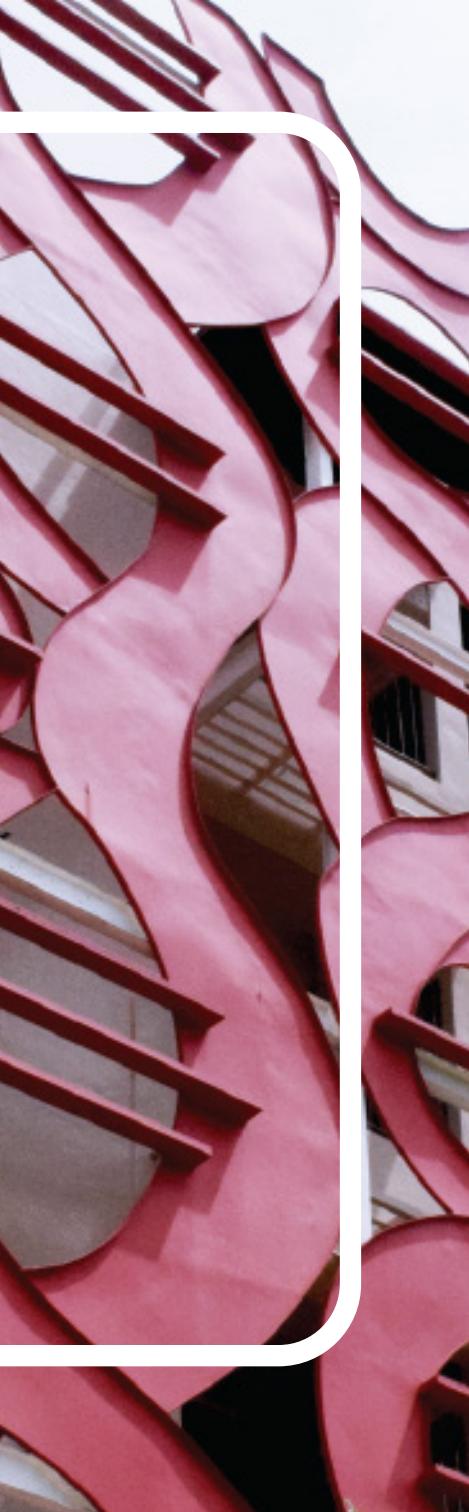


PRISM

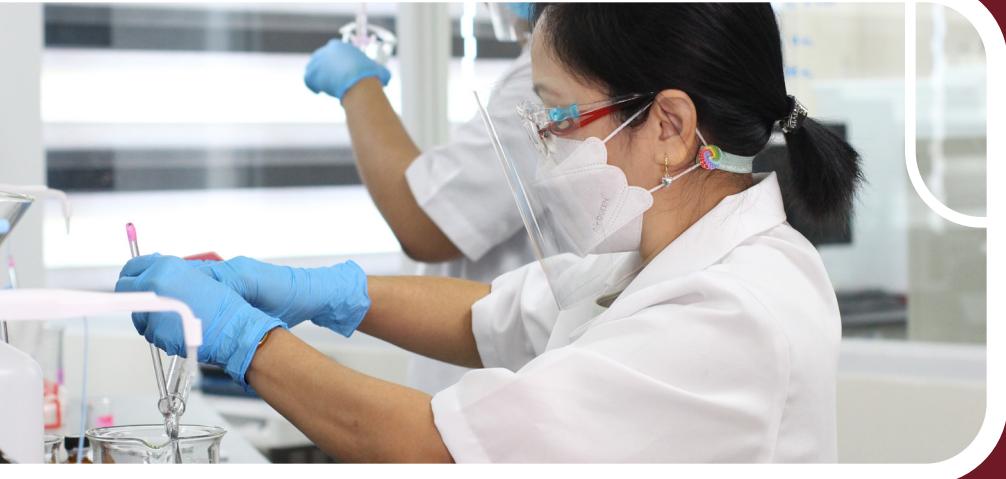
Premier Research Institute of Science and Mathematics



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PRISM



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PRISM Building
prism@g.msuiit.edu.ph
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Premier Research Institute of Science and Mathematics

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.

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



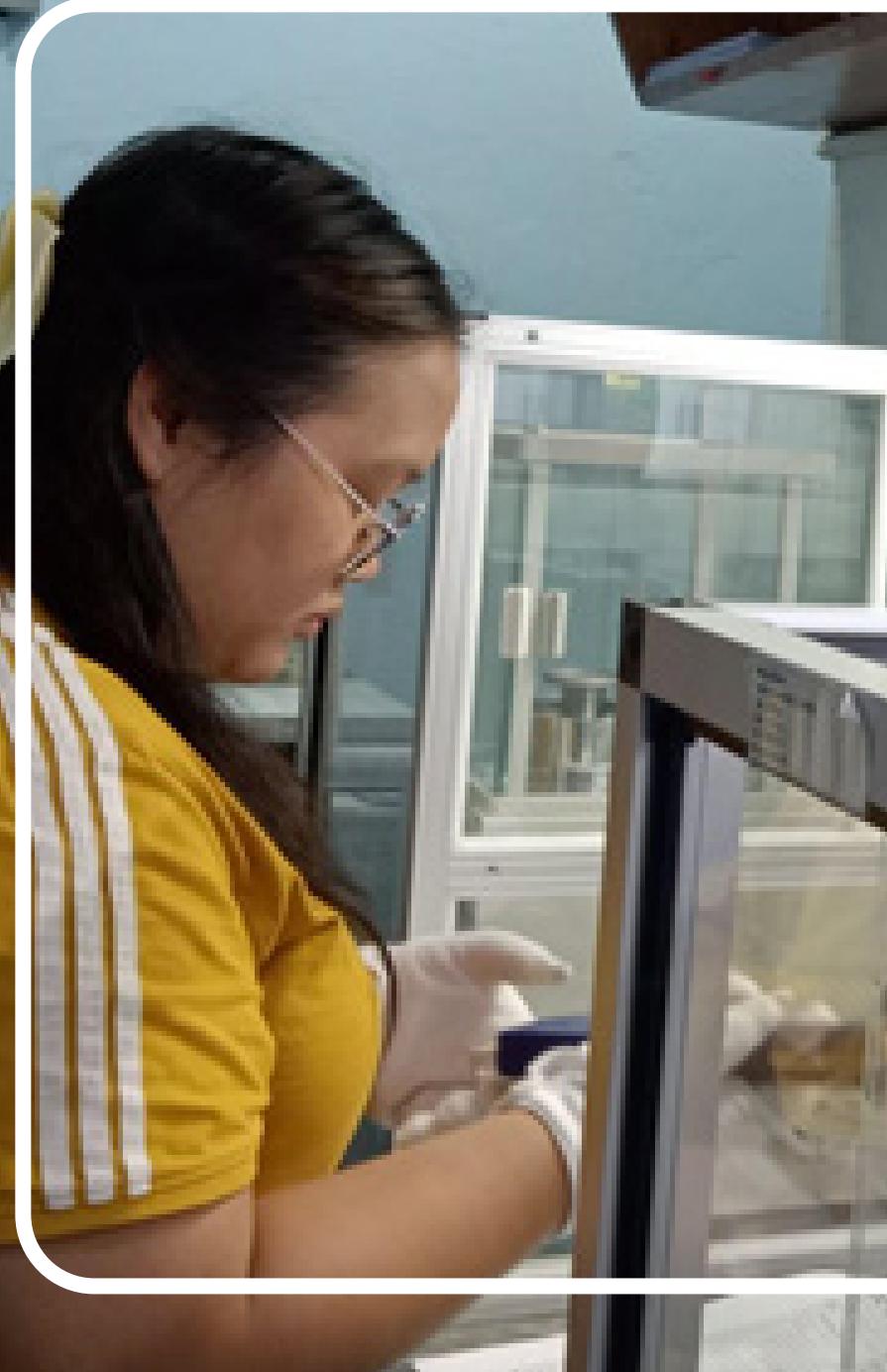
The conversion of PRISM's existing Research Groups into specific Research Centers is envisioned to greatly enhance their productivity and thereby boost their national and international reputation. The conversion will also offer more leverage and opportunities for increased funding and collaboration. 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

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.



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)



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.

CNR

Center for Nanoscience Research

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)



CBSC

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.



Ground Floor
PRISM Building



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:

CIH

Center for Integrative Health

- 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



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prism@g.msuiit.edu.ph

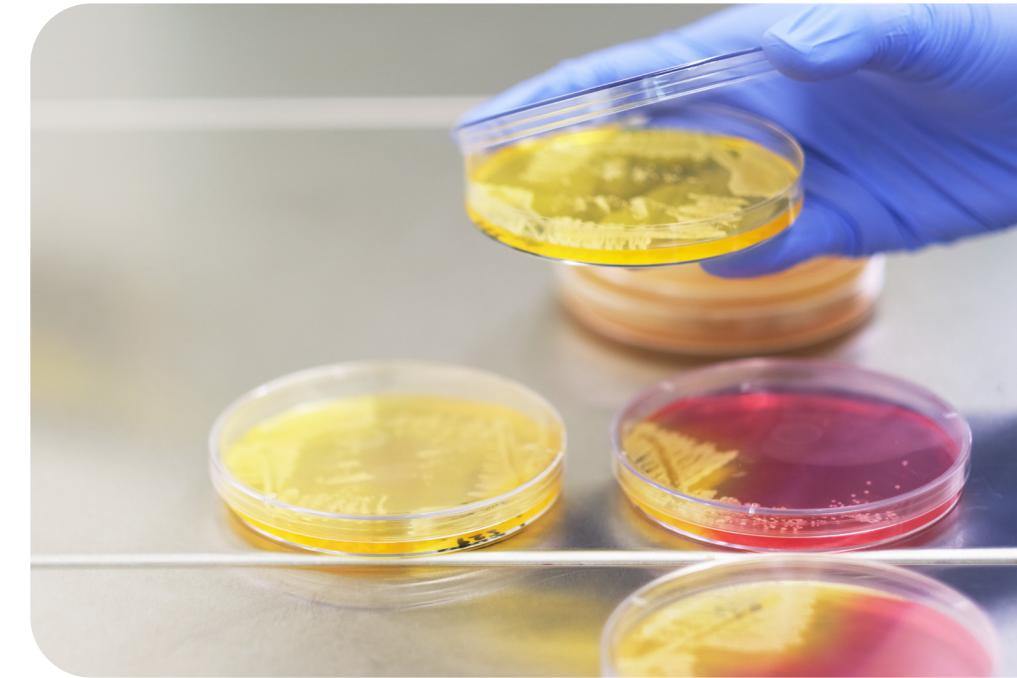


CMGPI

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.

Center for Microbial Genomics and Proteomics Innovation

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 Building
cmgpi.msuiit@gmail.com



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.

CNPDD

Center for Natural Products and Drug Discovery

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.

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.



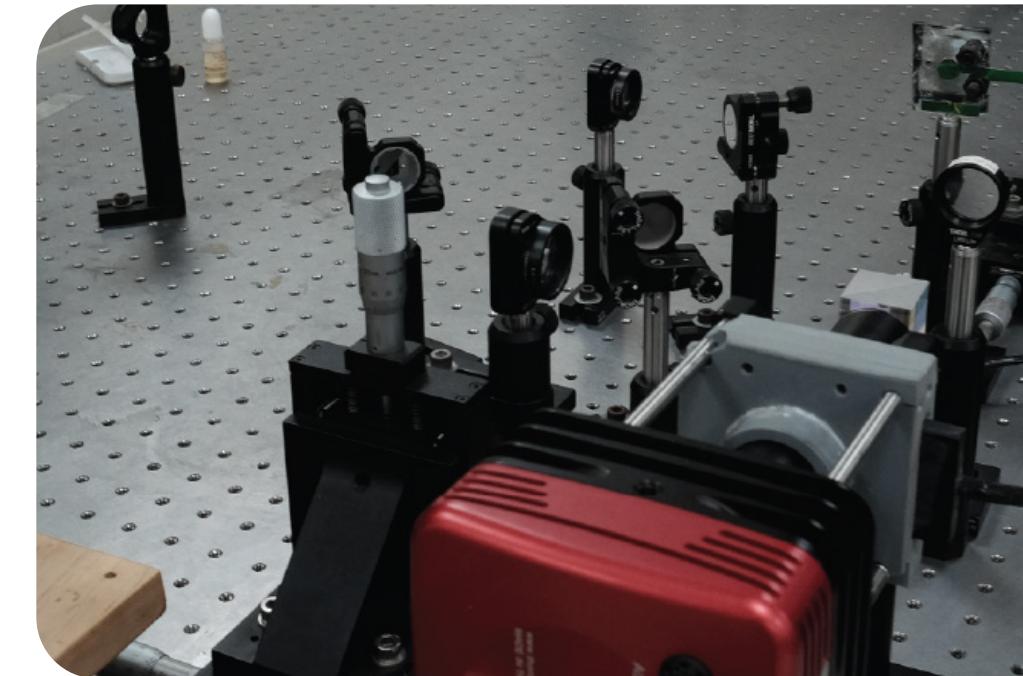
4th Floor, Main Laboratory
PRSIM Building
prism@g.msuiit.edu.ph
09154064810

CSRC

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:

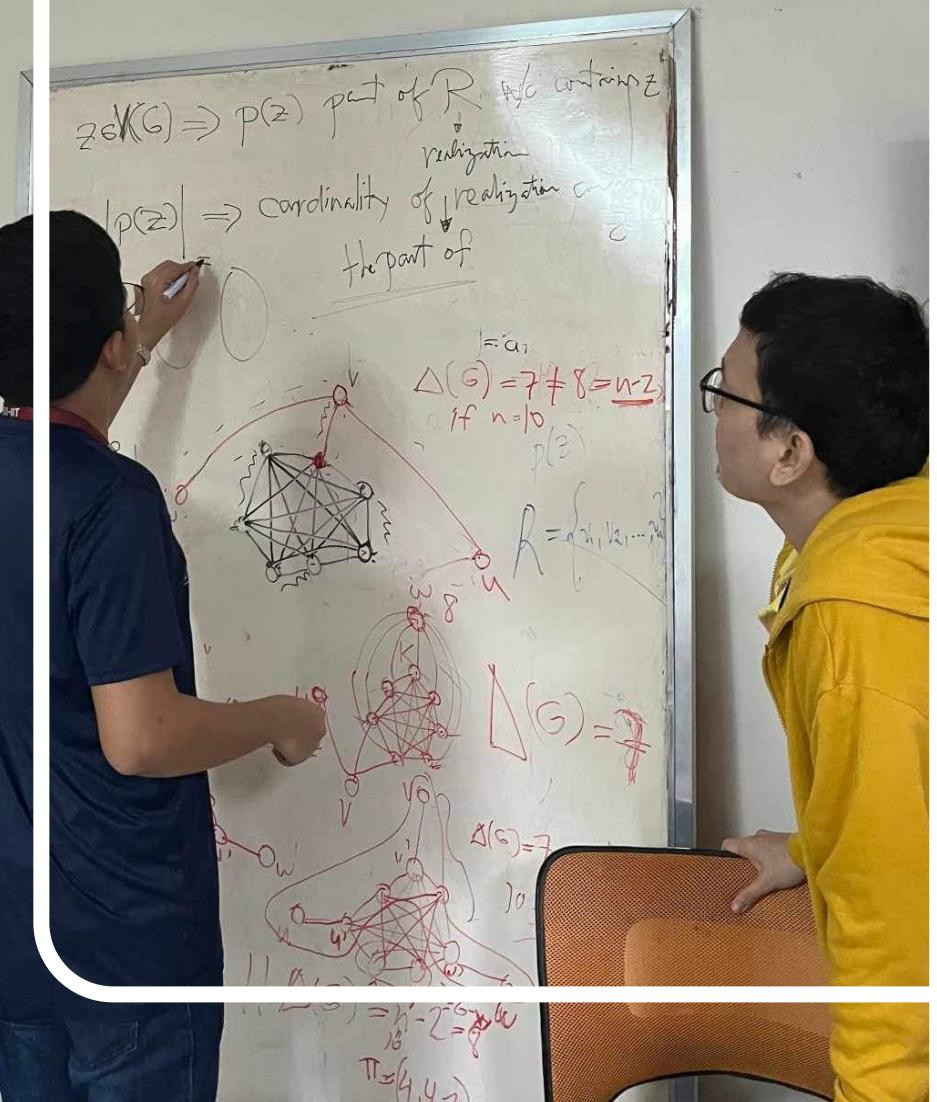
- Elucidation of bio-chemical, physical mechanisms underlying far-from-equilibrium systems such as active matter, biological organisms (*Nematodes* and *Physarum polycephalum*) and even population dynamics.
- Development of theoretical models and numerical simulation tools and investigations thereof 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.



3rd Floor
PRISM Building
marknolan.confesor@g.msuiit.edu.ph
(063) 09177177933

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. Its 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.



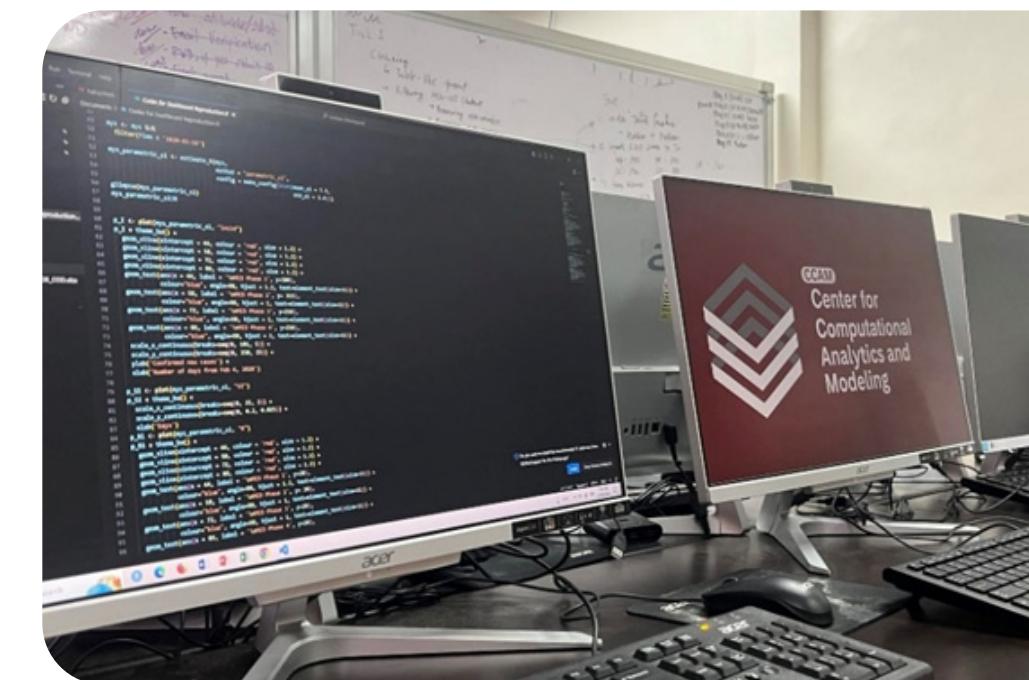
5th Floor
PRISM Building
cmtps@g.msuiit.edu.ph

CCAM

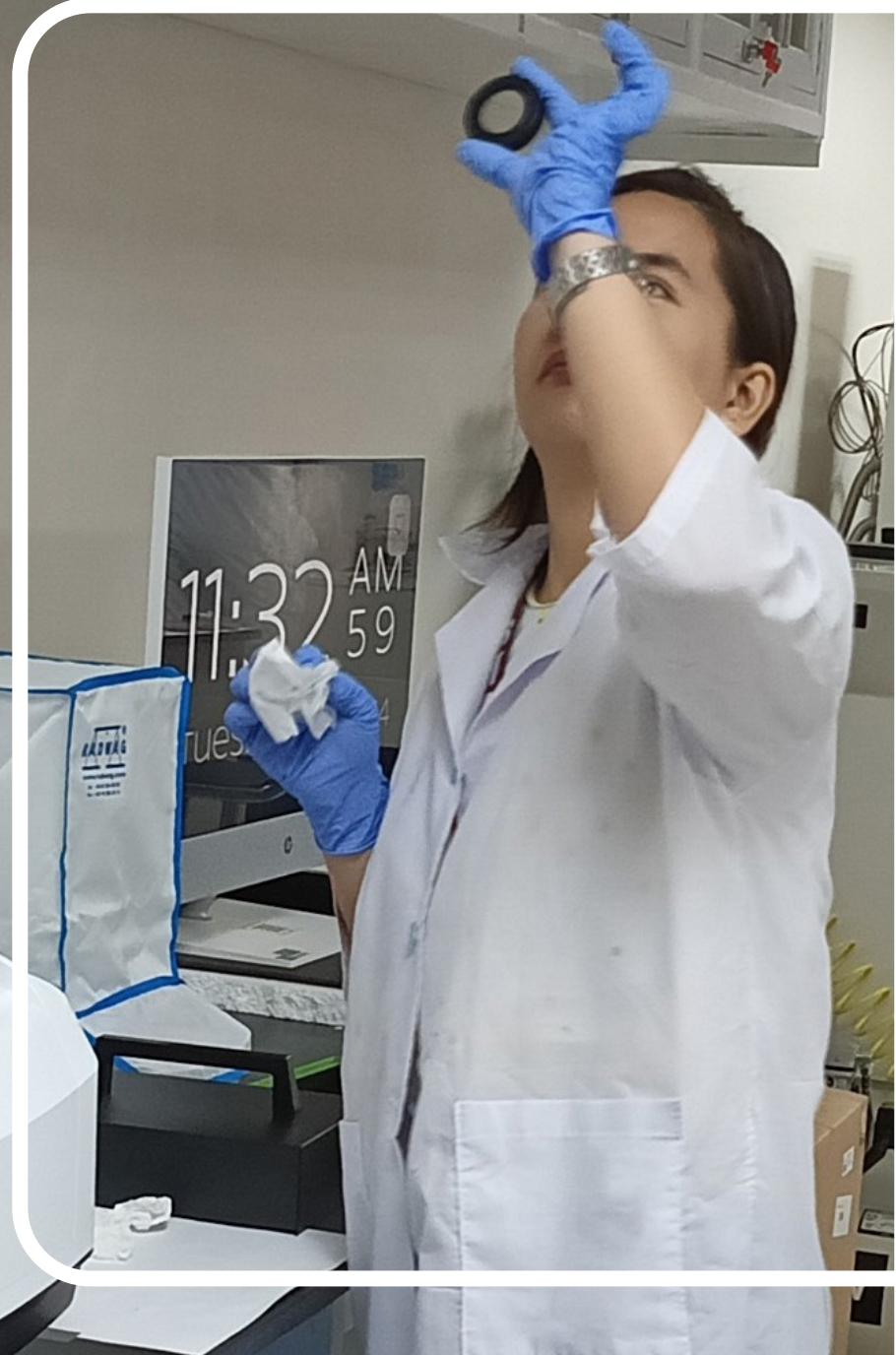
Center for Computational Analytics and Modeling

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:



5th Floor
PRISM Building
daisylou.polestico@g.msuit.edu.ph
(063) 221.4050
4349 (local)



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.

RCEEM

Research Center for Energy Efficient Materials

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.

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.



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