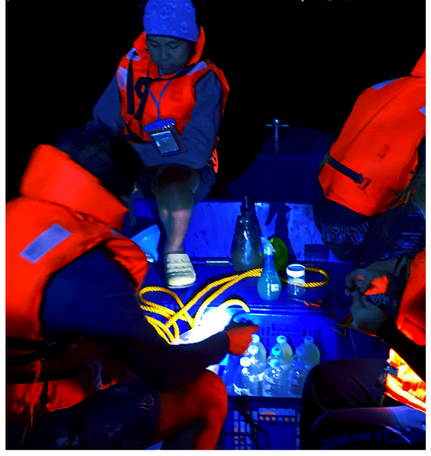
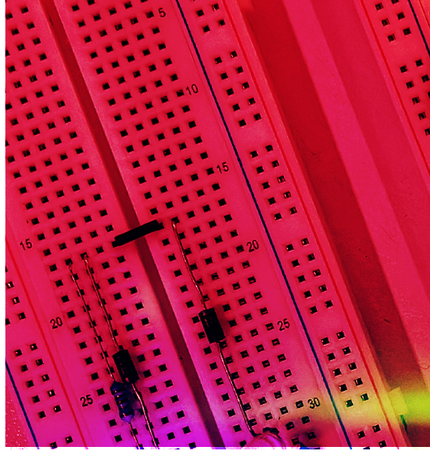
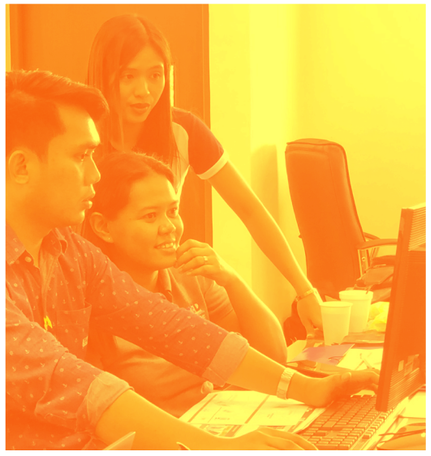
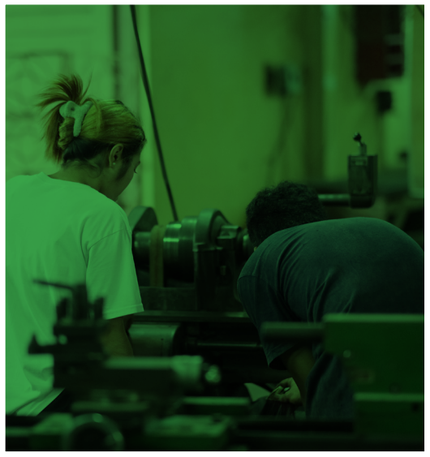
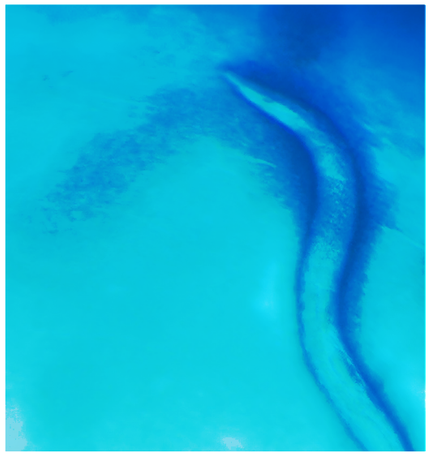
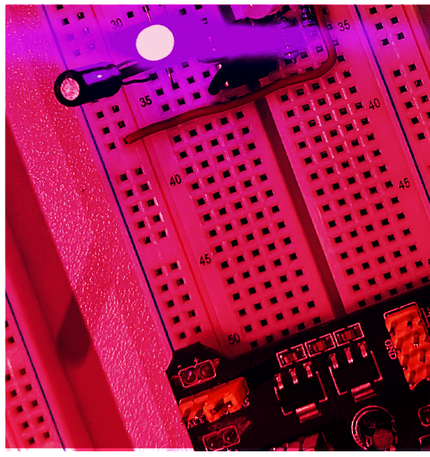







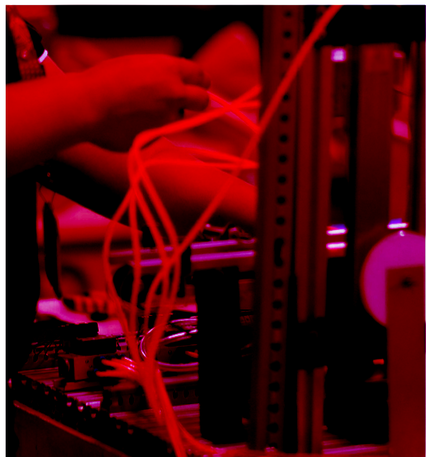



RINDANAO STATE UNIVERSITY
ILIGAN INSTITUTE OF TECHNOLOGY

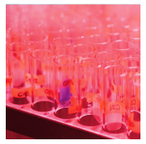
INFLUENCING *the* FUTURE

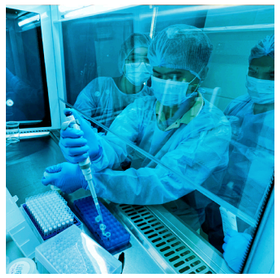
Research Compendium

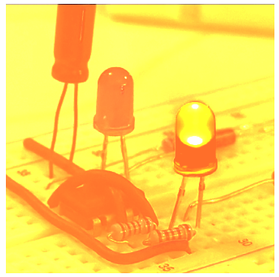












MSU-IIT's VISION

A research university committed to the holistic development of the individual and society

MISSION

To provide quality education for the sustainable development of the nation and the global community

CORE VALUES

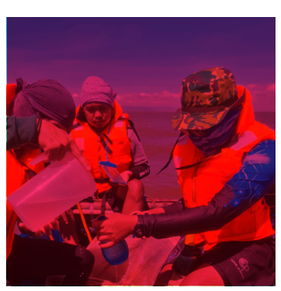
Honor and Excellence
Service and Compassion
Resilience and Innovation

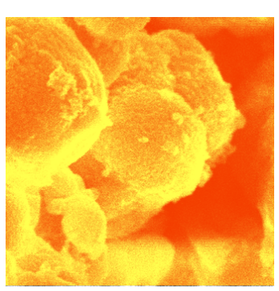
ABOUT OVCRE

The Office of the Vice Chancellor for Research and Enterprise (OVCRE) at MSU-IIT spearheads research, innovation, and enterprise efforts, offering support and services to faculty, students, and staff. It oversees project development, funding, and ethical clearance processes, promoting collaboration and managing intellectual property rights. The Office coordinates with university units, develops policies, and ensures compliance with regulations. It provides financial oversight and advises the Chancellor on research matters. The OVCRE's main functions include policy development, funding allocation, collaboration facilitation, compliance assurance, dissemination, and project evaluation.

Produced and Distributed

Office of the Vice Chancellor for Research and Enterprise





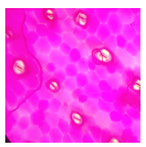
Message from the Office of the University Chancellor

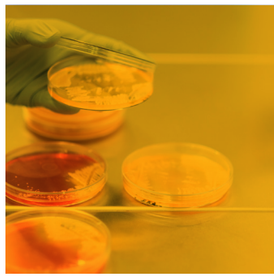
For the first time, we unveil to you a printed catalogue showcasing MSU-IIT's Research Equipment and Laboratory Services, marking a momentous leap forward in our commitment to research excellence and innovation.

This first-ever printed catalogue stands as a testament to our University's dedication to providing cutting-edge resources and facilities that propel our researchers to the forefront of their fields. It represents a tangible manifestation of our unwavering commitment to supporting groundbreaking research, fostering collaborations, and inspiring academic achievements that will influence the future.

Within the pages of this catalogue, you will find a treasure trove of information detailing the state-of-the-art equipment and laboratory services available to our faculty, students, and to our community. It is a comprehensive guide designed to empower researchers, providing them with the tools and facilities needed to push the boundaries of knowledge and contribute to transformative discovery.

I extend my heartfelt appreciation to the remarkable team who have tirelessly dedicated themselves to the compilation, design, and realization of this momentous achievement. Your vision, commitment, and unwavering pursuit of excellence have paved the way for this great initiative. It is through your collective efforts that MSU-IIT takes this remarkable stride toward strengthening our research capabilities.





I would also like to express my deep appreciation to the funding agencies, our academic partners, and industry collaborators whose unwavering support has been instrumental in realizing this achievement. Your commitment to research excellence and your belief in the power of knowledge have laid a solid foundation for a future fueled by innovation and societal progress.

Congratulations to each and every one of you who contributed to the realization of this first-ever printed catalogue. May it inspire and guide the path of countless researchers, enabling them to embark on remarkable journeys of exploration and discovery.

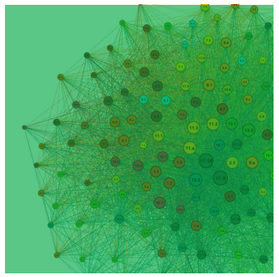
Prof. Alizedney M. Ditucalan, JD, LLM
MSU-IIT Chancellor

Message from the Office of the Vice Chancellor for Research and Enterprise

I am delighted to share with you the inaugural issue of our Catalogue of Services and Facilities of R & D Centers, a publication that showcases the innovative, and impactful research and development transpiring within our MSU-IIT.

Being the Vice Chancellor for Research and Enterprise, I am continually inspired by the novel and relevant works conducted by our faculty, researchers, and students across disciplines. This Catalogue serves as a testament to their dedication, creativity, and commitment to advancing knowledge and addressing the needs of the targeted clients and social communities.

This maiden issue features a diverse array of laboratory equipment, each contributing unique insights and solutions from biotechnology to groundbreaking discoveries in materials science that will highlight the breadth and depth of our research endeavors. Also, this catalogue will foster interdisciplinary collaboration and knowledge sharing between and among academia and the community of researchers as well as to better position them in tackling complex problems and in driving meaningful change.

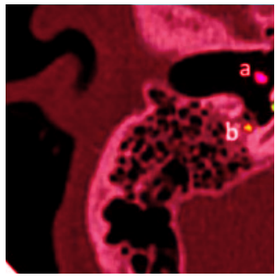


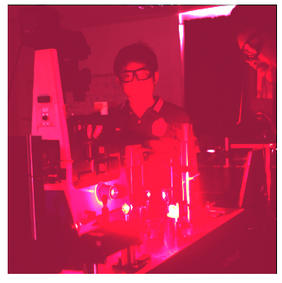
We have a new OVCRE Organizational Structure. This means OVCRE is ready to spark innovative research, create strategic alliances, and lead significant projects to improve collaboration and procedures. This further solidifies our commitment to research and enterprise that help in solving societal issues and concerns in the constantly changing landscapes in all spheres.

Having a catalogue of services and facilities at MSU-IIT is crucial for effective resource management, facilitating research and teaching activities, promoting collaboration, ensuring safety and compliance, aiding budgeting and planning, enhancing efficiency, attracting external partnerships and funding, and promoting the university's visibility and reputation.

I extend my heartfelt appreciation to all those who have contributed to the development of this catalogue. Your contributions have been instrumental in bringing this project to fruition.

Prof. Ephrime B. Metillo, PhD
Vice Chancellor Research and Enterprise





Message from the Research Dissemination Office

On behalf of the Research Dissemination Office, we are excited to present this maiden issue of the University Catalogue.

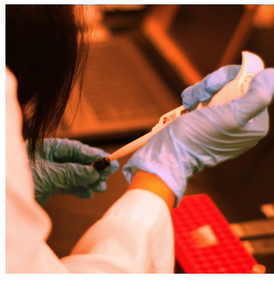
Our primary objective with this catalogue is to highlight the various centers and offices within MSU-IIT's Office of the Vice Chancellor for Research and Enterprise. These offices are not only dedicated to the pursuit of pure knowledge production but are also committed to making meaningful contributions to our community. Through this catalogue, we aim to raise public awareness about their services and encourage the community to take advantage of them.

Furthermore, we hope that this catalogue will serve as a valuable resource for the industry in our region, and beyond Mindanao, fostering greater academic-industry collaboration. We believe that by showcasing our research capabilities and services, we can build stronger partnerships that drive innovation and development.

We extend our sincere gratitude to the Centers, and to all the staff and research assistants who contributed to this project. Your hard work and dedication have made this catalogue possible.

Thank you, and we hope you find this catalogue informative and useful.

Primitivo III Cabanes Ragandang
Director of Research Dissemination



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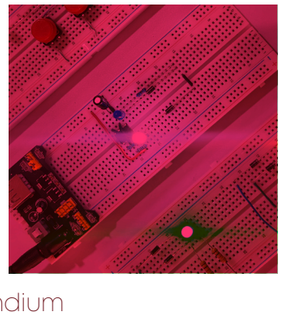
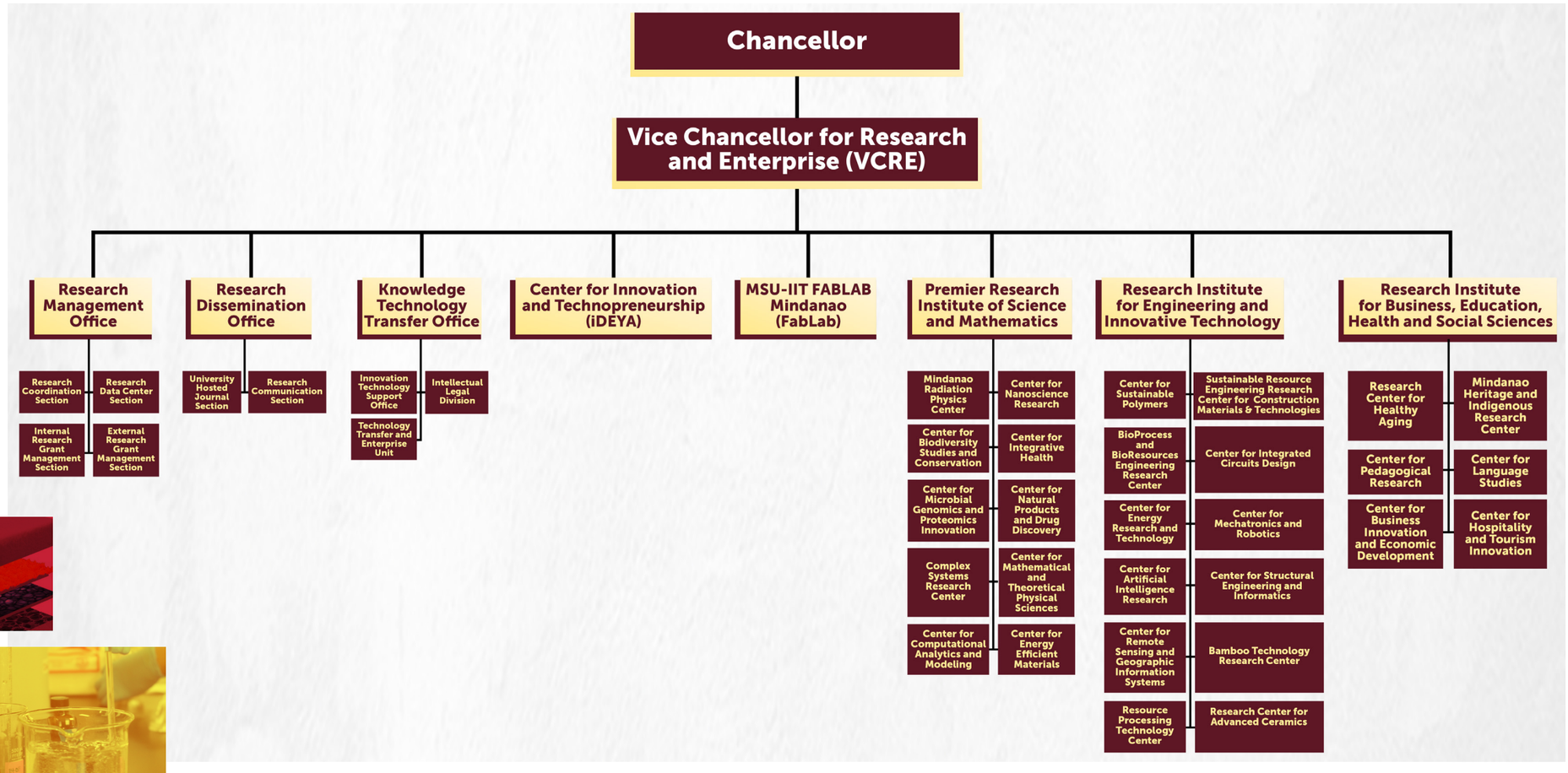
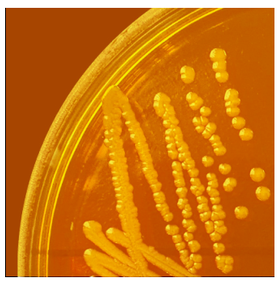




3rd Floor, Main Library
Building (OVCRE)
ovcre.dr@g.msuiit.edu.ph
bit.ly/DRwebsite
(063) 222.8630 I 4113 (local)



Research Manangement Office

The Research Management Office (RMO) supervises and promotes research initiatives at the University, aiming to enhance the research process through training, expertise, and services. It empowers faculty, staff, and students to conduct independent research for the benefit of the local community and nation, managing, monitoring, and evaluating research activities for innovation and impactful outcomes.

SERVICES OFFERED

INTERNALLY-FUNDED RESEARCH

- Eligible faculty and staff can submit project proposals to access funding from various units. These proposals cover processing, implementation, and monitoring/reporting of internally-funded research projects.

EXTERNALLY-FUNDED RESEARCH

- External funding applications are primarily the responsibility of the proponent, though the RMO will aid them, especially regarding University-related matters. The RMO will assist by facilitating requests for the Chancellor's endorsement of research proposals and providing administrative support for approved external research projects.

RESEARCH DISSEMINATION AWARD

- The Research Dissemination Award (RDA) allows MSU-IIT researchers to showcase their work internationally. Upon approval of a funded project, researchers can use Category A RDA once and Category B once. They can also access Category A once a year and Category B twice a year, pending fund availability.

PUBLICATION AWARD

- Research outcomes, like publications in reputable journals, increase MSU-IIT's visibility in the research community, potentially elevating its ranking among national and ASEAN universities. Recognizing the dedication of faculty and staff to research and publication is crucial. Awards are available for various publication formats, including journals, books, chapters, and in-house

PUBLICATION FEE SUBSIDY

- Publish papers in top-tier Scopus-indexed Journals to boost MSU-IIT's ranking in QS and potentially T.H.E. World University rankings. Published articles in will be given a Publication Fee Subsidy of up to Php 40,000.00 for Q2 journals and up to Php 50,000.00 for Q1 journals.

VISITING RESEARCH PROFESSOR (VRP)

- The RMO supports MSU-IIT's global research collaboration via the VRP Program, inviting foreign-based Filipino or international professors whose expertise aligns with university research goals. VRP participants stay for a minimum of two weeks to a maximum of one semester, extendable based on need.

Research Dissemination Office

The Research Dissemination Office (RDO) is mandated to facilitate the dissemination and communication of the research activities and outputs of the University. Dissemination and communication are vital in the research process since they can lead to greater understanding and appreciation of research by the public and the stakeholders and to improved public engagement in science. The Office shall also create platforms which shall improve and boost the visibility, comprehension, evaluation of the University's research outputs, thereby drawing attention to their economic, social and cultural value.

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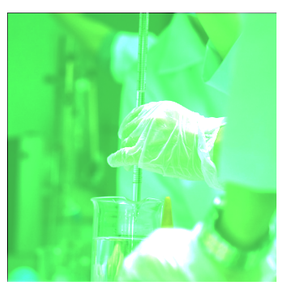
ovcre.ord@g.msuiit.edu.ph
(063) 222.8630 | 4113 (local)



SERVICES OFFERED

RESEARCH SUPPORT SERVICES

- Academic article writeshop: We help researchers write, finish, and submit their journal articles through short courses in article writing
- Accreditation and Indexing Management: We oversee the accreditation and indexing processes for University journals to meet national and international standards.
- Collaborative Publication Engagements: We forge partnerships with external institutions for co-publication opportunities, expanding the reach of research findings.

RESEARCH PROMOTION AND DISSEMINATION

- Promotion Activities: We promote research findings through organizing seminars, book launches, fairs, and other dissemination events.
- Science Communication Training: We conduct training sessions and seminars on Science Communication to enhance dissemination effectiveness.

CAPACITY BUILDING AND EVALUATION

- Research Communication Capacitation: We assist in building the capacity of University constituents in communicative strategies and packaging of research outputs.
- Award Application Evaluation: We aid in evaluating Research and Dissemination Award applications, ensuring fair assessment.

PUBLICATION SERVICES

- Preliminary Review: We conduct preliminary reviews of research outputs and manuscripts for potential publication.
- Publication Marketing: We market publications to maximize their impact and reach within and beyond the academic community.

3/F Knowledge and
Technology Transfer Office
Building
ovcre.kkto@g.msuiit.edu.ph

Knowledge Technology Transfer Office

The Knowledge Technology Transfer Office (KTTO) is the channel through which the two (2) important components of the innovation process, the technology developers and the technology seekers, can connect and accomplish technology transfer processes. The office will facilitate the exchange of knowledge and technology by fostering, promoting, and enabling university-industry interactions.

Through KTTO, MSU-IIT partners with the private sectors in a wide spectrum of technology areas. To foster an inspiring, engaging and vibrant entrepreneurial environment, KTTO offers a wide range of entrepreneurship activities to promote entrepreneurship.

SERVICES OFFERED

TECHNOLOGY AND OTHER IP CREATION

- serves as patent search facilities providing patent information and patent analytics to guide research project development; maintains databases of the University's technologies and staff expertise; and develops strategies and policies for managing MSU-IIT's IP portfolio.

TECHNOLOGY AND OTHER IP PROTECTION

- solicits disclosure of inventions and assesses patentability of invention disclosures; drafts and files patents and other IP protections; and builds and manages a robust portfolio of MSU-IIT IP assets.

TECHNOLOGY AND OTHER IP COMMERCIALIZATION

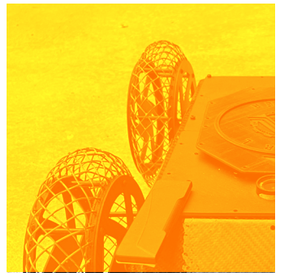
- prepares technical and market assessment to evaluate commercial potential of technology; matches technologies with potential industry partners; engages in negotiations and executes license agreements and other agreements with business partners; manages and monitors existing license agreements and milestones; and provides assistance for early-stage faculty startup or spin-off companies).

FOSTER UNIVERSITY - INDUSTRY PARTNERSHIPS

- serve as conduit between MSU-IIT and the industry, facilitating the transfer of technology via licensing and other modes of transfer; and link researchers and industry and other external partners for research collaboration, further development of technologies or IP commercialization.

STRENGTHEN IP AWARENESS, EDUCATION AND PUBLICITY

- provide education and training on intellectual property (IP) protection and technology; transfer process, policies and procedures; organize seminars, workshops, conferences and other events; and prepare and distribute informative brochures and technology briefs.



Center for Innovation and Technopreneurship

Established in 2016, the Center for Innovation and Technopreneurship (iDEYA) of MSU-IIT is Mindanao's first Technology Business Incubator (TBI), funded by the Department of Science and Technology (DOST) — Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD). With the slogan "Where Ideas Take Flight," iDEYA aims to foster innovation and entrepreneurship, driving local economic and social development. Since its inception, iDEYA has launched various programs, aiding startups in bringing their ideas to market and expanding its services, thereby enhancing the startup ecosystem in Iligan City and Mindanao. It offers two BOR-approved programs: the MSU-IIT Young Innovators Summer Apprenticeship Program and the iDEYA Startup Challenge Program. iDEYA is part of the TBI Philippine Network under the DOST-PCIEERD's TBI 4.0 Program, facilitating co-incubation opportunities and technology scaling for local startups, supported by Republic Acts: RA No. 11293 (Philippine Innovation Act) and RA No. 1137 (The Innovative Startup Act).

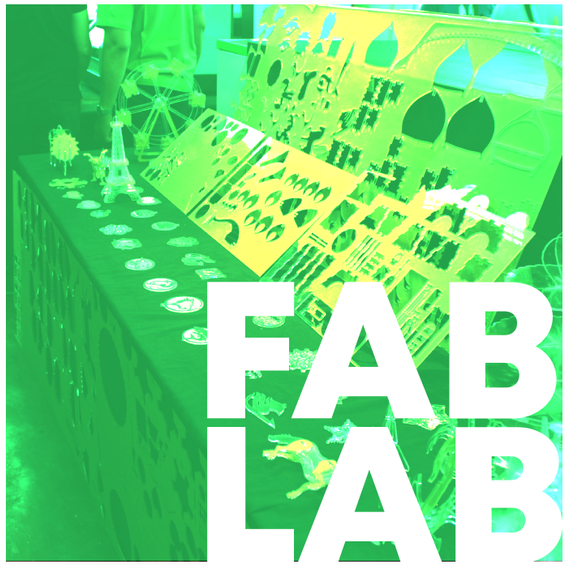
iDEYA Office
Building 22, CEBA-Annex
ideya@g.msuiit.edu.ph
(+63) 9163951930

SERVICES OFFERED

- The iDEYA Mindanao StartUp Challenge is an annual competition inviting potential founders to present their ideas.
- MYISAP is a month-long startup bootcamp tailored for young innovators interested in refining their ideation stage.
- iDEYABrew serves as our flagship ideation program workshop, where we provide instruction on ideation and design thinking to groups, organizations, and students.
- iDEYA Flight Talk is a regular virtual session featuring success stories, experiences, and expertise of various startup enablers all around the globe.

iDEYA is mandated to run incubation and ideation programs such as iMSC, MYISAP, iDEYABrew, iDEYA flight talk, and other related services to the startup community.

Room 122, Level 1
COET Building
falbal@g.msuiit.edu.ph
09269130142



MSU-IIT Fablab Mindanao

The MSU-IIT FabLab Mindanao (FABLAB) is not just a digital fabrication facility; it Is a hub for innovation and entrepreneurship, bridging creativity and technology. It's where ideas come to life. As Mindanao's first digital fabrication lab, it supports researchers and businesses by helping them create physical prototypes. Located within the MSU-IIT, known for its focus on engineering, science, and technology, the FABLAB aims to empower researchers in these fields to develop prototypes. It also assists small and medium enterprises in product development. With its motto "Prototyping and Collaborating Ideas," the FABLAB aspires to be an innovation hub, transforming ideas into tangible value and prosperity.

SERVICES OFFERED

- We offer assistance with various aspects of 3D printing for individuals, businesses, and industries. This service requires clients to have completed machine operation training for 3D printers and possess their digital designs in .stl/.obj format.

- We provide assistance with laser cutting and engraving processes for individuals, businesses, and industries. This service requires clients to have completed machine operation training for laser cutters and possess their digital designs in .dxf or .bmp format.

- We provide support for CNC routing and machining tasks for individuals, businesses, and industries. This service requires clients to have completed machine operation training for CNC Routers and possess their digital designs in .dxf or .sbp format.

- We offer wood lathe services for woodturning and woodworking projects, assisting individuals, businesses, and industries with their woodturning needs. This service is for clients trained in Wood Lathes; no digital files are needed as it's manual.

- It offers customized embroidery for 6-needle machines, serving individuals, businesses, and industries. With multi-needle machines, it delivers efficient, high-quality embroidery solutions. This service requires clients trained in Digital Embroidery with a .PES design file.

- It offers print and cut vinyl plotter services, including designing, printing, cutting, and applying vinyl graphics. Tailored for businesses, individuals, and industries, these services provide comprehensive assistance in vinyl graphic production. This service requires clients trained in Vinyl Plotter operation with a .PNG or .PSD design .file.

FACILITIES

3D PRINTER

- constructs three-dimensional objects layer by layer based on a digital 3D model, utilizing additive manufacturing technology. Unlike subtractive methods, which remove material, these printers add material sequentially. They find applications across various industries like manufacturing, prototyping, healthcare, education, and hobbies. Their benefits include rapid prototyping, customization, and the ability to create intricate geometries not feasible with traditional methods.

LASER CUTTER/ENGRAVING MACHINE

- employs a powerful laser beam to precisely cut or engrave materials. Widely used in manufacturing, signage, woodworking, jewelry making, and hobbies, these machines provide a versatile and efficient solution for cutting and engraving various materials, proving valuable across industries and creative projects and engraving a variety of materials, making them valuable tools in many industries and creative endeavors.

CNC (COMPUTER NUMERICAL CONTROL) ROUTER MACHINE

- a computer-controlled cutting machine that carves, engraves, and routes materials like wood, plastic, foam, and metal. It operates using rotary cutting tools guided by precise computer instructions, making it a versatile and indispensable tool in modern manufacturing.

WOOD LATHE

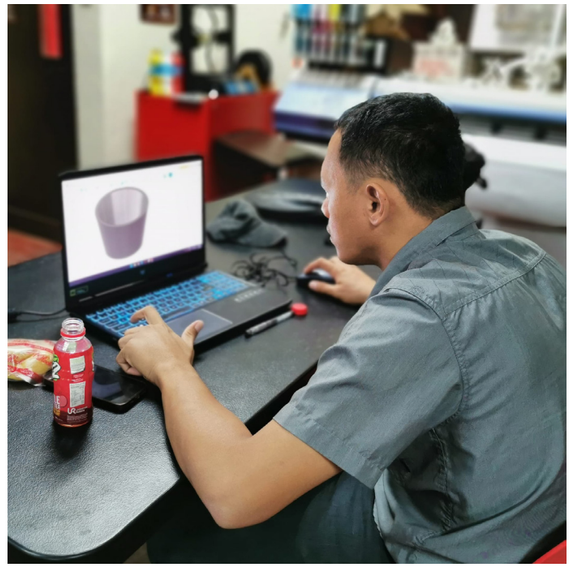
- a specialized woodworking machine that shapes and turns wood into cylindrical or symmetrical forms. It rotates wood at high speed while a cutting tool removes material, enabling woodworkers to craft intricate designs. Wood lathes are essential in woodworking, used to create bowls, vases, table legs, and more, catering to hobbyists, artisans, and professionals.

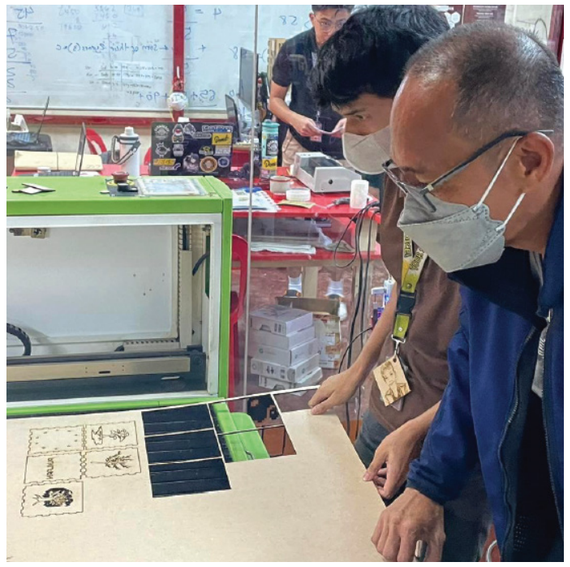
EMBROIDERY MACHINE WITH 6 NEEDLES

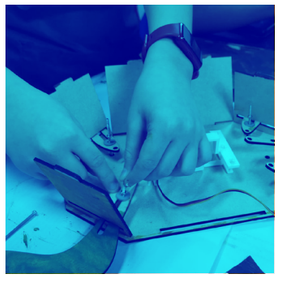
- specializes in intricate designs on fabric. Unlike single-needle machines, it allows simultaneous use of multiple colors, boosting efficiency and creativity. Essential for both professionals and hobbyists, it offers increased productivity and creative potential.

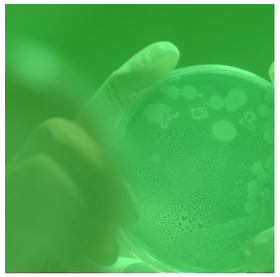
PRINT AND CUT VINYL PLOTTER

- a versatile tool for creating custom-designed graphics and signage. It combines a vinyl cutter with a digital printer, producing stickers, decals, labels, and more with vibrant colors and precise cutting. Essential for businesses and individuals seeking professional-quality results, it's used across signage, graphics, and apparel industries.









2nd Floor, Director's Office
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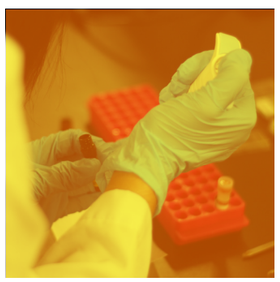
(063) 224.5250 | 221.4051
4346 (local)

Premier Research Institute of Science and Mathematics

Established in 2015 under BOR Resolution NO. 240, the Premier Research Institute of Science and Mathematics (PRISM) is the research arm of the College of Science and Mathematics at MSU-IIT. It aims to address societal issues through its core program, D3NP, and ten (10) Research Groups covering diverse areas such as Applied Mathematics, Biotechnology, and Renewable Energy. Equipped with cutting-edge facilities, PRISM fosters interdisciplinary collaborations, seeks partnerships with institutions and industry, secures funding, develops patentable technologies, provides capacity-building programs, and offers community support services.



The conversion of PRISM's existing Research Groups into specific Research Centers is envisioned to greatly enhance their productivity and thereby boost their national and international reputation. The conversion will also offer more leverage and opportunities for increased funding and collaboration. Moreover, the creation of the centers is in line with the University's 10-year vision and 5-year research and development agenda. Center for Computational Analytics and Modeling (CCAM); Center of Applied Mathematics and Statistics (CAMS); Center of for Biodiversity Studies and Conservation (CBSC); Center for Microbial Genomics and Proteomics Innovation (CMGPI); Center for Integrative Health (CIH); Complex Systems Research Center (CSRC); Center for Nanoscience Research (CNR); Center for Natural Products and Drug Discovery (CNPDD); Mindanao Radiation Physics Center (MRPC); Research Center for Energy Efficient Materials (RCEEM); and Center for Mathematical and Theoretical Physical Sciences (CMTPS).

To support globalization and internationalize academic research, institutions need to promote high-quality, innovative, and interdisciplinary research. Faculty from the College of Science and Mathematics (CSM) initiated projects needing advanced facilities and a supportive environment where the research output contributes to building knowledge and technology transfer.

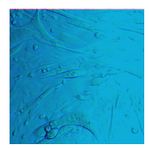
The PREMIER RESEARCH INSTITUTE OF SCIENCE AND MATHEMATICS (PRISM) comprises ten (10) R & D centers.

Since its founding, PRISM has formed numerous collaborations with industries, universities, and funding bodies. The PRISM Council was established on November 25, 2016, and the PRISM building was inaugurated on December 2, 2016, and officially handed over on March 29, 2017. The "Discovery, Development, and Delivery of Natural Products (D3NP)" Core Program for 2017-2027 was launched on March 31, 2017.

Since 2017, PRISM has significantly increased its operational laboratories, funded projects, and faculty researchers.

SERVICES OFFERED

- Liquid Nitrogen, charged per liter, provided that the clients have their own cryogenic container.
- Rotavap Usage, charged per sample per day.
- LHT Oven Usage, charged per temperature setting and hours of use.
- Probe-type Sonicator Usage, charged per run.
- Turbovap Usage, charged per sample.
- ULF Usage, charged based on storage duration.
- Centrifuge Usage, charged per run.
- Dehydrator Usage, charged per hour.
- RTPCR Usage, charged per sample.
- Technical services per Research Center



FACILITIES

LIQUID NITROGEN GENERATOR SYSTEM

- used to generate Liquid Nitrogen (LN2). LN2 is -196°C and is commonly used for cryogenic storage of cells and snap-freezing of sample tissues. It can also serve as a coolant and consumable for certain equipment, such as FTIR and BET.

ROTARY EVAPORATOR SYSTEM (ROTAVAP)

- used to make crude extracts in natural products research. It removes solvent from liquid mixtures through gentle heating, rotation, and evaporation under vacuum.

LABORATORY HIGH TEMPERATURE (LHT) OVEN

- a specialized oven designed to reach and maintain high temperatures (Max. 600°C).

PROBE-TYPE SONICATOR

- a device that uses ultrasonic energy to break down samples or facilitate mixing. It uses a probe that is placed in direct contact with the liquid mixture.

SOLVENT EVAPORATOR SYSTEM (TURBOVAP)

- used to further concentrate your crude extract after rotary evaporation. It completely dries your sample, removing any remaining solvent, through using N_2 gas a heat bath.

ULTRA LOW TEMPERATURE FREEZER (ULF)

- a specialized freezer that can store samples and materials at extremely low temperatures (-80°C to -86°C).

CENTRIFUGE MACHINE

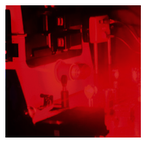
- a machine that utilizes centrifugal force to separate particles from liquid mixtures, for easier decantation (Max. 6000 rpm).

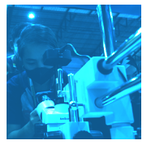
LARGE CAPACITY DEHYDRATORS

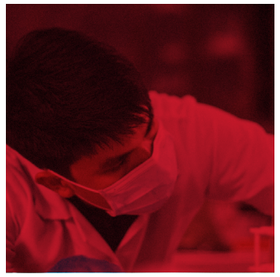
- used to remove moisture from large quantities of sample materials by using heat (Max. Temp. 100°C).

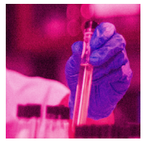
REAL-TIME POLYMERASE CHAIN REACTION (RTPCR) SYSTEM

- used to amplify and quantify specific DNA sequences in real time. It allows for the detection and measurement of gene expression levels, genetic variations, and pathogens. It is widely used in molecular biology research, clinical diagnostics, and infectious disease detection.







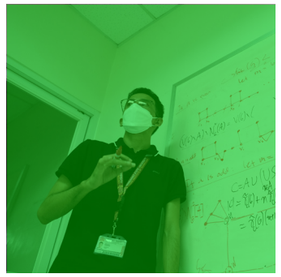


MRPC

Mindanao Radiation Physics Center

The Mindanao Radiation Physics Center (MRPC) focuses on the study of the fundamental nature of radiation, and its interaction with matter, using the principles and tools of mathematics, statistics, physics, chemistry, and biology. The group also studies the various applications of radiation, including but not limited to, medicine, nuclear energy, nuclear safety, nuclear security, radiation protection, materials testing, agriculture and geology.

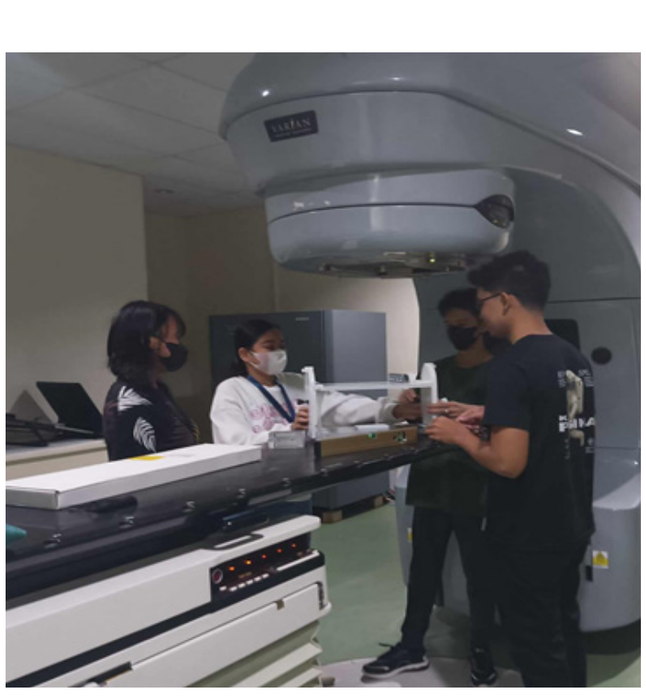
The Center fosters interdisciplinary research by bringing together scientists, engineers, and medical professionals to address societal challenges through cutting-edge radiation science projects. Its mission includes promoting collaboration across various fields, providing training programs, and facilitating partnerships with industry and government for practical applications of research.

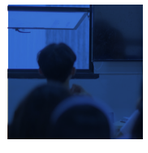


3rd Floor, Mindanao Radiation Physics Center, PRISM Building
prism@g.msuiit.edu.ph
(063) 221.4050
4141 / 4299 (local)

SERVICES OFFERED

- Conduct cutting-edge research in radiation science, with a focus on interdisciplinary projects that have the potential to make a significant impact on society.
- Foster collaborations between researchers in different fields, including mathematics, statistics, physics, chemistry, materials science, biology, engineering, agriculture, and geology.
- Provide a comprehensive training program for students, postdoctoral researchers, and junior faculty in the field of radiation science.
- Establish partnerships with industry and government organizations to promote the translation of radiation science research into practical applications.



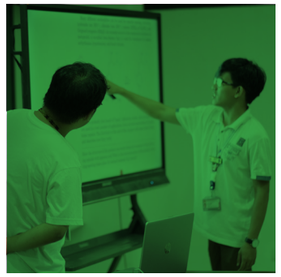


Center for Nanoscience Research

The Center for Nanoscience Research (CNR) focuses on the material synthesis, development and engineering of functional materials and systems at the molecular scale for various technological applications inclusive but not limited to metal oxide, chalcogenide and organic/inorganic hybrid nanomaterials for plant pest control, germicidal, electronics, photovoltaic cells and super hydrophobic applications.

CNR will bring together interdisciplinary researchers, seek funding, promote understanding of nanoscience, establish partnerships, provide training, produce capable graduates, and disseminate research outputs.

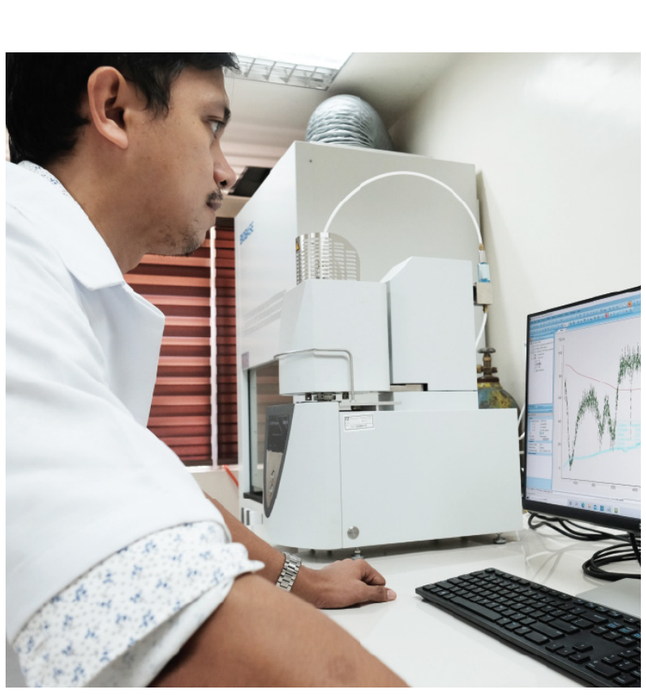
The Center for Nanoscience Research (CNR) integrates research works at the nanometer scale from various research backgrounds. The mission of the center is (1) to carry out researches in the synthesis, development and engineering of materials at the nanoscale for various technological applications and (2) provide state of the art facilities, capabilities and expertise for the nanoscience community. The research efforts are concentrated on the following themes: a) computational materials science, b) functional nanomaterials, c) plasma-based deposition and surface functionalization, d) conductive polymers, e) opto-electronics and f) nanofabrication.

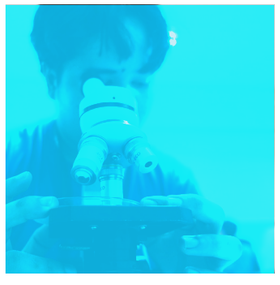


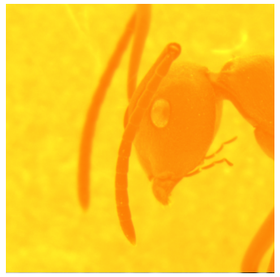
2nd Floor, Director's Office
PRISM Building
prism@g.msuiit.edu.ph
(063) 224.5250 | 221.4051
4346 (local)

SERVICES OFFERED

- Scanning Electron Microscopy-Energy Dispersive
- X-ray Spectroscopy (SEM-EDX)
- Simultaneous Thermal Analysis (DTA-TG)
- Rheological Behavior Analysis (Rotational Rheometer)
- Photoluminescence Spectroscopy (PL)
- Sputter Coating
- Ultraviolet-Visible Spectroscopy (UV-Vis)
- Fourier Transform Spectroscopy (FTIR)
- Electrical Characterization (IV-Curve Tracer)







Ground Floor
PRISM Building

Center for Biodiversity Studies and Conservation

The Center for Biodiversity Studies and Conservation (CBSC) conducts research ranging from genetic diversity within populations to ecosystem dynamics, aiming to sustain life and balance. It merges scientific, traditional, and local knowledge for conservation in Mindanao. Organized into five clusters, it focuses on preserving genetic resources, employing genomic analysis, DNA barcoding, and conservation genomics. Research spans Philippine flora and fauna, covering species interactions, distribution, phylogenetics, and conservation efforts. The Center has five (5) clusters such as the (i) Plant Biodiversity; (ii) Animal Biodiversity; (iii) Freshwater and Terrestrial Biodiversity; (iv) Marine Biodiversity; and (v) Molecular Systematics and Conservation Genomics.

SERVICES OFFERED

- Weighing of samples and chemicals
- Visualization of DNA samples
- For molecular bulk DNA extraction procedures; protein experiments; molecular biology workbench
- Amplification of DNA
- For DNA extraction and other molecular biology applications
- Quantification of samples and DNA
- Screening for Bioactivity/ Bioassays/Microbiology activities
- DNA extraction/ molecular biology experiments
- Sterilization and Decontamination of materials and samples
- Refilling of air in scuba tanks/ Underwater activities and survey
- Underwater activities and survey
- DNA barcoding
- eDNA metabarcoding
- Genomics research

FACILITIES

SIMULTANEOUS THERMAL ANALYZER (DIFFERENTIAL THERMAL ANALYZER - THERMOGRAVIMETRY)

- used for the simultaneous measurement of the mass changes and phase changes, decomposition processes under thermal treatment.

ROTATIONAL RHEOMETER

- allows the measurement of the rheological properties of liquid systems (solutions) and structured fluids like suspensions and emulsions. Flow curve can be generated in the determination of the viscosity dependence on shear rate as well as the visco-elastic characteristics of samples.

ANALYTICAL BALANCE

- used for the precise measurement of the mass of chemicals and reagents.

DIGITAL MAGNETIC STIRRER

- with hot plate is used for the routine mixing/heating of chemical components and dissolving reagents.

PHOTOLUMINESCENCE SPECTROMETER

- a non-destructive optical method of probing the electronic structure and optical properties of materials. Useful in the analyses of bandgaps, defects, impurities and energy levels in materials.

SPUTTER COATER

- used for depositing thin films of conductive materials onto non-conductive or poorly conductive surfaces and is very essential for sample preparation in electron microscopy and other analytical techniques.

UV-VIS SPECTROMETER

- used for measuring the amount of light absorbed, transmitted, and reflected by a sample enable both quantification and qualification.

FTIR SPECTOMETER

- used for the identification of chemical substances or functional groups present in materials.

IV-CURVE TRACER

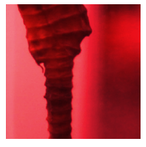
- used for the characterization of the electrical behavior of devices like diodes, transistors and solar cells under various conditions. Typical functions involve generating different voltage levels and measuring the resulting current and plotting these values to visualize the behavior of the device.

CENTRIFUGE

- used for separating particle or components of mixture based on their density using centrifugal force.

PORTABLE PH METER

- used for the precise measurement of the acidity or alkalinity of a solution.



INFRARED THERMOMETER GUN

- used for the measurement of surface temperatures without making physical contact based on the principle of detecting IR radiation emitted by an object.

SCANNING ELECTRON MICROSCOPY-ENERGY DISPERSIVE SPECTROSCOPY

- used to investigate the microstructure, morphology, and elemental composition of materials. It provides high-resolution imaging capabilities for the examination of surface features, grain structures, and defects at the micro- and nanoscale.

FACILITIES

ANALYTICAL WEIGHING BALANCE ELECTRONIC SCALE
- a precise lab instrument used to measure substances with accuracy to within 0.1 milligram. It features electronic sensors and a draft shield to minimize external influences, making it essential for scientific research, quality control, and experimentation.

GEL ELECTROPHORESIS WITH UV TRANSILLUMINATOR
- separates DNA, RNA, or proteins by size and charge. Samples migrate through a gel in an electric field, then UV light causes fragments to fluoresce. It's widely used in molecular biology, forensics, and medical diagnostics for fragment analysis.

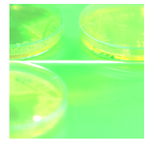
LARGE REFRIGERATED CENTRIFUGE
- rapidly separates substances by density, preserving samples with its refrigeration system. It handles larger volumes and heavier loads than standard centrifuges, commonly used in molecular biology and biochemistry for cell fractionation and protein purification.

THERMAL CYCLER/ PCR MACHINE
- amplifies DNA segments through temperature cycles, essential for genetic testing, forensics, and medical diagnostics. It automates temperature changes, crucial for modern molecular biology research.

ULTRAFAST HANDHELD SPECTROPHOTOMETER
- quickly measures light absorption or transmission, providing quantitative data on sample composition. Portable and lightweight, it is used in fieldwork, quality control, and various scientific fields, streamlining sample analysis.

LARGE WATERBATH
- a lab tool for maintaining a constant temperature for sample incubation. It's versatile, accommodating multiple containers, and is used in various fields like microbiology and molecular biology for tasks such as enzyme reactions and cell culturing.

BIOSAFETY CABINET LEVEL II
- provides a safe workspace for handling moderate-risk biological materials, using HEPA filtration and controlled airflow to protect personnel, products, and the environment from hazardous agents.



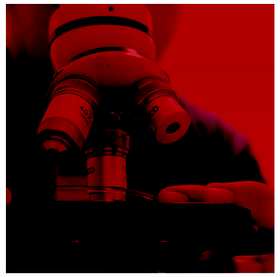
MINI DRY BATH INCUBATOR
- heats small samples to a specific temperature without water. It's ideal for DNA amplification and enzyme reactions in research, clinical, and academic labs with limited space.

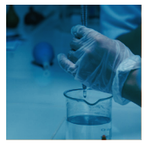
AUTOCLAVE
- sterilizes equipment and supplies by subjecting them to high-pressure steam, killing bacteria, viruses, fungi, and spores. It's crucial for maintaining cleanliness and safety in medical, laboratory, and industrial settings.

SCUBA DIVE COMPRESSOR
- a machine that fills scuba diving tanks with compressed air or enriched air nitrox, enabling divers to refill tanks for extended dives.

SCUBA TANKS
- are portable containers that hold compressed air or gas mixtures for breathing underwater during scuba diving.

BUOYANCY CONTROL DEVICE (BCD), MASKS, FINS, SNORKEL
- are essential scuba diving equipment. The BCD helps divers control buoyancy, masks provide clear vision underwater, fins enhance propulsion, and snorkels enable surface breathing without lifting the head.





Center for Integrative Health

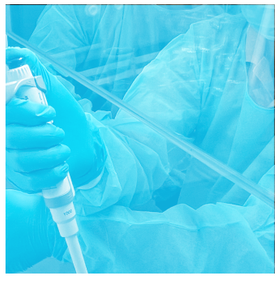
The Center of Integrative Health (CIH) aims to contribute to developing a culturally-congruent health care model that will streamline evidence-based practice. These include the following:

- Profiling of traditional healers and their practices
- Taxonomy, Nomenclature, and Data Analytics
- Detecting spatiotemporal patterns of diseases using Data Mining Tools
- In situ and ex-situ conservation of plant genetic resources
- Establishment of a physical space to provide Value-adding services and showcase traditional products

1st Floor
PRISM Building
prism@g.msuiit.edu.ph

SERVICES OFFERED

- The Center for Integrative Health, has shown competence in researching bio-assays of herbs and plants used for traditional healing. It also has a track record in using image analysis and other data mining tools in the synthesis and meta-analysis of published data, especially on patterns of disease distribution through time and space. The student researchers in the laboratory have a proven track record as well in using conventional and geometric morphometric approaches to describing and placing organisms in their proper taxonomic placements. The Center can conduct training/workshops, organize short courses on integrative health, big data analysis on public health issues including ethnomedicinal analysis and applications, and serving graduate and undergraduate students to do their research in the lab.



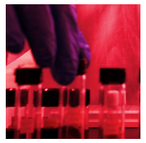
FACILITIES

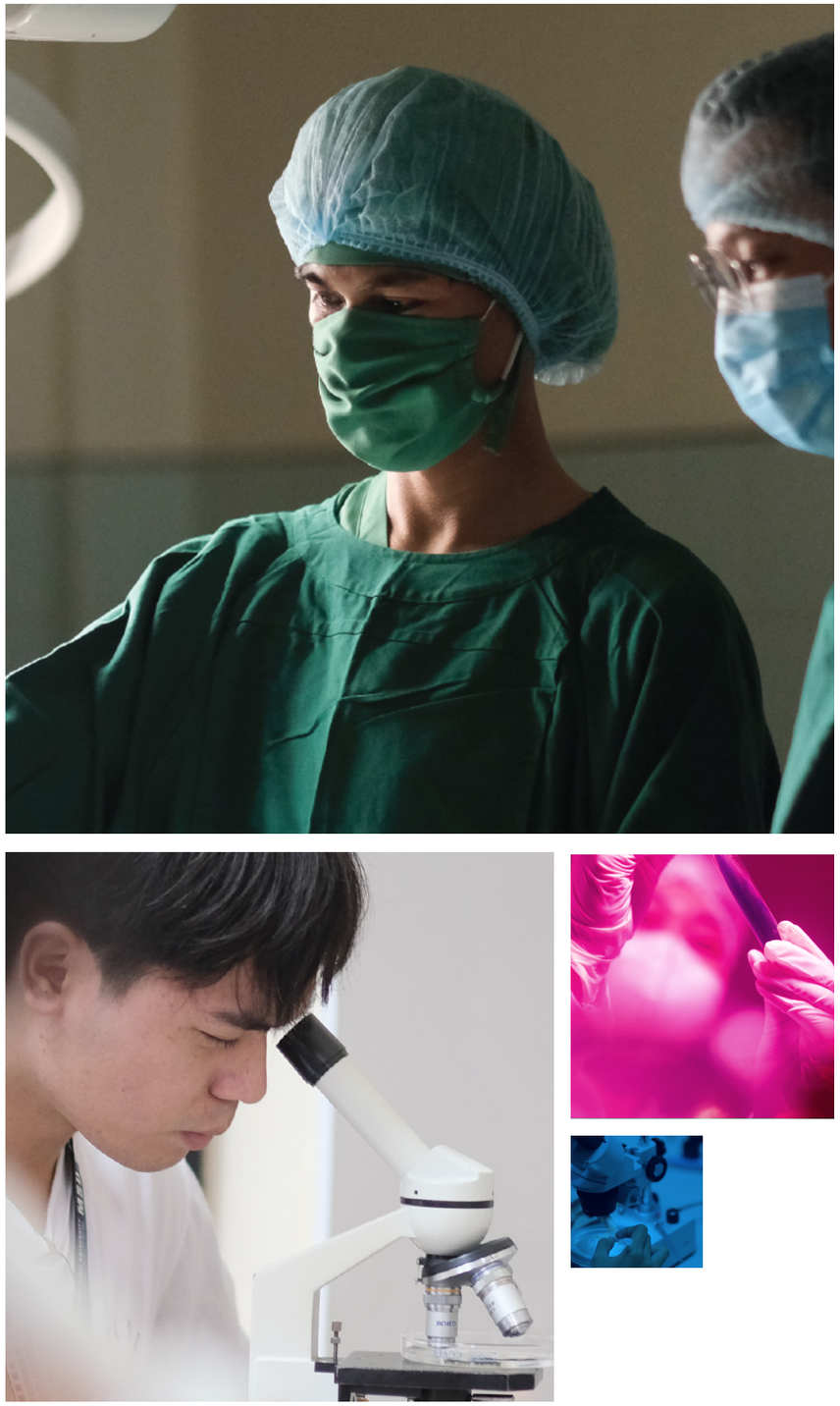
HIGH-END MICROSCOPES

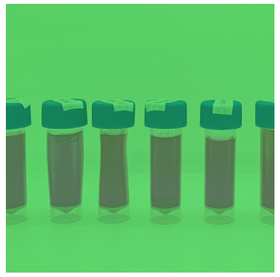
- are advanced tools for scientific research, featuring top-quality lenses, wide magnification ranges, high-resolution imaging, and contrast enhancement techniques. They often include motorized stages and digital imaging capabilities for precise control and analysis. Some models offer specialized techniques like super-resolution microscopy. With modular designs, they can be customized for specific research needs, making them versatile and adaptable instruments at the forefront of microscopy technology.

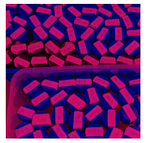
ROTAVAP FOR SAMPLE PREPARATIONS FOR BIOCHEMICAL ANALYSIS

- a laboratory instrument used for efficient evaporation of solvents from samples. It consists of a rotating flask, heated water bath, and vacuum system. By rotating the flask under vacuum, the solvent evaporates at lower temperatures, preserving sensitive samples. Rotavaps are commonly used in chemistry, biochemistry, and pharmaceutical research for concentration, purification, and solvent recovery.









CMGPI

Center for Microbial Genomics and Proteomics Innovation

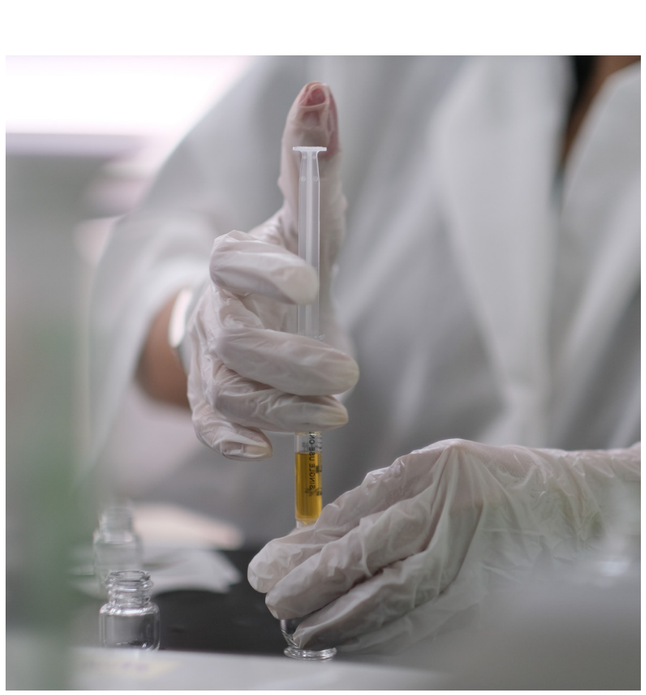
The Center for Microbial Genomics and Proteomics Innovation (CMGPI) aims to promote and support the research and innovation thrusts of the university and PRISM through microbiological research and development in genomics, proteomics, drug discovery and development, food innovation and safety, antimicrobial resistance surveillance, biosafety, and biosecurity, and to provide diagnostic, storage, and cataloging services of microorganisms for research.

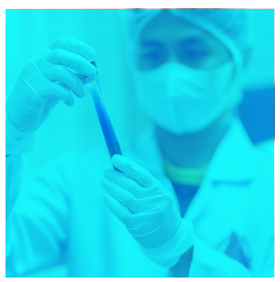
It also aims to establish PRISM in the network of international and national research labs and institutions in microbial biotechnology. The Center has four (4) research clusters like the (i) Microbial Biotechnology-based Development Unit; (ii) Drug Discovery and Microbial Food Innovation and Safety Unit (Nutraceuticals, Probiotics, Microbiological Risk Assessment); (iii) Antimicrobial Resistance Surveillance Unit (Molecular characterization of antibiotic resistance, molecular pathogen-host cell interactions, culture collection, service lab for AMR); and (iv) Biosafety and Biosecurity R&D Unit (Annual audit of PRISM labs, training on biosafety and biosecurity, innovative biosafety and biosecurity tools).

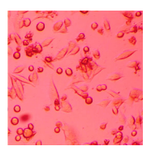
Genomics and Proteomics Laboratory
2nd Floor, PRISM Buidling
cmgpi.msuiit@gmail.com

SERVICES OFFERED

- Sterilization of Laboratory Equipment
- Antibiotic Susceptibility Testing
- Coliform and Bacterial Contamination Testing
- Microbial Culture Collection
- Molecular Identification of Microorganism







FACILITIES

AUTOCLAVES

- offer dependable sterilization for laboratory materials, crucially enhancing safety protocols. By ensuring the integrity of equipment and materials, they contribute to the reproducibility of research outcomes across diverse scientific fields.

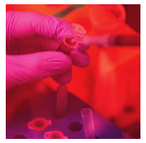
BIOSAFETY CABINETS

- specialized workspaces provide a secure and regulated environment for handling delicate samples and hazardous substances. By bolstering laboratory safety measures, they safeguard both personnel and the surrounding environment, while also assuring the reliability and authenticity of research findings.

COMET ASSAY

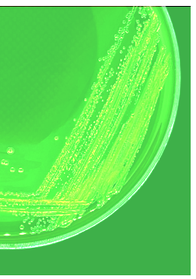
- also known as single-cell gel electrophoresis, this method is a straightforward approach to measuring DNA strand breaks in eukaryotic cells, aiding in genetic research endeavors.

FLOURESCENCE MICROSCOPE



- utilized to visualize specific features of small specimens such as microbes, fluorescence microscopes employ intense light sources to excite fluorescent species within a sample. This process generates magnified images, allowing for detailed observation and analysis.

FUME HOOD



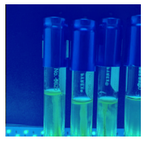
- functions as ventilated enclosures, it effectively traps and exhausts vapors, gases, and nanoparticles, ensuring a safer laboratory environment. By directing airflow away from researchers, it mitigates exposure risks while maintaining air quality.

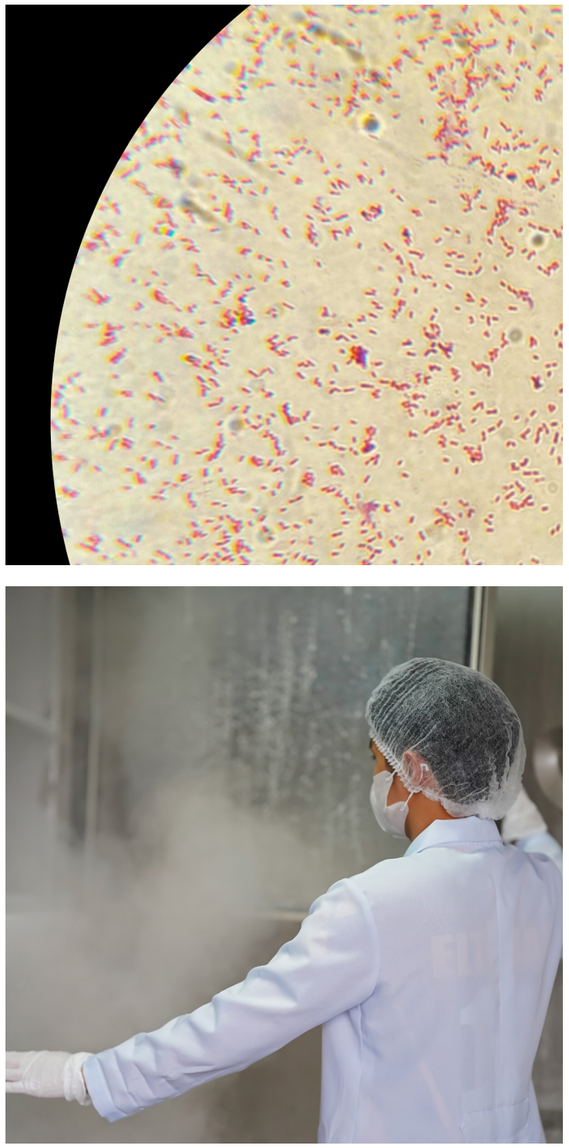
GENEEXPLORER™ PCR THERMAL CYCLER

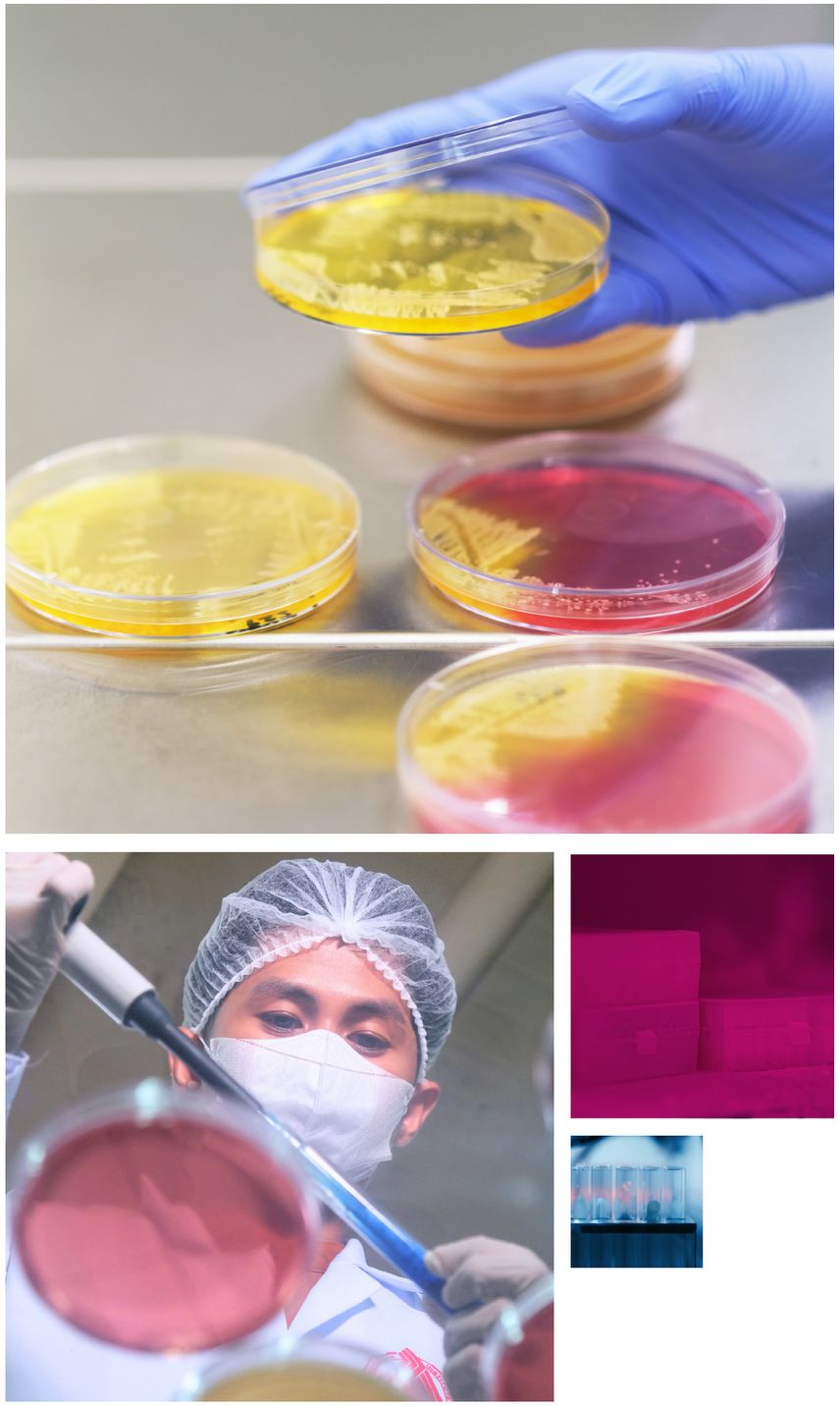
- has transformed molecular biology research by facilitating rapid and precise amplification, analysis, and manipulation of DNA sequences. Its versatility and widespread use have made it indispensable in numerous scientific investigations.

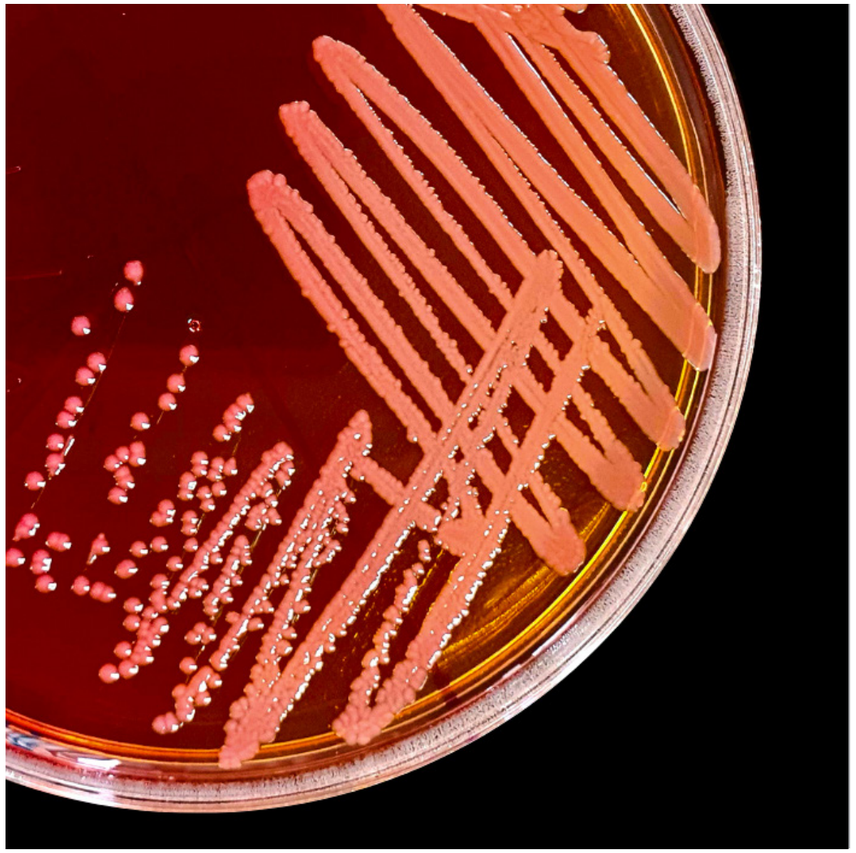
GEL ELECTROPHORESIS SYSTEM

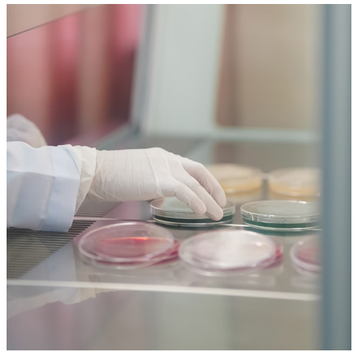
- a laboratory method used to separate mixtures of DNA, RNA, or proteins according to molecular size. In gel electrophoresis, the molecules to be separated are pushed by an electrical field through a gel that contains small pores.

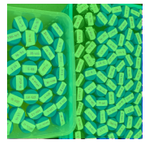


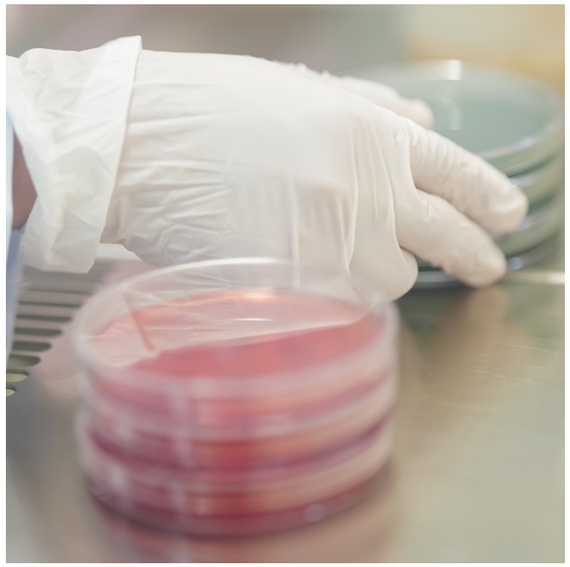


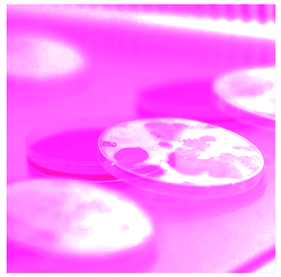


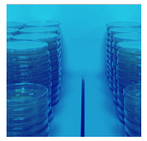












INCUBATOR

- provides controlled environments conducive to the growth, cultivation, and experimentation of biological samples. By maintaining stable and reproducible conditions, they contribute to the reliability and validity of research outcomes.

LABORATORY REFRIGERATORS

- offer reliable storage conditions for biological samples, reagents, and chemicals, they preserve sample integrity and facilitate experimental consistency. Their use is integral to ensuring the success and reliability of research endeavors.

MICROCENTRIFUGE

- essential for separating nucleic acids and proteins based on size and charge, microcentrifuges are utilized across forensic, molecular biology, genetics, and microbiology laboratories for analyzing and comparing DNA samples.

MICROWAVE OVEN

- utilized to melt microbiological media efficiently, microwave ovens contribute to significant reductions in heat generation and time consumption during laboratory procedures.

STOMACHER

- primarily employed in microbiology applications, stomachers extract and wash intact microbes into solution, commonly used in food testing, environmental, and life science research laboratories.

VORTEX

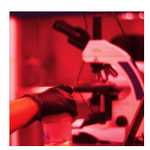
- are used to mix small vials of liquids through quickly oscillating circular motion, creating a vortex that facilitates thorough mixing and homogenization of samples.

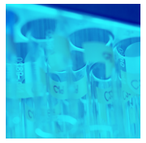
UV TRANSILLUMINATORS

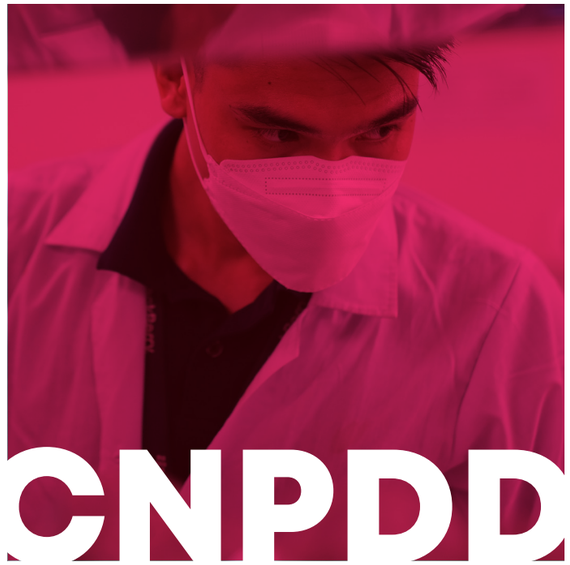
- employed in molecular biology laboratories, they illuminate DNA or RNA separated by electrophoresis through agarose gel. By causing DNA to fluoresce, they enable visualization and analysis of genetic material.

ULTRALOW FREEZER

- maintaining ultra-low temperatures, they ensure the quality, integrity, and accessibility of samples over extended periods, crucial for long-term storage in research settings.







CNPDD

Center for Natural Products and Drug Discovery

The research mission of the Center for Natural Products and Drug Discovery (CNPDD) is the discovery and development of natural product-derived pharmaceutical leads and food supplements to benefit human health. Its natural products research effort is a broad, interdisciplinary and integrated program in the fields of (1) molecular diversity and screening, isolation and structure elucidation (2) in silico-based and structure-based drug design and optimization and (3) Synthetic Chemistry.

For molecular diversity and screening, the Center has unique expertise in natural products chemistry and provides state-of-the-art infrastructure to facilitate the discovery of new drug leads addressing multiple aspects including the isolation, characterization and biological evaluation of secondary metabolites from terrestrial plants and marine organisms, assay development and screening campaigns.

The in silico-based and structure-based drug design and optimization involves target identification and binding site identification through virtual screenings. This field also optimizes lead compounds to improve drug-likeness through fragment-based approaches and binding free energy simulations.

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09154064810

SERVICES OFFERED

ULTRAPURE WATER (TYPE 1) FROM THE MERCK DIRECT-Q 3UV WATER PURIFICATION SYSTEM

- Service: Ultrapure water provision
- Pricing: Per liter

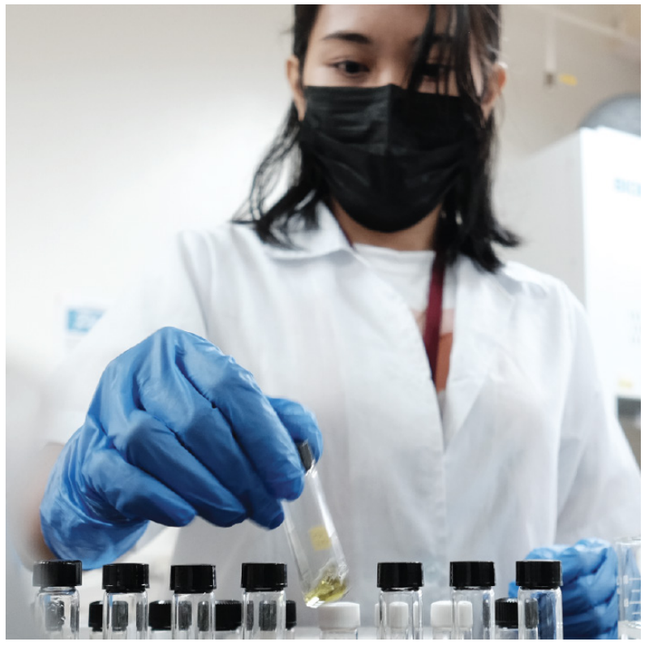
HETTICH ZENTRIFUGEN UNIVERSAL 320R REFRIGERATED CENTRIFUGE

- Service: Sample centrifugation
- Pricing: Per sample/run

PERKINELMER VICTOR X3 MULTIMODE SPECTROPHOTOMETER WITH PLATE READER

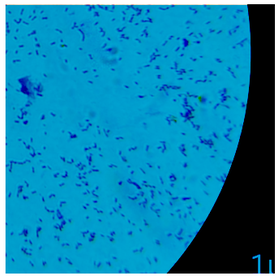
- Service: Microplate absorbance, luminescence, and fluorescence readings
- Pricing: per reading

TECHNICAL SERVICES INCLUDING ANTIOXIDANT ASSAYS AND MTT ASSAY



Synthetic chemistry involves the creation and re-creation of synthetic and natural compounds as drug leads enabling access to more expansive chemical space and to molecules possessing the essential biological activity needed to feed the drug discovery and early-stage development.

The CNPDD also provides expertise, infrastructure and training to students and postdoctoral fellows whose interdisciplinary interests are focused on drug discovery and early development.



FACILITIES

ULTRAPURE (TYPE 1) WATER, SOURCED FROM THE DIRECT-Q 3UV WATER PURIFICATION SYSTEM BY MERCK

- serves as a universal solvent across various scientific and industrial applications. With its exceptionally high purity levels, this water is devoid of impurities, ensuring optimal performance in experiments and analyses. Renowned for its reliability and quality, it provides researchers, and laboratories with a dependable solution for their diverse needs, where precision and purity are most important.

HETTICH ZENTRIFUGEN UNIVERSAL 320R REFRIGERATED CENTRIFUGE

- efficiently separates particles suspended in liquids at speeds of up to 9000 rpm, while maintaining temperatures as low as 10 degrees Celsius.

PERKINELMER VICTOR X3 MULTIMODE SPECTROPHOTOMETER,

- equipped with a plate reader, specializes in microplate absorbance, luminescence, and fluorescence readings.

ANTIOXIDANT ASSAY: THE DPPH (2,2-DIPHENYL-1-PICRYLHYDRAZYL) ASSAY.

- A widely used method in antioxidant research to assess the free radical scavenging capacity of compounds.

ANTIOXIDANT ASSAY: THE TOTAL PHENOLICS CONTENT ASSAY.

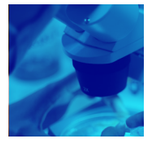
- Quantifies the total concentration of phenolic compounds in a sample using the Folin-Ciocalteu method.

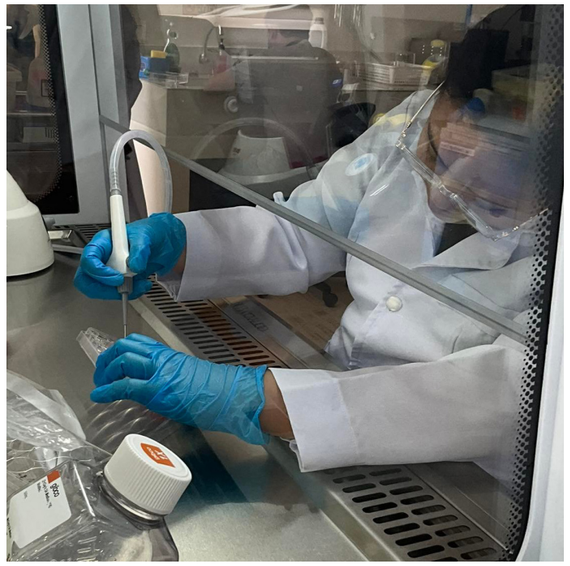
ANTIOXIDANT ASSAY: THE TOTAL ANTIOXIDANT CAPACITY ASSAY.

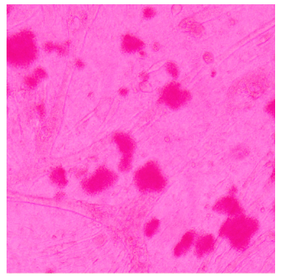
- A laboratory technique used to measure the overall antioxidant capacity of a sample using the phosphomolybdenum method.

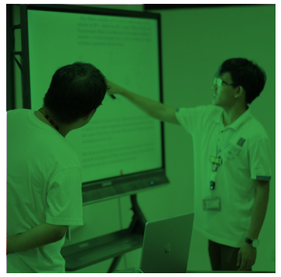
MTT ASSAY.

- allows the estimation of the activity of metabolically active cells and provides a rapid and convenient method of determining viable cell number in proliferation, cytotoxicity assays.









Complex Systems Research Center

The Complex Systems Research Center (CSRC) is composed of faculty members of varied backgrounds that seeks to identify, study and predict dynamics or behaviors of Physical / Biological / Chemical systems that are composed of many constituents' sub-systems that are inherently noisy. Prediction of such complex systems dynamics will then allow design and creation of new products for high-end application such as single drug delivery and point of care diagnostic among others. The Center boasts of three laboratories: (1) the Soft Matter and Biological Physics Laboratory, (2) the Nematode Laboratory, and the (3) High Performance Computing Laboratory together with the Mathematical Biology Cluster - a modelling sub-group. The following are the research theme of the CSRC up to 2033:

- Elucidation of bio-chemical, physical mechanisms underlying far-from-equilibrium systems such as active matter, biological organisms (Nematodes and Physarum polycephalum) and even population dynamics.
- Development of theoretical models and numerical simulation tools and investigations thereof to predict behavior of different type of complex systems.
- Development of a working single-drug delivery system.
- Development of a Lab-on-Chip device for medical, industrial and drug discovery applications.

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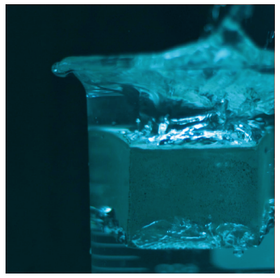
4346 (local)

SERVICES OFFERED

- Provide trainings and workshops on the proper usage of the equipment and its applications.
- Experiment and product fabrication services.
- Numerical modeling of dynamical systems found in Chemistry, Biology, Physics, and Social Communities with complex interactions.



FACILITIES

NIKON RESEARCH GRADE INVERTED MICROSCOPE WITH CCD CAMERA

- an advanced laboratory instrument used for high-resolution imaging and analysis of biological samples. It features a precision optical system with top-quality lenses for clear and detailed observation. Equipped with a sensitive CCD camera, it captures digital images of specimens with high fidelity. Its inverted design allows for easy access to specimens in culture dishes or multi-well plates. This microscope is widely used in cell biology, microbiology, and other life science research for studying cellular structures and dynamics.

BRAND NEW RESEARCH GRADE INVERTED MICROSCOPE WITH FLUORESCENCE AND CCD CAMERA

- an advanced laboratory instrument designed for high-resolution imaging of biological samples. It features a sophisticated optical system capable of fluorescence microscopy, allowing researchers to visualize specific molecules within cells. Equipped with a sensitive CCD camera, it captures digital images with exceptional clarity and detail. Its inverted configuration enables easy access to samples in culture vessels. This microscope is ideal for applications such as live cell imaging, cell biology, and neuroscience research, providing valuable insights into cellular structures and dynamics.

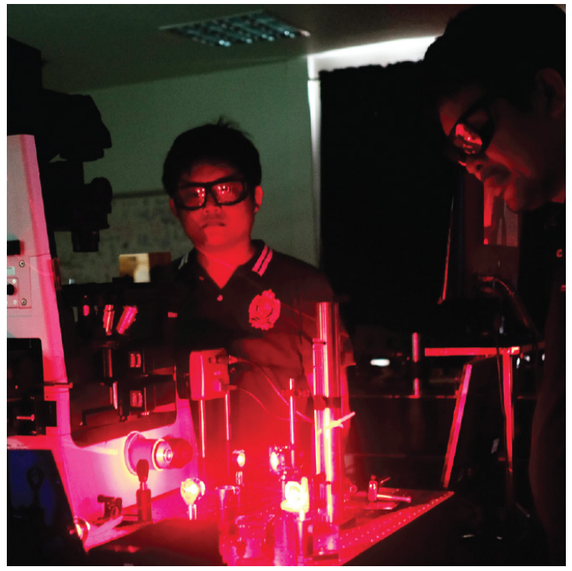
3D PRINTER - DIGITAL LIGHT POCESSING

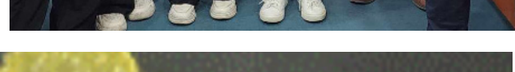
- utilizes a technology similar to that found in digital projectors. It projects light onto a liquid resin, solidifying it layer by layer to create 3D objects. DLP 3D printers offer high resolution and speed, making them suitable for producing intricate and detailed prototypes, models, and small-scale production parts. This technology is commonly used in various industries including manufacturing, automotive, aerospace, and healthcare for rapid prototyping and customized manufacturing applications.

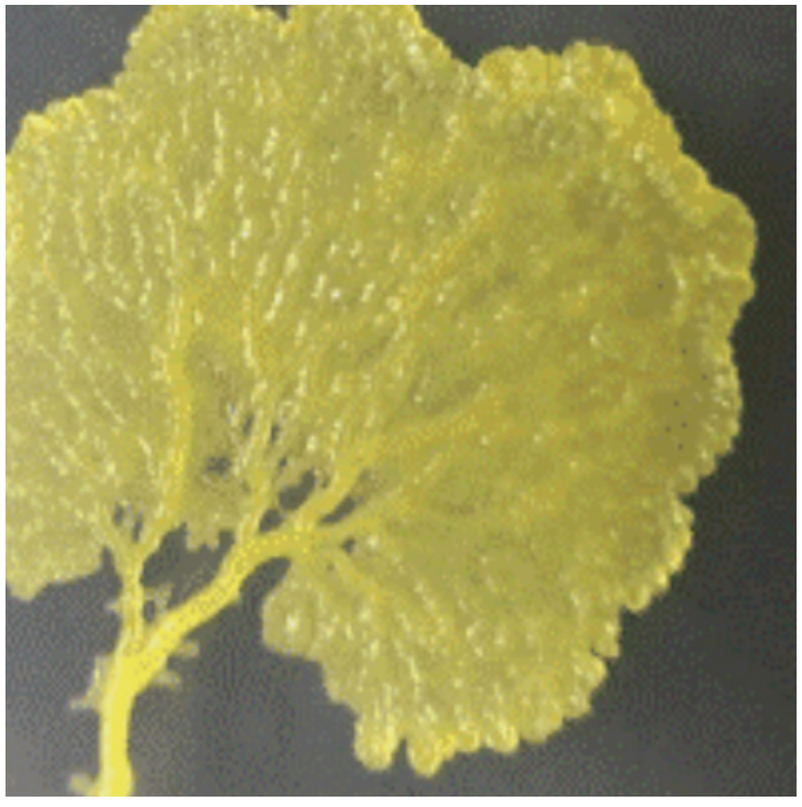
NSF CERTIFIED CLASS II A2 BIOLOGICAL SAFETY CABINET

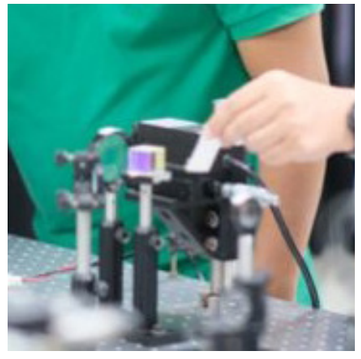
- a specialized containment system designed to provide a sterile and safe environment for handling hazardous biological materials. It features a high-efficiency particulate air (HEPA) filtration system that removes airborne contaminants, protecting both the operator and the environment. This cabinet is certified by the National Sanitation Foundation (NSF) to meet stringent safety standards, ensuring compliance with regulations for working with biological agents. It is commonly used in microbiology, pharmaceutical research, and clinical laboratories for procedures requiring sterile conditions and containment of hazardous substances.

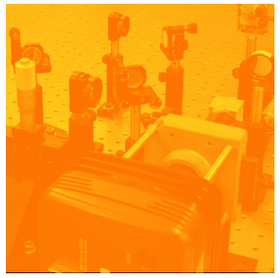
VACUUM COATER is a specialized device used in various industries to apply thin coatings onto surfaces in a controlled environment. It operates by removing air from a chamber to create a vacuum, allowing the deposition of materials onto substrates through techniques such as thermal evaporation, sputtering, or chemical vapor deposition. Vacuum coaters are employed in applications ranging from semiconductor manufacturing and optical coatings to surface protection and decorative finishes. They enable precise control over coating thickness, composition, and uniformity, producing functional or aesthetic enhancements on a wide range of materials.

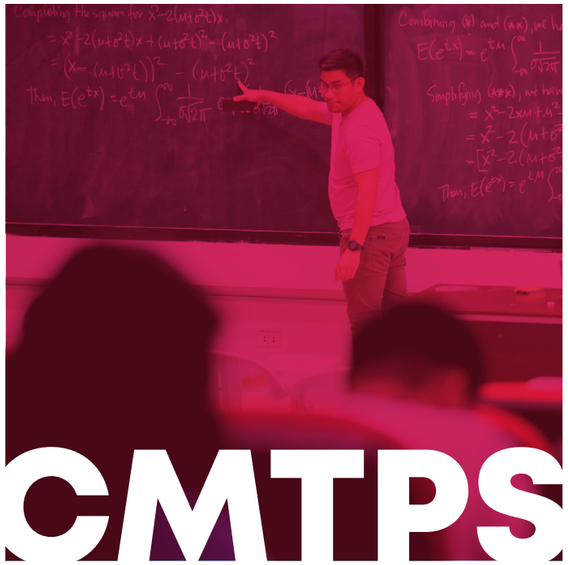


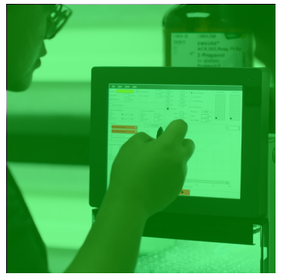












Center for Mathematical and Theoretical Physical Sciences

The Center for Mathematical and Theoretical Physical Sciences (CMTPS) is the PRISM's hub for theoretical research activities in mathematics, physics, chemistry, and informatics. It's primary focus is to (1) embark on studies that aim to generate new ideas, principles, models, and theories which may form the basis of progress and development in the different fields and, in the future, shed light to yet unexplained phenomena in both the pure and the applied sciences, and (2) train and mentor the next generation of researchers.

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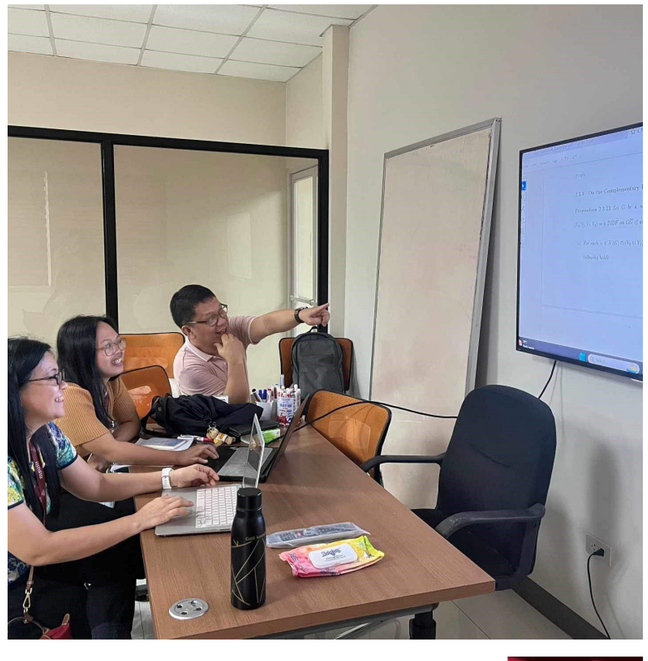
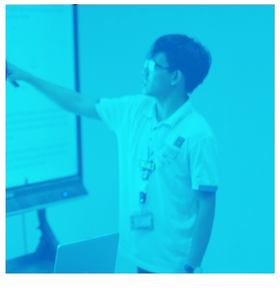
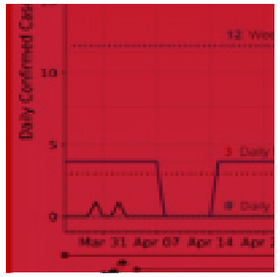
09154064810

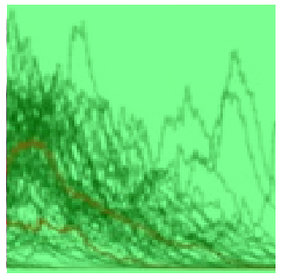
SERVICES OFFERED

- Provide space / venue for research activities / discussions among researchers in mathematics and theoretical physical sciences









Center for Computational Analytics and Modeling

The Center for Computational Analytics and Modeling (CCAM) focuses on four main thrusts: research and innovation, consultancy services, capacity building, and practical utilization of research outputs in the university and the community. CCAM researchers primarily work on developing mathematical and statistical solutions, creating new tools and computing protocols, and providing analytics and modeling to address local, national, environmental, and societal issues. The CCAM aims to utilize computational techniques and statistical information for research, decision-making, and collaboration with other disciplines and groups. In addition to supporting PRISM's core project, CCAM researchers focus on five main research themes: developing machine learning models, mathematical and statistical modeling of various data types, integrating computational methods into other research areas, conducting basic research in Mathematics and Statistics, and simulating real-life applications. The Center offers a comprehensive suite of services designed to meet a wide range of analytical and research needs. Our services include:

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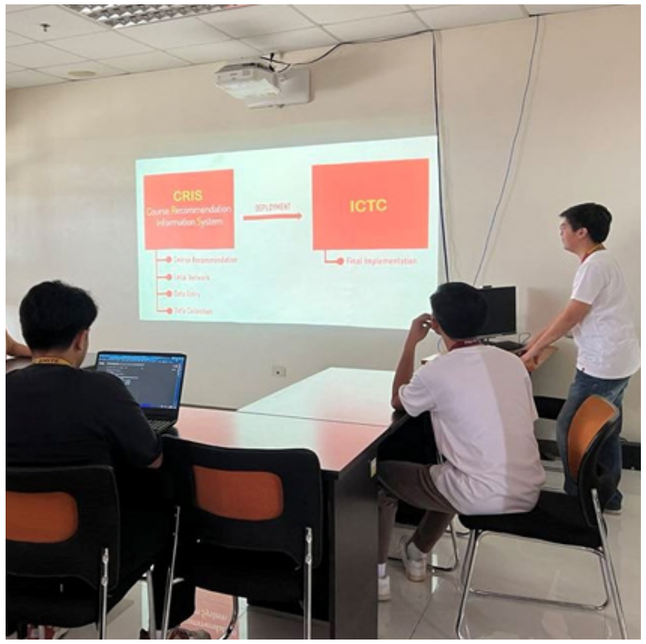
SERVICES OFFERED

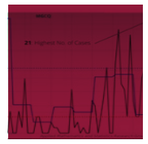
ANALYTICAL AND STATISTICAL ANALYSES.

- We offer comprehensive evaluations to support data-driven decision-making, using a variety of tailored statistical techniques.

DESIGN OF EXPERIMENTS.

- Our team specializes in planning and executing experiments for robust, reliable results, with expertise in experimental design, survey methodologies, and sampling.





MATHEMATICAL MODELING.

- We create precise models to represent complex systems, aiding in understanding, prediction, and optimization of various scenarios.

STATISTICAL MODELING.

- Utilizing advanced techniques, we develop models that capture underlying data patterns, facilitating informed decision-making.

MACHINE LEARNING, HYBRID MODELING, AND SIMULATION.

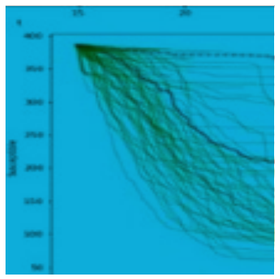
- We employ cutting-edge algorithms and hybrid models for superior predictive performance, providing detailed simulations to simulate real-world scenarios.

EXPERT STATISTICAL CONSULTING.

- Our seasoned statisticians offer expert consulting on study design, data analysis, and result interpretation, ensuring projects benefit from rigorous statistical expertise.

TRAININGS AND WORKSHOPS.

- Our Center provides tailored training sessions and workshops, specifically designed to meet individual needs. These programs focus on advanced statistical analysis and the proficient use of statistical and computing software, ensuring participants acquire the necessary skills and knowledge for their research and professional endeavors.



At CCAM, we are committed to delivering high-quality, customized solutions to meet one's unique analytical and research challenges.

FACILITIES

The CCAM computing laboratory is designed to support a wide range of computational tasks, including analytical and statistical analyses, modeling, simulations, monitoring and surveillance of social, environmental, epidemiological, and health data, and managing databases and data banks. Our facilities include:

DESKTOP AND ALL-IN-ONE PCS.

- These powerful machines are optimized for intensive statistical analyses, modeling, and data analytics tasks. They are ideal for exploring complex datasets and generating insightful visualizations.

LAPTOPS.

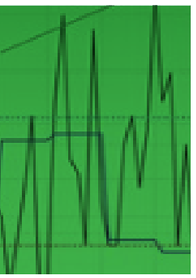
- Portable and versatile, our laptops provide the flexibility needed to perform on-the-go research and analysis, whether for data monitoring, surveillance, or hybrid modeling. They are perfect for fieldwork and collaborative projects.

NETWORK ATTACHED STORAGE (NAS).

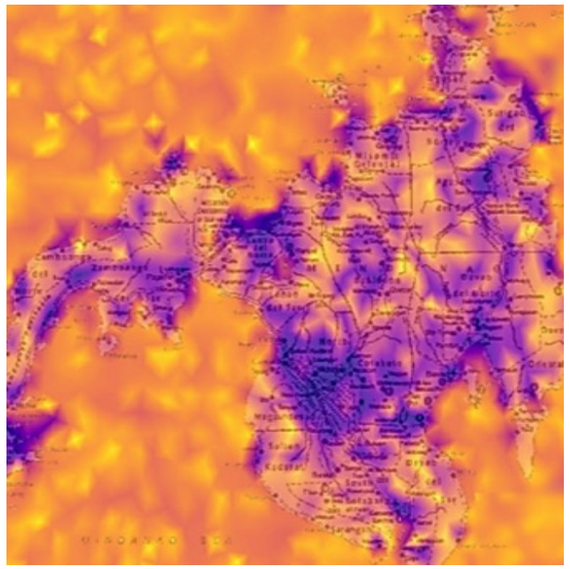
- Our NAS solutions offer robust centralized storage, ensuring secure data backup, efficient file sharing, and convenient remote access. They are essential for managing large datasets and supporting information systems development.

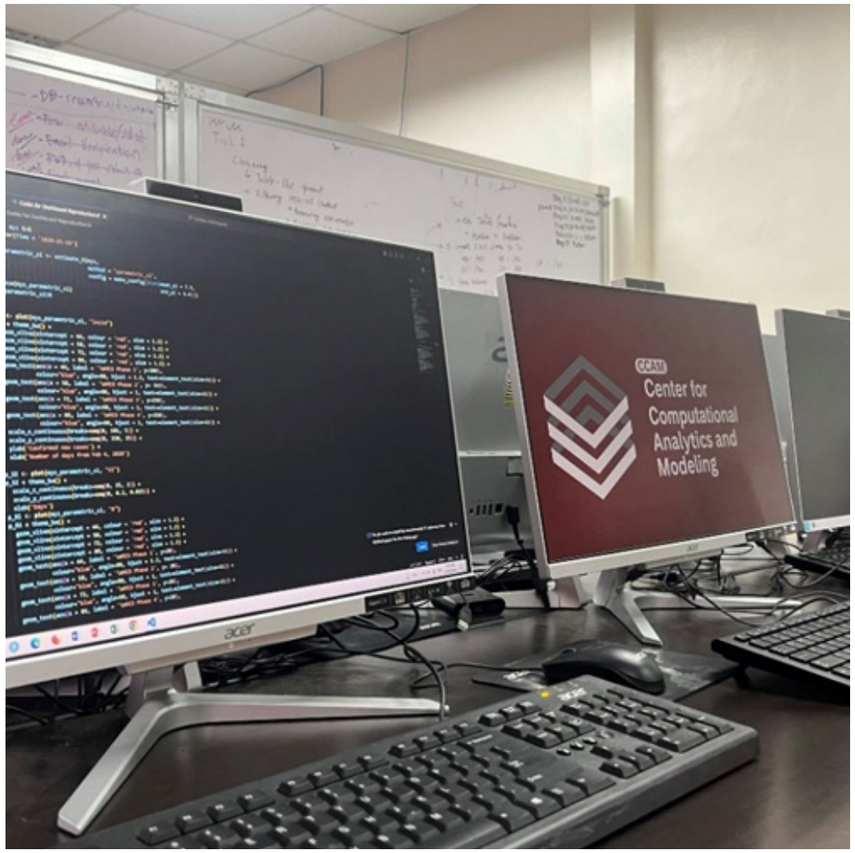
DATA VISUALIZATION TOOLS.

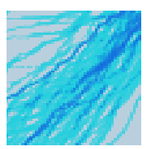
- Enhance understanding of data and visualize complex relationships and patterns to communicate insights effectively.

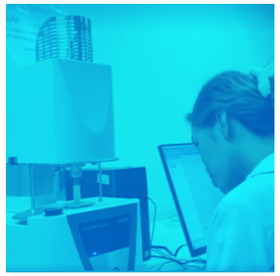


The CCAM laboratory serves as a hub for innovation and collaboration, providing the tools and expertise to leverage scientific research and practical applications in academia, industry, or government.









Research Center for Energy Efficient Materials

The Research Center for Energy Efficient Materials (RCEEM) tasks to perform advanced materials synthesis, characterization and predictive modelling for the research, development and innovation of energy efficient materials for sustainable energy generation. Energy efficient and low-cost materials are the two main drivers in energy generation and energy conversion technology research. We are developing innovative, advanced materials for environmentally friendly and efficient energy generation to drive sustainable economic growth.

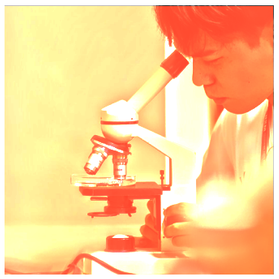
The pursuit of advanced materials for energy generation and conversion technologies has emerged as a pivotal area of focus for research and development globally, including in the Philippines. This imperative arises from the pressing global energy crisis, necessitating systematic solutions. Leveraging advanced materials for energy generation and conversion not only offers environmentally sustainable alternatives but also fosters innovation with significant economic, environmental, and industrial benefits.

3rd Floor, Organic Nanomaterial Processing Laboratory PRISM Building
(063) 223.2343 | 4113 (local)

The establishment of RCEEM is expected to deliver the following: (a) improve the quality and quantity of reputable scientific publications; (b) increase research collaboration among Higher Education Institution (HEI) and Industry partners both national and International; (c) improve the quality and quantity of research engagements that have intellectual property rights (IPR) and can be commercialized; and (d) produce training services and human resource development in the field of advanced materials for energy generation and energy conversion technologies.

SERVICES OFFERED

- Milli-Q Ultrapure water dispenser
- LAMBDA 365+ UV-vis Spectrometer
- High-speed refrigerated Centrifuge
- Chromameter analyzer
- Brunauer-Emmett-Teller (BET) Analyzer (BELSORP MAX II)
- Spin coater
- Orbital shaker
- Waterbath Sonicator
- Laboratory oven
- pH meter
- Hot plate with a magnetic stirrer
- Vortex Mixer



FACILITIES

MILLI-Q ULTRAPURE WATER DISPENSER
- offers ultrapure water at 18.2 MΩ□cm conductivity, perfect for labs, medical settings, and pharmaceutical use. It ensures top-tier purity and reliability for diverse applications.

LAMBDA 365+ UV-VIS SPECTROMETER
- boasts a customizable spectral bandwidth (0.5 nm to 20 nm) and versatile sample compartments for liquids, powders, and solids. Ideal for diverse research needs, it delivers accurate data across a wide range of samples.

HIGH-SPEED REFRIGERATED CENTRIFUGE
- reaches speeds of 9000 rpm for 50 mL tubes and 16,000 rpm for 2 mL tubes. It's ideal for quick and precise sample separation in various laboratory applications, with controlled temperature conditions.

CHROMAMETER ANALYZER
- accurately measures color using the Lab* color space, which breaks down color into lightness, red-green, and yellow-blue components. It's essential for precise color analysis in industries like manufacturing, design, and research, ensuring consistency and meeting quality standards.

BRUNAUER-EMMETT-TELLER (BET) ANALYZER (BELSORP MAX II)
- measures surface area, pore size, and porosity of materials using gas adsorption techniques. It's crucial for understanding material structure and optimizing performance in research and industry.

SPIN COATER
- a tool used to deposit suspensions and solutions onto substrates. It consists of a rotating platform and a dispenser. As the platform spins, centrifugal force spreads the liquid evenly, creating uniform coatings. It's widely used in material science for fabricating thin films in various industries.

PH METER
- measures acidity or alkalinity by detecting hydrogen ion concentration. This one covers pH 1 to 14, useful for a wide range of applications from highly acidic to highly alkaline solutions.

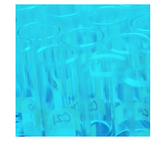
HOT PLATE WITH A MAGNETIC STIRRER
- a lab tool for mixing and synthesizing materials. It has a heated surface and a magnetic stirrer underneath. A small magnetic bar inside the vessel spins, stirring the contents for uniform mixing and heating. It's widely used in chemistry, biology, and material science.

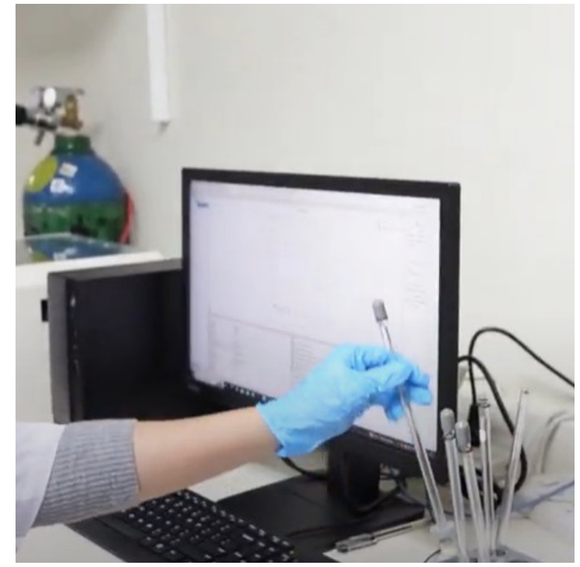
VORTEX MIXER
- a lab tool for swiftly and thoroughly mixing small volumes of liquids. It creates a vortex in the sample, making stirring rods unnecessary. Widely used in chemistry, biology, and biochemistry, it's ideal for blending precursors and compounds in research settings.

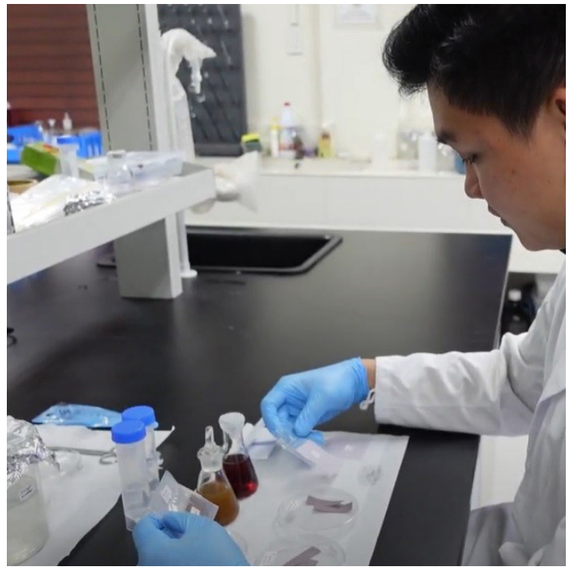
ORBITAL SHAKER
- used to mix substances by gently swirling containers placed on its platform in a circular motion. It's ideal for delicate samples in chemistry, biology, and pharmaceutical research.

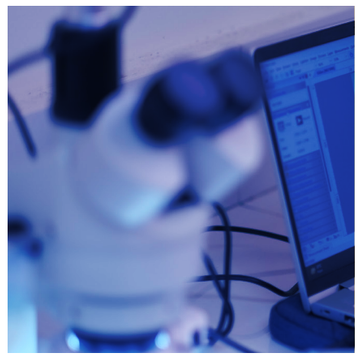
WATERBATH SONICATOR
- uses ultrasonic vibrations in a water bath for mixing, cleaning, and synthesizing various materials. It's vital in scientific research and industrial processes, offering precise control for efficient sample processing across multiple fields.

LABORATORY OVEN
- with a max temp of 150°C, dries glassware and samples, maintaining controlled heating for precision without damage.





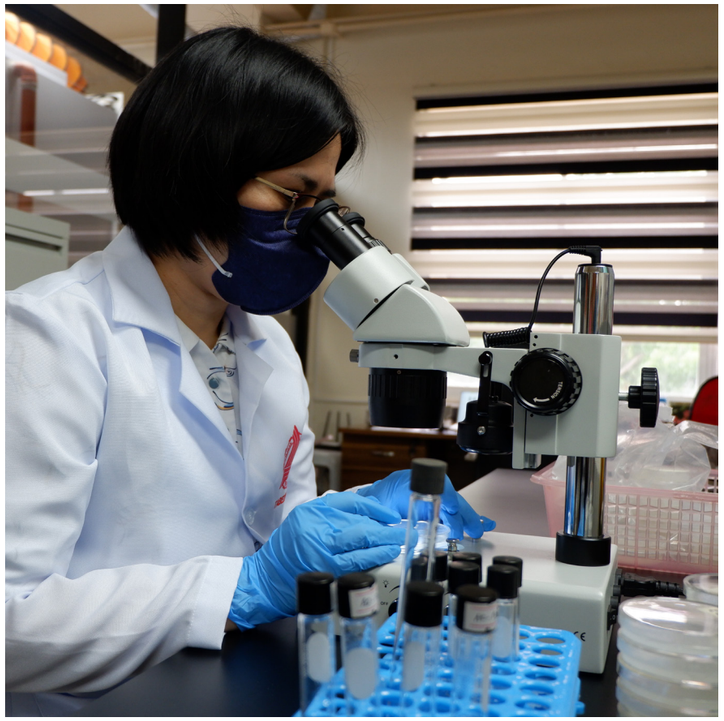




Research Institute for Engineering and Innovative Technology

SET Building

The Research Institute for Engineering and Innovative Technology (RIEIT) responds to the challenges posed by globalization and the internationalization of education and research, MSU-IIT is actively pursuing the transformation into a globally competitive research university. Central to this endeavor is the cultivation of a robust research culture within the institution. This culture aims to inspire faculty and students alike to engage in pioneering, interdisciplinary, and collaborative research initiatives. Moreover, it fosters the creation of innovative products, the development of socially impactful and environmentally sustainable services and processes, and the implementation of entrepreneurship-focused programs.



The Research Centers of RIEIT, each of which is multidisciplinary/interdisciplinary in nature, play pivotal roles, including the (i) Center for Sustainable Polymers; (ii) Center for Sustainable Construction Technology; (iii) BioProcess and BioResources Engineering Research Center; (iv) Integrated Circuit Design Center; (v) Center for Energy Research and Technology; (vi) Center for Mechatronics and Robotics; (vii) Center for Artificial Intelligence Research; (viii) Center for Structural Engineering and Informatics; (ix) Center for Remote Sensing and Geographic Information Systems; (x) Bamboo Technology Research Center; (xi) Resource Processing Technology Center; and (xii) Research Center for Advanced Ceramics.

MSU-IIT Engineering, in collaboration with other academic units, is striving to evolve into a research intensive discipline dedicated to top-tier education and sustainable progress. Despite obstacles, it has been actively engaged in pioneering research, predominantly backed by external entities such as CHED, DOST, and esteemed foreign partners like USAID STRIDE and UK NERC. These partnerships not only fund research endeavors but also offer scholarships and training in technology commercialization, entrepreneurship, and IP management.

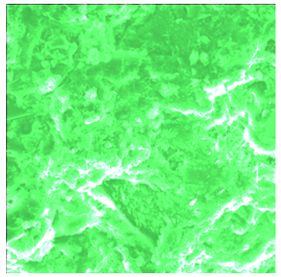
Now, MSU-IIT Engineering is poised to introduce the RESEARCH INSTITUTE FOR ENGINEERING AND INNOVATIVE TECHNOLOGY (RIEIT), boasting significant funding, state-of-the-art facilities, and robust collaborations. Over the last decade, we've amassed approximately P721 million for research initiatives, converting laboratories into cutting-edge research hubs, commercializing four innovations, filing twenty-two patents, and garnering support from various sectors including industry, government, and global collaborators. With our highly dedicated faculty and a proven track record of excellence, RIEIT represents the natural progression for our vibrant engineering community.

SERVICES OFFERED

- Facilitate and promote partnerships and collaborations between researchers, government and industry;
- Provide infrastructure and training that promote innovation and technopreneurship;
- Spearhead policies and programs that advance the culture of innovation, interdisciplinarity, and sustainability; and
- Promote a diverse and inclusive work environment.

Center for Mathematical and Theoretical Physical Sciences

The Center for Sustainable Polymers (CSP) pioneers advanced sustainable polymeric materials processing and characterization, offering innovative solutions for businesses' critical materials challenges. Focused on research, CSP aims to boost the knowledge-based economy by developing principles, protocols, and products supporting the tech-driven market in the Philippines. Through lab and pilot-scale processing and expertise in various disciplines, CSP accelerates product development from lab to market, serving industries, higher education institutions, and the community. It comprises four major research laboratories: Environmental Polymers Lab, Polymer-Nanotechnology Lab, Biomedical Engineering Lab, and Industrial Products Lab, along with shared facilities like the Analytical Facility and Machining and Fabrication Workshop.



Room 307, 3rd Floor
SET Building
arnold.lubguban@g.msuiit.edu.ph
09777494995

SERVICES OFFERED

ADVANCING SUSTAINABILITY:
- Promotes adoption of sustainable polymers through education, research, and industry partnerships.

TAILORED SUPPORT:
- Provides training programs, expert consultation services, and collaborative partnerships to co-create innovative solutions.

CUTTING-EDGE EQUIPMENT:
- Offers high-end equipment and technology for a wide range of services such as spectroscopy, chromatography, imaging, mechanical testing, and biomedical testing.

COMPREHENSIVE TESTING:
- Ensures accurate and reliable testing across diverse industries.

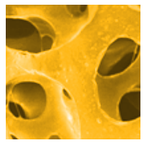
FACILITIES

AMINO ACID ANALYSIS BY HPLC
- utilizes High-Performance Liquid Chromatography (HPLC) for precise quantification and analysis of amino acids in various samples.

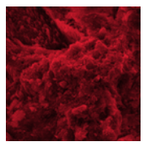
ATOMIC FORCE MICROSCOPY (AFM)
- provides high-resolution imaging and surface characterization at the nanometer scale, used for studying surface topography and mechanical properties of materials.

CO₂ INCUBATION
- provides a controlled environment with regulated temperature, humidity, and CO₂ levels, ideal for cell culture and tissue engineering applications.

COMPOUND IDENTIFICATION BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS)
- identifies and quantifies compounds in complex mixtures by separating components using gas chromatography and detecting them using mass spectrometry.



DNA QUANTIFICATION
- measures DNA concentration and purity using fluorescent dyes, ensuring accurate quantification for molecular biology experiments.



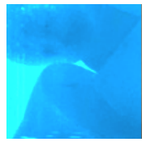
DIFFERENTIAL SCANNING CALORIMETRY
- measures heat flow in materials as a function of temperature or time, used for analyzing thermal properties and phase transitions.

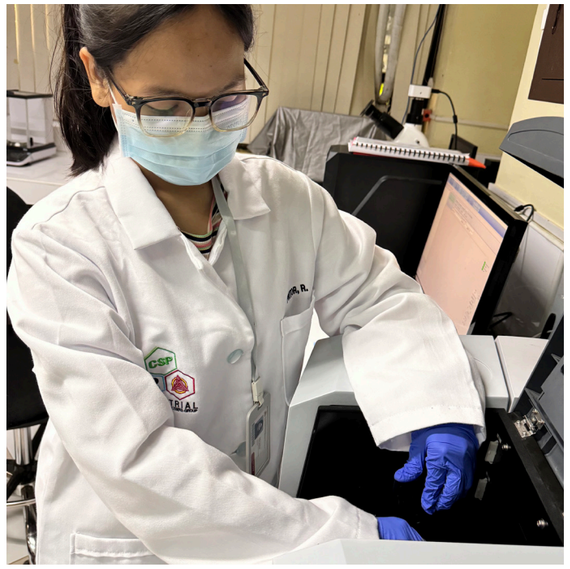
SAMPLE DRYING USING OVENS
- offers controlled heating for drying and curing samples.

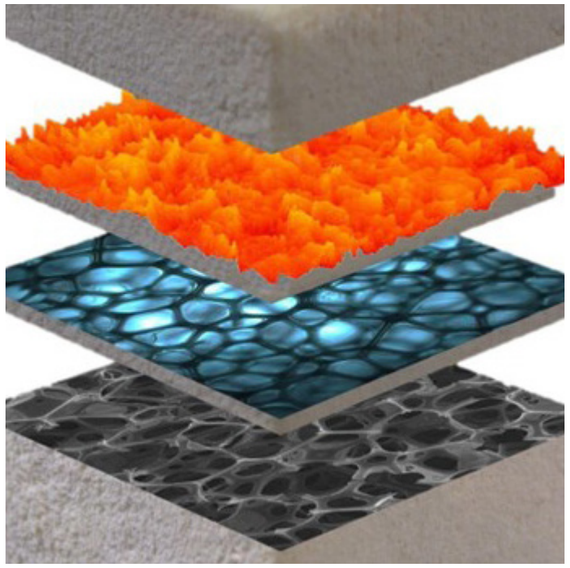
FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR)
- identifies chemical bonds in a molecule by producing an infrared absorption spectrum.

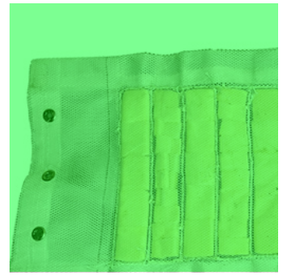
DENSITY MEASUREMENT BY GAS PYCNOMETRY
- determines the density of solids and powders through gas displacement.

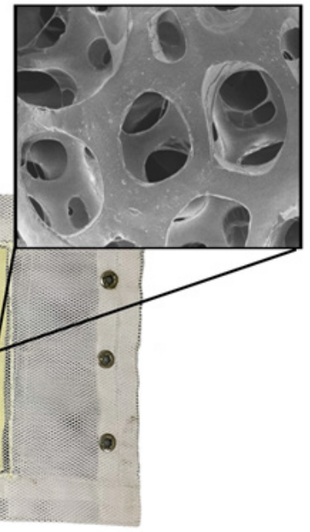
HEAT FLOW METER
- measures thermal conductivity of materials.

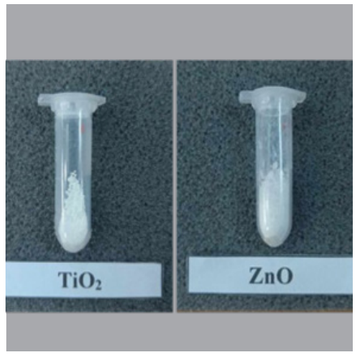


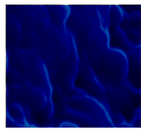


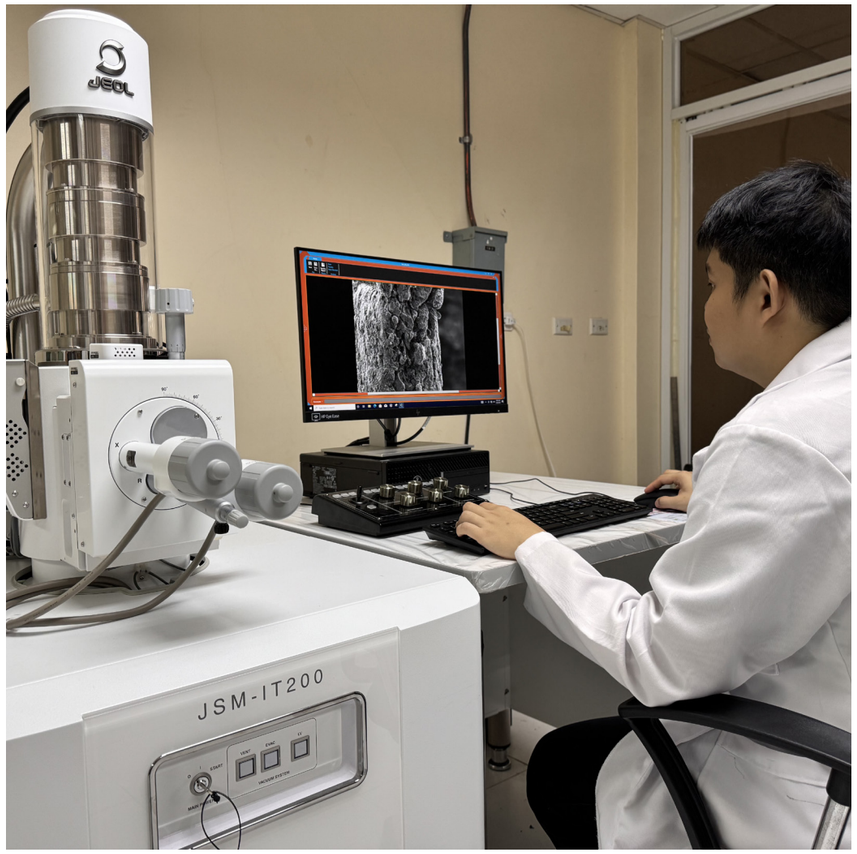


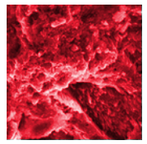


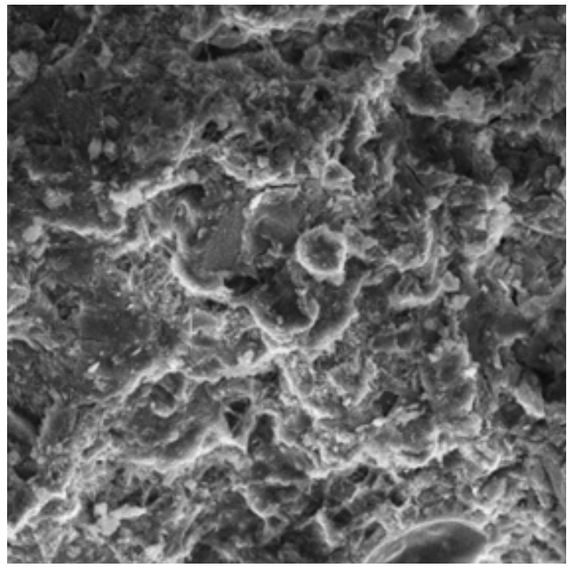


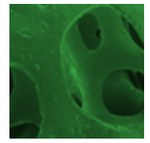












ABSORBANCE AND FLUORESCENCE MEASUREMENT BY MICROPLATE SPECTROPHOTOMETRY
- measures the absorbance or fluorescence of samples in microplate format.

TISSUE SECTIONING USING MICROTOME
- cuts extremely thin slices of tissue samples for microscopic examination.

SURFACE TENSION MEASUREMENT BY OPTICAL TENSIOMETRY
- measures surface tension and interfacial properties of liquids.

ELECTROCHEMICAL ANALYSIS BY POTENTIOSTAT
- controls the voltage of an electrochemical cell, used in studies of electrochemical reactions, corrosion, and battery research.

SAMPLE SEPARATION BY REFRIGERATED CENTRIFUGATION
- separates components in biological samples at low temperatures, preserving sample integrity during processes like cell fractionation and protein purification.

RHEOMETER
- measures the flow and deformation behavior of materials.

SURFACE IMAGING BY SCANNING ELECTRON MICROSCOPY (SEM)
- provides high-resolution imaging of sample surfaces.

HISTOPATHOLOGY USING HEMATOXYLIN & EOSIN (H&E) STAINING
- examines tissue's structure through Hematoxylin & Eosin (H&E) staining, providing detailed insights into cellular architecture.

LOW TEMPERATURE STORAGE
- preserves biological samples, reagents, and other sensitive materials at low temperatures.

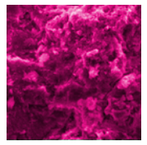
LYOPHILIZATION BY FREEZE DRYING
- removes water from samples through sublimation, used for preserving biologicals, pharmaceuticals, and food products.

PROTEIN SEPARATION BY SDS-PAGE
- separates proteins based on their electrophoretic mobility using Sodium Dodecyl Sulphate-Polyacrylamide Gel Electrophoresis.

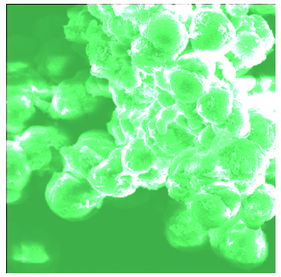
POWDER PRODUCTION BY SPRAY DRYING
- converts liquid samples into dry powders by rapid drying with a hot gas.

MATERIAL PROPERTY MEASUREMENT BY TEXTURE ANALYSIS
- measures the physical properties of materials, such as hardness, cohesiveness, and elasticity.

MECHANICAL PROPERTY TESTING BY UNIVERSAL TESTING MACHINE
- evaluates the mechanical properties of materials, such as tensile strength, compression, and flexural properties.



SuRER CMT



Sustainable Resource Engineering Research Center for Construction Materials & Technologies

The Sustainable Resource Engineering Research Center for Construction Materials & Technologies (SuRER CMT) focuses on developing environmentally friendly solutions for the construction industry, promoting renewable materials and minimizing waste. It aims to establish the University as an innovation hub, contributing to the Philippines' global significance. By delivering affordable, competitive, and sustainable construction materials, it enhances the country's economy.

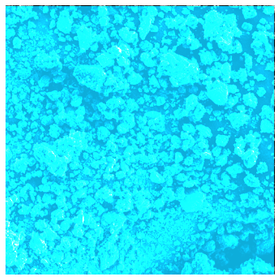
Its objective is to develop sustainable construction materials and technologies, utilizing agro-industrial wastes. This promotes circularity and protects human and environmental health. Specifically, it aims to: serve as an innovation lab for sustainable infrastructures; advance knowledge in Construction Materials Technologies; and enhance industrial competitiveness in waste utilization.

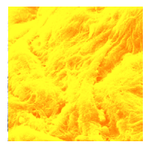
The CSCT comprises three Research Laboratories and a common Analytical and Characterization Laboratory: (i) Construction Admixtures and Formulations Research Laboratory; (ii) Construction Materials and Structures Research Laboratory; (iii) Bio-based Construction and Building Materials Research Laboratory; and (iv) Construction Admixtures and Materials Characterization and Analytical Laboratory.

2Nd Floor
COET Building
mariasheila.ramos@g.msuiit.edu.ph
(063) 223.2351
4130/4230 (local)

SERVICES OFFERED

- Kjeldahl Analysis
- Atomic Absorption Spectrometry
- Simultaneous Thermal Analysis
- XRD Analysis
- XRF Analysis
- Chloride Permeability Testing





FACILITIES

FUMEHOOD
- utilized to extract gases, vapors, and fumes from the working environment.

KJELDAHL DIGESTION AND DISTILLATION SET-UP (4 PLACE)
- employed for accurately determining the nitrogen content in samples through quantitative analysis.

ROTAVAPOR
- utilized to efficiently remove solvents through the evaporation process.

DIGITAL PRECISION BALANCE, 10 KG MAX, 0.10 G PRECISION
- a sophisticated weighing instrument for precise mass measurement. Ideal for scientific, laboratory, or industrial use, it guarantees accurate readings, even for small weight variations, ensuring reliability in meticulous measurement tasks.

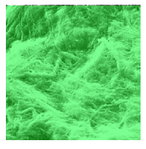
ANALYTICAL BALANCE, 330 G MAX, 0.001 PRECISION
- a high-precision weighing device tailored for meticulous mass measurement. Ideal for scientific research, pharmaceuticals, and manufacturing quality control, it ensures reliable and precise results, serving as an indispensable tool where precision is crucial.

LAB GRINDING MACHINE, NANOSIZED
- a cutting-edge unit designed for precise size reduction of materials at the nano scale. Its compact design and nanosized capabilities make it ideal for advanced research in fields like materials science and nanotechnology.

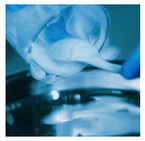
THERMOSTATIC WATER BATH
- precisely heats and maintains samples at specific temperatures. Ideal for scientific, medical, and industrial use, its thermostatic control ensures consistency for accurate results in various applications

LAB SPRAYER DRYER
- converts liquids into powders with precision and efficiency, ideal for research and development in industries like pharmaceuticals and food. Its compact design and precise control ensure consistent and uniform drying, preserving the integrity of substances being processed.

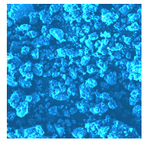
FORCED GRAVITY LAB OVEN
- perfect for drying delicate samples prone to displacement by air currents. Its forced gravity technology ensures gentle, uniform drying, making it ideal for precise laboratory applications.

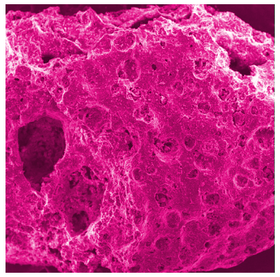


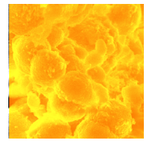
ATOMIC ABSORPTION SPECTROPHOTOMETER
- quantifies chemical elements by measuring light absorption from their free atoms in a gaseous state. It offers precise analysis, identifying and quantifying elements within samples across diverse fields like environmental monitoring and metallurgy.



THERMAL GRAVIMETRIC ANALYZER (TGA) WITH DIFFERENTIAL SCANNING CALORIMETRY (DSC)
- a tool for assessing the thermal stability of materials like polymers. It measures changes in mass and heat flow with temperature, revealing insights into decomposition and oxidation. This instrument is essential for research, quality control, and material characterization across industries.







BiO PRER

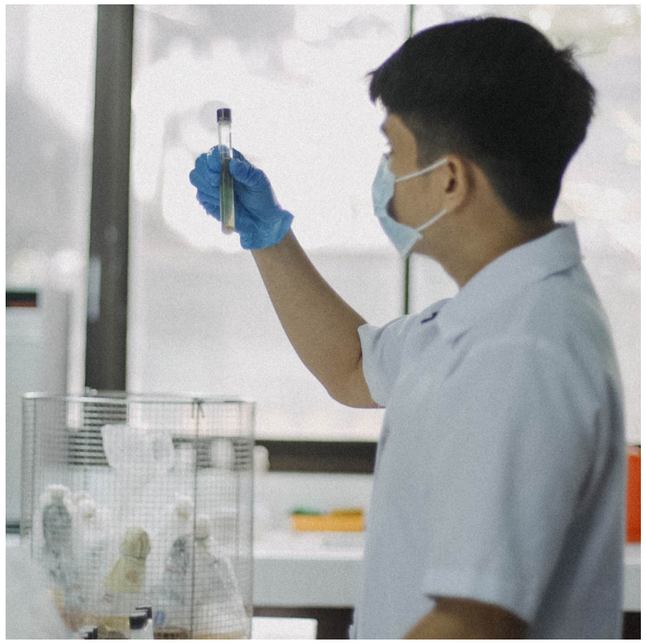
Bioprocess and Bioresources Engineering Research Center

The Bioprocess and Bioresources Engineering Research Center (BioPRER) is specifically mandated to boost partnerships between BioPRER and the local bioprocess industries based on proper IP management and protection to provide a mutually-beneficial interaction through addressing industry problems and/or developing industrially-important sustainable bioprocess materials; intensify knowledge, provide technical support and mentoring, and assist academia-based researches for emerging and related technologies in bioprocess science and engineering; promote inclusive growth and attain global competitiveness that will benefit the research community and industry by increasing the number of developed and transferred bioprocess-based technologies; and advance sustainability in the utilization of bioresources through circular economy principles by the deployment of bioprocess technologies for commodities and services, and generate revenues through technology transfer, licensing, and commercialization.

Room 331
RIEIT Building
mariasheila.ramos@g.msuiit.edu.ph
(063) 223.2351
4130/4230 (local)

SERVICES OFFERED

- Solid Waste Management Baseline Assessment
- Waste Analysis and Characterization Study
- Water and Wastewater Analysis
- Toxicity Characteristics Leaching Procedures



FACILITIES

AUTOCLAVE
- utilized in scientific settings where elevated temperature and pressure are necessary, distinct from normal air pressure. Its applications include sterilizing and de-sterilizing samples effectively.

UV-VIS SPECTROPHOTOMETER
- utilized to gauge light absorbance throughout the ultraviolet (UV) and visible (Vis) ranges of the electromagnetic spectrum. Its readings offer crucial insights into various material properties.

INCUBATOR
- creates a controlled environment, insulated within an enclosure, where temperature, humidity, and other environmental factors can be regulated. This ensures optimal conditions for the growth of cultured organisms.

ANALYTICAL BALANCE
- designed for accurately measuring the mass of an object with precision.

PH METER
- utilized to measure the pH of various samples, providing accurate readings.

MAGNETIC STIRRER
- employed to agitate and blend mixtures effectively, ensuring homogeneity.

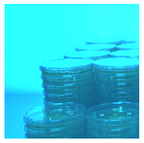
CENTRIFUGE
- designed to separate the components of a mixture.

MICROBIOLOGICAL REFRIGERATOR
- intended for the preservation and storage of reagents, culture media, biological specimens, bacterial samples, and similar materials.

BOD REFRIGERATOR
- specifically designed for conducting Biochemical Oxygen Demand (BOD) determinations.

MICRO-FILTRATION SET-UP
- utilized in water treatment processes.

ROTARY EVAPORATOR
- efficiently remove solvents by employing the evaporation process.



FUME HOOD
- captures gases, vapors, and fumes from the work area for efficient removal.

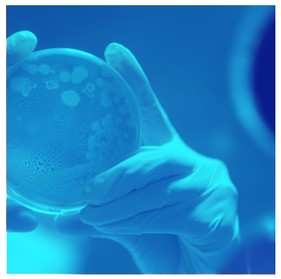
SHAKER INCUBATOR
- facilitates cell culturing, cell aeration, and solubility studies.

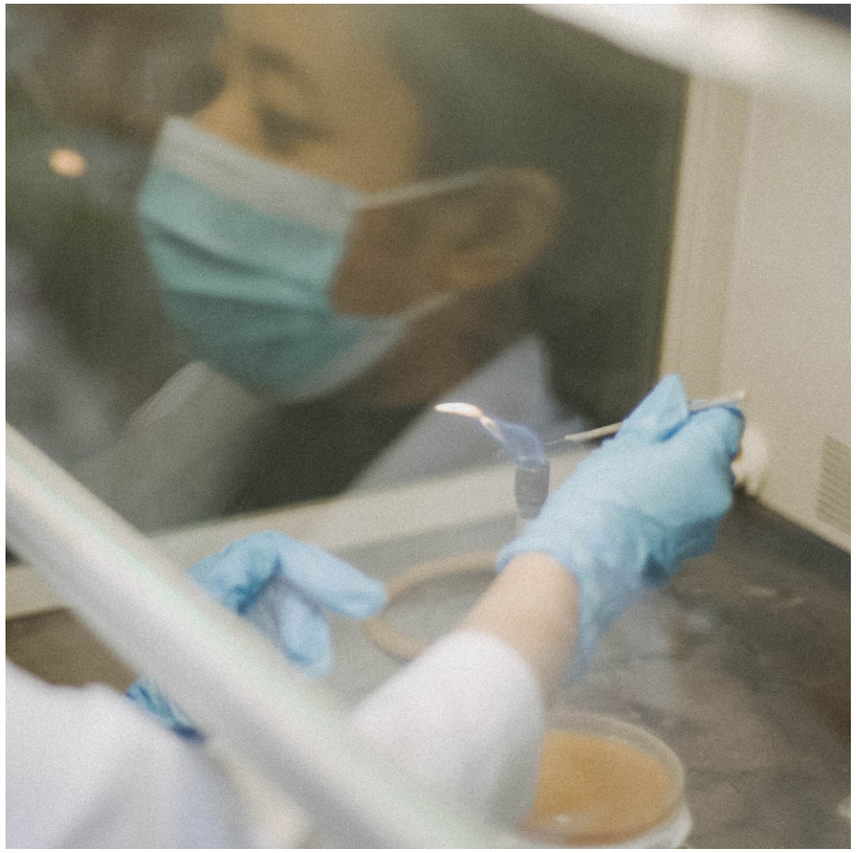
WEIGHING SCALE
- used to measure the mass of an object.

TURBIDITY METER (WATER QUALITY ANALYZER)
- measures the turbidity of samples.

ROTARY AGITATOR FOR TCLP
- continuously stirs stored liquids, preventing them from settling and separating into various components, ensuring consistent liquid consistency.

MICROSCOPE
- enables the observation of surfaces and small objects at the micro-scale.





CICD

Center for Integrated Circuits Design

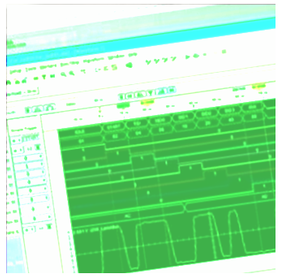
The Center for Integrated Circuits Design – Microelectronics Laboratory, a pioneering research hub dedicated to advancing integrated circuits design in the Southern Philippines.

At CICD, we are committed to pushing the boundaries of IC development. Since our inception, we have been at the forefront of fundamental research in microelectronics and IC design, from component- and block-level design to advanced system-level, system-on-chip (SoC) solutions, and IoT applications, such as Energy Harvesting and Wireless Sensor Networks.

It is our mission to establish an IC Design niche in the country, continuously produce highly skilled graduates, proliferate microelectronic education, and eventually help position the Philippines globally in IC design.

Equipped with cutting-edge IC design tools, our laboratory provides a platform for both cell-based and full-custom IC design. These tools empower our engineers to tackle complex chip design and system development, meeting the demands of today's nanometer technology.

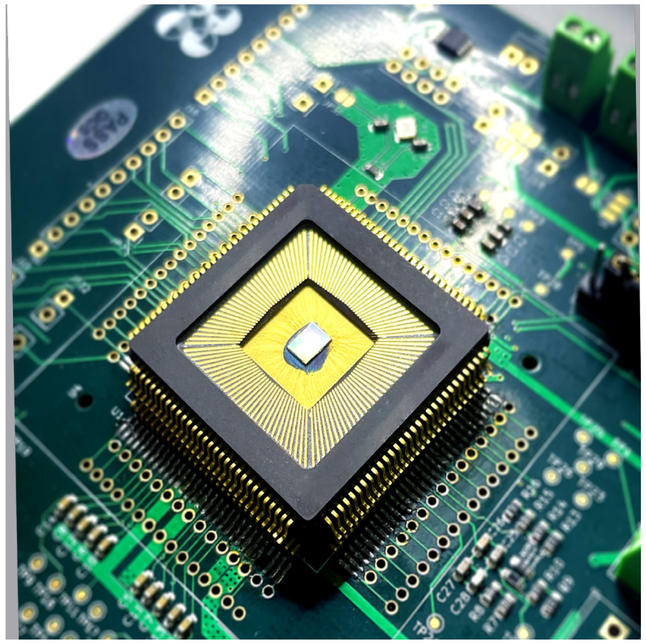
Through courses, training, workshops, university collaborations, industry partnerships and initiatives like research projects, we're shaping the future of IC design and Microelectronics in the country.



Room 209C
2nd Floor, COET Building
microlab@g.msuiit.edu.ph
((+63) 221 - 4050
4652 (local)

SERVICES OFFERED

- Full Custom IC (chip) Design: Analog IC, Digital IC Design & Mixed-Signal IC Design
- IC Layout Services
- RTL Design & Verification
- Chip Testing Evaluation & Verification
- PCB Design
- Electromagnetic (EM) Evaluation and Analysis of the 3D Model Integration of Chip & PCB Design
- Battery Testing Characterization & Evaluation
- Chip Thermal Evaluation and Analysis
- Electronic Testing, Failure Analysis & Evaluation
- IC Design Training and Workshop using Industry-Standard Software Tool
- Radio Frequency (RF) Testing and Evaluation



FACILITIES

MICROELECTRONICS RESEARCH LABORATORY

- a hub for innovation and development, housing a dedicated team of full-time researchers. This includes experts in IC analog, digital, and mixed-signal design, IC layout engineering, verification engineering, PCB design, and embedded system engineering. The laboratory is equipped with state-of-the-art, industry-grade EDA (Electronic Design Automation) tools, which are essential for the intricate processes of chip design and system development.

GRADUATE AND UNDERGRADUATE RESEARCH LABORATORY

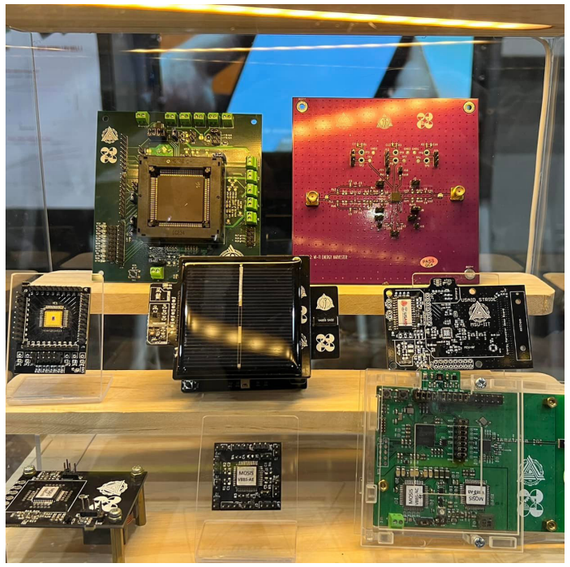
- a workspace designed to support the research endeavors of both Masters in Electronics Engineering (MS ECE) students and Electronics Engineering (BS ECE) students. This laboratory provides the necessary resources and environment for students to engage in hands-on research projects related to microelectronics. It serves as a collaborative space where students can apply theoretical knowledge, conduct experiments, and develop innovative solutions under the guidance of experienced faculty and researchers.

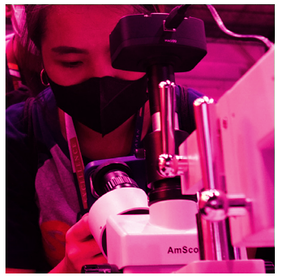
MICROLAB CHIP TESTING ROOM

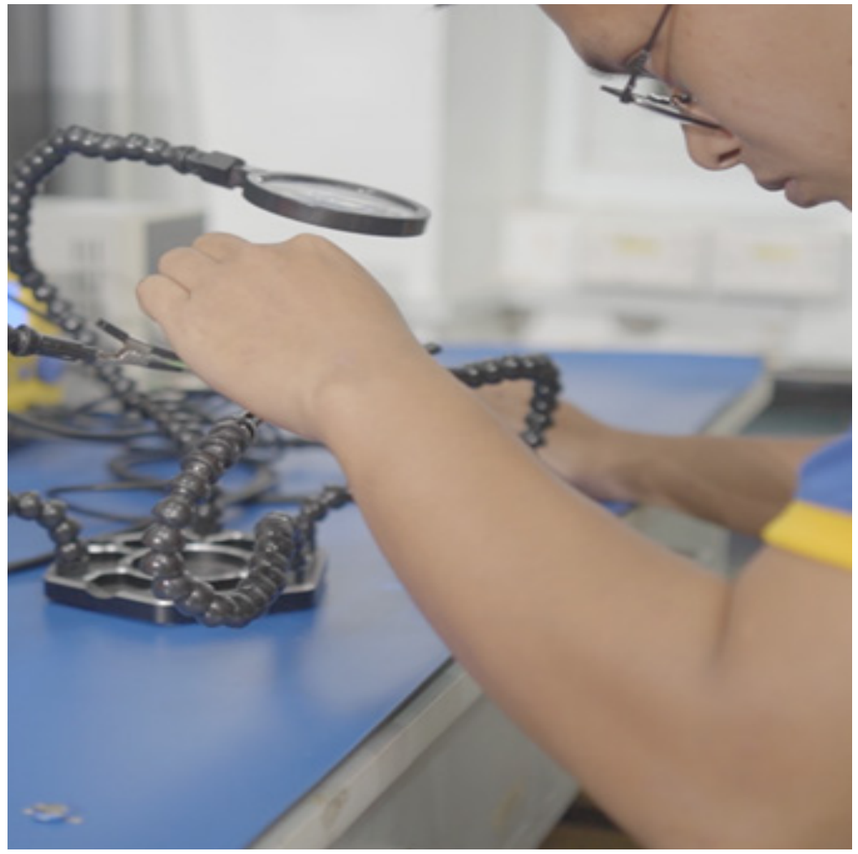
- a specialized facility dedicated to the testing and verification of electronic components and systems. This room is equipped with advanced test equipment and a comprehensive supply of electronic components essential for chip testing, hardware design verification, and firmware validation. It enables researchers and engineers to conduct rigorous testing and ensure the reliability and functionality of their designs before deployment.

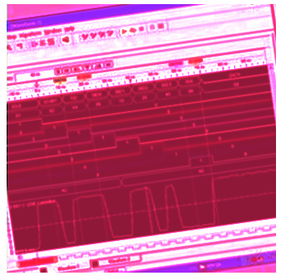
MICROLAB CONFERENCE ROOM

- a space designed to facilitate collaboration and communication among researchers, students, and industry professionals. It can accommodate small to medium-sized groups and is equipped with a large smart display, high-speed internet access, and a conference camera and microphone for seamless conference calls. This room is ideal for a variety of activities, including meetings, research discussions, brainstorming sessions, and formal presentations.









DC POWER ANALYZER WITH DATA ACQUISITION SYSTEM

- a modular system that can be tailored to meet specific test needs. It has four slots to accept one to four DC power or load modules. It is used to measure the flow of power in an electrical system. This refers to the rate of electrical transferal between a power source and a sink. Measuring power flow is a critical yet rudimentary process that can be carried out with consummate ease using a standard power analyzer.

SOLDERING, DESOLDERING AND SMD REWORK STATION

- a multipurpose power soldering device designed for electronic components soldering. It also has an 'adjustable temperature' based soldering device designed for soldering through-hole and SMD electronic components.

CONSTANT TEMPERATURE CHAMBER

- an instrument with a controlled environment capable of producing conditions that a product will encounter during its use. It is also used to test heat resistance, cold resistance, dry resistance, and moisture resistance of diverse materials under a variety of environmental conditions. This instrument can also carry out adaptability tests of instruments, electricians, electronics, parts, and materials when they are stored, transported, and used in environmental conditions with high humidity and temperature or low humidity and temperature. It is also well-suited for testing several raw materials, including electronics, electrical, and plastics to figure out their resistance to heat, cold, dryness, and moisture.

LOGIC ANALYZER

- an instrument for capturing, displaying, and measuring multiple electronic signals simultaneously in a digital circuit. Logic analyzers can show the relationship and timing among many different signals in a digital system and are often capable of analyzing digital communication protocols, such as I2C, SPI, and Serial.

DDS FUNCTION WAVEFORM GENERATOR

- a signal generator instrument that uses digital devices to generate frequency-variable and phase-variable signals from a fixed frequency reference clock signal.

MINI REFLOW OVEN

- a machine used primarily for reflow soldering of surface mount electronic components to printed circuit boards (PCBs).

CERT

Center for Energy Research and Technology

The Center for Energy Research and Technology (CERT) serves as a hub for research and instruction, applying engineering principles to address challenges on waste management, renewable energy, emissions, green technology, and material recovery. It fosters collaboration between universities and industries to promote environmental sustainability and strengthen Mindanao's circular economy.

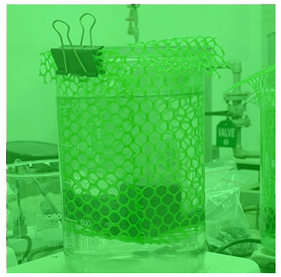
CERT is comprised of eight major research laboratories with each laboratory focusing on specific areas:

WASTE VALORIZATION AND ENERGY (WAVE): Conversion of biomass and solid wastes into valuable products;

URBAN AND HAZARDOUS WASTE MANAGEMENT (UHM): Management of urban and hazardous wastes through upcycling technologies;

GREEN RESEARCH AND MATERIALS (GRaM): Development of green materials and composites from treated wastes;

WASTE AND RESOURCE MANAGEMENT (WaRM): Utilization of residuals for water and wastewater treatment;



Room 307, 3rd Floor
SET Building
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09777494995

SOLAR ENERGY SYSTEMS (SES): Research on solar PVs and energy-efficient technologies;

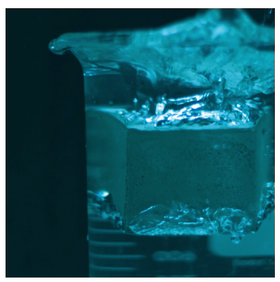
ENERGY-ENVIRONMENT INTERACTION (E2I): Study of energy-environment interaction and climate impact alleviation;

HYDROPOWER: Development of electrical microgrids and control systems; and

WIND ENERGY: Research on fluid dynamics and turbine design for wind energy harvest.

SERVICES OFFERED

- Biomass Biomass and select residual waste fuel conversion
- Thermogravimetric Analysis
- Proximate Analysis
- Elemental (CHNS/O) Analysis
- Bomb Calorimetry
- Moisture Content Determination
- High-Temperature Gasification Analysis
- Ash Content Determination
- Syngas Composition Determination
- Equipment Design
- Process Simulation
- Technical Support



FACILITIES

0.5-LITER HYDROTHERMAL REACTOR

- a laboratory-scale equipment with various applications, including the hydrothermal conversion of wastes to fuel, and material recovery experiments.

100-LITER HYDROTHERMAL TREATMENT PILOT PLANT

- a specialized system for conducting hydrothermal processing experiments on a larger scale.

THERMOGRAVIMETRIC ANALYZER

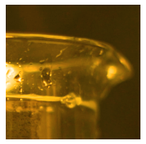
- a precision instrument used to study the thermal behavior of materials and degradation characteristics through subjection to controlled heating and atmosphere.

ELEMENTAL (CHNS/O) ANALYZER

- a state of the art equipment used to determine specific elements particularly, but not limited to, chemical and fuel characterization.

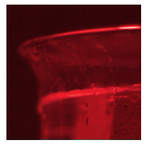
BOMB CALORIMETER

- a modern equipment to determine the heats of combustion of fuel products.



SPLIT-TYPE VERTICAL TUBE FURNACE

- a sophisticated equipment for high-temperature processing applications which can conduct gasification experiments, synthesis of inorganic compounds and various applications.



MUFFLE FURNACE

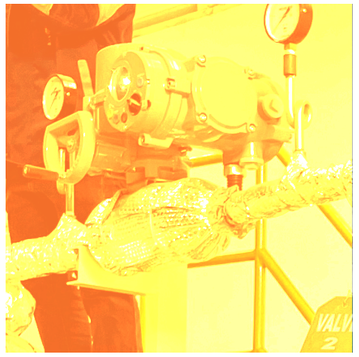
- a well-rounded equipment for high temperature applications, including determination of ash content, for materials research.

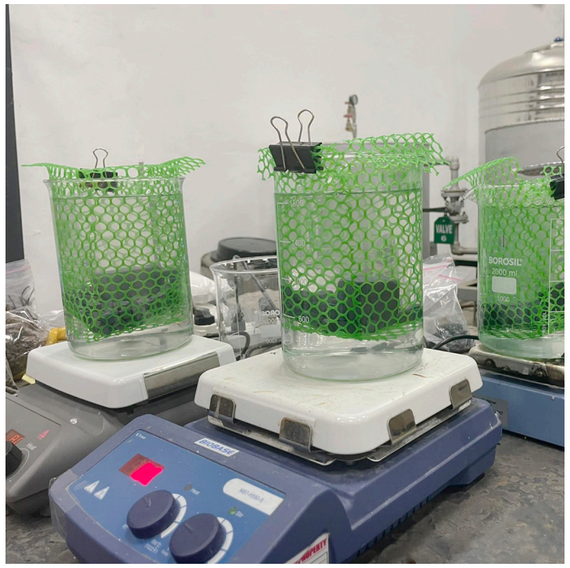
SYNGAS ANALYZER

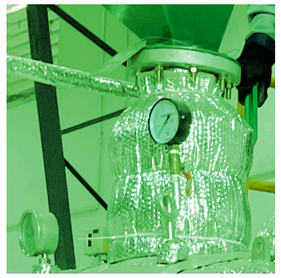
- a specialized equipment for the determination and volumetric percent confirmation of the synthesis gases produced during gasification experiments.

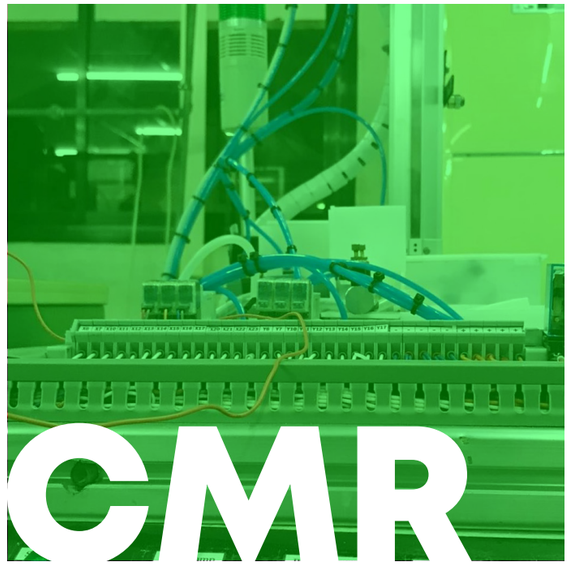
LABORATORY OVEN

- paired with High Precision Analytical Balance used for moisture content determination, drying of raw materials and products, and laboratory scale weighing applications.









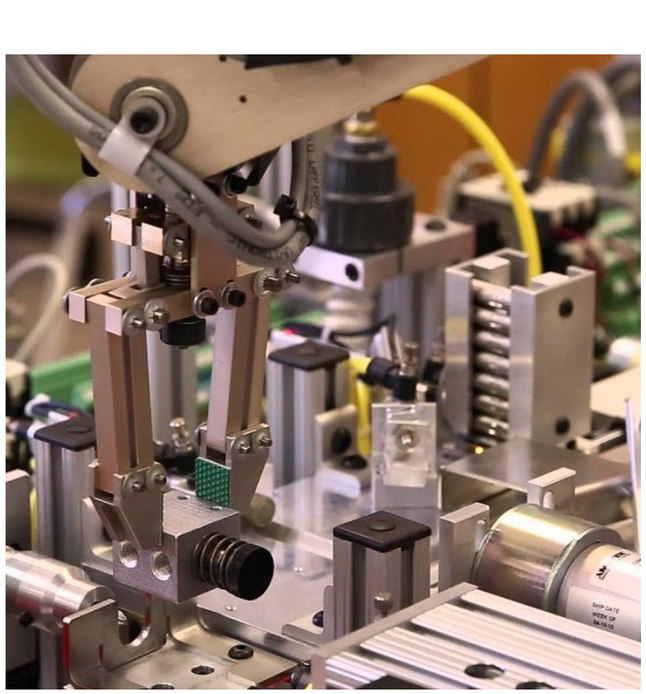
Center for Mechatronics and Robotics

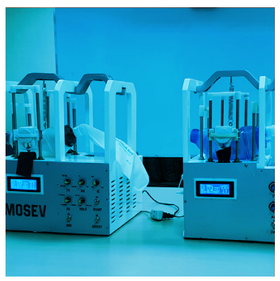
The Center for Mechatronic and Robotics (CMR) consists of 3 laboratories: CRL (Control and Robotics Laboratory), Industrial Automation and Mechatronics Laboratory, and RICE Lab (Robotics, Instrumentation, and Control Engineering Laboratory). The center is a hub of knowledge and learning. The center aims to become a worldwide competitive research center for mechatronics and robotics, and it is open to other academic institution, industrial sector, local governments, non-governmental organizations (NGOs), and other related sectors.

Room 102 & 105
COE Building. Control & Robotics Laboratory
cmr@g.msuiit.edu.ph
(063) 221. 4047

SERVICES OFFERED

- Computer-Aided Designing
- PLC Training
- Industrial Automation Training
- 3D Printing Services
- Robot Fabrication and Assembling
- CNC Machining Services
- Basic and Advanced Robotics Training
- Aerial Inspection Services
- Basic and Autonomous Drone Training
- Drone Fabrication and Assembling
- Artificial Intelligence-Machine Learning Training





FACILITIES

SHELLED UAV (UNMANNED AERIAL VEHICLE)
- a drone with protective spherical shell, gimbal and camera that allows proximity inspection of infrastructures. It has a state-of-the-art crack detection system for facilitating on structural assessment.

DRONE-BASED WATER SAMPLER
- features a water sampling collection system with a drone, spool unit, and water sampler connected via tether cable. The device is capable of collecting 500 mL water sample with minimal leakage and is suitable for bodies of water in diverse environments.

CROVER, THE GROUND ROBOT
- a ground robot technology that can be used as platform for research and education. It is a lightweight ground robot that can be customized depending on its application. Othe features such as robotic arm, SLAM (Simultaneous Localization and Mapping), person following, autonomous navigation, and control dashboard are integrated to the ground robot.

ROBOTIC ARM
- a type of mechanical arm, generally programmable, that performs functions comparable to a human arm. Joints connect the manipulator's linkages, allowing for either rotational (as in an articulated robot) or translational (linear) displacement.

3D PRINTER
- a device that is used for 3D printing that allow rapid prototyping of 3D models or designs using plastic-based filament (additive manufacturing).

CNC MACHINE
- a programmable machine that is capable of producing custom designs through cutting. The automated nature of CNC machining enables the production of high precision and high accuracy design (subtractive manufacturing).

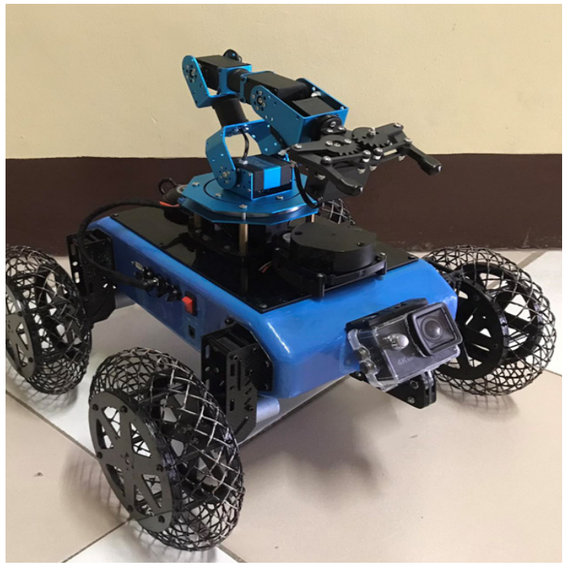
PLC (PROGRAMMABLE LOGIC CONTROLLER) TRAINER
- a trainer kit for PLC, a specialized computer that manages and automates mechanical processes in factories and industries. This easy-to-follow learning plans helps in grasping the core concepts of PLCs quickly.

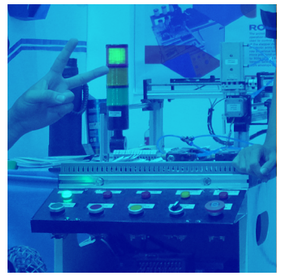
MECHATRONICS TRAINER
- an equipment mainly includes training benches, mechanical parts of typical mechatronics equipment, PLC modules, inverter modules, button modules, power modules, simulated production equipment training modules, wiring terminal blocks and various sensors.

HYDRAULICS TRAINER
- an equipment that adopts standard industrial hydraulic components that ensure safety, reliability and close to industrialization. All hydraulic valves adopt hydraulic components, and their performance parameters are in full compliance with the requirements compliance with industrial application standards.

PNEUMATICS TRAINER
- a training equipment composed of practice table, practice operation panel of pneumatic system loop, and electrical control part found in industrial applications.

MOTOR CONTROL SYSTEM TRAINER
- a training equipment for hands-on learning with motors found in industrial, commercial and residential applications.

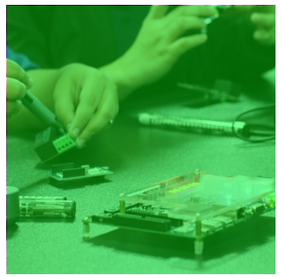




Center for Artificial Intelligence Research

The Artificial intelligence (AI) is associated with human intelligence with similar characteristics such as language understanding, reasoning, learning, problem-solving, and others. AI is positioned at the core of the next generation software technologies in the market. Companies such as Google, IBM, Microsoft, and other leading players have actively implemented AI as a crucial part of their technologies. With this direction taking off on the international scene it is highly likely that the technologies that utilize AI will affect the economy, the academe, the industry, and ultimately our way of life. Positioning a Research Center in Mindanao that will be a catalyst for this global trend is vital if we want to grow with how the world is changing.

As a prime research facility in Artificial Intelligence in Mindanao, the main objective of the Center for Artificial Intelligence (CAIR) is to be an institution that will provide innovative solutions that will support an AI-based industry. Specifically, the CAIR's mandate is to encourage collaborative research efforts with other disciplines to benefit the community; foster knowledge sharing of AI literacy towards industry and the local community; consolidate AI resources, learnings, and talent in one place; forge strong collaborations between CAIR and the industry through proper Intellectual Property management and protection to provide a mutually beneficial relationship; provide research opportunities for ethics surrounding policy creation with the development of new AI technologies; and promote equal learning.



COET Building

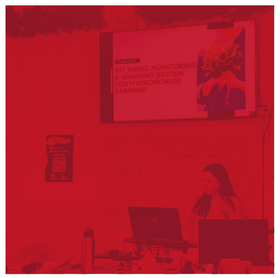
SERVICES OFFERED

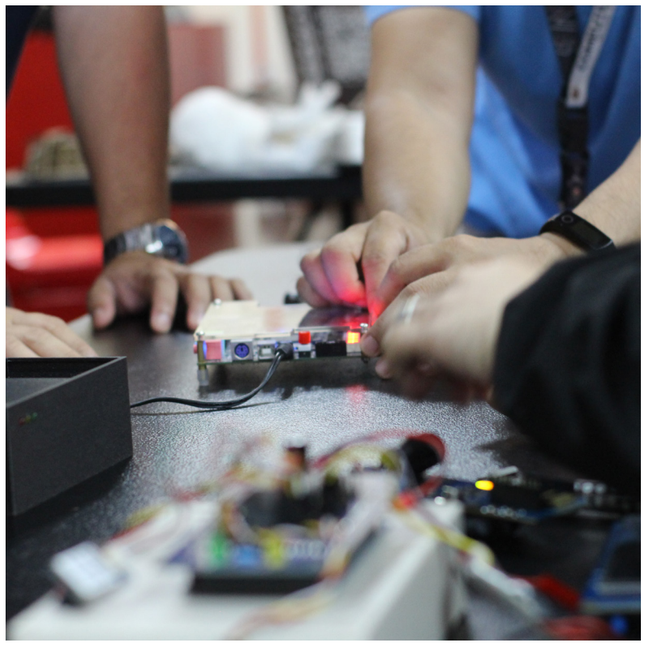
RESEARCH AND DEVELOPMENT

- Advanced AI Research: Pioneer AI breakthroughs in algorithms, machine learning, deep learning, natural language processing, computer vision, and robotics.
- Practical AI Solutions: Develop tailored AI applications for healthcare, finance, manufacturing, and diverse industries.
- Collaborative Projects: Partner with universities, research institutions, and corporations for joint AI research endeavors.

EDUCATION AND TRAINING

- Knowledge Events: Host workshops and seminars to update the community on the latest AI advancements.
- Professional Development: Offer certification courses and training programs for AI upskilling.
- Academic Offerings: Provide AI courses for both undergraduate and graduate students.



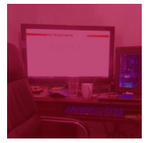


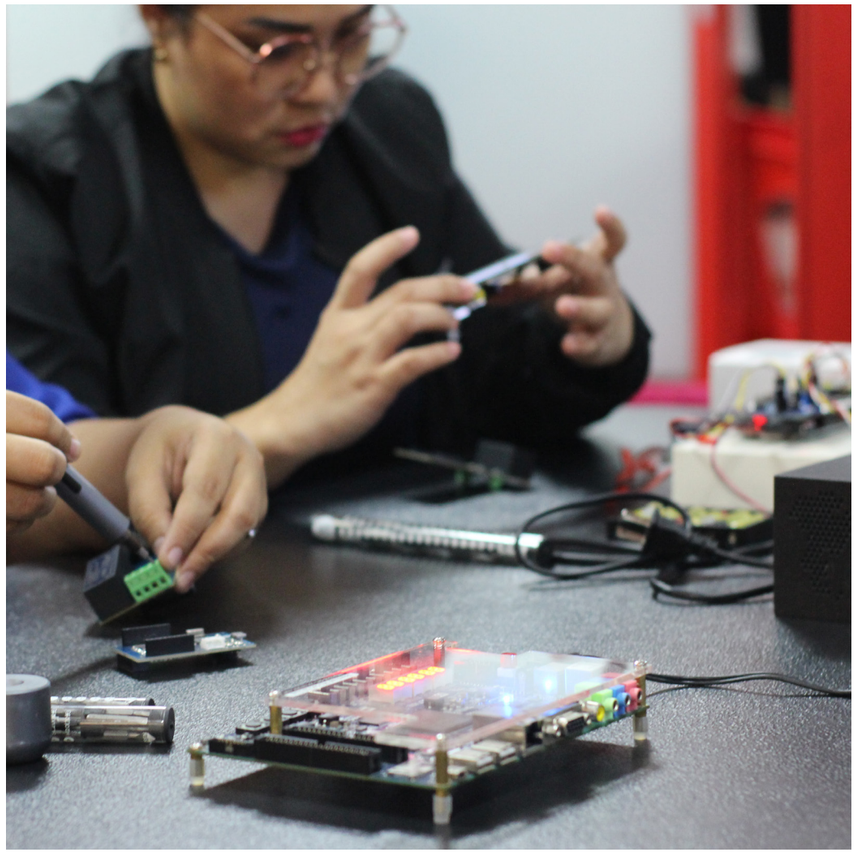
CONSULTING SERVICES

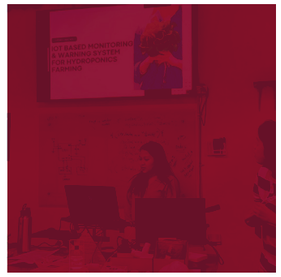
- Strategy Guidance: Assist organizations in crafting and executing AI strategies.
- Technical Support: Aid in the technical execution of AI projects, from data collection to deployment.
- Ethical Oversight: Provide guidance on ethical AI practices, including bias mitigation and transparency.

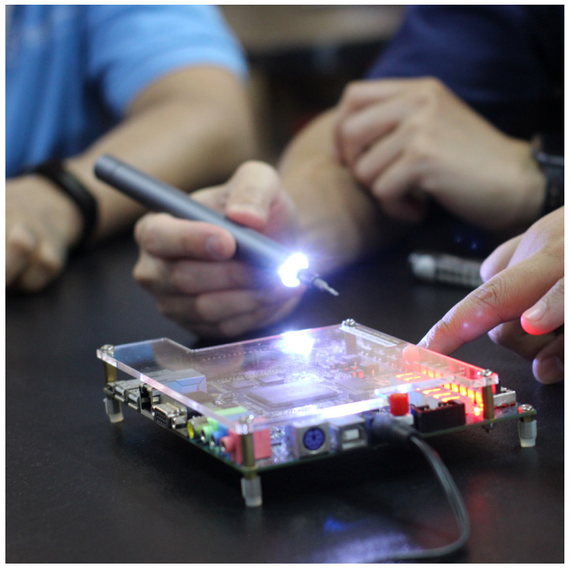
INFRASTRUCTURE AND TOOLS

- Computing Power: Grant access to high-performance computing resources and AI platforms.
- Development Resources: Supply software tools and frameworks for AI research and development.
- Data Solutions: Offer curated datasets and data management services for AI projects.









INNOVATION AND ENTREPRENEURSHIP

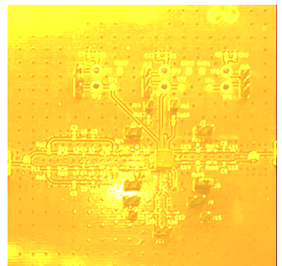
- Startup Support: Foster AI startups through incubation and acceleration programs.
- Collaboration Platforms: Forge partnerships with industry leaders to enable knowledge exchange and joint projects.
- Networking Events: Host conferences and symposiums to connect AI experts and practitioners globally.

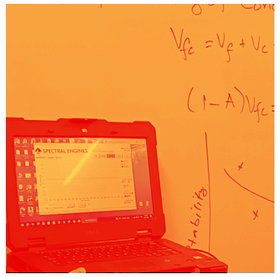
POLICY AND ADVOCACY

- Framework Development: Collaborate with policymakers to establish AI frameworks and regulations.
- Public Engagement: Educate the public about AI and its societal impacts through awareness campaigns.
- Ethical Standards: Advocate for ethical AI use through guidelines and best practices.

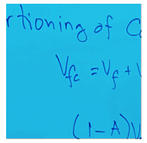
APPLICATION DOMAINS

- Healthcare: Develop AI solutions for medical diagnostics, personalized medicine, and healthcare management.
- Finance: Create AI applications for fraud detection, risk management, and financial forecasting.
- Industry: Implement AI for predictive maintenance, process optimization, and supply chain management.
- Urban Development: Utilize AI for smart city initiatives, including urban planning, traffic management, and public safety.





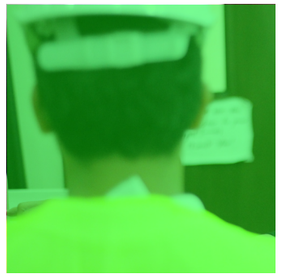
CSEI



Center for Structural Engineering and Informatics

The Center for Structural Engineering and Informatics (CSEI) cultivates a common thrust towards research and innovation in structural engineering and informatics at MSU-IIT, and in the Mindanao region in general. It envisions to be the prime research and development and service facility for sustainable structural engineering and informatics in Mindanao. CSEI's mission is to be the leading research and development facility and provider of technical and expert services in structural engineering and informatics to support the construction sector, other HEIs/SCUs, and the Mindanao community.

It is the CSEI's mandate to solve real-world problems and situations involving structural engineering and informatics through (1) generating new knowledge through research and development collaborations in the fields of structural engineering and informatics; (2) forging strong relationships with other academic institutions and the construction sector; and (3) disseminating knowledge and technology by providing expert assistance in structural engineering and informatics.



Room 110, 1st floor
COET Building

SERVICES OFFERED

RESEARCH AND DEVELOPMENT ACTIVITIES.

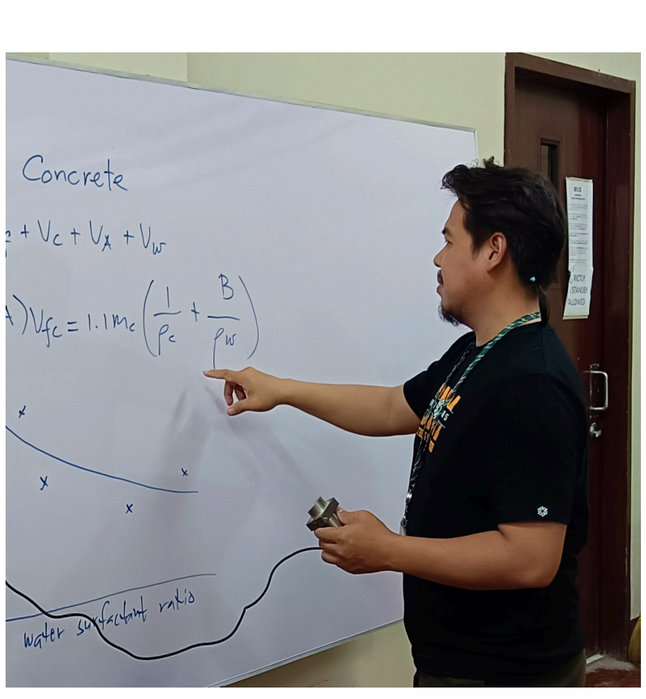
- The Center will generate new knowledge through internal and external research projects focused on Structural Engineering Maintenance, Structure Informatics and Systems, Bridge, Tower, and Earthquake Engineering, and Building Construction and Structural Materials. It will also serve as a research facility for undergraduate and graduate students in structural engineering and informatics.

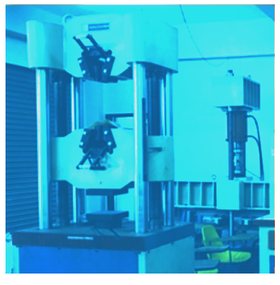
LOCAL AND INTERNATIONALIZATION ACTIVITIES.

- The CSEI will collaborate with existing local and international partners and expand its network to include research institutions, SUCs/HEIs, government agencies, and the construction sector to support knowledge generation and technology transfer.

KNOWLEDGE AND TECHNOLOGY TRANSFER ACTIVITIES.

- The CSEI will train academics and students in structural engineering and provide training services on structural engineering and informatics to stakeholders. It also plans to host conferences to promote knowledge and technology transfer.





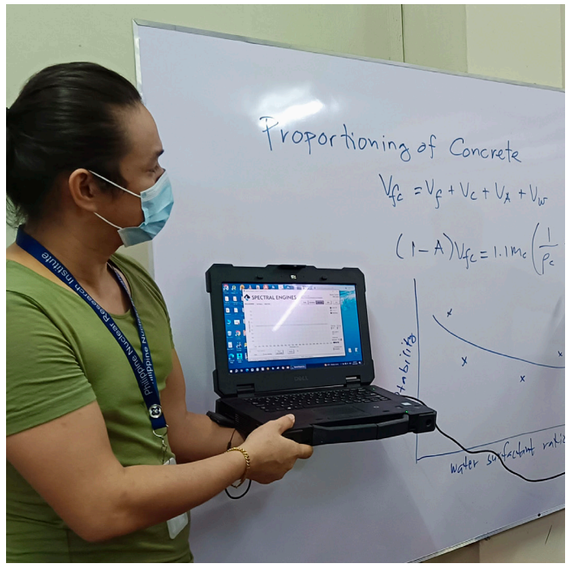
FACILITIES

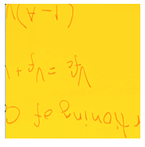
At present, the center is equipped with a Compression machine, a vital apparatus used for evaluating the structural integrity and strength of various construction materials. While our current inventory includes essential equipment like the Compression machine, we are continuously striving to enhance our capabilities and expand our resources.

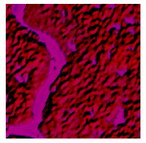
In line with this goal, some of our equipment, such as the reaction frame and Universal Testing Machine (UTM), is currently undergoing maintenance to ensure optimal performance and reliability. Additionally, to address our computing requirements and facilitate big data processing tasks, the center collaborates with the Center for Remote Sensing and Geographic Information Systems (CRS-GIS) to utilize shared computing facilities and resources.

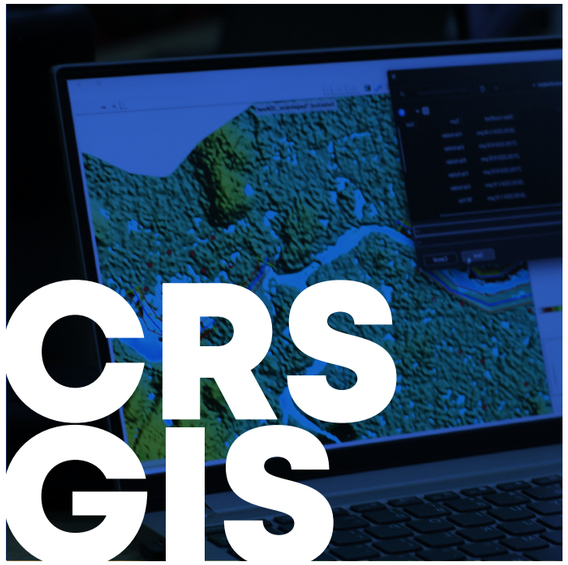
Looking ahead, we are committed to bolstering our equipment inventory and software capabilities through strategic partnerships and international collaborations. By leveraging synergies with other universities and forging international alliances, we aim to access cutting-edge technologies, acquire specialized equipment, and deploy advanced software solutions that will enhance the center's capacity to fulfill its mandate effectively.

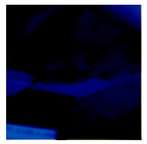
Through these collaborative efforts, we endeavor to establish the center as a hub of excellence in materials testing and analysis, providing researchers, students, and industry partners with access to state-of-the-art facilities and resources to drive innovation, research excellence, and sustainable development initiatives.





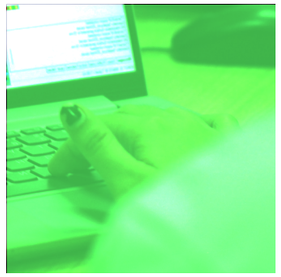






Center for Remote Sensing and Geographic Information Systems

This Center for Remote Sensing and Geographic Information Systems (CRS-GIS) is a leading hub for research, training, and technology transfer in Mindanao. It is the mandate of the CRS-GIS to contribute to science-based decision-making for understanding and solving real-world geographic problems and situations through (1) providing technical assistance in utilizing RS-GIS-based climate/ disaster risk and vulnerability assessments, risk and thematic mapping, and the establishment of exposure databases; (2) engaging institutions and organizations in mutually beneficial collaborative endeavors to address geomatics problems; (3) enhancing and increasing knowledge, providing technical support and mentoring, conducting training, and assisting research related to emerging and related geomatics technologies; and (4) serving as a research facility for undergraduate and graduate students conducting geomatics studies.



Room 109, 1st floor
COET Building

SERVICES OFFERED

DEVELOPMENT OF TRAINING MANUALS FOR RS-GIS.

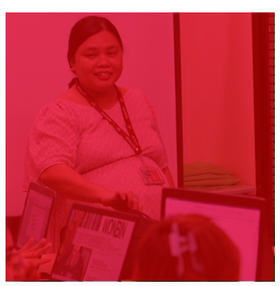
- The center is a leading facility in geomatics and GIS training, offering a range of courses, workshops, and modules for various skill levels. We have conducted numerous workshops for Local Government Units (LGUs), National Government Agencies (NGAs), students, and faculty. Our trained faculty and students facilitate these sessions, and we collaborate with LGUs and institutions to expand our training reach.

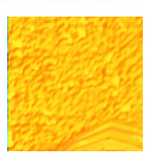
MAP GENERATION SERVICES.

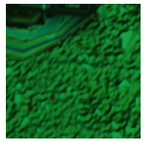
- The center assists LGUs in developing comprehensive exposure databases with geo-referenced data on population, infrastructure, and economic activities. Using advanced geospatial tools, we collaborate with local authorities to enhance disaster preparedness and response.

EQUIPMENT RENTAL AND FEES.

- We offer a variety of rental equipment for research and fieldwork, including surveying instruments and data processing tools. Fees may apply for equipment requiring specialized technical expertise. Our protocols ensure efficient and secure equipment use, promoting equitable access. Our training programs, services, and equipment rentals empower individuals and organizations with the tools for informed decision-making, sustainable development, and community resilience.







FACILITIES

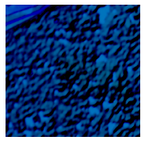
The center boasts state-of-the-art workstations specifically designed for high-resolution image processing and fast computing tailored for handling large-scale data processing tasks. Our cutting-edge data server provides ample storage capacity, boasting an impressive 40TB for seamless data storage and retrieval.

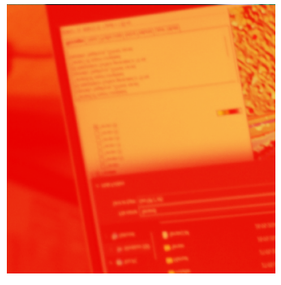
In addition to robust computing resources, the center is equipped with specialized tools for hydrologic data collection and analysis. A suite of precision instruments, including mechanical flowmeters, water level sensors, and rain gauges, empowers researchers to accurately measure and monitor hydrological parameters with precision and reliability.

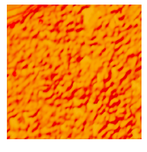
Moreover, our comprehensive inventory includes advanced water quality assessment tools, such as a sophisticated water quality meter capable of analyzing up to 13 distinct water quality parameters. Additionally, a dedicated sediment meter facilitates precise measurement of sediment transport dynamics, enabling thorough analysis of aquatic environments.

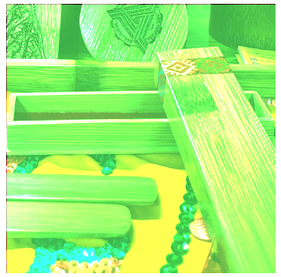
For terrain modeling and spatial data mapping, the center offers an array of sophisticated surveying instruments. These include Real-Time Kinematic (RTK) systems, Total Stations, handheld GPS devices, and echo sounders, providing researchers with the necessary tools to conduct precise topographic surveys and generate detailed spatial information.

With these cutting-edge resources at our disposal, researchers and practitioners alike are empowered to conduct in-depth analyses, model complex environmental processes, and generate accurate spatial representations essential for informed decision-making and resource management.









Bamboo Technology Research Center

This Bamboo Technology Research Center (BTRC) is dedicated to advancing the sustainable use of bamboo and fostering the growth of bamboo-based industries. It employs a comprehensive strategy encompassing research, extension, and production to facilitate the transfer of pertinent bamboo technology to industry, Higher Education, Institution/State Universities and Colleges, and the community.

Moreover, BTRC provides solutions through lab- and pilot-scale processing, physical characterizations, and expertise spanning material manipulation to processing. This focus is geared towards fostering innovations, product development, and prototyping, ensuring products are market-ready.

Ground Floor
Old SET Building
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4235 (local)

SERVICES OFFERED

- Surface smoothing, Material preparation, Board flattening, Dimensional lumber production, Custom milling
- Smoothing rough lumber, trimming doors and frames, beveling edges, creating chamfers and rebates, Final surface preparation, Shaping curved surfaces
- Straight cuts, Rip cuts, Crosscuts, Miter cuts, Bevel cuts, Rabbet cuts, Resawing, Sheet goods processing
- Reshaping and trimming, Precision cutting, cutting composite materials, Cutting foam and rubber
- Leveling surfaces, trimming end grain, creating chamfers and rabbets, Final surface preparation, Smoothing rough lumber
- Shaping and Contouring, Removing Surface Imperfections, Polishing and Buffing, Restoration Work
- Lathe machine for machining and woodworking for a wide range of operations, including turning, facing, taper turning, threading, knurling, drilling, boring parting off, profiling, and contouring to create precise cylindrical shapes makes it indispensable in manufacturing, fabrication

FACILITIES

THICKNESS PLANER WITH A SPIRAL CUTTER HEAD

- offers pros superior precision and smoothness. Its helical cutters, arranged closely, deliver a finer finish with minimal tear-out or unevenness, ideal for professional use.

HANDHELD WOOD PLANER

- comes in manual or electric types. Manuals are precise and suited for light home woodworking, while electrics handle heavier tasks with greater precision.

TABLE SAW

- a flat surface, or "table," with a circular saw blade powered by an electric motor underneath. The blade can be adjusted in height and protrudes through the center of the table. The motor sits below, leaving the top free for cutting wood with precision and efficiency.

VERTICAL BAND SAW

- used in woodworking, metalworking, and other industries. Its defining feature is a vertically aligned blade that moves around two wheels—one above and one below the work surface—allowing for precise cuts in various materials.

WOOD JOINTER

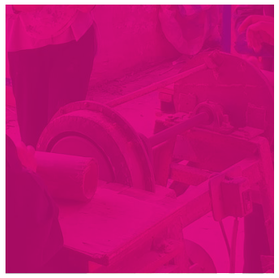
- also known as a jointer or surface planer, is a woodworking machine that flattens surfaces and straightens edges on boards or lumber. It consists of a flat table and a rotating cutter head with blades. By passing wood over the table, the cutter head removes material to create smooth, flat, and straight edges. Wood jointers are essential for preparing lumber for tasks like joining pieces and ensuring precise cuts. They're used in furniture making, cabinetry, carpentry, and more.

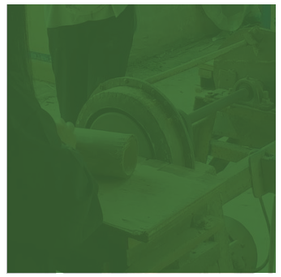
HANDHELD PLANER

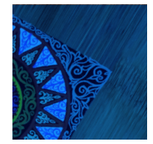
- often referred to simply as a hand planer, is a portable woodworking tool used for shaping, smoothing, and leveling wooden surfaces. It consists of a sharp blade mounted on a metal or plastic body with handles for control. These planers remove excess material from wood, like saw marks or unevenness, to create a smooth finish. Users adjust the blade depth to control material removal and run the planer along the wood surface to achieve the desired result. They're versatile tools suitable for tasks like trimming doors, chamfering edges, fitting joints, and leveling panels.

DOUBLE SANDER

- also known as a dual-action sander or dual-disc sander, is a portable woodworking tool for shaping, smoothing, and leveling wooden surfaces. It features a sharp blade mounted on a metal or plastic body with handles for control. These planers remove excess material from wood, like saw marks or unevenness, to create a smooth finish. Users adjust the blade depth to control material removal and run the planer along the wood surface to achieve their desired results. Versatile and suitable for tasks such as trimming doors, chamfering edges, fitting joints, and leveling panels.





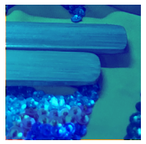


TWIN RIPSAW

- also known as a double or dual-blade ripsaw, cuts two parallel pieces of lumber simultaneously from a single board or workpiece. It features two circular saw blades mounted side by side on a shared arbor or shaft. This efficient tool is widely used in lumber mills, furniture manufacturing, and woodworking shops to enhance productivity by reducing processing time through simultaneous cutting.

PUSH DRILL

- also known as a push screwdriver, is a hand tool for drilling small holes in wood, plastic, or metal. It features a cylindrical body with a handle and a chuck for interchangeable drill bits. Pushing down on the handle rotates the chuck and bit, boring into the material. Some models include a ratcheting mechanism for easier and more efficient drilling.



LATHE MACHINE

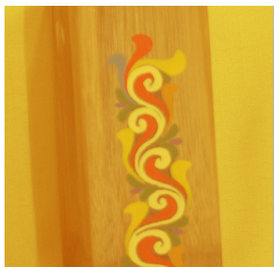
- a versatile tool used in woodworking, metalworking, and machining to shape cylindrical workpieces. It rotates the workpiece while a cutting tool removes material to create desired shapes or surface finishes. Available in various sizes, from small benchtop to large industrial models, lathes are used for turning cylindrical workpieces, facing operations, drilling holes, and producing tapered shapes by adjusting the cutting tool's position relative to the workpiece's axis as it rotates.

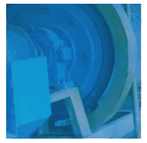
ROUTER

- used in woodworking and carpentry for shaping, grooving, trimming, and carving wood. It consists of a motor mounted on a base with a spinning cutting tool called a router bit. Routers come in two main types: handheld and table-mounted. Handheld routers are portable and used for tasks like edge profiling and dado cutting. Table-mounted routers are fixed to a workbench and used for precision tasks like joinery and molding.

GRINDER CUTTER

- commonly known as a grinder, is used for cutting, grinding, and shaping materials like metal, wood, and concrete. It features a motor-driven spinning disc or wheel with abrasive surfaces to grind away material. In woodworking, it's versatile for cutting and shaping wood with attachments, ideal for intricate designs, edging, and material removal.





Resource Processing and Technology Center

The Resource Processing and Technology Center (RPTC) focuses on solving the scientific and technological problems and challenges facing the energy and resource sectors—mining, cement, extractive metallurgy and electric power stations—that are critical industries for the sustainable development of Mindanao and the national economy. The Center will also tackle the multidisciplinary social and environmental challenges associated with natural resource extraction, waste management, circular economy and sustainable development.

Under this center are four (4) major research laboratories, namely (i) Mining and Mineral Processing (MinProc) Laboratory, (ii) Metal Extraction (MetEx) Laboratory, (iii) Physical and Mechanical Metallurgy (PhysMM) Laboratory, and (iv) Recycling and Environment Laboratory (ReclEn), including the RPTC Characterization and Analytical Laboratory as a common laboratory of the Center.

MINING AND MINERAL PROCESSING (MINPROC) LABORATORY focuses on the investigation, design, development and adoption of sustainable, eco-friendly and socially responsible mining and resource processing technologies, protocols and strategies for the resources sector.

METAL EXTRACTION (METEX) LABORATORY focuses on the development of novel, more eco-friendly and sustainable methods and technologies, including the advancement of conventional techniques, for the recovery of metals from primary resources.

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PHYSICAL AND MECHANICAL METALLURGY (PHYSMM) LABORATORY focuses on the development of novel, more eco-friendly and sustainable protocols, strategies and technologies, including the advancement of conventional techniques, for the manufacture of advanced materials and alloys.

RECYCLING AND ENVIRONMENT (RECLEN) LABORATORY focuses on the development of novel, eco-friendly, socially responsible, and sustainable methods and technologies, including the advancement of conventional techniques, for the recovery of metals, non-metals and valuable materials from "urban" resources, including mining, industrial, municipal and agricultural solid and liquid waste streams, including the rehabilitation and remediation of mining and industry impacted areas.

PTC CHARACTERIZATION AND ANALYTICAL LABORATORY an open laboratory that primarily provides technical services for researchers of RPTC. Its secondary function is to support the technical needs of other research centers of RIEIT. This laboratory is also in charge of managing the services offered by the RPTC to MSU-IIT constituents, other institutions and agencies, both public and private, and to the community. It is responsible in assuring the quality and validity of all the analyses and services given to all clients by keeping abreast with the latest and relevant improvements in laboratory techniques and protocols with proper and regular meeting with the Coordinators of the different service laboratories.

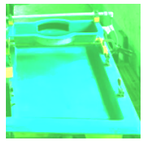
SERVICES OFFERED

RPTC ANALYTICAL AND TRAINING SERVICES:

- Gold appraisal and training
- Aluminum melting, foundry and casting
- Heat treatment of steel
- Welding training
- Bond work index determination
- Particle size analysis
- Pilot plant for gravity concentration of gold ores and electronic wastes

Consultancy services:

- XRD pattern interpretation
- Training for geochemical modelling
- Mine site development plan
- Prospecting
- Corrosion and fire-retardant coating
- Groundwater and pollutant transport modelling



FACILITIES

METALLURGICAL MICROSCOPES.

- This specialized microscope is designed for observing cross-sections of metal, usually steel samples, which are mounted on a polymer resin. This type of microscope is inverted and employ high-resolution objective lenses with very short working distances.

LPG-FIRED ALUMINUM MELTING FURNACE.

- This LPG-fueled aluminum melting furnace can reach at least 660°C for melting scrap aluminum for aluminum foundry sand casting application.

ELEVATOR FURNACE.

- It is a specialized type of furnace with a vertical lifting mechanism for the transport of materials in and out of the heating chamber and provides controlled heating for various applications.

MUFFLE FURNACE.

- It is an instrument used to heat materials to above 750°C under conditions that isolates the sample from the fuel and by-products of combustion from the heat source.

TUBE FURNACE.

- It is a heating device designed to process small samples or heat materials in an inert atmosphere with precise temperature control and uniformity.

DRYING OVENS.

- It is a laboratory device used to remove water, moisture, and other solvents from samples by controlled heating.

ULTRAVIOLET-VISIBLE (UV-VIS) SPECTROPHOTOMETER.

- It is an analytical technique that measures the amount of discrete wavelengths of UV or visible light that are absorbed by or transmitted through a sample in comparison to a reference or blank sample. This technique can measure concentrations of bacterial cultures, organic molecules and heavy metals in liquid samples.

BALL MILLS.

- These are machines for grinding (i.e., size reduction) materials using steel balls from 750 to 50 micrometer (□m) and extensively used in mineral processing and ore dressing processes.

JAW CRUSHER.

- These are heavy-duty and large throughput machines for crushing ore-bearing rocks from 125 mm to <2 mm.

SHAKING TABLE.

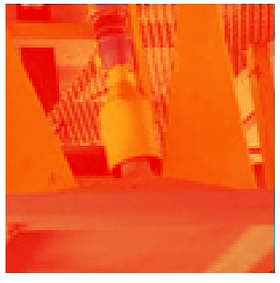
- It is a gravity concentrator used to separate materials or minerals based on differences in specific gravity (or density), which can be applied for gold-bearing ore processing and electronic waste recycling.

PULVERIZER.

- It is a crushing machine used to reduce the size of soft materials down to <2 mm in diameter.

ROTAP SIEVE SHAKER.

- This machine, in tandem with a set of standard sieves, is used for the particle size analysis of soil, rock and ore samples.



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Prof. Ivyleen B. Arugay
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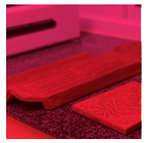
Dr. Ruben L. Menchavez
OIC-Head, Advanced Ceramic Processing Laboratory (ACPL), RIEIT

Dr. Raymond V. Rivera Virtudazo
OIC-Head, Advanced Porous Ceramic Particles Laboratory



Research Center for Advanced Ceramics

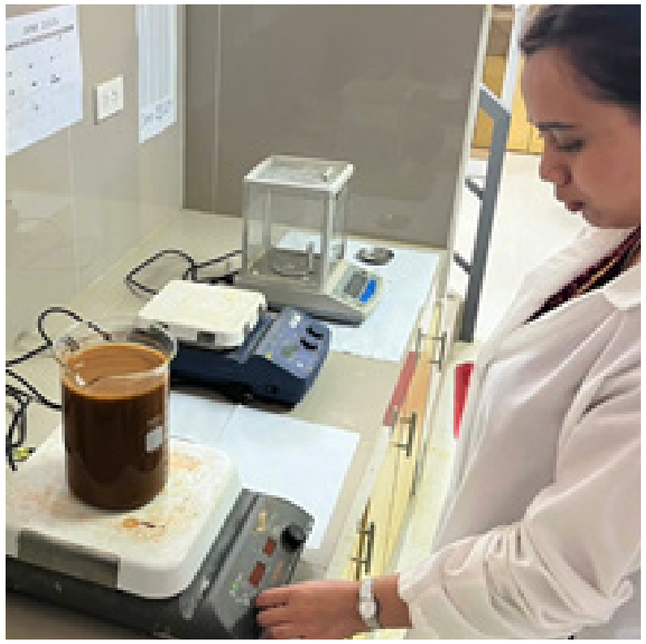
The Research Center for Advanced Ceramics (RCAC) serves as a cornerstone in propelling the ceramics field forward, nurturing talent, fostering innovation, and contributing to socio-economic and cultural progress. It provides extension and training services for ceramic cottage industries in Iligan City and neighboring provinces, acting as a vital resource hub. Extending its expertise beyond, it offers training programs to both internal and external stakeholders, aiding in research endeavors, conducting analytical testing, and providing consultation services. Collaborations and workshops further enrich the research landscape, while technical support and comprehensive training programs ensure smooth and efficient utilization of equipment.

The purpose of the RCAC includes developing materials for multidisciplinary research and education on ceramics and related materials, with emphasis on their synthesis, processing, manufacturing, and evaluation of properties and performance. Moreover, the RCAC will make advanced research in a large variety of materials of interest to various industries and government agencies. These local projects and collaborative efforts with other organizations and companies will lead to excellent academic and technological works in the field of ceramics, composites, and related materials.

Under RCAC are five (5) major research laboratories, namely (i) Advanced Ceramic Processing Laboratory (ACPL), (ii) Advanced Porous Ceramic Particles Laboratory (APCPL), (iii) Ceramic Researches for Engineering Advanced Technology and Environment (CREATE), (iv) Advanced Functional Ceramics Laboratory (AFCL), (v) Ceramic Production Technology and Training Lab (CPTTL, formerly Ceramic Training Center (CTC), including the Characterization and Analytical Lab as common laboratory of the Center

ADVANCED CERAMIC PROCESSING LABORATORY (ACPL) focuses on the design of new materials or combinations of existing materials that exhibit surprising variations on the properties traditionally assigned to ceramics via the application of a modern materials science approach.

ADVANCED POROUS CERAMIC PARTICLES LABORATORY (APCPL) focuses on porous ceramic particles for insulation, energy storage, thermal management materials and thermoelectric generator applications. The materials developed have the same strength, rigidity, heat resistance, and chemical stability as that of regular ceramics but are much lighter.



CERAMIC RESEARCHES FOR ENGINEERING ADVANCED TECHNOLOGY AND ENVIRONMENT C.R.E.A.T.E. LAB is a research laboratory involved in the valorisation of various mining, industrial and agricultural wastes in combination of minerals primarily from Mindanao for the development of traditional and innovative ceramics, and nano-/micro-composites for industrial, construction, municipal, environmental applications and homeland protection.

ADVANCED FUNCTIONAL CERAMICS LABORATORY (AFCL) focuses on the development of ceramic materials for refractories, membrane technology, aerospace, energy, bioceramics, and other structural ceramic applications.

CERAMIC PRODUCTION TECHNOLOGY AND TRAINING LAB (CPTTL) is formerly called the "Ceramic Training Center'' that provides extension and training services on ceramic technology that would encourage the development of ceramic cottage industries in Iligan City and neighboring provinces. Its objectives are (i) to promote the production of ceramic products from local mineral resources; and (ii) to conduct research and development activities for the development of indigenous ceramic technology and the adaptation and innovation of suitable imported technology.

SERVICES OFFERED

- Purification of nano-/micro-minerals; Evaluation of Electrophoretic Deposition with/without Electrochemical Impedance Analysis (with/without Equivalent Circuit Modelling); Rheology of mineral aqueous system; and Structural Ceramics (for CREATE Lab)
- Ceramic Membrane (Ceramic Filter), Slip casting, Ceramic Body and Glaze formulation, and Structural Ceramics (for Advanced Functional Ceramics Laboratory)
- Microwave Processing of Ceramics and Gelcasting (for , Advanced Ceramic Processing Laboratory)
- Porous ceramics processing; Micro-Nanoparticles processing; Micro-Nano Hollow ceramic particle synthesis; Thermoelectric oxide and Thermal Management Material Synthesis; Non-Firing Ceramics synthesis; Cement Processing; Waste derived Silicate Processing/ Synthesis (for Advanced Porous Ceramic Particles Laboratory)
- Synthesis of apatite powders, ceramic diffusers (for Research Center for Advanced Ceramics)

FACILITIES

ZETA POTENTIAL ANALYZER

- does the measurements and calculations to ascertain the zeta potential of a given material. Zeta potential analyzers are used by the ceramics, electronic and pharmaceutical industries to determine the stability of their suspensions and emulsions. The higher the zeta potential, the more stability the product has.

POTENTIOSTAT/GALVANOSTAT (+/- 4.5 V).

- A potentiostat is used to maintain a constant potential at the working electrode in a 3-electrode electrochemical cell and is the principal piece of equipment used in electrochemical experiments. A galvanostat is a device that maintains a constant current in an electrolytic cell during the course of coulometric titration or other electrochemical experiments.

VARIABLE MIXER/DRILL PRESS

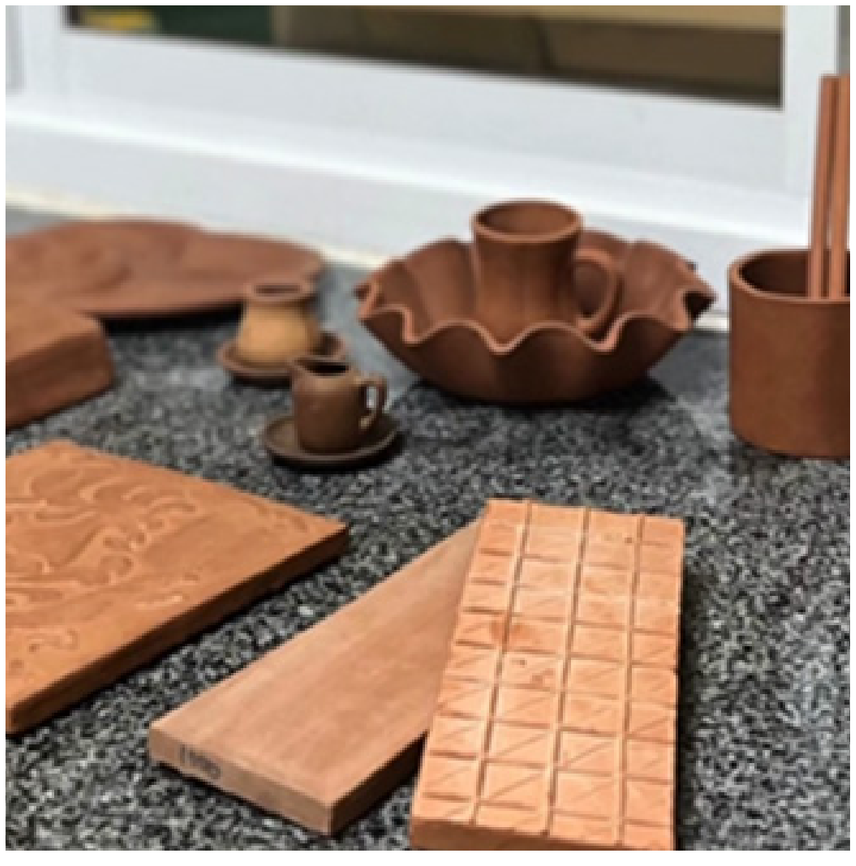
- a versatile machine that uses a multiple-cutting-edge drill bit secured in a rotating chuck to bore and drill holes, normally into wood stock. These machines also have variable speeds, and some have multiple spindles for gang drilling.

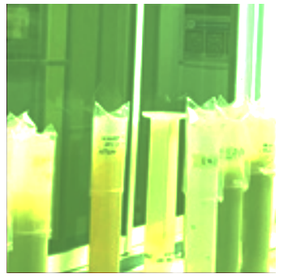
BENCHTOP DRILL PRESS/MIXER

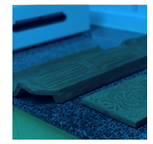
- a versatile tool that combines the functions of a drill press and a mixer. It is designed to perform various tasks such as drilling, tapping, and mixing materials like drywall mud, plaster, or other substances.

ELECTRIC MUFFLE FURNACE WITH UPS

- designed for high-temperature applications, such as sintering, and material testing, ensuring continuous operation even during power interruptions. The muffle furnace features precise temperature control, efficient insulation, and heating elements capable of reaching temperatures up to 1800°C. The integrated UPS provides backup power, preventing temperature drops and protecting sensitive samples during power outages.







VACUUM OVEN

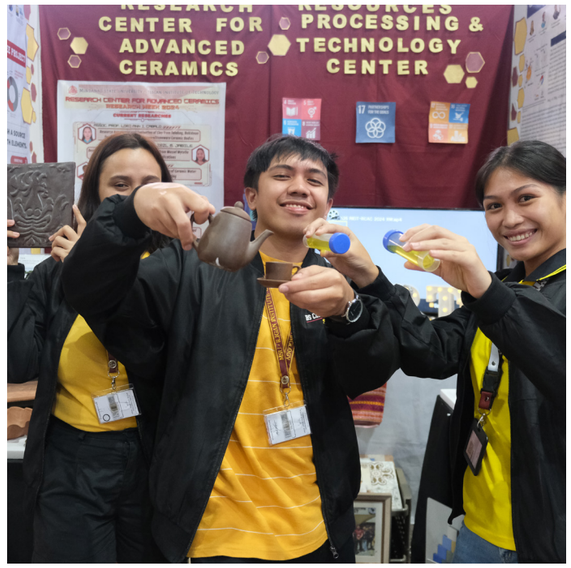
- used for drying heat sensitive materials such as powder to extract moisture. As vacuum drying lowers the boiling point; therefore, losses of compounds other than water are minimized. Samples are dried under gentle heating leaving almost no residue. Some applications of vacuum oven include moisture content determination, dry sterilization, purification and out gassing of solids etc.

CONVECTION OVENS

- circulate air during the heating process to maintain an even temperature. Features include capacity, adjustability of fan speeds, achievable temperature, programmability, and temperature ramp rates. Applications include annealing, evaporation, product age acceleration, polymerization, part drying, baking, curing, sterilization, and heat treatment.

PORTABLE DIGITAL MICROSCOPE

- a handheld device that uses a digital camera to capture high-resolution images of small objects or samples. These microscopes are designed to be compact and lightweight, making them easy to use in various settings such as laboratories, classrooms, or field studies. They typically have a built-in LCD screen and can be powered by batteries or USB connections



CORUNDUM GRINDING MEDIA

- are used in various applications, including grinding jars with jar mills, to process materials such as ores, ceramics, grain, and more. These media are typically cylindrical in shape, with equal length and diameter for maximum surface area, and are made from either Burundum alumina or Zirconia.

ELECTRIC ROLLER

- for a jar mill is a device used to rotate jars containing materials for grinding or mixing. It typically consists of motor-driven rollers that can accommodate one or more jars, providing consistent rotation at adjustable speeds. This ensures thorough and uniform mixing or grinding of materials, commonly used in laboratories for preparing fine powders and homogenous mixtures in ceramics, chemistry, and material science.

LABORATORY SIEVES

- an instrument which is used for the measurement of particle size. In its most common form, it consists of a woven wire screen, with square apertures, rigidly mounted in a shallow cylindrical metal frame.

LABORATORY MICROWAVE OVEN

- a device designed to perform various laboratory procedures, such as sample preparation, fixation, staining, dehydration, decalcification, impregnation, polymerization, immunohistochemistry, and cytochemistry. These ovens are designed to provide precise temperature control, efficient heating, and safe operation for various laboratory applications.

ELECTRIC FURNACE

- a device designed to heat ceramic materials to high temperatures such as 1400oC for various applications such as materials testing, heat treatment, and ceramic product manufacturing.

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Research Institute for Business, Education, Health and Social Sciences

The increasing interconnectedness and integration of the world present numerous opportunities for publishing special issues that reflect global research trends. By focusing on areas such as securing funding, understanding knowledge creation, fostering interdisciplinary collaborations, and strengthening institutional partnerships,

RIBEHSS can contribute significantly to the global research community. Special issues in these areas not only highlight current trends and challenges but also promote the sharing of innovative solutions and best practices, ultimately advancing knowledge and improving outcomes across various fields.

International research collaboration promotes the exchange of knowledge, values, and ideas across borders to facilitate global opportunities that mirror current interests and advancements.

In the past decade, international data collection for research has advanced, enabling comparative studies across nations. These studies deepen our understanding of education, health, social sciences, and economics, providing a wealth of ideas. Ongoing and impactful research has been pivotal in this evolving understanding. Evidence-based insights from academic research in various fields, including business, education, health, and social sciences, offer valuable perspectives to organizations, highlighting the risks and costs of relying on outdated approaches or intuition. Universities globally excel in producing evidence-based knowledge, often resulting in the creation of specialized research centers.

Health research, in particular, profoundly impacts communities by pioneering new procedures and tools. It plays a major role in assessing the efficacy of novel treatments, aiding physicians in delivering optimal care to patients.

Integral to the Filipino lifestyle, economic prosperity benefits from scientific research, which propels technological innovations and guards against economic downturns. The RESEARCH INSTITUTE FOR BUSINESS, EDUCATION, HEALTH, AND SOCIAL SCIENCES (RIBEHSS) provides distinctive research avenues for faculty and students, fostering international partnerships and funding from various grants and foundations.

SERVICES OFFERED

- Acquire funding to support research activities, especially in improving the education quality, pedagogical models and methodologies within and across the disciplines, and in promoting equity in education.
- Shed light on recent advances in our understanding of the forces that underpin the creation of knowledge, its diffusion and commercialization through innovation, and the role of the entrepreneur in the growth process.
- Foster, facilitate, and strengthen interdisciplinary collaborations among researchers in the various fields of business, education, health, social sciences, heritage studies and allied fields.
- Ò Initiate further linkages with other institutions to advance its research activities and establish strong industry-academe partnerships with local, national, international institutions.

Research Center for Healthy Aging

The Research Center for Healthy Aging (RCHA) will study on the older adult's health care status and further research endeavors for their welfare. In addition, the aging healthcare management will be undertaken as a strong support for UN's Sustainable Development Goal (SDGs) through International Labor Organization (ILO), WHO, DOH and Philippine government with the help of other vital organizations in order to safeguard the aging individuals, their families and improved their overall welfare. It is worth noting that through graceful aging, we commence with the developmental life span starting from womb to tomb, thus all health age groups will be a part of this endeavor.

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SERVICES OFFERED

ELDERLY PROGRAM INITIATIVES COVERING

- Education on Physical Aging ('womb-to-tomb' concept)
- Health Issues affecting Older Adults and the risks they encountered as they age.
- Dementia & Alzheimer awareness and assessments
- Community research (Medical Missions) and extension projects for Older Adult's empowerment and continued quality of life.
- Pre-Retirement Programs for faculty and Staff of MSU-IIT and Post-Retirement Support for MSU-IIT retirees.
- Advocacy and Practice of Graceful Aging
- Health Innovation for Older Adults in the pursuit of continued quality of life.
- Death and Dying Preparation and Awareness

- Community outreach program linkages to GO and NGO for Older Adult Graceful Aging advocacy within and outside MSU-IIT.
- Policy recommendation and support as basis from Older Adults research in the Research Center for Healthy Aging.

Following the mandate of R.A. 9994, Gender and Development Center, PCW Magna Carta for Women, UN-SDG and other pertinent laws that cover Senior Citizen rights and privileges in the Philippines and international mandates as well.

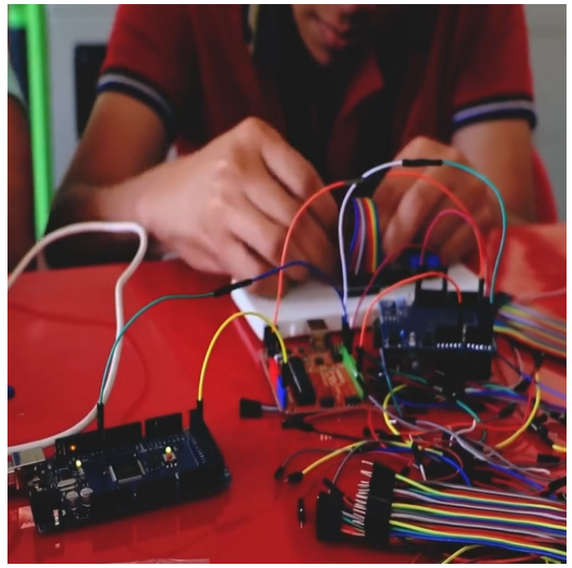
PROJECTS

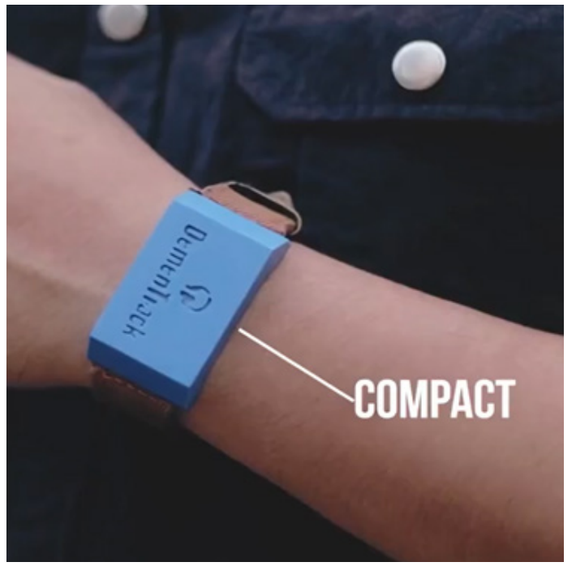
DEVELOPMENT OF A PROTOTYPE FOR DEMENTRACK: AN INTERNET-OF-THINGS DEVICE FOR TRACKING WANDERING DEMENTIA PATIENTS (DEMENTRACK)

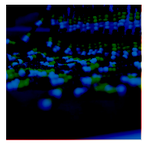
- a research innovation aiming to develop a tracking system that monitors these patients and alerts caregivers through a mobile application if they wander. The system utilizes a Bluetooth geofence to designate an area for the patient; when the patient exits this virtual fence, the caregiver is notified. Using an esp32 microcontroller and a GPS module as a tracking device, it communicates with a developed mobile application to track the patient. Test results show that the tracking system performed its task with minor errors. Improving the GPS module is recommended for better performance. The concept is viable, but researchers recommend further exploration and experimentation with geofence applications.

MEDICATION ALERT (MEDAL): HEALTH INNOVATION FOR NON-ADHERENT ELDERLY IN ILIGAN CITY

- aimed to create a prototype, the first of its kind in the Philippines, to enhance medication adherence among the elderly. The research involved various phases, including problem analysis, prototype development, and laboratory and pre-clinical testing. Using purposive sampling, the study targeted specific areas in Iligan City, with 11 elderly respondents participating due to time constraints. After a trial period of 2 days, respondents were assessed using questionnaires based on Kirova's Criteria of Innovation Potential. The results indicated that 81.82% found the device effective in addressing medication non-adherence, 63.64% found it convenient, and 54.55% perceived it as advantageous compared to existing products. However, 45.45% felt it was not cost-effective. Nevertheless, 72.73% agreed that the product met practical needs. Overall, with a weighted mean of 1.45, the study suggests that the Medication Alert innovation increases the likelihood of medication adherence and could be a potential solution for non-adherence among the elderly.

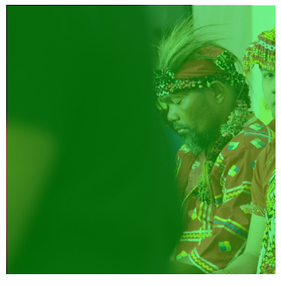






Mindanao Heritage and Indigenous Research Center

The Mindanao Heritage and Indigenous Research Center (MHIRC) will provide research on indigenous communities will not help in the understanding and appreciation of the indigenous peoples, their history and culture towards attainment of peace and development. This center will not be limited to a certain department and discipline but it will encompass all disciplines of the University as it takes into consideration languages, belief systems, stories/narratives, traditional practices (medicine, disaster preparedness), customary laws and others. The center shall become a refuge/sanctuary of our Indigenous people. Their indigenous communities' engagement with the center shall be well spelled out in Memorandum of Agreement.



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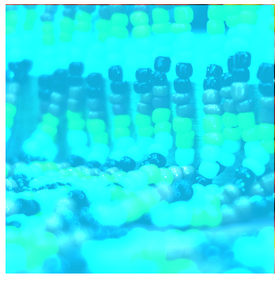
SERVICES OFFERED

- Technical assistance pertaining to policy guidelines on Indigenous Peoples engagement, both in research and community involvement
- Heritage management through research and capacity-development (cultural mapping and other relevant training-workshops on indigenous knowledge and experiences)
- Ethnography and historical research
- Documentation of tangible and intangible cultural heritage
- Serving as repository of source materials on Mindanao histories and studies



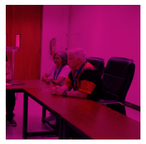
Center for Pedagogical Research

The Center for Pedagogical Research (CPR) was established in 2023 as a key research center of the MSU-Iligan Institute of Technology. From its conception, it has been led by its key mission to advance research culture that promotes the improvement of teaching and learning in MSU-IIT and the wider educational community.

Room 03 Level 1
CED Building
cpr@g.msuiit.edu.ph
09175429102

SERVICES OFFERED

- Conducts rigorous and relevant multi-disciplinary research and development that inform pedagogy and practice in MSU-IIT and its neighboring HEI's .
- Fosters collaborative partnerships with key stakeholders such as the Department of Education Higher Education Institutes and other colleges within the university.
- Facilitates in developing new knowledge about the teaching-learning situation to improve educational practices.
- Advances knowledge that promotes the improvement of teaching and learning in the College of Education and the wider educational community.
- Shares successful practices, responds to the needs educators and policymakers in MSUIIT and across the nation, and signals emerging trends.
- Innovate Instructional materials to enhance teaching and learning process.
- Conduct pedagogical training



Center forLanguage Studies

Research. The Center for Language Studies shall support the conduct of language research in the University. The Center will oversee the conduct of linguistic research according to priority research areas. Language documentation and description rank high in priority, and internal (MSU-IIT) collaborative research ranks next. The Center can take on the task of evaluating language research (which are seeking funding support) for its endorsement to the OVCRE for internal funding. The Center can also vet research proposals for external funding; alternatively, the Center may draft proposals for the consideration of external funding agencies, which it might delegate for implementation by faculty and other personnel. In recognition of the limitations of current analytical frameworks, the Center shall build and curate an archiving system that will house all unprocessed language data. This will enable analysis in the far future when methods and frameworks will have evolved to cater best to (Philippine) languages.

Room 03 Level 1
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COLLABORATION. The Center shall oversee to pursuing linkages with agencies and language institutions in the country for the purpose of furthering research, capacity training, and other language application projects.

TRAINING. The Center shall organize training and other capacity building activities for language researchers.

APPLICATIONS. This function of the Center is concerned with the delivery of functions such as extramural courses on local and foreign languages, as well as certifications for language proficiency, and translation validation. This is in response to the need by foreign exchange students, faculty, and personnel, who have language proficiency requirements for their projects and programs.

SERVICES OFFERED

- Translation Validation for English, Filipino and Cebuano Languages

CBIED

Center for Business Innovation and Economic Development

The Center for Business Innovation and Economic Development (CBIED) will research the promotion, expansion and competitiveness of businesses as wellas the general economic development of the region. The CBIED shall carry out research on challenges that face regional economic development and business innovation, economic conditions, market and consumer trends and behavior, technological developments that are potentially useful to businesses, entrepreneurship and policy intervention. The center will promote regional economic development by offering insights and suggestions to aid in the implementation of innovative and sustainable business practices and products.

2nd Floor
CBAA Building
cbaa.dean@g.msuiit.edu.ph

SERVICES OFFERED

- Conduct high-quality research on business innovation and economic development, addressing issues like poverty alleviation, job creation, market integration, natural resource utilization, environmental and climate change, digitalization, and technological advancement for urban, rural, and underserved communities.
- Collaborate on research projects with non-government and government agencies such as NEDA, BSP, DTI, and LGUs.
- Provide a forum for local and international experts to collaborate and share knowledge on business innovation and economic development in Mindanao.
- Facilitate knowledge exchange between businesses, economists, and practitioners through conferences, seminars, and consultation services.
- Disseminate research through local and international presentations and publications in business innovation and economic development.

Center for Hospitality and Tourism Innovation

The Center for Hospitality and Tourism Innovation (CHATi) is an education-based research hub committed to study a wide range of research interests on the significance of the hospitality, and tourism industry. Through CHATi, the exchange of new ideas from faculty and student research accomplishments with industry professionals congregate into roundtable discussions, conferences, international engagement, and publications, affiliating this institution and the industry to maximize research analysis,business operational integration innovation, solutions and techniques, for our hospitality and tourism industry to come up with and actionable and impactful advancement into fulfillment. Thus, the Center facilitates research projects and programs on hospitality and tourism that will lead to local, national, and international partnerships and implementation of extension activities.

2nd Floor
Department of Hospitality and Tourism Management
CEBA Building

SERVICES OFFERED

- Conduct research on hospitality and tourism, including market trends, consumer behavior, destination management, sustainable practices, and operations, using quantitative and qualitative methods.
- Provide data analysis services to stakeholders like tourism boards, businesses, and government agencies, analyzing statistics, market data, and surveys to inform decisions.
- Offer consulting services, including market research, strategic planning, destination marketing, feasibility studies, and performance evaluations.
- Develop training programs and workshops to enhance industry professionals' skills in management, customer service, revenue management, and sustainable practices.

- Collaborate on joint research projects, innovation initiatives, and community engagement with industry partners, academic institutions, and government agencies.
- Organize conferences, seminars, and networking events for knowledge exchange, collaboration, and professional development in the hospitality and tourism sector.
- Serve as an innovation hub by exploring trends like digital marketing, big data, AI, and VR, including incubating startups, hosting hackathons, and supporting tech transfer initiatives.

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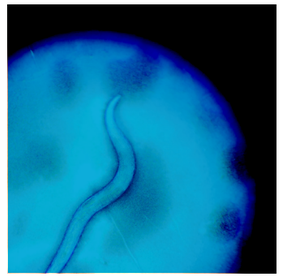
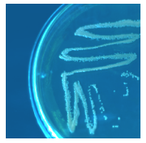
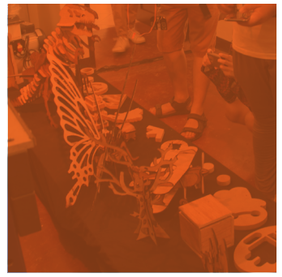
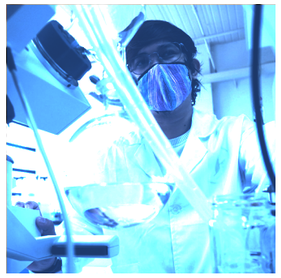
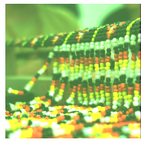
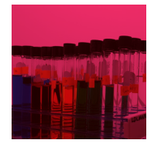




Research Compendium

Mindanao State University
ILIGAN INSTITUTE OF TECHNOLOGY

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Office of Communications
Administrative Staff