that facilitates cooperations to strengthen the ASEAN member states' quality and networks for higher education.

As associate member, Mapúa gets opportunities to be involved in AUN-QA's projects and joint initiatives with partner organizations, attend AUN-QA's courses and workshops, and acquire AUN-QA's best practices and information for quality assurance (www.aun-qa.org).

Mapúa's growing connections with the local industry is also seen as a huge contributor to the success of its students. One recent undertaking is the successful launch of the Yuchengco Group of Companies' partnership with the Ayala Corporation. Now being part of another leading organization in the Philippine industry, students of Mapúa can

"International programs help our students become more aware and adapt to alternative and multifaceted approaches to learning. It allows them to learn independence, expand their horizons, and gain different perspectives, which are traits that are needed to be globally competitive," said Engr. Rosette Eira E. Camus, Director of Mapúa's Office of International Career and Exchange Programs (ICEP).

Through the years, students and graduates have benefited from the international programs with nearly 4,000 Mapúans participating in the programs since 2013. Currently, Mapúa has 76 partner universities for its exchange and study abroad programs and 28 partners from the industries for its international OJT program. Country destinations for plant visits include Japan, Korea, Taiwan, Singapore, Malaysia, Thailand, Vietnam, and

Mapúa University also provides internships for research abroad. It currently has 48 partner universities for research internships in 23 countries such as Australia, Bulgaria, Canada, China, France, India, Indonesia, Japan, South Korea, Sweden, Taiwan, Thailand, and USA, among others. Since 2012, Mapúa has sent 196 students for research-related engagements abroad.

not only get opportunities in the University's sister companies in the Yuchengco group, but also in its allies in the Ayala group. Students may now undergo on-the-job trainings in both organizations' affiliates, with the possibility of eventual employment.

A leading Philippine engineering and technological university

In 2017, the Commission on Higher Education (CHED) recognized seven (7) of Mapúa's undergraduate engineering programs as Centers of Excellence (COEs), namely, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Electronics Engineering, Environmental and Sanitary Engineering, and Mechanical Engineering. It is the Philippine institution that holds the most number of engineering programs recognized as Centers of Excellence by CHED.

Mapúa was also tagged as a Center of Excellence for Information Technology education, with Computer Science, Information Systems, and Information Technology programs. The University's Industrial Engineering program was also tagged as a Center for Development (COD).

With Mapúa's high regard for education, the fruits of its labor are not only vested in the institution but has been rewarded to its students and graduates as well. Since 2000, Mapúa has produced a total of 374 board topnotchers across 11 of Professional Regulation Commission (PRC)-administered exams: architecture, chemical engineering, chemistry, civil engineering, electrical engineering, electronics engineering, environmental and sanitary engineering, geology, interior design, mechanical engineering, and metallurgical engineering.

In a survey conducted by online publication Entrepreneur Philippines and the online employment portal Jobstreet.com Philippines in 2017, graduates of the University also bested three out of six employment levels for the highest-paid professionals in the country. Graduates of Mapúa had the highest recorded average monthly salary for employees with one to four years' experience, supervisors or employees with five years or more experience, and assistant managers or manager. Mapúa also ranked second for fresh graduates or employees with one-year experience, and for non-executive positions.

Innovations for education

As premier technological school of the country, innovation is in Mapúa's bloodline. It employs teaching and learning innovations to effectively deliver its education, fostering advanced student and professional learning.

Mapúa uses Cardinal EDGE, a learning management system powered by Blackboard, in delivering its education online. This has contributed to the success



Mapúa's virtual classroom allows students and professors to communicate with one another, share presentations or videos and other course materials, and create productive class engagements online like that of the on-campus set-up.

of the launching of Digital Day, Mapúa's initiative to continuously deliver classes in the event of sudden face-to-face class suspensions due to unforeseen situations such as calamities and threats; and Digital Rush, Mapúa's online undergraduate classes scheduled from 7 a.m. to 9 a.m. and from 7 p.m. to 9 p.m., for its students to avoid the traffic rush hours. With the University's state-of-the-art tools for digital education, synchronous lectures can be delivered online to about 2,300 students in about 100 classes.

In further support of its thrust in breaking barriers in learning with digital technology, the University established its online education platform Mapúa Digital Academics to deliver its curriculum and academic content using the latest in educational technology.

Through Mapúa Digital Academics, the University successfully launched its six (6) fully online undergraduate degree programs in engineering and I.T., namely, Computer Engineering, Electrical Engineering, Electronics Engineering, Industrial Engineering, Computer Science, and Information Technology; and nine (9) fully online master's degree programs: the Master of Engineering (MEP) programs in Computer Engineering, Electrical Engineering, Electronics Engineering, and Industrial Engineering; the Master of Science (MS) programs in Computer Engineering, Electrical Engineering, Electronics Engineering, and Mechanical Engineering; and the Master in Information Technology. Filipinos and foreign individuals who wish to earn a degree from the Philippine leading engineering and I.T. school can now do so. The programs, which are equal in quality with their on-campus counterparts, feature flexible and self-paced learning, and grant students access to the University's top-of-the-line tools and resources for online education.

In 2019, Mapúa also launched its partnership with Coursera to offer online courses for students to gain micro-credentials from 190 topnotch institutions and organizations worldwide. Students are provided unlimited access to about 3,600 courses in Coursera, covering various fields of studies such as engineering, data science, computer science, mathematics, biology, medicine, business, digital marketing, humanities, and social sciences, among others. After completing the course modules in Coursera, students will gain a digital certificate from the offering university that can be added to their LinkedIn accounts.

Mapúa for people and planet

As producer of future builders, Mapúa also advocates for environmental protection and shares this cause



MAPÚA IS A QS-RANKED UNIVERSITY RANK 451-500



4 QS Star rating for **Excellence**



5 QS Star rating for **Employability**, **Social Responsibility**, and **Facilities**







STARS[™]

* * * * *

4 QS Star rating for **Program Strength**, Inclusiveness, and Teaching





4 QS Star rating for Academic Development and Internationalization





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ISO Certification on **Environmental Management** Systems ISO 14001:2015

ISO certification on **Quality Management Systems** ISO 9001:2015



2020 TIMES HIGHER EDUCATION (THE) UNIVERSITY **IMPACT RANKINGS**

Placed in 5 Sustainable Development Goals: SDG 6, SDG 7, SDG 8, SDG 12, and SDG 17

with its students to ensure that they carry the responsibility after graduation.

One testament to this is the University's inclusion in the global Times Higher Education (THE) Impact Rankings 2020, its second in the span of two years. Mapúa was ranked in five (5) Sustainable Development Goals out of 17: SDG 6–Clean Water and Sanitation (Rank 101-200 out of 330 institutions); SDG 7-Affordable and Clean Energy (Rank 201-300 out of 361 institutions): SDG 8–Decent Work and Economic Growth (Rank 401+ out of 479 institutions); SDG 12-Responsible Consumption and Production (Rank 301+ out of 360 institutions); and lastly, for the second time in a row, SDG 17–Partnership for the Goals (Rank 601+ out of 806 institutions). Overall, it placed 601+ out of 766 participating institutions worldwide.

The THE Impact Rankings were inaugurated in 2019 and are the only global performance tables that assess universities against the United Nations' Sustainable Development Goals (SDGs) by using carefully calibrated indicators to provide comprehensive and balanced comparisons accross three broad areas: research, outreach, and stewardship (timeshighereducation.com). A university's inclusion in the rankings implies that it is championing the causes in the SDGs, which are greatly supported by the young generation. The Impact Rankings do not look specifically into the academic strengths of the institution but put greater weight on its tangible efforts in making a difference in the world and its students.

Last 2018, Mapúa was also granted an ISO certification on environmental management systems (ISO 14001:2015) by TÜV-SÜD. It is the first school in the Philippines to receive this certification from the global expert providing quality, safety, and sustainability assurance to institutions and companies around the world. The environmental management systems certification shows the University's commitment to promote sustainable actions for environmental protection as it delivers quality education.

Mapúa has also committed itself in conducting researches and producing innovations to create better and safer communities. Unveiling a major breakthrough in disaster preparedness, the University launched its project Universal Structural Health Evaluation and Recording System or USHER last 2019 which determines the structural integrity of buildings and other infrastructure in hopes of reducing casualties in the event of a devastating earthquake.

This new technology is expected to save many



▶ Engr. Michael B. Baylon, Senior Technical Sales Manager of USHER Technologies Inc. presenting USHER system to the USHER Structural Engineering Partners (USEPs) who attended the launching event

people's lives should a big earthquake hit the West Valley Fault, which runs through several cities in Metro Manila. Through the use of this new technology, proponents believe it has the ability to reduce casualties and structural damage.

This 2020. Mapúa launched a new mobile and web-based application called eSalba. which is aimed at reducing disaster and health risks in the island province of Marinduque. The tool will enable users to see the locations of incident reporters. the whereabouts of responders, areas for evacuation, and health centers in the community. Additionally, it will show the local health vulnerability indices of households, barangays, and municipalities, and identify which areas in the communities potentially have metals contaminations, as well as the level of concentrations of contaminations in groundwater, surface water, soil, sediments, and agricultural yields.



ESalba mobile application interface

The new innovation was completed in partnership with the Marinduque State College (MSC) and in cooperation with the local government units of the province. The eSalba system is an output of two research projects, namely, the VAPERS (Vulnerability

"We have linked with global industry to understand their workforce requirements and used these requirements as the desired learning outcomes of our academic programs. We have designed our programs to fully attain these outcomes and have sought and obtained accreditation by international bodies. We have exerted efforts to elevate our educational and research standards by participating in the world ranking of universities. In this, we have met with a significant measure of success," said Dr. Vea.

We have exerted efforts to elevate our educational and research standards by participating in the world ranking of universities. In this, we have met with a significant measure of success."

Assessment and Prompt Emergency Response System for LGUs Disaster Risk Reduction in the Philippines) and D-HIVE (Development of Health Index: Vulnerability to Extreme Environmental Events for Marinduge Island) projects, with financial support from the Commission on Higher Education K to 12 DARE TO program and the Department of Science and Technology-Philippine Council for Health Research and Development (DOST-PCHRD) Grant-in-Aid (GIA) program, respectively. The D-HIVE project is headed by Mapúa's Dr. Delia B. Senoro and is now being implemented in the MIMAROPA region, with the aim to further develop the eSalba system. It is envisioned to develop the tool over all regions in the country.

Now a recognized engineering and technological university in Asia, Mapúa vows to keep on transforming the lives of many young Filipinos as a DROID (Digital, Research-Driven, Outcomes-Based, and International Domain).







MASSIVE, SIMULTANEOUS, SYNCHRONOUS, ONLINE CLASSES (2016)



UNIVERSITY STATUS UNDER CHED NEW CRITERIA (2017)





TECHNOLOGY IS THE FLITLIR

To respond to the call of the times has always been one of the commitments of Mapúa University. For more than nine decades, Mapúa has always been at the forefront of technological education, continuously leading its counterparts toward an advanced and accomplished future.

This 2021, the University is set to actualize another vision with the launching of the Mapúa Smart Infinity Classroom (MSIC) in its Intramuros campus. Designed to become

a room mainly for collaboration, the smart classroom is envisioned by Mapúa as a physical asset that embodies the ideas of outcomes-based education.

"It is always important to use a powerful and suitable tool to achieve an objective. In this case, we are aiming for the full attainment of learning outcomes. Digital educational technologies are a very effective means towards this end. Having a generation of digital natives as our learners, it makes complete sense for Mapúa to adopt what its students were born into and have great facility at," said Mapúa University President Dr. Reynaldo B. Vea.

The new state-of-the-art facility integrates technologies in classroom discussions with the available computers, specialized softwares, and audience response technologies. It will also feature shared working spaces like group tables and interactive whiteboards which will be installed around the room's perimeter to create a highly immersive environment for the students.

The MSIC is designed to fit up to 41 students. Its interactive surfaces are its most vital areas for they will serve as perceptual spaces where students can construct and discuss meaning as one and come to a collective understanding on their course topics.

"When you are in an environment with touch screens dedicated to creating opportunities for shared perceptual meaning, you can dig down and construct knowledge in a deeper way. We want the students' most

boring subjects become palatable by using technology, which of course is a concept of blended learning," said Engr. Ericson D. Dimaunahan, director of Mapúa's Center for Teaching and Learning.

While in the MSIC, faculty members can also deliver beyond what is expected of them. Given the high-tech resources provided for discussions, they are granted the flexibility to implement innovative teaching activities in facilitating learning to optimize student educational support. This promotes a learner-centered approach that meets the expectations of the institution for both its students and faculty members.



MAPÚA MAKATI MOVES TO A NEW LOCATION WITH **BIGGER, ECOLOGICALLY** SUSTAINABLE FACILITIES

Mapúa University in Makati City will open at a new location along Pablo Ocampo Sr. Extension in Brgy. San Antonio by 2021. The new annex, which features ecologically sustainable design and construction, will replace the one presently located along Gil Puyat Avenue.

The new location and its structures are fully compliant with all international standards for the construction and maintenance of its facility. The building's structural framing is designed based on the provisions of the latest code, the National Structural Code of the Philippines 7th Edition, and its structural integrity was analyzed by using computer software such as ETABS 2016 Ultimate 16.2. Staad Pro V8i, and Safe 2016.

These quality assessment measures mean that, for students and other occupants of the building, safety and security provisions for structural damage due to natural causes have been integrated into the design, ensuring a stronger and more reliable structure. The infrastructure uses eco-friendly materials such as low volatile organic compound or VOC paint materials, alongside a provision of a dedicated Materials Recovery Facility to reduce, reuse, or recycle waste. Primarily, the infrastructure uses insulated glass unit (IGU), a low-E glass for exterior windows and other sections, which reduces heat absorption but maximizes natural light.

For electrical, the building makes use of sustainable LED lighting fixtures and an advanced Lightning Protection System.

The building's plumbing and sanitary systems uses potable water tanks located at its basement, and it also features a Sewage Treatment Plant, a Rainwater Catchment tanks for irrigation, as well as the use of low water consuming plumbing fixtures.

The P2.5-billion new annex will be an eightstory building on a 5,114-square-meter property. Aside from the school facilities, it will likewise allocate commercial space for a bank, a canteen, a bookstore, and a covered court for the convenience of the school population.



The new location is strategically located in an area with numerous commercial establishments, fast food chains, condominiums, low cost housing, and supermarkets.

The School of Information Technology (SOIT), E.T. Yuchengco School of Business and Management (ETYSBM), and the School of Media Studies (SMS) will occupy the front portion of the new building. The rear portion of the new annex, meanwhile, will house the senior high school and a covered basketball court for all the students.

The Makati annex houses some of the University's internationally accredited programs. Three of SOIT's programs are



accredited by ABET's Computing Accreditation Commission (CAC), namely Computer Science, Information Systems, and Information Technology. The University currently holds the most number of ABET-accredited programs in the country.





SOIT's ABET-accredited programs are also recognized by the PCS (Philippine Computer Society) Information and Computing Accreditation Board (PICAB), a provisional signatory member of the Seoul Accord which also recognizes tertiary level computing and IT programs as having met the academic requirements to produce globally qualified IT professionals.

Mapúa is a Quacquarelli Symonds (QS) Top 500 Asian University and is known as the country's premier engineering and technological school. It is the first Philippine university to be granted an ISO certification on environmental management systems (ISO 14001:2015) by TÜV SÜD, a global accreditation leader focusing on safety, security, and sustainability. This certification demonstrates the University's commitment to promote sustainable actions for environmental protection as it delivers quality education.



SCHOOL OF CIVIL, ENVIRONMENTAL, AND GEOLOGICAL ENGINEERING

The School of Civil, Environmental, and Geological Engineering (CEGE) instills the values of critical thinking, social awareness, and environmental concern in its students. It commits itself to developing all frontiers of knowledge in civil, environmental, and geological engineering, using the latest IT tools and through stateof-the-art delivery of instructions.

Students are trained to provide actual engineering solutions through a real-life design and a thesis project as final requirements. These summative courses allow students to learn the integration and application of engineering knowledge where multiple and real-life constraints are addressed during the process. Its programs' curricula also features a course on Student Global Mobility and Leadership in Innovation, encouraging students to pursue advanced learning abroad through seminars, international plant visits, and international on-the-job trainings. These then enable graduates to take on careers in construction management, geotechnology, public health, transportation, mining, and urban planning.

PROGRAMS CIVIL ENGINEERING

ABET accredited ICE recognized CHED Center of Excellence

CONSTRUCTION ENGINEERING AND MANAGEMENT ENVIRONMENTAL AND SANITARY ENGINEERING

ABET accredited ICE recognized CHED Center of Excellence

GEOLOGY

GEOLOGICAL SCIENCE AND ENGINEERING

DOUBLE-DEGREE PROGRAMS

CIVIL ENGINEERING AND ENVIRONMENTAL AND SANITARY ENGINEERING GEOLOGICAL SCIENCE AND ENGINEERING







Hydraulics Research and Operation Uni Laboratory





WHAT IS

The Institution of Civil Engineers (ICE) is a professional membership body in the United Kingdom. Based in London, it has over 92,000 members worldwide.

It supports the civil engineering profession through professional qualification and promotes professional development through providing civil engineering knowledge resources.

■ ICE recognizes Civil Engineering degrees accredited by ABET.

• Students graduating from these programs will no longer need to apply for an academic assessment to gain an ICE professional qualification.

• ICE offers various memberships, placing members on a path to successful careers.

Student membership provides students access to engineering knowledge including ICE's online Infrastructure Learning Hub, enabling them to learn even more about civil engineering, innovation, and developments through recorded lectures,webinars, and case studies.



Fabrication of electrospun membranes using NANON-01 (Electrospinning)



Preparation of reagents using erlenmeyer flasks and analytical balance

SCHOOL OF CHEMICAL, BIOLOGICAL, AND **MATERIALS ENGINEERING AND SCIENCES**

Mapúa was the first school to offer BS Chemical Egnieering in the Philippines. Currently, the program is housed in the School of Chemical, Biological, and Materials Engineering and Sciences, with three other undergraduate programs - Biological Engineering, Chemistry, and Materials Science and Engineering. The school equips students with theoretical knowledge and relevant training in the respective disciplines. Graduates may pursue careers in : (a) product and process design in the manufacture of food products, pharmaceuticals, personal care products and cosmetics, fuel, petrochemicals, industrial chemicals, biomedical diagnostics, and biomaterials; (b) energy generation and utilization; (c) environmental remediation and management; (d) materials research and development; (e) advanced chemical analysis; (f)nanotechnology; (g)biotechnology; (h)other emerging technologies.

PROGRAMS

BIOLOGICAL ENGINEERING

ABET accredited

CHEMICAL ENGI

ABET accredite CHED Center of

CHEMISTRY

•••••• ABET accredited

DOUBLE-DEGREE PROGRAMS

CHEMICAL ENGINEERING AND CHEMISTRY

MATERIALS SCIENCE AND ENGINEERING AND ELECTRONICS ENGINEERING



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MATERIALS SCIENCE AND ENGINEERING

SCHOOL OF ELECTRICAL, ELECTRONICS, **AND COMPUTER ENGINEERING**



The School of Electrical, Electronics, and Computer Engineering (EECE) delivers quality engineering education standards for students with all of its programs recognized by US- based ABET's Engineering Accreditation Commission (EAC). It features top-of-theline facilities and apparatus, as well as off-campus trainings with local industry partners, enabling students to conduct hands-on applications of knowledge in their program courses. The school also prepares its students for the world of practice by engaging them in Mapúa's international programs for OJT, plant visits, summer camp, and student exchange. These opportunities enhance student expertise in the wide array of specializations the school is offering, ensuring that they will be able to demonstrate what they learned in the program and pass their licensure examinations after graduating from the University. Students can build a good foundation to pursue careers in electrical management, electrical design, circuits and systems development, telecommunication, robotics, and hardware and software engineering.

PROGRAMS

ELECTRICAL ENGINEERING

ABET accredited CHED Center of Excellence

SPECIALIZATIONS

Industrial Automation and Control Entrepreneurship Power Electronics Power System Power System Protection

Test Development Microelectronics Renewable Energy Petroleum Refining Technology

ELECTRONICS ENGINEERING

ABET accredited CHED Center of Excellence

SPECIALIZATIONS

Microelectronics Robotics and Mechatronics Test Development Aduanced Internet Protocol Networking

Communications Automation and Control Systems Power Electronics Biomedical Engineering

COMPUTER ENGINEERING

ABET accredited CHED Center of Excellence

SPECIALIZATIONS

UNIX administration Software Application Development Embedded System Technology Robotics and Mechatronics

Test Development

Internet of Things Biomedical Engineering Cybersecurity



Test and Measurement Lab course using the NI STS T1

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Post-processing of fully colored 3D print



Steam power plant experiment

SCHOOL OF **MECHANICAL AND MANUFACTURING ENGINEERING**

Established in 1940, School of Mechanical and Manufacturing Engineering houses internationally accredited programs, preparing students for careers in operation, maintenance, design, research, management, manufacturing, electronics, energy, food processing, among others.

The Mechanical Engineering program combines the traditional, new and emerging fields of mechanical engineering, in a balanced curriculum of lecture, hands-on laboratories and design throughout the entire program. It offers a diversified number of elective courses such as mechatronics, automotive, heating, ventilation and air-conditioning (HVAC), petroleum refining technology, and other specialist topics aside from its excellence in power plants, industrial plants, and mechanical design.

The Manufacturing Engineering program trains students in designing, processing, and manufacturing products and technologies needed by various industries and sectors. Students taking this program are also trained in management and material science.





PROGRAMS

MANUFACTURING ENGINEERING

ABET accredited

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MECHANICAL ENGINEERING

ABET accredited CHED Center of Excellence

DOUBLE-DEGREE PROGRAM

MECHANICAL ENGINEERING AND BIOLOGICAL ENGINEERING

BS Mechanical Engineering students with Aguila IV, a three-wheeled prototype vehicle that bagged the offtrack Technical Innovation Award for the gasoline energy type category of the 2017 Shell Eco-marathon Asia held in Singapore.

SCHOOL OF **INDUSTRIAL ENGINEERING AND ENGINEERING MANAGEMENT**

The School of Industrial Engineering and Engineering Management (IE-EMG) has constantly produced graduates ready to take lead roles in professional areas such as engineering, management, manufacturing, logistics, health systems, retail, service, and ergonomics. It trains its students to become both managerial and technical leaders with topnotch programs designed to strengthen student comprehension in the areas of production and quality, human factors and ergonomics, and optimization and simulation. It also engages its students to do research for them to understand the current trends of industries, which will help them develop cutting-edge solutions and create efficient and sustainable innovations for businesses in the future.



Using of teach pendant to enter commands for Pegasus robot programming at CIM Laboratory

Recording of illumination data obtained from llight meter

PROGRAMS

INDUSTRIAL ENGINEERING

ABET accredited CHED Center of Development

SERVICE ENGINEERING AND MANAGEMENT



Recording of tension force using a pull force gauge platform at Ergonomics Laboratory





SCHOOL OF **ARCHITECTURE, INTERIOR DESIGN, AND THE BUILT ENVIRONMENT**

Mapúa's School of Architecture, Industrial Design, and the Built Environment is the Philippines' oldest architecture school. Its students advocate for environmental preservation by balancing aesthetics with sustainability in creating contemporary and functional interior spaces and structures. They also create unique products that can be the next big thing in the market and gain extensive knowledge in sound environmental planning and conservation and management to develop ecologically sustainable and safe environments. Using the latest design tools and software, students learn both the creative and technical aspects of their disciplines.



LIDAR Laboratory puts Environmental Planning students in the cutting edge of Geo-informatics



Design students are equipped with digital presentation and sustainable building information management skills

PROGRAMS

ARCHITECTURE

INTERIOR DESIGN

INDUSTRIAL DESIGN

ENVIRONMENTAL PLANNING



Creative industrial design products in exhibit



Interior design students' design proposal



SCHOOL OF **MEDIA STUDIES**

At Mapúa's School of Media Studies, students are trained to tell stories in different media, but in the same excellent manner. They are mentored by experts in visual art, digital film, broadcast, and new media. The School offers five topnotch programs that turn students into skilled and competitive digital artists and media professionals.

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PROGRAMS

MULTIMEDIA ARTS
DIGITAL FILM
BROADCAST MEDIA
DIGITAL JOURNALISM
ADVERTISING DESIGN





SCHOOL OF **INFORMATION TECHNOLOGY**

With programs accredited by ABET's Computing Accreditation Commission (CAC), the School of Information Technology (SOIT) carries Mapúa's banner of excellence as the country's premier technological school. The University is a recognized Center of Excellence for IT education that breeds highcaliber professionals in the field. The school prepares its students to become future technology leaders who are able to create systems and provide solutions that will cater to the technological needs of businesses and the society.

Apart from its competitive faculty profile, students of SOIT's programs also receiue extensive trainings in the school's partners from the industry. It also challenges its students to gain international experience, allowing them to participate in OJT, plant visit, leadership and cultural training, conference paper presentations, and student exchange activities abroad.

PROGRAMS

COMPUTER SCIENCE

ABET accredited

SPECIALIZATIONS

Intelligent Systems Data Science

Application Development

ENTERTAINMENT AND MULTIMEDIA COMPUTING

SPECIALIZATIONS

Game Development

INFORMATION SYSTEMS

ABET accredited

SPECIALIZATIONS

Business Analytics Enterprise Resource Planning Enterprise Data Management ITAudit IT Service Management

.....

INFORMATION TECHNOLOGY

ABET accredited

SPECIALIZATIONS

Computer Network and Security Cybersecurity

Application Development Enterprise Data Management



Network Configuration and Administration



Game Programming



Application Programming

SCHOOL OF **SOCIAL SCIENCES AND EDUCATION**

Encompassing a grounded and dynamic learning experience, Mapúa's social sciences and education programs offer courses designed to be responsive to current trends. Students learn to develop tools and processes aimed at improving existing academic frameworks through the use of emerging technologies, conduct an in-depth study of humans and the human mind to understand individual and group behavior, and gain knowledge on general psychological concepts rooted in various fields of science. These prepare students to pursue higher studies in the future, like Medicine and Law, or careers in psychotherapy, teaching and research, business, human resource, and the government.

PROGRAMS

BS PSYCHOLOGY

AB PSYCHOLOGY

EDUCATIONAL TECHNOLOGY

State-of-the-Art Biofeedback Equipment for Psycho-Physiological Experiments

E.T. YUCHENGCO SCHOOL **OF BUSINESS AND** MANAGEMENT

Through the programs of Mapúa's E.T. Yuchengco School of Business and Management, students are prepared to enter the globalized corporate environment. Students become equipped with the excellent balance of theoretical knowledge and real-world experience. Graduates may pursue careers in accounting, auditing, banking, business, finance, marketing, hospitality, and service industries, among others.

•••• BUS







Hands-on learning opportunities using Advanced Psychological Assessment Tools





PROGRAMS

ACCO	UNTA	NCY			
• • • • • • • • • •	• • • • • • • •	• • • • • • • •	• • • • • • • • • •	•••••	• • • • • • •
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DEPARTMENT OF **PHYSICS**

Get into the core of matter and energy with Mapúa's undergraduate program in Physics. It provides students with a comprehensive and rigorous training in the fields of physics, interdisciplinary sciences, and engineering which will serve as their foundation as future researchers, data analysts, scientists, professors, and lead engineers of various industries.

PROGRAM

PHYSICS

DOUBLE-DEGREE PROGRAMS

PHYSICS AND ELECTRICAL ENGINEERING

PHYSICS AND ELECTRONICS ENGINEERING

PHYSICS AND MATERIALS SCIENCE AND ENGINEERING



Investigating the atomic and molecular spectra of gases using spectrophotometers

DEPARTMENT OF **MATHEMATICS**

PROGRAM DATA SCIENCE

The Department of Mathematics prepares students for careers in the 21st century. Its Data Science program provides students with relevant skills in mathematics, statistics, computer science, machine learning, data mining, and data visualization, making them equipped in handling big data that will be beneficial in creating better services and new products in the future. Graduates of the program may pursue careers in data-driven industries and organizations.



DEPARTMENT OF **ARTS AND LETTERS**

The Department of Arts and Letters promotes total human development through program and course offerings in the areas of Languages, the Humanities, and in Communication. These gain for the students a solid understanding of the human experience and of human values from which lens they examine themselves, their community, and the world; and because of which they can pursue goals for the common good.

Its initial undergraduate program offering is Bachelor of Science in Technical Communication (BSTC), a pioneering program in the country, and a welcome addition to the growing number of liberal arts programs in Mapúa.

A unique Mapúa program, BSTC is a fusion of the traditional Mapúa strengths (engineering and technology), and its emerging strengths (English and Communication). Its curriculum is founded on a strong liberal education component and reflects the communication challenges wrought by global trends and directions in various fields.

The Department also offers a number of courses in the new General Education Curriculum through the four Clusters it houses: the Humanities Cluster, the English Cluster, the Filipino Cluster, and the Communication Cluster.

PROGRAM

TECHNICAL COMMUNICATION



DEPARTMENT OF **PHYSICAL EDUCATION AND ATHLETICS**

Mapúa's program in Physical Education provides students with an understanding of theoretical and practical knowledge of sports and wellness management. A graduate of the program may pursue a career as a coach, personal trainer, sports analyst, wellness activity manager, gym manager, corporate wellness trainer, sports tourism officer, or recreation director, among others.

PROGRAM

PHYSICAL EDUCATION (MAJOR IN SPORTS AND WELLNESS MANAGEMENT)







GRADUATE PROGRAMS

- Master of Arts in Psychology
- Master in Business Analytics
- Master of Engineering
- Master in Information Technology
- Masters in Multimedia Arts
- Master of Science in Architecture
- Master of Science in Biological Engineering
- Master of Science in Chemical Engineering
- Master of Science in Chemistry
- Master of Science in Civil Engineering
- Master of Science in Computer Engineering
- Master of Science in Computer Engineering by Research
- Master of Science in Computer Science
- Master of Science in Electrical Engineering
- Master of Science in Electrical Engineering by Research
- Master of Science in Electronics Engineering
- Master of Science in Engineering Management
- Master of Science in Environmental Engineering
- Master of Science in Geoinformatics
- Master of Science in Industrial Engineering
- Master of Science in Materials Science and Engineering
- Master of Science in Mechanical Engineering
- Doctor of Philosophy in Chemical Engineering
- Doctor of Philosophy in Chemistry
- Doctor of Philosophy in Computer Engineering by Research
- Doctor of Philosophy in Computer Science
- Doctor of Philosophy in Electronics Engineering
- Doctor of Philosophy in Environmental Engineering
- Doctor of Philosophy in Industrial Engineering by Research
- Doctor of Philosophy in Materials Science and Engineering
- Doctor of Philosophy in Mechanical Engineering by Research

DUAL-DEGREE MASTER'S PROGRAMS

BStudent takes a degree in two phases: first at the home university for a specified period and then at the host foreign partner university for another period. Student will then be conferred with degrees from both Mapúa and its partner international institution.

- MS Biological Engineering (Mapúa) MS Biomedical Engineering (Chung Yuan Christian University)
- MS Biological Engineering (Mapúa) MS Computer Engineering (Chung Yuan Christian University)
- MS Biological Engineering (Mapúa) MS Electrical Engineering (Chung Yuan Christian University)
- MS Biological Engineering (Mapúa) MS Electronics Engineering (Chung Yuan Christian University)
- MS Chemical Engineering (Mapúa) MS Chemical Engineering (Chung Yuan Christian University)
- MS Civil Engineering (Mapúa) MS Civil Engineering (Chung Yuan Christian University)
- MS Environmental Engineering (Mapúa) MS Environmental Engineering and Science
- MS Environmental Engineering (Mapúa) MS Environmental Resources Management
- MS Environmental Engineering (Mapúa) MS Industrial Safety and Disaster Prevention
- MS Environmental Engineering (Mapúa) MS Bioenvironmental Engineering
- MS Computer Engineering (Μαρύα) MS Information and Computer Engineering
- MS Electrical Engineering (Mapúa) MS Electrical Engineering (Chung Yuan Christian University)
- MS Engineering Management (Mapúa) MS Industrial and Systems Engineering
- MS Mechanical Engineering (Mapúa) MS Mechanical Engineering (Chung Yuan Christian University)

JOINT PROGRAMS

- **BS** in Accountancy Master in Business Analytics
- BS in Business Administration Master in Business Analytics
- BS in Electrical Engineering MS in Electrical Engineering
- BS in Chemical Engineering Chemistry MS in Chemistry
- BS in Chemical Engineering Chemistry MS in Environmental Engineering
- BS in Civil Engineering MS in Construction Engineering
- **BS in Civil Engineering MS in Civil Engineering**
- BS in Chemical Engineering MS in Environmental Engineering
- BS in Chemical Engineering MS in Materials Science and Engineering
- **BS in Computer Engineering MS in Computer Engineering**
- **BS** in Electronics Engineering MS in Electronics Engineering
- BS in Electronics Engineering MS in Materials Science and Engineering
- MS in Environmental Engineering Ph.D. in Environmental Engineering
- BS in Materials Science and Engineering MS in Materials Science and Engineering
- BS in Biological Engineering MS in Biological Engineering
- AB in Psychology MA in Psychology
- BS in Psychology MA in Psychology

(Chia Nan University of Pharmacy and Science) (Chia Nan University of Pharmacy and Science) (Chia Nan University of Pharmacy and Science) (Chung Yuan Christian University) (Chung Yuan Christian University) MS Electronics Engineering (Mapúa) – MS Electronics Engineering (Chung Yuan Christian University) (Chung Yuan Christian University)





FULLY ONLINE UNDERGRADUATE AND MASTER'S DEGREE PROGRAMS

Mapúa harnesses digital technology to provide convenient and flexible online learning for students and professionals anywhere in the world. Its innovations for education are powered by its online learning platform Digital Academics and learning management system Cardinal EDGE or Education in the Digital and Global Environment.

The University offers six (6) fully online undergraduate degrees and nine (9) fully online master's degrees.

- Bachelor of Science in Computer Engineering
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Electronics Engineering
- Bachelor of Science in Industrial Engineering
- Bachelor of Science in Computer Science
- Bachelor of Science in Information Technology
- Master of Engineering in Computer Engineering
- Master of Engineering in Electrical Engineering
- Master of Engineering in Electronics Engineering
- Master of Engineering in Industrial Engineering
- Master of Science in Computer Engineering
- Master of Science in Electrical Engineering
- Master of Science in Electronics Engineering
- Master of Science in Mechanical Engineering
- Master in Information TechnologY





THE BENEFITS OF TAKING A FULLY ONLINE DEGREE PROGRAM





UBIQUITOUS LEARNING Self-learning materials such as recorded lectures references By early a second s

recorded lectures, references, modules, and assessments are accessible online regardless of time and location.

By earning your degree online, you can learn on your own schedule and accomplish coursework suitable to your time. For some, online programs provide the opportunity to learn while still working and growing professionally.



STUDENT SUPPORT/LIFE COACHES

Comprehensive student services are provided to fully online students. Life coaches are available to guide students through their academic and student life. They act as advisors to students on matters related to their fully online studies – academic advising and enrollment, career advising and placement opportunities, goal setting, time management and social skills coaching, and other transactions with the University. Online education can cost less, as it eliminates miscellaneous fees and other school associated costs – transport, fuel, board and lodging, etc

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TIME FLEXIBILITY AND ACADEMIC FREEDOM

SELF PACED LEARNING

Online programs promote selfpaced learning. Student can visit materials at a time that doesn't interfere with other commitments, education, work and life.



REDUCED COSTS

Making learning a convenient and exciting experience with digital education

Online course resources

has countless benefits. As premier technological university in the Philippines, Mapúa rides this trend and innovates it to provide better opportunities to make learning exciting and convenient for you.

Integrating technology in lessons

With the known trait of innovation in its DNA, Mapúa continuously create breakthroughs that result its intended academic outcomes. Maximizing the use of its platforms for education. Mapúa has developed your traditional campus setups. and self-paced learning by using cutting-edge technologies to needed to succeed after their

"For our generation of students who that they are familiar with. Making and making teaching and learning activities blended, we are not only empowering our students but experience," said Dr. Bonifacio T. Doma, Jr., Mapúa's Executive Vice President for Academic Affairs.

Mapúa uses Cardinal EDGE, a Blackboard account is provided University. The tool enables other applications that fit the student via Blackboard.

E-textbooks

of educational contents such as e-textbooks, journals, encyclopedias, etc. These tools allow students to pursue advanced learning online

SmartBooks

SmartBook, a digital version of course textbook. It contains the same content within the textbook, SmartBook actively tailors contents depending on the individual needs of the student. SmartBook can be

Lecture videos

This transforms traditional teaching



Virtual Laboratories

The school also uses Labster to carry out student laboratory activities virtually. The tools engaging and effective nature contributes to the attainment of outcomes despite the untraditional setup. It gives students a true-to-life learning experience while in remote mode by using interactive lab simulations and 3D imaging that stimulate a student's cognitive processes, among others.

Another is CloudLabs which covers the areas of basic sciences, namely Biology, Chemistry, and Physics. It provides individual evaluation, laboratories and contents developed according to educational standard, teacher and student guide, multimedia content and simulator, learning activities with design and structure focused on problem solving, critical thinking, as well as activities based on current methodologies, exercises, and techniques for better student understanding.

Assessment Tools

Teachers of the University also uses McGraw-Hill Education Connect, a robust toolkit of

learning resources designed with the flexibility instructors need to unlock the potential of a diverse student population. It provides opportunities for both formative and summative assessment, providing students with a safe place to make mistakes, encouraging deliberate practice, and enabling them to move one step closer to mastery. Its autograding feature allows teachers to maximize more time to teaching for the tool automatically grades assignments and quizzes, while providing an easy-to-read reports so they know which students need more guidance. More so, they can focus on learning outcomes for in Connect, they can create assignments and run report to quickly assess if students are learning crucial course contents. Connect also provides consolidated resources that teachers can access at their fingertips.

Mapúa also uses ALEKS, which is built with an artificial intelligence engine that assesses student individually and continuously, mapping the details of each one's knowledge. It identifies whether each student has mastered a certain topic or is ready to learn the topic. It then uses this knowledge

to make learning more efficient by continuously offering the student a selection of only the topics he/she is ready to learn after the assessment. This builds student confidence and learning momentum.

Industry-used software

Mapúa also uses the matrix laboratory software or commonly known as MATLAB. While still in college, students get to explore and use the software that is utilized by practicing professionals in the industry, such as engineers, professors, and scientists. MATLAB is very useful especially for engineering and programming courses that require computations, data analysis, development of algorithms, and creation of graphs and other applications.

In the advent of technology and big data explosion, students of Mapúa are also trained to use Python and R Programming languages to learn how to systematically analyze data to generate useful information. Data science requires statistical tools and the use of sophisticated mathematical methods for robust computations, which has built-in support for both R and Python. Python is considered to be in the first place in the list of all Artificial Intelligence development languages due to its simplicity and for having plenty of libraries such as Numpy for scientific computations and Pybrain and sci-kit learn for machine learning. On the other hand, R can easily produce welldesigned publication-quality plot, including mathematical symbols and formulae when needed, also showcasing its numerous packages for implementation of supervised machine learning methods like classification and regression, as well as unsupervised methods like clusterina.

Innovations for education **Digital Day** In the event of a disaster or

threat that causes sudden class suspensions, Mapúa has Digital Day as an alternative to on-campus discussions. Students only have to access their Blackboard accounts, for lectures will be delivered online by their professors. Because this method ensures non-disruption of classes, there will be no need to hold make-up classes on weekends

to catch up on missed lessons during the day on which classes were suspended.

Digital Rush

The University also offers fully online sections in order for students to avoid the morning and evening rush hours. Several classes that are scheduled from 7 a.m. to 9 a.m. and from 7 p.m. to 9 p.m. are conducted online. This innovation saves students from feeling the pressure of missing out a class due to heavy traffic congestions.

Micro-credentials from topnotch HEIS

Mapúa brings world-class education to its students. It has partnered with Coursera, an American online learning platform, allowing students to take courses online to gain certifications or micro-credentials from topnotch higher education institutions abroad. You will be granted unlimited access to the about 3,600 courses developed by top instructors from over 190 leading universities and organizations in the world. Students get to explore beyond their required courses for Coursera offerings cover various fields of studies such as engineering, data science, computer science, mathematics, biology, medicine, business, digital marketing, humanities, and social sciences, among others. After completing the module, the offering university will grant students a digital certificate that they can add to their LinkedIn accounts, which will surely be an advantage in the future as they seek jobs to practice their profession.

"By using different modern tools, we are making the delivery of content more efficient, effective, accessible, and relevant. All of these efforts are being done toward the successful achievement of student outcomes," said Dr. Doma.

GOING FURTHER WITH INTERNATIONAL EXPERIENCE: MAPÚANS GEARED FOR WORLD OF PRACTICE



> Mapúa students take part in various international programs, making them ready and competitive for the global arena

We often hear that learning is not confined to the classroom, and this Mapúa University believes. For one to become globally competitive, he must experience the world.

With this, Mapúa University has elevated its education to a high ground by providing students with international experience, which complements its globally recognized academic programs. Spearheaded by its Office of International Career and Exchange Programs (ICEP), Mapúa has been forging linkages and partnerships with various companies and universities abroad for its international programs.

"International programs help our students become more aware and adapt to alternative and multifaceted approaches to learning. It allows them to learn independence, expand their horizons, and gain different perspectives, which are traits that are needed to be globally competitive," said Engr. Rosette Eira Camus, director of ICEP.

Currently, Mapúa has over 100 partner institutions for its international programs, catering to both local and foreign students. Through the years, students and graduates have benefited from the international programs. From 2013 to present, nearly 3,000 Mapúans have participated in the international programs.

Mapúa, through the Office of International Linkages for Research and Development, also sends students to undergraduate research internships. The University has now 58 partners across 23 countries and has sent 196 outbound research students abroad.

Attaining hands-on experience

In 2010, Mapúa started to focus on international onthe-job trainings (OJT). Since then, it has sent 360 students to various companies in different parts of the world such as China, Iran, Japan, Malaysia, Singapore, South Korea, Spain, Taiwan, the United States, and Vietnam. Currently, the University has 28 partners for international OJT.

Among the Mapúans who had their OJT abroad is Engr. Alex Roy Recella, a BS Mechanical Engineering graduate. In 2016, he served as an intern for Nagatsu Precision Co. Ltd. located in Tokyo, Japan. "International on-the-job training is an amazingly beneficial venture that every college student should pursue in their life, as it will help us find success in the increasing globalization of the world economy," Engr. Recella said.

According to Engr. Recella, participating in the international OJT was out of his comfort zone. Part of his experience were immersing in a new culture and learning a new language. Nevertheless, these challenges have helped him become a better individual and prepare for the corporate environment.



Having independence, developing international business relationships, and not being afraid of getting out of your comfort zone—all of these qualities will help you progress not just in the professional world but also in your personal life".

ENGR. ALEX ROY RECELLA **BS Mechanical Engineering** Intern, Nagatsu Precision Co. Ltd.

MAPÚA UNIVERSITY INTERNATIONAL PROGRAMS

Since 2013,

Mapúans have been sent abroad for the University's international programs

Foreign students have come to Mapúa to study



STUDENT EXCHANGE

Foreign students came to Mapúa

Mapúans have been sent abroad

JOINT PROGRAM



INTERNATIONAL SEMINAR AND WORKSHOP



Mapúans have been sent abroad to attend seminars and workshops

ENGLISH CAMP

Foreign students have come to Mapúa to study

SUMMER SCHOOL

Foreign students have come to Mapúa to study



Mapúans have been sent abroad

INTERNATIONAL PLANT VISIT

TERNATIONAL ON-THE-JOB TRAINING



Mapúans have conducted their OJTs abroad

Mapúans have

been sent

abroad

"Having independence, developing international business relationships, and not being afraid of getting out of your comfort zone-all of these qualities will help you progress not just in the professional world but also in your personal life," he added.

Furthermore, Mapúa conducts international plant visits, giving students the global exposure they need in the industry. The program, which is part of the University's curricula, provides students with relevant academic experiences that aim to match the theoretical knowledge they learn inside the classroom with the actual production systems and business processing plants.

Students from Mapúa's engineering and information technology schools participate in international plant visits. Currently, the University sends students to Hong Kong, Japan, Korea, Malaysia, Singapore, Taiwan, Thailand, and Vietnam for the program.

Exploring career opportunities, taking part in nation building

Mapúa also sends students abroad for its student exchange program. The program allows students to earn credit courses from the partner university. Meanwhile, students who participate in the joint program take on degrees at Mapúa and a partner university abroad for specified periods. This allows them to be conferred with degrees from both universities.

Alyssa Yvonne Alipis, a Mapúa Mechanical Engineering student, has participated in the University's joint program. She has obtained a degree in Mechanical System Engineering from South Korea's Kumoh National Institute of Technology (KIT) and is finishing her degree at Mapúa.

Alipis had a fruitful two-year stay at the Korean educational institution. She became a part of the KIT Intelligent Robotics Laboratory and co-developed "Intelligent-Terrain Robot," a disaster response robot that served as her supervised laboratory project. With her team, she also conducted a capstone design project titled "Development of Auto-Tilting System to Improve Driving Stability."

These projects received numerous awards and distinctions from different events and competitions.

With all these, Alipis feels confident in practicing her craft anywhere in the world.

the program.

Besides these personal triumphs from her international experience, Alipis wants to impart the knowledge and skills she has acquired for a better Philippines.

"I have a vision about how I could possibly help Philippines in improving its technology. There are a lot of technologies in South Korea that can be employed here in the Philippines," she said.

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> Through Mapúa's joint program, Alipis has already obtained a bachelor's degree from Korea's Kumoh National Institute of Technology, a partner university for

"I have an edge over other students because in 4 to 5 years, I was able to get two degrees. More so, one of them was obtained abroad, in a country that is advanced in terms of technology," she shared.

Mapúa's international programs provide its students a unique learning experience, making them better charged with knowledge and skills. These make them ready and competitive for the global arena, securing careers anywhere in the world.



STUDENT EXCHANGE

One of the primary features of the student exchange program is the credit course. The number of units that the exchange student will take will depend on the agreement between Mapúa and the host university per semester/quarter.

DUAL-DEGREE PROGRAM

Mapúa offers dual-degree programs with its partner universities abroad. This involves a student taking a degree in two phases: first at the home university for a specified period and then at the host university for another period. At the end of the program, depending on the agreement with the partner university, the student will be conferred with degree(s) from both universities.

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ENGLISH CAMP

Mapúa has developed an intensive program for inbound exchange students to promote the use of spoken English in various settings such as academic, professional, cultural, and social situations.

INTERNATIONAL SUMMER CAMP

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In the summer, outbound exchange students flock to partner university to join in its international summer school. This school at the undergraduate level has a goal of exposing students to the foreign culture, history, and global best practices. Activities during the summer school include cultural and historical visits, industry and plant visits, adventure trips, and immersion with locals.

INTERNATIONAL PLANT VISIT

processing of plants.

INTERNATIONAL OJT

International on-the-job trainings are part of Mapúa's initiatives to ensure students' professional readiness in the working culture abroad as well as competitiveness in the global arena.

International plant visits are part of the University's curriculum to provide students with relevant academic experiences that aims to match the theoretical knowledge learned inside the classroom with the actual production systems and business



Mapúa's cutting-edge education has successfully launched the careers of its graduates, with many notable alumni making their mark in a variety of fields including engineering, sciences, design, business, multimedia, and sports.



VNI

CARVEY MAIGUE

Innovator of AuREUS: Aurora Renewable Energy & UV Sequestration Sustainability Winner, International James Dyson Award 2020 Electrical Engineering



Multimedia Arts (2013)



RAYNIER BRIZUELA Director, Asuang Nominee for Best Original Screenplay 67th FAMAS Awards



ARCH. ALVIN FELIPE

First Registered Foreign Architect ASEAN Region Director, Peluche Pte. Ltd. Architecture (2005)



GLENN BANAGUAS

2019 The Outstanding Filipino (TOFIL) Awardee Junior Chamber International (JCI) Chemical Engineering (1996)

(L-R) DARWYN JAMES GOLING, ADRIAN ROBERT DOROTEO EMMANUEL FREEMAN PALOMA, ALEC DENJI SANTOS, JACOB MARTIN MANGUIAT. LOUIE ANDRIE REYTA, AND FRANKLIN GODWIN LAÑOJAN

Innovators of Project Fire Luminosity Alert and Multisensory Equipment (FLAME)

DOST-PCIEERD 2017 Young Innovators Program (YIP) Awardee 2019 Regional Invention Contest and Exhibits - National Capital Region, First Runner-Up Senior High School









OFFICE OF STUDENT AFFAIRS

Creates a safe, conducive for learning, and healthy campus environment for Mapúans.

OFFICE OF THE PREFECT OF DISCIPLINE

Takes the forefront in resoluing student disputes and complaints, and implements rules and regulations to all Mapúans.

CENTER FOR GUIDANCE

AND COUNSELING Facilitates students' holistic development: educational, vocational, and psychological potentialities.

CENTER FOR SCHOLARSHIPS AND **FINANCIAL ASSISTANCE**

Ensures that financial assistance and grants are available to academically deserving and creatively gifted Mapúans.

CENTER FOR STUDENT ADVISING

Provides support ranging from academic to peer to personal for students' development.

CENTER FOR CAREER SERVICES

Facilitates international programs for inbound and outbound students.

CENTER FOR SPIRITUAL DEVELOPMENT

Caters to the spiritual well-being of all Mapúans.

CENTER OF CULTURAL DEVELOPMENT

Offers a diverse cultural treat to Mapúans to showcase their creative talents through the Mapúa Tekno Teatro and the Mapúa Cardinal Singers.

CENTER FOR STUDENT PUBLICATIONS

Publishes the school organ, the New Builder, and the school yearbook, Cardinal and Gold.

HEALTH SERVICES DEPARTMENT

Caters to the physical wellness of all Mapúans.



(L-R) MA. CATHYRINE RAVINA (Industrial Eng JANELA MAE ZAMBRANO, AND DENISSE JOY DAYAO

TEAM KAIZEN

Innovators of SPHERE: An Ultra-wideband Technology-based Innovation for Search and Rescue Operations in the Philippines DOST-PCIEERD 2020 Young Innovators Program (YIP) Grantee



Multimedia Arts (2014)

Bronze Medalist, 4x400 meters Mixed Relay Category 2019 SEA Games **Physical Education**

























PRODUCING THE NATION'S **OP BUILDERS** B CREATORS

Mapúa University takes pride in its growing list of exemplary graduates with a number of Mapúans earning spots in the Top 10 board passers of the 2019 and 2020 engineer and architect licensure examinations. The University now has a total of **374 board topnotchers** in 11 of PRC- administered exams since 2000: architecture, chemical engineering, chemistry, civil engineering, electrical engineering, electronics engineering, environmental and sanitary engineering, geology, interior design, mechanical engineering, and metallurgical engineering.

TOP-PERFORMING SCHOOL

JANUARY 2019 ARCHITECT LICENSURE EXAMINATION

TOP-PERFORMING SCHOOL

AUGUST 2019 SANITARY ENGINEER LICENSURE EXAMINATION

TOP-PERFORMING SCHOOL

JANUARY 2020 SANITARY ENGINEER LICENSURE EXAMINATION

ARCH. GENNA AINA G. DOMINGO 4TH PLACER 6TH PLACER

ENGR. ERICK JOHN B. REYES 3RD PLACER

APRIL 2019 REGISTERED ELECTRICAL ENGINEER LICENSURE EXAM

3RD PLACER

ENGR. JASON ROY M. AVES 7TH PLACER

6TH PLACER 7TH PLACER 8TH PLACER

ENGR. MARK DARRYL D. ANG 5TH PLACER ENGR. JOHN ALDUS T. DADO 6TH PLACER

ENGR. EMERSON M. RENDON 1ST PLACER ENGR. RANDOLPH NATANIEL A. MACARAEG 4TH PLACER

2ND PLACER

ARCH. DENZEL LEON DANTIS 2ND PLACER

JANUARY 2019 ARCHITECT LICENSURE EXAM

ARCH. ULYSSES EDUARDO B. DE GUIA JR.

APRIL 2019 ELECTRONICS ENGINEER LICENSURE EXAM

ENGR. PAUL NATHANIEL M. BACUD

MAY 2019 CIVIL ENGINEER LICENSURE EXAM

ENGR. RALPH CHRISTIAN N. NONO

ENGR. JULES-RENAN A. MONTANO

ENGR. MARK ALEXANDER G. BUNDANG

MAY 2019 CHEMICAL ENGINEER LICENSURE EXAM

AUGUST 2019 SANITARY ENGINEER LICENSURE EXAM

JANUARY 2020 SANITARY ENGINEER LICENSURE EXAM

ENGR. JOHN MEGRYAN B. SAMARTINO

JANUARY 2020 ARCHITECT LICENSURE EXAM

TO THE TOP: A MAPÚAN'S JOURNEY TO BOARD EXAMS DOMINANCE

Best thesis awardee. Cum laude. Board topnotcher, twice.

These distinctions summarize the fruitful academic and early professional life of Engr. Peter Matthew T. Fowler and have made him as one of Mapúa University's best graduates.

A double-degree graduate, Engr. Fowler aced both of the board examinations he took, topping the May 2018 Chemical Engineer Licensure Examination and ranking third in the October 2018 Chemist Licensure Examination. In his stay at the University, Engr. Fowler made it to the President's List twice and graduated cum laude for both of his programs. He also had the privilege to conduct his thesis at a top engineering school in Taiwan which went on to win the Best Thesis Award from Mapúa's School of Chemical, Biological, and Materials Engineering and Sciences (CBMES)

An adage says, success is like a tip of the iceberg—everyone seems to see the accomplishments but the efforts to achieve these remain hidden. This holds true for Engr. Fowler as he believes that achieving something requires more than merely wanting it, just as his stay at Mapúa taught him.

"The Mapúan training requires a lot of determination and perseverance; if you want to succeed and excel in your field, giving up must never be an option. Fight for your dreams and don't be afraid to push your limits and dream big," he shared.







Imparting wisdom. Engr. Fowler delivers an inspirational message to Mapúa freshmen and Grade 11 students during the general assemply of FroSHS Week 2018.

Choosing Mapúa

Most people tend to have their dream professions changed as they go through different phases in life. And Engr. Fowler was no different. His dream profession changed from surgeon to biologist to an accountant.

Despite having an evident interest in science, Peter, as he is called by his family and friends, never saw himself as an engineer. But once he learned about chemical engineering, he got interested and wanted to pursue such program.

"I was in my senior year in high school when a cousin introduced to me the idea of taking up chemical engineering. I looked it up and realized that it is a melting pot of the sciences, aimed at solving problems," he shared.

However, choosing the school for his degree was a different story. Engr. Fowler decided to take up chemical engineering at Mapúa due to its resounding reputation as a top engineering and technological university. "When I told my high school adviser that I wanted to pursue chemical engineering, she immediately told me 'Go to Mapúa'," he recalled. Initially set to enroll in the BS Chemical Engineering program, Engr. Fowler underwent a scholarship interview and was presented the idea of taking a double-degree program. Acknowledging the opportunity in front of him, he grabbed the offer and pursued Mapúa's BS Chemical Engineering-BS Chemistry program.

"I was highly encouraged to take up the double-degree program and why not? It would only take me two more terms; so I grabbed it," he furthered.

Having experienced the Mapúa student life and conquering it with flying colors, Engr. Fowler advises aspiring Mapúans to be prepared and committed in order for them to do well in their studies.

"Know very well what you're signing up for. Do research on your intended program and make sure you are whole-hearted when you enroll into it," he said.



Applying the lessons

Challenges and hardships are inevitable in every journey. In Peter's stay at Mapúa, managing time and setting priorities were the biggest ones.

The fast-paced environment under the guarter system challenged Peter and transformed him into a much better individual.

"Eventually, all these became engraved as experience, molding me into what I am now: goals-oriented, guality-driven, and flexible even under high pressure," Engr. Fowler said.

Facing the obstacles that were the chemist and chemical engineering boards, Engr. Fowler was entering a familiar territory—he had limited time to prepare. Applying the lessons he learned from school, he strategized a game plan that eventually helped him ace the board examinations.

"For both, I gathered the best review materials as suggested by my advisers, and I never



skipped a lecture I haven't fully understoodeven if it meant not being able to cover all topics for review," he shared.

Engr. Fowler's success in the board examinations is a feat that is rarely accomplished. Among the few people he shares this distinction with are four fellow Mapúa CBMES graduates—a testament to the caliber of graduates the University produces, and at the same time, a proof that success is attainable with the right preparation and mindset.

"It is something that comes out of intense determination not to finish as a topnotcher but to really understand and appreciate my profession," he shared.

Engr. Fowler shares that the "secret" to passing and topping the board is mastering the basics. As board examinees might focus on the more complicated topics, he advises them to focus more on the basics, as this allows them to integrate ideas thoroughly and analyze easier.

"I strongly believe that anyone who shares the same outlook in learning can accomplish what we have done." he said.

Being contented with less is also a no-no for students who want to be successful. For Engr. Fowler, students must not study just to pass but to learn. "Excellence starts with the right attitude. Aim for excellence, not just mediocrity."

Peter also highlights the importance of surrounding oneself with people who share the same priorities. Luckily for him, he had motivating and supportive family, friends, and professors, who boosted his confidence during his study up until the board examinations.

"I was also surrounded by very motivating people, who, up until my board exams, helped boost my confidence. This is why I always attribute my success in the exams not only to my Mapúan training, but also to those who believed in me more than I believed in myself," he said.

Gearing for higher highs

With all the achievements, Engr. Fowler feels thankful to his alma mater, Mapúa University. "When the university said, 'If you have big dreams, start here,' it wasn't only to attract enrollees. It was the real deal. With what I have gained from the school—lessons and credentials—I am confident that I will be able to realize whatever endeavors I have in the future," he said.

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When the university said, 'If you have big dreams, start here,' it wasn't only to attract enrollees. It was the real deal. With what I have gained from the school lessons and credentials— I am confident that I will be able to realize whatever endeavors I have in the future"

Engr. Fowler's journey is indeed a story of success. His right mindset and attitude, hard work, and perseverance led to his accomplishments in school and in the board examinations. Through these qualities, Peter can be assured that his journey is not over, but more successes are coming his way.



After his graduation and before his preparations for the boards, Engr. Fowler immediately taught subjects at the Mapúa's School of CBMES. Wanting to be more equipped in imparting his knowledge to others, Peter has decided to take further studies.

Now, he is currently pursuing a Master of Science degree in Chemical Engineering abroad and is hoping to follow it up with a doctoral degree at another dream foreign university.





► ABET accreditation team being briefed on the capabilities of the EECE Communications Laboratory during their tour of facilities in 2009.

Mapúa started offering BS Biological Mapúa became the first school in Southeast Asia to receive accreditation from the Engineering Accreditation Commission of ABET for its Computer, Electrical, and Electronics Engineering programs.

ABET granted accreditations to five more engineering programs of Mapúa: Chemical, Civil, Environmental and Sanitary, Industrial, and Mechanical Engineering programs.

ABET's Computing Accreditation Commission also granted accreditation to Mapúa's Computer Science and Information Technology programs.





▶ The Philippine Technological Council - Accreditation and Certification Board for Engineering and Technology (PTC-ACBET) awarded the Computer Engineering Program of Mapúa University an Accredited Status for providing equitable quality education to its clientele and is recognized as meeting the initial academic requirements for engineers in the Philippines.

Mapúa received the highest level of accreditation from the Philippine Technological Council - Accreditation and Certification Board for Engineering and Technology (PTC-ACBET), for its Industrial, Civil, Electrical, and Electronics Engineering programs. It is the Philippines' representative in the Washington Accord, which promotes outcomes-based standards in engineering education worldwide.



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Four more programs of Mapúa were granted PTC-ACBET accreditation, namely, Chemical,

Computer, Mechanical, and Environmental and Sanitary Engineering programs.

Mapúa's Computer Science, Information Systems, and Information Technology programs received accreditation from the Philippine Computer Society (PCS) Information and Computing Accreditation Board (PICAB). PICAB is a provisional signatory member of the Seoul Accord, the counterpart of the Washington Accord in the field of Information Technology.

Mapúa became the institution to have the most number of ABET accredited programs in a single entity in the Philippines with 14, namely Biological Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Electronics Engineering, Environmental and Sanitary Engineering, Industrial Engineering, Manufacturing Engineering, Materials Science and Engineering, Mechanical Engineering, Computer Science, Information Systems, and Information Technology.

The Commission on Higher Education (CHED) also recognized seven of Mapúa's undergraduate programs as Centers of Excellence (COE): Chemical, Civil, Computer, Electrical, Electronics, Environmental and Sanitary, and Mechanical Engineering programs. It also tagged Mapúa as a Center of Excellence for I.T. education, with program offerings such as Computer Science, Entertainment and Multimedia Computing, Information Systems, and Information Technology.. The University's Industrial Engineering program was also tagged as a Center for Development (COD).



Mapúa University was granted an ISO certification on environmental management systems or ISO 14001:2015 by TÜV-SÜD. It also upgraded its ISO certification on quality management systems from 9001:2008 to 9001:2015.

Mapúa entered

Quacquarelli Symonds (QS) Asia Top 500 University Rankings (Rank 401-450).

Mapúa is included in the Sustainable Development Goals (SDGs) ranking in the first ever Times Higher Education (THE) University Impact Rankings.

Mapúa again earned a spot in Quacquarelli Symonds (QS) Asia Top 500 University Rankings (Rank 451-500).

Mapúa University moved up from being a 3-Star to a 4-Star institution under the QS Intelligence Unit's (QSIU) QS Stars Rating System.

Mapúa entered the global Times Higher Education (THE) Impact Rankings 2020, ranking in five Sustainable Development Goals out of 17. Overall, it placed 601+ out of 766 participating schools worldwide.

Mapúa boosts research publications in 2019 and beefs research capacity with more partnerships

Strengthening its presence in the global arena, Mapúa University continues to increase its research publications and forge linkages and partnerships with international institutions.

As part of its internationalization efforts, Mapúa is increasing the number of research papers in Scopus, the largest abstract and citation database for peer-reviewed literature.

For 2019, the University recorded 380 published conference papers, articles, and reviews, more than doubling 2018's 180 publications, data from the Office of Directed Research for Innovation and Value Enhancement shows. Mapúa has so far tallied 232 publications for the current year, bringing the total to 982 publications from years 2017 through 2020.

Meanwhile, the University addresses its needs for international visibility for research and development through the Office of International Linkages for Research and Development (ILRAD). Established in 2012, it is tasked to create opportunities and establish platforms, venues, and avenues for research together with international research partners and collaborators.

To date, Mapúa has 58 partners across 23 countries for research internships.

"Forging linkages with international partners for research and development provides various benefits including the provision of environmental ambiance to students that encourages outlook to strive for higher and lifelong learning," expounds ILRAD Director Dr. Delia B. Senoro.



Swedish researcher David Fredriksson from KTH Royal Institute of Technology, Stockholm, Sweden. Part of his research on the development of wood-based membrane (beema bamboo and spruce cellulose) for water purification was conducted in Mapúa.











Inbound student researcher Erik Jonas Henrik Lybecker from the Department of Engineering Physics of KTH Royal Institute of Technology presenting his study on the exploration for the optimal location of a biorefinery within the Philippines using mixed-integer linear programming.

Doctor of Philosophy in Environmental Engineering student Ricardo F. De Leon, Jr., at National Cheng Kung University, Taiwan, working on the harmful cyanobacteria monitoring of Laguna Lake water, a project under the TP-WRIC.





Mapúa University research group with Professor Anders Hult of KTH Royal Institute of Technology, Sweden, who works on Beema Bamboo Research.

Membranes produced by beema bamboo, spruce, or pine cellulose of various weights with polyvinyl alcohol.



MS Environmental Engineering student Karmela Inna Mae Medrano working on his thesis study, "Behavior of various fractions of Heavy Metal on surface sediments in the South and West Bay of Laguna Lake, Philippines," which was funded by the Taiwan-Philippines Water Quality Research and Innovation Center (TP-WRIC) in Mapúa.



SCOPUS-INDEXED PUBLICATIONS



Mapúa has recorded **982** published conference papers, articles, and reviews in Scopus from years 2017 through 2020. The University tallied **380 publications** for 2019, more than doubling its output for 2018.

AREAS OF STUDY FOR RESEARCH INTERNSHIPS

- Chemical Science and Engineering
- Electrical Engineering
- Environmental Science and Engineering
- Information and Computer Engineering
- Biological Science and Technology
- Biomechatronics Engineering
- Biomedical Engineering
- Industrial and Systems Engineering
- Pharmacy and Science
- Animal Vaccine Technology
- Architecture and Built Environment
- Membrane Technology
- Nuclear Science and Technology Development
- Biomedical Engineering and Environmental Sciences
- Medical Sciences Industry
- Bioscience Technology

PARTNER UNIVERSITIES FOR RESEARCH INTERNSHIPS INDUSTRIES

Australia Bulgaria France India Indonesia Japan Kenya Malaysia Singapore South Korea Sweden Taiwan

COUNTRIES UN ORGANIZATION

Thailand United Kingdom United States Canada China Greece Iceland Ireland Italy Serbia Vietnam

WHY RESEARCH MATTERS IN MAPÚA

All great world inventions started with a question. A question constructed out of sheer curiosity, which then turns into discoveries fueled by passion and dedication to research. As a leader in Phillippine engineering and technological education, Mapúa University maintains a culture of learning where its students are not afraid to ask questions and are challenged to conduct research to create new knowledge and innovations that are beneficial to all.

With its high regard for knowledge generation, Mapúa directs efforts to research, development, and innovation (RDI), and gives them equal treatment and seriousness as its instructions, going above and beyond its duty as a higher

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education institution of the country. "Our goals for Mapúa RDI are to be able to produce research translatable into products, systems, or processes useful to people and the planet and to create intellectual properties that could result in the school having self-sustaining research programs," said Mapúa University President Dr. Reynaldo B. Vea.

Through research colloquiums, immersions with the industries, and thesis projects while in their undergraduate years, Mapúans are exposed to in- and off-campus activities where they can apply and increase their knowledge in their field of studies. Results have clearly been notable the past years with student researches recognized not only for being economically viable but also for their sustainable and promising features.

Contributing to medical studies

Serving as an event to respond to its commitment as a Philippine learning entity that generates new knowledge and innovations, Mapúa University hosts its institutional research colloquium every year to showcase research studies conducted by students of its different schools and departments. This 2020, in its second research colloquium, stood out one student's research on the possible cure for diabetes.

BS Chemistry and Chemical Engineering student Ronel Mendoza's study entitled "Bioassay-Guided Isolation and Structure Elucidation of Bioactive Phytoconstituents with Antiheperglycemic Activity from the Aerial Parts of Premna odorata Blanco," was awarded Best Paper. Mendoza's thesis study is the first bioassayguided isolation done on the aerial parts of Premna odorata Blanco, or locally recognized as Alagaw tree, used as an herbal medicine for folkloric applications of cold, cough, urinary tract infection, headache, and diarrhea.

Mendoza grinded parts of the Premna odorata Blanco and subjected them to a series of bioassay-guided fractionation. In every stage of isolation, each fraction is tested for its antidiabetic activity.



▶ (Left) Experimental set-up called Column Chromatography used to isolate the components from the plant (Right) The isolated components from the plants; a mixture of β-sitosterol and stigmasterol.

In conducting his study, Mendoza encountered challenges due to the limited resources and unavailability of some equipment. But with his adviser. Dr. Kathlia Cruz of the School of CBMES. he was provided with the best alternative courses of action to deal with the problems and constraints. He shared that the research-related activities provided by the University to the students are valuable for they help enhance both their analytical and communication skills. "The ability of coming up with a hypothesis-driven approach to a problem given the constraints and options available is a soft skill that every professional must possess. These skills are necessary for future professionals that are expected to deal with the industry's problems," he added.



"The fraction that exhibited the highest activity was further purified until I obtained the mixture of β -sitosterol and stigmasterol. These components were able to inhibit enzymes that are known to hydrolyze carbohydrates into glucose," said Mendoza.

The isolated compounds, β -sitosterol and stigmasterol, Mendoza found in the plant showed significant antidiabetic activity that may be developed and explored as an adjunct drug for the treatment of Type 2 diabetes.



b BS Chemistry and Chemical Engineering student Ronel Mendoza awarded Best Paper for his study on the treatment for diabetes during the 2nd Mapúa University Research Colloquium held last January 23, 2020.





Members of Mapúa University Senior High School's Team FLAME presenting Project Fire Luminosity Alert and Multisensory Equipment in the 2018 National Science and Technology Week forum at the World Trade Center

▶ (Top from left to right) Jacob Martin Manguiat, Alec Denji Santos, Engr. Ericson Dimaunahan, Louie Andrie Reyta, Franklin Godwin Lañojan, (buttom from left to right) Emmanuel Freeman Paloma, Adrian Robert Doroteo, and Darwyn James Goling of Mapúa Team FLAME.

Addressing societal hazards

In 2017, young innovators of Mapúa Senior High School were recognized by the Department of Science and Technology-Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD) for developing a fire detecting and monitoring equipment called Project FLAME. Project FLAME or Project Fire Luminosity Alert and Multisensory Equipment is powered by the Internet of Things (IoT), which uses heat signature mapping and multisensory system designed to reduce fire incidents in the country. It uses video image analysis and creates an accurate early detection system that will send alerts and warnings to the Bureau of Fire Protection (BFP) for faster fire incident response.

The team was composed of then Grade 12 STEM students Jacob Martin Manguigat, Emmanuel Freeman Paloma, Alec Denji Santos, Darwyn James Goling, Louie Andrie Reyta, Adrian Robert Doroteo, Franklin Godwin Lanojan, and Engr. Ericson Dimaunahan as adviser.

"During our risk reduction management class, we saw the trend and the rate of fire incidents in the country, and it is increasing every year. Using knowledge in our own field of expertise, we developed Project FLAME." said Emmanuel Freeman Paloma, team member,

The accuracy of the equipment is based on its double trigger feature, which will only send an alarm when heat irregularities are shown in the heat map and the fire hazard sensor is triggered.

Synergizing the research trainings of Mapúa senior high school and college exposes senior high school students to the rich and diversified research culture of the University, which ensures the quality of their research ouputs. "Our research advisers are experienced researchers in the college level. This is the advantage of having our college manpower in our research projects. We are benefitting in terms of having a replication of the collegiate culture and practices in the senior high school level," said Dr. Lilibeth Sabino, principal of Mapúa Senior High School.

What started out from being Mapúa Senior High School's robotics team and best research awardee in the Senior High School research colloquium, Team FLAME has come a long way with their project now being funded by DOST-PCIEERD for production and adoption by the BFP.

"The energy of our young students to do research is intact. They think outside the box and are not easily distracted. You just have to mentor them," said Engr. Ericson Dimaunahan.

Engineering to promote Philippine art and culture

Mapúa Mechanical engineering students Irvin Joearl Garcia, Jastin Liwanag, Jonathan Miguel Ravalo, and Vinzwill Christian Subaan also developed a pandan-slitting machine prototype aimed to help Filipino farmers of the weaving industry.

Pandanus tectorius, screw pine or simply known as pandan, is a species of plant related to palm used for weaving banig, a handwoven mat widely used in Filipino households. The students' pandan-slitting machine is designed to help minimize the time consumed in the traditional weaving process, a long and intricate one, which often starts with the removal of thorns, cutting of pandan leaves into strips, followed by air drying, flattening, and dyeing of the strips,



and lastly the actual weaving process. With the machine. Filipino pandan farmers can have an efficient and cost-effective tool that can remove thorns and cut pandan leaves into working strips ready for air drying. Its reliable features can guarantee measurement consistency of the pandan strips, ensuring quality and the increase in rate of banig production.

"It is our intention to help spread awareness to the Mapúa community about the importance of promoting the Philippine cultural heritage by means of incorporating engineering and technology in our country's traditional arts and crafts." said Vinzwill Christian Subaan.

Mapúa vows to continue working on this feat to create more outputs for the community, laying in the foreground its capacities for RDI and furthermore increasing its local and international visibility which is a known edge Mapúa has been giving its graduates.

> Prototype of the pandan-slitting machine that was developed by Mapúa School of Mechanical and Manufacturing Engineering students.

For the People and Planet: Mapúa Schools give back to the community

Mapúa University and its subsidiaries, the Malayan Colleges Laguna (MCL) and the Malayan Colleges Mindanao (MCM), continuously extend help to various communities in the Philippines. Activities organized and delivered by the institutions are driven by the mother school's sustainability campaign "Education for People and Planet", its lifelong promise as premier engineering and technological school of the country.

"As an educational institution it is very important that Mapúa dedicates itself to serving the community in order to stay relevant. In the particular case of sustainability concerns, Mapúa's involvement is furthermore driven by the realization that the university's future is inextricably bound to that of human society. Climate change affects us all. Responding to it should involve us all," said Dr. Reynaldo B. Vea, President and CEO of Mapúa.

Key areas for community activities

Mapúa mobilizes its campaign by encouraging and providing support to its schools, departments, and its subsidiaries to hold out activities under the following key areas: health, environment, livelihood, education, aid and

infrastructure, values formation, sports and recreation, arts, and consultancy programs. It also demonstrates its commitment to supporting the United Nations' Sustainable Development Goals through its teaching, research, and knowledge transfer. Since 1998, it has conducted over 900 community extension programs, headed by its Office of Social Orientation and Community Involvement Program (SOCIP). Its National Service Training Program has also delivered a total of 859 outreach activities since 2013.



Micro-hydro power generator was donated to Tawangan, Benguet



Mapúa conducted a relief distribution in Marawi and Pagayawan, Lanao del Sur

Mapúa installed wind turbines at Sitio Bayucan,

Taytay, Rizal to provide renewable source of

electricity in the community.



Amid the coronavirus pandemic, Mapúa is one with the nation and its people in creating support channels to aid sectors affected by the lockdowns. Using its expertise in both engineering and technology, coupled by its drive for humanitarianism, the University has launched new innovations and projects to help local government units and communities combat the spread of COVID-19 and prepare for possible outbreaks in the future.

One of its remarkable breakthroughs for 2020 was the development of the GOCLEAN Chamber or Mobile Disinfection and Anti-Coronavirus Chamber during the early weeks of the enhanced community guarantine (ECQ). Faculty members and researchers served as consultants of USHER Technologies Inc. It is a low-cost, mobile disinfection chamber, which provides full-body disinfection within seconds. It features a fast, easy, and safe disinfection mechanism to help mitigate the risks of acquiring COVID-19.



The GOCLEAN Chamber developed by engineers of USHER Technologies Inc. and professor consultants of Mapúa

The University also provided support to frontliners by producing personal protective equipment (PPE), specifically face shield frames. It partnered with the Department of Trade and Industry Philippine Trade Training Center-Global MSME Academy (DTI PTTC-GMEA) to develop 2,371 face shield frames, using its Fabrication Laboratory.





▶ Face shield frames produced by Mapua School of Mechanical Engineering Dean Mark Manuel donated to frontliners and relief volunteers

Mapúa also launched eSalba in September, a mobile and web-based application, which is aimed at reducing disaster and health risks in the island province of Marinduque. The tool will help local government units (LGUs) in improving the disaster and health resiliency capabilities of 54,000 households in the island. Users can see the locations of those who will report incidents, as well as the whereabouts of responders, areas for evacuation, and health centers in the community, creating a quick and coordinated disaster response.

Dr. Mark Manuel, Dean of the University's School of Mechanical and Manufacturing Engineering, also produced 1,000 3D-printed face shield frames that were donated to Mapúa security personnel, the NCR Regional Community Defense Group, Army Reserve Command, the frontliners of the Medical City Taguig, some beneficiaries in Bicol, and San Miguel volunteer repackers. Dr. Manuel also created an online video tutorial on 3D printing.





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We recognize that the current generation of students are very knowledgeable and concerned about the environment. A Mapúa education should reinforce such an attitude and arm them with the means to act on the problems."





▶ (From Top) Face masks distribution held at Barangay 867 Zone 95, Pandacan, Manila ; Turnover of several gallons of disinfectant solution to a partner barangay

SOCIP also led the distribution of disinfectant solutions made from the chemical chlorine donated by Mapúa alumni association. A total of 48 carboys, which is equivalent to about 765 gallons of disinfectant solution, were produced from the donation. It also led the distribution of disinfectants such as alcohol and liquid hand soaps to 43 barangays in Pandacan in July. A total of 5,000 pieces of face masks were also donated to the barangays of Pandacan and 5 other barangays in Intramuros, Manila.

Mapúa is also one of the three founding schools of Bayanihan Eskwelahan, a collection of higher education institutions (HEIs) of the Philippines who are actively participating in the reconstruction of the country during the pandemic. Member HEIs commit to offer their expertise and physical resources to provide backup support to the country's already overloaded healthcare system. It now has a total of 14 member institutions.

"We recognize that the current generation of students are very knowledgeable and concerned about the environment. A Mapúa education should reinforce such an attitude and arm them with the means to act on the problems. This is a major intended outcome of our academic programs," shared Dr. Vea.









MCM donated 100 armchairs made out of plastic wastes to Matina Aplaya Elementary School, Davao.











Mapúa held out a relief good distribution in the areas affected by the Taal volcano eruption.

Students of Mapúa participate in the construction of houses in Bistekville I, Habitat Site in Pavatas, Quezon Citv.

Other activities:

Livelihood Trainings

- Branch Circuit Wiring Seminars
- Marketing Workshops
- Tutorial Classes on Mathematics and Physics

Manila





various parts of the country



Mapúa and MCL turned over the antennas designed for better TV reception to residents of the Panguil River Eco Park in Pangil, Laguna.



development at Baseco Compound, Port service, etc. Area, Manila and Pasiq Line St., Sta. Ana,



Faculty members and students of Mapúa Mapúa administers health services help in Gawad Kalinga's housing project like free medical check-up, dental

Programs for continuous improvement with DepEd Computer Literacy Trainings

- Zumba and Circuit Trainings PC Troubleshooting Seminars English Camps
- Welding Workshops

MAPÚA UNIVERSITY Admissions office

658 Muralla Street, Intramuros, Manila 1002 Philippines Tel No.: +63 (2) 8247-5000 Telefax: +63 (2) 8524-5570 Email: admissions@mapua.edu.ph



www.mapua.edu.ph