International Collaboration



Technical University of Cluj-Napoca

Thompson Rivers University

The University of Wisconsin-Madison and The University of Wisconsin-Madison al Thai-IceCube Collaboration The University of Wisconsin-Green Bay Iowa State University

Uppsala University

The University of Seville

Université de Liège (ULiège)

Technische Hochschule Nürnberg Georg Simon Ohm, Faculty of Materials Engineering Leibniz-Institut für Werkstofforientierte Technologien – IWT

epartment of Diagnostics and Crisis Ianagement, Wageningen Bioveterinary esearch, Wageningen University

CY Cergy Paris Université
 Université Clermont Auvergne
 Université Gremonte Alpes (UGA)
 Institut polytechnique de Grenoble (Grenoble INP – UGA)
 French National Research Institute for Sustainable Development (IRD)

University of Leeds

University of Leeds

Aston University, School of Engineering & Applied Science

University of Essex, Faculty of Science, Department of Biology

University of Hull

The University of Glasgow

The University of Edinburgh

Centre for Research and Technology
 Hellas/Institute of Applied Bioscience:

University of Wollongong

The Future Circular Collider (FCC) Feasibility Study hosted by the European Organization for Nuclear Research (CERN)
 European Organization for Nuclear Research (CERN) SND@LHC Experiment

Brno University of Technology, Faculty of Mechanical Engineering, Institute of Mathematics (Erasmus+ Interinstitutional agreement Key Action 1) Frasmus Mundus HEDIKMA Consortium Health Data, Information and KM Endorsment Letter

• College of Life Sciences and Biotechnology, Korea

College of Life Sciences and Biotechnology, Korea University Sungkyunkwan University Sejong University College of Al-SW Creative Convergence, Pai Chai University BK21 FOUR R&E Center for Environmental Science and Ecological Engineering (ESEE) and Department of Environmental Science and Ecological Engineering, Korea University Korean Society for Atmospheric Environment (KOSAE) Division of Analytical Science, Korea Basic Science Institute (KBSI)

Korea Institute of Geosciences and Mineral Resources (KIGAM)

(RIGAM)
College of Natural Sciences, Hanyang University
Department of Materials Science and Engineering (MSE),
Korea Advanced Institute of Science and Technology
(KAIST)

University

Basic Science Institute (G-LAMP) & College of Natural Sciences, Pusan National University

Ming Chi University of Technology
 Institute of Earth Sciences Academia Sinica
 National Kaohsiung University of Science and Technology
 College of Agriculture, Tunghai University
 National Dong Hwa University

National Meanchey University

Vietnam National University of Agriculture

GenomeAsia 100K (GA100K) Lee Kong Chian School of Medicine (LKCMedicine), Nanyang Technological University Singapore (NTU Singapore)

Interdisciplinary Graduate School of Engineering Sciences, Kyushu University
Institute for Materials Chemistry and Engineering, Interdisciplinary Graduate School of
Engineering Sciences, Kyushu University
Graduate School of Medical Science, Kumamoto University
Institute for Chemical Research, Kyoto University
School of Engineering, School of Materials and Chemical Technology, and School of
Environment and Society, Tokyo Institute of Technology
Graduate School of Engineering, School of Engineering, Osaka University
Graduate School of Science and Technology, Miligata University (Double Degree Program)
Graduate School of Science, School of Science, Saka University
Institute of Physical and Chemical Research (RIKEN)
Graduate School of Science, School of Science, Saka University
Graduate School of Science, School of Science, Saka University
Graduate School of Science, School of Science, Saka University
Graduate School of Science, School of Science, Saka University
Graduate School of Science, School of Science, Saka University
Graduate School of Science, School of Science, Saka University
Graduate School of Science, Saka University
Graduate School of Science, School of Science, Saka University
Institute of Physical and Chemical Research (RIKEN)

Graduate School of Agriculture and Life Sciences, The University of Tokyo (Student Exchange)
 Graduate School of Agriculture and Life Sciences, The University of Tokyo (Academic Exchange)
 Tohoku University (DDD)

Tohoku University (JSD)
Graduate School of Science and Engineering, Toyo University
Center for Green Research on Energy and Environmental Materials (GREEN), National
Institute for Materials Science (NIMS)

Institute for Materials Science (NIMS)
Graduate School of Science, Osaka University (Double-Degree Program for Ph.D.)
Graduate School of Life Sciences, Ritsumeikan University
National Institute for Fusion Science
Institute for Chemical Research, Kyoto University
Graduate School of Nanobioscience, Yokohama City University
Graduate School of Nanobioscience, Yokohama City University
Toyota Technological Institute
Tohoku University
Aichi Institute of Technology
College of Life Sciences, Ritsumeikan University
RIKEN, Nishina Center for Accelerator-Based Science
Graduate Institute for Advanced Studies, The Graduate University for Advanced Studies,
SOKENDAI

Fujian Agriculture and Forestry University
Institule of Apicultural Research, Chinese Academy of Agricultural Sciences
College of Environmental and Chemical Engineering, Shanghai University of
Electric Power
Dalian University of Technology
School of Earth Sciences, China University of Geosciences (Wuhan)
School of Nuclear Science and Technology, Lanzhou University
Kunming University of Science and Technology

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Faculty of Science







Faculty of Science **Chiang Mai University**

คณะวิทยาศาสุตร์ มหาวิทยาลัยเชียงใหม่







Faculty of Science, Chiang Mai University



Science CMU Official





sci_cmu

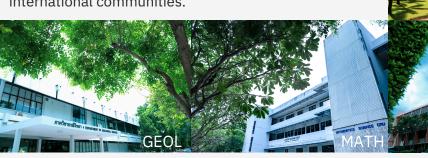


@scicmu

ABOUT

A premier faculty driving sustainable development through science and innovation The Faculty of Science as well as Chiang Mai University was established in 1964 along with two other pioneering faculties.

The Faculty currently consist of 33 fully equipped buildings occupying a total area of approximately 6 ha. Our mission is to produce global citizens with high quality education in both pure and applied science disciplines that serve local, national and international communities.



Chemistry

Departments

• Industrial Chemistry Biology

• Physics and Material Sciences

 Geology Mathematics

Statistics

• Computer Science

Our departments

Currently, the Faculty of Science consist of 8 academic departments, 3 research centers and 2 service centers which drive our vision and mission based on faculty's values.



• Material Science Research Center (MSRC)

Research

Centers

• Environmental Science Research Center (ESRC)

• Data Science Research Center (DSRC)

Service

• Science and Technology Service Center (STSC)

• Doi Suthep Nature Center (DSNC)

PHYS & MATS



Our Missions & Values

The Faculty of Science mainly focuses on the following mission:

- High-quality Education,
- Research Excellence,
- Societal-benefit Academic Services.

Centers

We drive the vision, mission by the organization values: sCi.

- scientific managementCustomer and valued-people focusinstitutional learning

More than 95% are PhD

Number of academic staffs: We are ranked in top 3 among Thailand's universities based on OS University Ranking.



Development of science, technology, and innovation applied for the benefit of communities and society, towards sustainable development.



At the Faculty of Science, we truly believe science can be both challenging and FUN and there are more to discover!



Science is everywhere! It is a functioning tool that is applicable toward everyday life, such as industries, innovation, technologies, creative communities and much more!



We focus on investigation of fundamental science, leading to the deep science and deep technology, based on scientific knowledge.





During its first decade, the Faculty of Science offered five undergraduate programs in Mathematics, Chemistry, Physics, Biology, and Geological Sciences. In 1974, eight Master's Degree Programs were offered in Chemistry, Biology, Geological Sciences, Physics, Teaching Chemistry, Teaching Physics, Teaching Biology and Teaching Mathematics. Then, in 1989, the Faculty of Science was the first faculty in the University to offer Doctoral Degree Programs with three PhD Programs in Physics, Biology and Geological Sciences.

Currently, we offer 53 undergraduate and postgraduate programs covering fundamental and applied sciences. Recently, all graduate programs have gradually transformed into the bilingual and international programs. In addition, the Faculty of Science also offer a flexible and tailored learning system through the CMU School of Lifelong Education.

STUDYING @ SCIENCE



Bachelor's Degree **Programs**

Thai Programs Chemistry

- Industrial Chemistry
- Biochemistry and Biochemical Innovation
- Biology
- Zoology
- Microbiology
- Physics
- Material Sciences
- Gemology Geology
- Mathematics
- Statistics
- Computer Science
- Data Science

International

• Environmental Science

The Faculty of Science offers various undergraduate, postgraduate and non-degree courses through lifelong education system to K-12 students, alumni or non-formal

- regular courses offered by the departments. The required class work, assignments, examinations as well as course assessment will be identical to regular students. The recorded grades can be transferred into a degree program if needed
- non-degree workshop or course to those who are interest in skill boost-up (up-skill/re-skill) with shorter duration. Certificates will also be available and some short-courses may offer a letter grade of comparable courses in the bulletin.

GRADUATE **PROGRAMS**



We offer a variety of advanced graduate degree programs that would facilitate individual students' interest through fully equipped research facilities and world-class researchers.

Degree

Programs

Thai Programs

Bilingual Programs

- Teaching Mathematics
- Biology
- Chemistry
- Computer Science
- Mathematics
- Applied Mathematics
- Applied Statistics and Analytics

International 5

- Environmental Science
- Applied Microbiology Geology
- Applied Geophysics
- Astronomy

- Physics
- Materials Science
- Industrial Chemistry
- Environmental Science
- Innovation Science for Industry

Doctoral

Degree

Bilingual Programs

Programs

• Materials Science

- Mathematics Biology
- Chemistry
- Applied Microbiology
- Biodiversity and Ethnobiology
- Geology
- Physics

- Applied Statistics • Computer Science
- Materials Science
- Astronomy
- Industrial Chemistry and Innovation
- Environmental Science
- Nanoscience and Nanotechnology

Student Support Systems @Science CMU

We provide several student support systems ranging from student activities and those who need some mental help or financial aid in order to ensure students successes in education and future career.

- Extracurricular activities: Several student clubs are available through Student Union. Club activities are intended to support student development of global citizen skills including communication, teamwork, leadership, etc.
- Scholarships: We allocate various scholarships for excellent students, students who need financial assistance, and part-time job scholarships.
- Physical and mental health support: We provide an exercise room for our students, alumnus, and staff to use freely. We also offer a psychologist for mental
- English Skills: All undergraduate students are required to take English proficiency development online course which is supported by the faculty.



Doi Suthep trekking tradition for the freshmen of Chiang Mai University, organized by the student union of



Number of Bachelor's degree students (2024)

Number of Master's degree students (2024)

Number of Doctoral degree students (2024)

Scholarships for high-potential students (2024)

Supported scholarship for undergraduate students (2024)

Number of students through lifelong education system (2024)

Number of science students' extracurricular clubs

RESEARCH @ SCIENCE CMU

Linear electron accelerator at PBP-CMU Electron Linac Laboratory, Department of Physics and Strong fundamental science is a foundation for country development toward excellence where modern applied science could enhance the country's competitiveness and competency by coupling high-standard education and teaching with international frontier research in standardized laboratories.



Fundamental Research

We investigate the state-of-art scientific knowledge which leads to the frontier researches. We also promote high-quality publications in the international academic journals.



Applied and Innovation Research

We apply scientific knowledge to solve real-world problems via spinning off the researches to create innovations based on the strong fundamental science. The Faculty of Science focuses on international frontier research housed in laboratories equipped with advanced scientific apparatus. These facilities support both research and teaching and help to promote research excellence amongst our researchers. The researches in the faculty are mainly diverges to 4 directions.



Targeted Research

We aim to the goals set by the government and country policy. We also follow new research trends which lead to the future research directions.



Outreach Research

We connect industries and users to obtain the research questions or connect the researches to users directly, which follow the sustainable development goals (SDGs).



- Reducing Forest Fires: A Case Study of Chiang Mai Province, Doi Suthep-Pui National Park, by Integrating Big Data, Proactive Policies and Communication
- Consortium for Nurturing High-performance Postdoctoral and Postgraduate Researchers in Materials Science and Technology to Drive Thailand to BCG Economy
- Enhancing Food Security and Sustainability in the Mekong Countries through Innovative Edible Insect Integration for Future Food
- Research Unit of Excellence in Infrared Free-Electron Laser for Advanced Science and Technology Experiments
- Development of high-efficiency perovskite solar cell prototypes
 aligned with international standards through advancements in carbon
 ink formulations, fabricating processes, and production improvements
 to cut costs and enhance manufacturing feasibility in Thailand
- Project for high-performance post-doctoral researcher development in condensed matter physics to promote new technology advancements, covering research in topological insulators, magnetic materials, and semiconductors
- CCS Storage and Seal Characterization of Tertiary Strata in Lampang Basin:Analyses of Outcrop Samples and Geophysical Data

Research Groups & Centers

led by Science CMU

The Faculty of Science, CMU, supports the foundation of the potential centers of excellence or research groups - research centers for boosting the high-impacted research. The centers / groups are also supported by the office of research administration, Chiang Mai University.

- Center of Excellence in Materials Science and Technology
- Center of Excellence in Microbial Diversity and Sustainable Utilization
- Excellence Center in Optimization and Computational Intelligence for Big Data Prediction
- Research Center of Deep Technology in Beekeeping and Bee Products for Sustainable Development Goals
- Advanced Computational Simulation for Clean Energy and Green Environment
- Environmental Science Research Center
- Forest Restoration Research Group
- Research Group on Space Weather and Cosmic Rays from Ground-based Observations and Effects on Earth-Space Ecology
- Research Unit for Development and Utilization of Electron Linear Accelerator and Ultrafast Infrared/Terahertz Laser
- Artificial Intelligent in Health Informatics
- Research group: eDNA Frontiers for Biodiversity Conservation, Economic, Recovery and Sustainable Social Development
- Research Group "Natural Extracts and Innovative Products for Alternative Healthcare"
- Cell engineering for cancer therapy research group

Every year, the Faculty's researchers produce numerous high-quality research articles that are published in internationally-renowned journals and are well-cited in the scientific literature. Research output with social impact and knowledge for the benefit of society are the fruits of the strong foundation and continuing progress of the Faculty.



Central Science Laboratory oscience CMU

We support the world-class research facilities under one roof at the central science laboratory. We also service the analysis of samples through the science and technology service center (STSC). We provide more than 40 services, including:

- Transmission Electron Microscope JEM-2100 Plus
- Transmission Electron Microscope JEM-2010
- Scanning Electron Microscope JSM IT800
- Scanning Electron Microscope JSM IT300
- Scanning Electron Microscope Hitachi- SU3800
- Nuclear Magnetic Resonance Spectrometer
- SC-XRD : Single Crystal X-Ray Diffractometer
- Gas Chromatography Mass Chromatography
- Inductively Coupled Plasma Mass Spectrometer
- Raman Spectroscopy
- Optically Stimulated Luminescence : OSL



 \geq 550

Total number of research papers published in journal of SCOPUS database per year ≥**40**%

Number of published paper in the first quartile of SCOPUS per year 230MB

research fund per year

natents

patents from 2022 - 2024

The Faculty of Science has long been fully committed to societal outreach through academic services based on our superior education and research expertise. We encourage local communities, particularly in the northern region, to utilize our inhouse scientific knowledge to better suit community needs and to access our highquality science and technology as learning resources. This academic service mission provided by our nationally leading Faculty's research and service centers.



Doi Suthep Nature Center (DSNC) Faculty of Science **Chiang Mai University**

The Doi Suthep Nature Center is the learning center of the Faculty of Science, Chiang Mai University. The goal of this center is to promote environmental friendly way of life and to connect people to beautiful nature. There is an exhibit and projects about the biodiversity of Doi Suthep-Pui National Park, Chiang Mai, Thailand. This place also offers to be a coordination center and knowledge center that provide information about Doi Suthep.



Doi Suthep Learning Sources

Through various projects, academic services are provided to young children, adolescents, students, families, and anyone interested in nature study. For examples,

- Doi Suthep walk
- Doi Suthep Kid Ranges
- Volunteering for Doi Suthep Forest Restoration
- Doi Suthep Local Guide Training
- Course of "Forest Restoration Technology"
- Doi Suthep Symposium
- Seed Bank for Conserving Genetics of Native Tree Species
- Curriculum "Doi Suthep Classroom Gateway to NATURE"

Doi Suthep Exhibition

We provide the permanent and circular exhibition, such as

- Suthep Now, Then'n Hope
- Mother Nature: Innovative Inspiration

SCIENCE









In order to achieve UN's Sustainable Development Goals (SDGs), the Faculty of Science has driven our highly competent research and academic outreach to align with the following SDGs:

- SDG 6 Clean Water and Sanitation
 SDG 7 Affordable and Clean Energy
 SDG 9 Industrial, Innovation, and Infrastructure
 SDG 15 Life on Land

Science and Technology Service Center (STSC-CMU)

STSC-CMU is an organization within the Faculty of science. We offer scientific and technological services to individuals on and off campus.

Academic Services and Science Camp

Analysis, Test, and **Validating Services**

Research and **Development Services**



We provide trainings and academic camps, including both theoretical and practical courses, for students, teachers, and private and industrial sector employees. We provide both short and long-term courses by our staffs.

We provide analysis, testing, and validating services for government and private organizations. The services include biological, microbiological, and Halal verifications in accordance with ISO/IEC 17025 -2017 laboratory standards.

We deliver research and development services through receiving government and private organizations' real problems. We employ our scientific expertise to address these issues. Additionally, we enhance and develop goods to a higher standard.

We serve the newcomer entrepreneurs who collaborate with CMU's Faculty of Science faculties members. We propose space rental as a means of enhancing the research-to-innovation-development process and commercial value addition.

SciMART is the trademark of products by STSC-CMU. We intend to manufacture and distribute products derived from research and innovation. Our goal is to apply our scientific knowledge to practical applications and sell distinctive, ecofriendly products of superior quality.



Proactive Science Camp

The Faculty of Science, through departments and centers, provides tailored-made Science Camps to boost up K-12 students' passion and skills in science and technology. Under the support of CMU and a collaboration with both public sectors and private organizations, we target highly enthusiastic students with promising potentials from the northern Thailand to join our proactive science camp.



The Faculty of Science encourages and supports faculty members to apply their research in various forms, such as Inside-Out, Outside-In approaches, as well as promoting advancement to higher CMU-RL levels and fostering spin-offs that transform research into marketable products and diverse innovations. These

products and innovations are distinguished by their strong foundation in fundamental scientific knowledge.

Science Olympiad Camp under POSN Foundation

The Faculty of Science is one of the Science Olympiad training centers affiliated with the POSN Foundation. We offer intensive training courses in Science and Mathematics to high potential students in the Upper Northern Thailand and select representatives to participate the International Olympiad competitions. In addition, as part of the POSN's goals, the Faculty of Science aims to strengthen K-12 Science & Mathematics education by disseminating effective teaching and advanced education to high schools.



CMU Science Camp

The Faculty of Science's Academic Club organizes an annual 5-day Science Camp to nationwide, eligible senior high school students. Attendees will have an opportunity to explore highly sophisticated scientific laboratories as well as to experience how to apply science and mathematics in solving scientifically challenging problems. Participants will obtain certificates which can be used to apply for any of the fifteen undergraduate majors offered by the Faculty through 1st round TCAS application

Knowledge from Science CMU For Sustainable Northern Air Pollution Problem Resolution

the Environmental Science Research Center, on behalf of Faculty of Science, is one of the leaders of the Academic Center for Air Pollution in Northern Thailand (AcAir CMU) in proposing the use of scientific knowledge to resolve the Northern air pollution problem. In addition, through a variety of activities and operations, we help northern Thais recognize the need to counteract air pollution.

MASOUARAX

Innovative Mask and Clean Room

We develop the innovative PM2.5 mask with positive pressure, MasquaraX, as well as highquality masks that can be used for a variety of purposes, including forest fire suppression. Also, we train the communities how to make low-cost DIY masks.

หมือกกา หมือกควิน

Environmental Youth Camp for Smog Retaliation

This camp aims at training youngsters, particularly the high school students, to recognize and realize the existence and hazards of smog and haze in Northern Thailand and to comprehend air pollution problems on how to mitigate as well as to retaliate the PM2.5 pollution. Lessons learned from this camp can be transferred to local communities via trained youths.





CMU Model

We introduce the CMU pilot project for the sustainable resolution of the northern air pollution problem in acquiring the requisite knowledge base. This will be utilized to align the policy with other areas. We have started with Pa Tueng Ngam community, Ping Khong sub-district,





BIRTH 2022 Co., Ltd.

InnoPlasCM Co., Ltd.

S.M. Rice Innovation Co., Ltd.



Start Up

Spin-Off

Science CMU

PlasOne, Cold Air Plasma Technology for Hair Loss Treatment





Pet nano spray for wound healing from Holoptelea integrifolia extract

Novamatt Solution, Co. Ltd.



The Circular Economical **Production Process of High-Quality** Porous Metal-Organic Framework (MOF) Materials of Aluminum



Cool Air Plasma Jet

Highly porous carbon and nano silicon-based materials from biomass for use as anode materials in lithium- and sodium-ion batteries







A place where nature nurtures beautiful intellegence

CMU provides dormitories, hygienic dining areas, world-class athletic facilities, a library, learning centers, a health facility, and recreational spaces surrounding the campus.

With CMU's excellent infrastructure, it becomes the college town that serves students, faculty members, and surrounding communities. This make CMU one of the attractions for people who visited Chiang Mai.

With its perfect location, it takes only 15 minutes to travel around Chiang Mai in any style. This featured natural areas, craft districts, archeological sites, commercial zones, coffee shops, and restaurants with a unique atmosphere. This makes CMU community be unique and inventive.





Chiang Mai, the prosperous city with natural resources and Lanna culture, is a 725-year-old city. The city's expansion is well-balanced, giving Chiang Mai its distinctive Thai character. Chiang Mai is one of the most popular tourist attractions. Since 2017, Chiang Mai has been a member of UNESCO's creative cities network under the "craft and folk art" branch.

In addition to being a city of culture and nature, Chiang Mai is a city of education, having institutes of all levels and national research institutes. This enables us the premier city for higher education. With the strengths of education, climate, geography, and biodiversity, we can learn and contribute to natural science research just by wandering around campus. It is possible to say that CMU is one of the greatest institutions for studying the natural sciences.















Examples of Science Research Centers





STeP is the CMU organization that functions as a bridge between the university and the business, public, and social sectors. STeP incorporates research findings into innovation initiatives and commercial industries. They also assist in establishing social and developing community tech startups. This is one of the mechanisms that will propel the nation into a knowledge-based society.

Information: http://www.step.cmu.ac.th



National Astronomical Research Institute of Thailand (NARIT)

NARIT is a public organization with research missions in astronomy, space science, and atmospheric science for the development of astronomical innovation and academic services. NARIT is located in Sirindhorn Astronomy Park, which is not too distant from CMU. In addition, there is a national observatory on Inthanon mountain. NARIT and CMU collaborate closely in higher education studies.

Information: http://www.narit.or.th



Queen Sirikit Botanic Garden

The QSBG is a world-class botanical garden in Chiang Mai, at Mae Rim district. The QSBG is a repository for preserving and cataloging seedlings according to their families. It is one of Thailand's largest botanical gardens, with numerous nature trails adjacent to Mae Sa waterfall. This empowers us to do more advanced biological studies.

Information: http://www.qsbg.org

