

# UNIVERSITITEKNOLOGI A LA SA

Vitalizing Academia - Industry - Community Nexus





UTM has now achieved great success through collaborations with partners from the academia, industry, community and government agencies. At UTM, our value and purpose is rooted in prospering the lives of others through the creation of new knowledge, and venturing into research and innovation that translates to the needs of the industry and the community. However, a sustainable impact can only be realized through a synergistic alliance as each stakeholder has its own unique lens.

UTM provides opportunities for the industries to collaborate in various forms such as the development of human capital, training and professional services, curriculum development and modules, technology development, products and services as well as donations of professional services, laboratory development, scholarships and endowments. Together with you and your trust in us, we have carried out programmes that transcend academic and research development activities. To date, we have more than 2,185 industry partners and I trust that UTM has the capacity and the passion to forge more alliances and strengthen existing partnerships and I look forward to welcoming more UTM partners on board.

I also sincerely hope that this Universiti Teknologi Malaysia "Vitalizing Academia - Industry - Community Nexus" prospectus can be used as a reference to explore UTM in various sectors before establishing a working relationship with us. My hope is that this will open up more opportunities for UTM and you!

Last but not least, WELCOME TO UTM!

"Building Alliance, Advancing Partnership".

Prof. Datuk Ir. Dr. Wahid bin Omar Vice Chancellor Universiti Teknologi Malaysia UTM is an Innovation-Driven Entrepreneurial Research university in engineering, science and technology situated in a strategic part of Kuala Lumpur and Iskandar Malaysia economic corridor, Johor Bahru. Thriving towards sustainable impact, UTM has established a holistic and conducive innovation ecosystem in which the academia, industries, communities and government agencies are able to co-create, co-develop and be actively involved in finding innovative solutions to challenges faced that would impede our nation-building.

To realize this aim, UTM has various platforms and programmes recognized by the Ministry that enrich university-industry collaborations such as the "Academia Industry Exchange Programme", "4th IR Competence Centre", "Higher Education Centre of Excellence" and "Industry Centre of Excellence".

At UTM, our university-industry collaboration goes beyond research and development activities. We aspire to nurture talents in response to the fast changing global and economic landscape and the need for specialised skills in the workforce. Curating new knowledge and skills can only be attained by engaging hand in hand with others outside the university.

I do believe that this prospectus will provide our potential partners an insight into various programmes and opportunities at UTM. We also understand the need to design our collaborations to meet different needs of our stakeholders, hence we look forward for you to join us at UTM!

"Vitalizing Academia - Industry – Community Nexus".

Prof. Datuk. Dr Ahmad Fauzi Ismail Deputy Vice Chancellor (Research & Innovation) Universiti Teknologi Malaysia





## Introduction

Partnerships provide the capacity to achieve what may not otherwise be achieved. They also provide partners with unique resources and benefits. We believe that organizations can deliver better outcomes for the communities they operate in when they work together in partnerships. In today's world, no organization can afford to go alone in any scientific endeavor. Hence, UTM is committed to providing an ecosystem that thrives on seamless academia-industry and community partnerships.









## **UTM** at a Glance

UTM is an innovation-driven Entrepreneurial Research University in engineering, science, and technology with its main campus located in Johor Bahru, a township within Iskandar Malaysia southern economic corridor. Additionally, we also have a presence in the heart of vibrant Kuala Lumpur, Malaysia's capital city as our branch campus.

We aspire to strengthen our innovation ecosystem by promoting strategic linkages and knowledge transfer across all sectors of government, industry, academia, and society. While our core responsibility is to create holistic, entrepreneurial, creative and balanced human capital, we believe that introducing cutting edge innovation and services as solutions to challenges faced by the industry and community is the utmost importance.

This prospectus serves to provide information for the industry, government sectors, agencies, and nonprofit organizations on collaboration and partnership opportunities of mutual benefits.

> Together, lets make a difference

> > Welcome to UTM

## Contents

- 2 Foreword by Vice Chancellor
- 5 Foreword by Deputy Vice Chancellor (Research & Innovation)
- 6 Introduction
- 9 UTM at a Glance
- 12 Mission, Vision & Philosophy
- 14 Faculties
- 15 Rankings and Ratings
- 17 Consultancy, Research and Development
- 18 Research Alliances
- 21 Higher Institution Centre of Excellence (HICoE)
- 22 Wireless Communication Centre (WCC)
- 25 Advanced Membrane Technology Research Centre (AMTEC)
- 26 Institute of Noise and Vibration (INV)
- 29 Institute of Bioproduct Development (IBD)
- 30 Research Institutes
- 32 Ibnu Sina Institute for Scientific & Industrial Research (ISI-SIR)
- 35 Research Institute for Sustainable Environment (RISE)
- 36 Institute for Smart Infrastructure & Innovative Construction (ISIIC)
- 39 Institute for Vehicle System & Engineering (IVeSE)
- 40 Institute of Human Centered Engineering (iHumEn)

- 43 Institute of Future Energy (IFE)
- 45 Centre of Excellence (CoE)
- 47 Institute of High Voltage & High Current (IVAT)
- 48 Institute for Oil & Gas (IFOG)
- 51 Centre for Artificial Intelligence & Robotics (CAIRO)
- 52 Centre for Engineering Education (CEE)
- 55 Centre for Advanced Composite Materials (CACM)
- 56 Innovation Centre in Agritechnology for Advanced Bioprocessing (ICA)
- 59 Benefits
- 60 Tax Incentives
- 63 Our Experts, Your Choice
- 65 Services and Facilities
- 66 Laboratories: Sample Analysis & Testing
- 70 Facilities
- 74 Accredited ISO Laboratories
- 81 Innovation & Commercialization
- 85 Human Capital Development Programmes
- 88 Professional Certification
- 91 University Social Responsibility
- 97 Philanthropic, Donation & Investment
- 101 Testimonials

# MISSION

To lead in the development of holistic talents and innovative technologies for universal well-being and prosperity

## PHILOSOPHY

The divine law of Allah is the foundation of knowledge. In line with His will, UTM strives with total commitment to attain excellence in science, technology and engineering for the well-being and prosperity of mankind

# **VISION**

To be a premier global academic and research institution, excelling in science, technology and engineering



## **FACULTIES**

#### **FACULTY OF ENGINEERING**

- School of Chemical and Energy Engineering
- School of Electrical Engineering
- School of Civil Engineering
- School of Mechanical Engineering
  School of Biomedical Engineering and **Health Sciences**
- School of Computing

engineering.utm.my



MALAYSIA-JAPAN INTERNATIONAL **INSTITUTE OF TECHNOLOGY** 

mjiit.utm.my



RAZAK FACULTY OF TECHNOLOGY AND INFORMATICS

- Engineering and Technology
- Science. management
- and Design

   Advanced Informatics
- Perdana Centre

razak.utm.my

### AZMAN HASHIM INTERNATIONAL **BUSINESS SCHOOL**

- Business Administration, **UTM Kuala Lumpur**
- Business Administration, **UTM Johor Bahru**
- Accounting and Finance, UTM Johor Bahru
- Information System, UTM Johor bahru

business.utm.my





- Real Estate
- Quantity Surveying
- Architecture
- Landscape Architecture
- Urban Regional Planning

builtsurvey.utm.my



#### **FACULTY OF** SCIENCE

- Physics
- ChemistryMathematical
- Sciences
- Biosciences

science.utm.my



SCHOOL OF PROFESSIONAL AND CONTINUING EDUCATION

www4.utmspace.edu.my



- School of Education
- School of Human Resource Development and Psychology
- Islamic Civilisation **Academy**
- Language AcademyCentre for Advanced
- Studies on Islam, Science and Civilization (CASIS)

humanities.utm.my

## RANKINGS & RATINGS

UTM core competencies are in chemical, electrical, mechanical and civil engineering. However, over the years, we extend our research capabilities in other applied sciences and technologies as well, with elements of engineering.

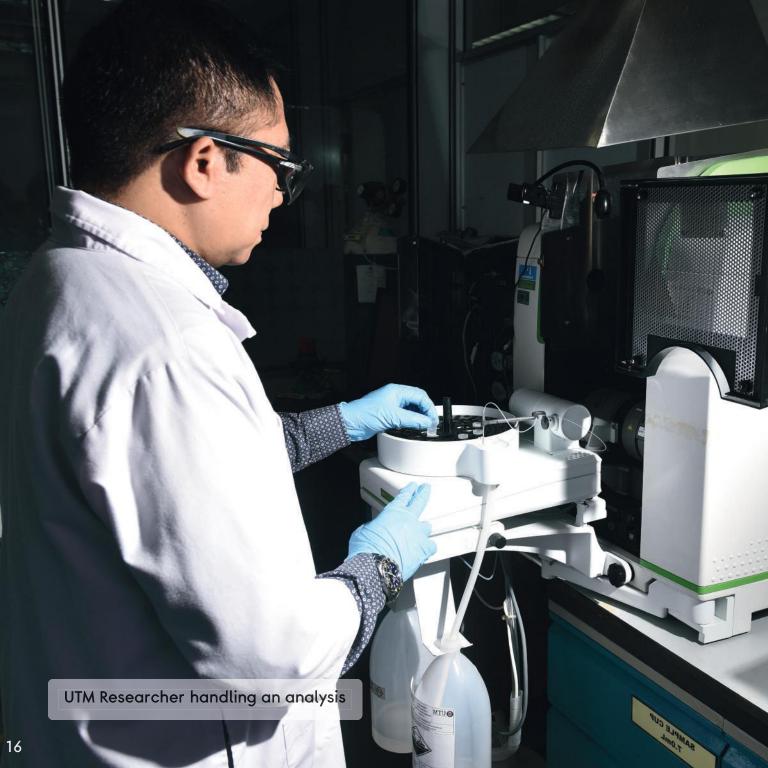




6 STAR SETARA 2017 #47 (2019)

THE ASIA UNIVERSITY RANKING







## Consultancy, Research and Development

Our research is inspired by the five major niche areas that we have devised based on our unique strength in research, and, more importantly with the vision of addressing national and global grand agendas.

There are 11 Centres of Excellence in UTM including 6 research institutes comprising of 27 research centres. While 5 Centres of Excellence focus on UTM's research niches areas, research institutes go beyond a single niche and hence are elevated to engage in cross-disciplinary research. On the national level, UTM has 4 Higher Institution Centres of Excellence (HICoE) that specifically focuses on the country's key focus areas.

## Research Alliances

Our Research Alliances serve as a keystone for UTM researchers and play a significant role in bridging university research that stimulates innovation, encourages collaboration and commercialization.









INNOVATIVE ENGINEERING

UTM's traditional strength in engineering seeks to revolutionize established technology while exploring the field of high performance infrastructure to address real world mobility.



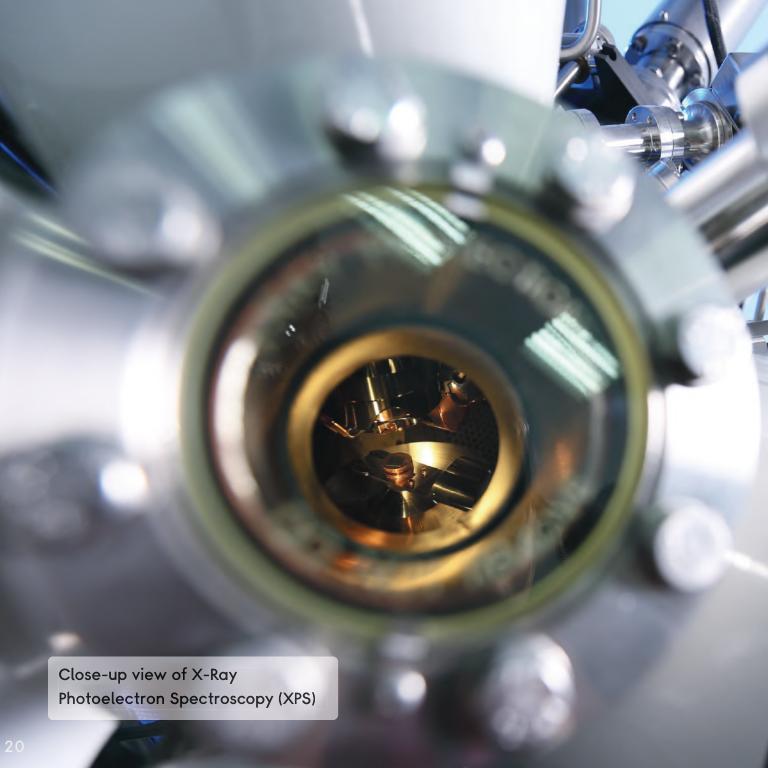
SMART DIGITAL COMMUNITY The most diverse community of researchers bring the best out of multi-disciplinary research focusing on smart and data driven concept and solution.



RESOURCE SUSTAINABILITY With various pressure mounting up like resources scarcity & climate change, UTM focused on addressing such major agenda, playing an important role in bringing the concept of sustainability in society and resources



UTM strives to create a knowledge-based bio-economy platform which leverages on the existing bioresources integrated with life sciences, engineering and computer science knowledge for human well-being.





## **Higher Institution** Centre of Excellence (HICoE)

The Higher Institution Centre of Excellence (HICoE) is a status and recognition presented by the Ministry of Education in which selected HICoE's with proven track and record are mandated by the Ministry to focus on becoming a global leader in their research niche areas. We have four (4) HICoE's with specific niches areas;



Emerging Technologies for 5G



Membrane Technology for Water Reclamation



((( )) Vibration Engineering & Integrity
Assessment



Biodiversity Utilization for Human Wellness

Our HICoE's are the main driver for national R&D and innovation agenda particularly in fundamental research, high-end consultancy services as well as contributing to human capital development needs of the nation.



Higher Institution Centre of Excellence National CoE Niche Area: Emerging Technologies for 5G

UTM Wireless communication plays a vital role within the commercial, business and public sectors in almost all industrialized part of the world. UTM WCC was established in the aims:

- To stimulate, encourage and enhance the quality of research development and commercialization in wireless communication.
- To conduct contract research and consultancy services for government and telecommunication industries related to wireless communication.
- To use the latest facilities to provide technical training programs in the field of wireless communication.



### Antenna for 5G Application

- Massive MIMO Antenna
- Beamforming Antenna & Feeding Network Sustainable Energy
- Dielectric Resonator Antenna
- Milimeter wave antenna

Propagation Measurement, Characterization & Modeling for 5G Application

- Wideband & Narrowband Channel Measurement & Modelling
- Modulation and Coding Scheme & Multiple Access Scheme
- Electro-magnetic Field & Biological Effects
- Internet of Things (IoT)
- WIRELESS COMMUNICATION CENTRE P15A, Wireless Communication Centre, Universiti Teknologi Malaysia, 81310, Johor Bahru, Johor, Malaysia.
- **©** 07-553 6106 | 07-553 6087
- wcc.utm.my





#### **Research Focus**

- Membrane for Water & Wastewater Treatment
- Membrane for Water Purification
- Membrane for Gas Separation
- Membrane for Biomedical Application
- Membrane for Palm Oil Refinery
- Carbon Nanotube, Carbon Fibre & Graphene based Materials



- ADVANCED MEMBRANE TECHNOLOGY RESEARCH CENTRE (AMTEC) Block N29a, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia.
- **©** 07-553 5624 | 07-553 5812
- □ amtec@utm.my
- amtec.utm.my



## Advanced Membrane Technology Research Centre (AMTEC)

Higher Institution Centre of Excellence
National CoE Niche Area: Membrane Technology for Water
Reclamation

AMTEC is known as a regional and international referral centre for advanced membrane technology and applications. The vision of AMTEC is to become a hub of membrane-based technology for national human capital development and wealth creation and its mission is to establish as a world-renown centre of excellence in research development and commercialization. The centre is established to generate new and exciting research projects, to provide a centre for research activities related to membrane-based technology, to build research networks with research universities and industries in Malaysia and worldwide, to provide opportunities for research collaboration and facilities for visiting researchers, and to train new generations of postgraduate students in the field of membrane-based technology.

## Institute of Noise and Vibration (INV)

Higher Institution Centre of Excellence National CoE Niche Area: Vibration Engineering & Integrity Assessment

UTM Institute of Noise and Vibration is recognized as a referral centre by the industry and government agencies for noise & vibration and seismic engineering in the country. The centre focusses on industrial noise and vibration to ensure a safe and sound working and living environment.

The Institute consists of professionals who are passionate in the areas of Noise & Vibration and Seismic Engineering. We are motivated by problem solving and technical challenges of the project, and not solely on profits. Income from our services is paid to the University, which funds our operations, scholarships and our continuing pursuit of knowledge and technology advancement.





#### **Consultation Focus**

- Machinery Vibrations
- Structural Dynamics & Integrity Assessment
- Non-Destructive Integrity Inspections
- Noise & Vibration Analysis & Mitigation
- Environmental and Industrial Noise
- Building Acoustics

#### Research Focus

- Machinery Diagnostics and Prognostics
- Non-Destructive Integrity Inspection Techniques
- Structural Health Monitoring
- Pipeline & Tanks Monitoring

#### Niche Expertise

- Modelling & Simulation
- Investigations & Troubleshooting
- Analysis & Design
- Measurements & Monitoring

#### **Key Industries**

- Oil & Gas
- Power Generation
- Highways & Railways
- Construction
- Manufacturing & Environmental Consultants
- Government Agencies
- INSTITUTE OF NOISE & VIBRATION (INV) Block L, UTM Kuala Lumpur Campus, Jalan Sultan Yahya Petra, 54100, Kuala Lumpur, Malaysia.
- 03-2615 4924
- ⊠ salman.kl@utm.my | salman.leong@gmail.com
- www.inv.com.my





#### Services include:

<u>Contract Research & Consultancy</u> Product Development And Formulations Professional training

<u>Bioproduct Development</u> Cosmetics, Herbal, Foods, Microbes

Routine Analytical Services
Physical, Chemical, And Biological

- INSTITUTE OF BIOPRODUCT DEVELOPMENT Universiti Teknologi Malaysia, 81310 UTM, Johor bahru, Johor, Malaysia.
- **©** 07-553 6465
- □ corporate@ibd.utm.my
- www.utm.my/ibd/





# Institute of Bioproduct Development (IBD)

Higher Institution Centre of Excellence
National Niche Area: Biodiversity Utilization for Human Wellness
– Plant & Microbial Based Bioproduct

UTM Institute of Bioproduct Development (IBD) is a fine specialty chemical R&BD centre with a specific aim on solving the problem of living and create the opportunity for living through biotechnology. Its main focus is on the development of products and services for the wellness of the soil & ecosystem, plants, animals and human. IBD provides a complete R&BD service in product formulation, validation & efficacy study, and prototype production. IBD serves as a house of experts to promote new technology-based firms (NTBF) in biotechnology sector and works to support the country's Knowledge-Based Economy (KBE)

## Research Institutes

Our Research Institutes comprises of various disciplines ranging from engineering, science, technology, social science, and business. Each Research Institute houses research centres and groups encouraging interdisciplinary and crosses disciplinary breakthrough innovation.





# Ibnu Sina Institute for Scientific & Industrial Research (ISI-SIR)

UTM Ibnu Sina Institute for Scientific & Industrial Research aims to maximise the benefits of research by advancing fundamental knowledge and beyond to contribute to better public policy, economic prosperity, social cohesion, community identity and the quality of life. The role of Science and Technology in the industry and society are key themes of the institute while it embarks on strategic research relevant to the industry.

#### **Core Research Areas:**

- Nanomaterials
- Optoelectronic devices, plasma technology, and laser physics
- Separation process through green technology
- Application of Mathematical and statistical techniques in solving industrial problems (modeling of systems & processes, optimization, and Computational Maths & Stats)
- Data science, Big Data analytics and machine learning
- Islamic jurisprudence, Islamic psychology, and E-learning





#### Research Centres

- Centre of Lipids Engineering and Applied Research (CLEAR)
- Centre for Sustainable Nanomaterial (CSNano)
- Laser Centre
- UTM Big Data Centre (UTM-BDC)
- UTM Centre for Industrial and Applied Mathematics (UTM-CIAM)
- Centre of Research for Fiqh Science and Technology (CFiRST)
- IBNU SINA INSTITUTE FOR SCIENTIFIC AND INDUSTRIAL RESEARCH Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia.
- **©** 07-553 0070
- ⊠ ibnusinainstitute@utm.my
- ibnusina.utm.my





#### **Research Centres**

- Centre for Environmental Sustainability & Water Security (IPASA)
- Geosciences and Digital Earth Centre (INSTeG)
- Process Systems Engineering Centre (PROSPECT)
- Centre for Innovative Planning and Development (CIPD)
- Centre for Coastal and Ocean **Engineering (COEI)**
- RESEARCH INSTITUTE FOR SUSTAINABLE ENVIRONMENT Universiti Teknologi Malaysia 81310 Johor Bahru, Johor, Malaysia
- **©** 07-553 1529
- □ rise@utm.my
- rise.utm.my



## Research Institute for Sustainable Environment (RISE)

The Research Institute for Sustainable Environment (RISE) provides R&D, consultancy, lab services, monitoring, and testing, as well as advice for policymakers, industries, town planners and domestic users in the area of sustainable environmental management, planning, and engineering.

## Core Research Areas: Sustainable Environmental Management, Planning and Engineering

- Environmental Sustainability
- Water Pollution Control
- Water Management
- Smart Industry / Factory
- Smart Industrial Park Planning
- Planning & Design Smart Grid
- Smart Green Port
- Capacity Building
- Sustainable policy and physical planning of future cities
- Adaptive planning for climate resilient cities
- Building urban resilience through urban design
- Smart mobility as a means of creating

- sustainable cities
- Sustainable tourism to enhance community resilience
- Rural transformation and sustainable rural communities
- Policies and practices for a low carbon society
- GIS and modern technology in sustainable land use planning
- Coastal engineering & modelling
- Estuary and ocean ecosystem
- Marine hazard and mitigations
- Remote sensing applications
- Remote Sensing & Geospatial Solutions
- Water & Carbon Footprint

# Institute for Smart Infrastructure & Innovative Construction (ISIIC)

Institute for Smart Infrastructure and Innovative Construction (ISIIC) was established in February 2015. ISIIC is a strong combination of existing established research centers. ISIIC covers advanced property development technology, assessment and also supports research on the management aspect & conservation through cross-disciplinary research & services.

### Core Research Area: Infrastructure & Construction Technology

- Real Estate & Facilities Management
- Sustainable Construction Technology
- Heritage Built Environment & Conservation
- Forensic Civil Engineering
- Tropical Geoengineering



#### **Research Centres**

- Centre for Real Estate Studies (CRES)
- **UTM-Construction Research Centre** (UTM-CRC)
- Centre for the Study of Built **Environment in the Malay World** (KALAM)
- Forensic Engineering Centre (FEC)
- Tropical Geoengineering Centre (GEOTROPIK)
- INSTITUTE FOR SMART INFRASTRUCTURE AND INNOVATIVE CONSTRUCTION Level 1, Block C09, School of Civil Engineering, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia.
- **C** 07-553 2092
- dvcri@utm.my
- isiic.utm.my



#### **Research Centres**

- Automotive Development Centre (ADC)
- Marine Technology Centre (MTC)
- UTM Centre for Low Carbon Transport with Imperial College London (LoCarTIC)

- NSTITUTE FOR VEHICLE SYSTEM ENGINEERING (IVESE) Block P23, School of Mechanical Enginering, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia.
- **C** 07-553 0070
- ivese@utm.my
- ivese.utm.my



# Institute for Vehicle System & Engineering (IVeSE)

UTM Institute for Vehicle System & Engineering researches land and water-based vehicle with not only the technology on core components such as engine & carbon emission but also advanced material in body parts & smart transportation concept.

Core Research Area: Vehicle Systems & Engineering

- Automotive Systems & Technology
- Marine Technology
- Low Carbon Technology in Vehicles

# Institute of Human Centered Engineering (iHumEn)

UTM Institute of Human Centered Engineering (iHumEn) is a multidisciplinary research institute is a combination of experts and the faculty's strengths from computing, electric/electronic, robotic, mechanical, biomedical engineering.

iHumEn support, promote, and facilitate research and innovation in areas parallel with the national strategic programs that foster technology transfer as well as human capital and infrastructure development. iHumEn explore the potential of human-centered technology to enrich, benefit and transform our life.

Core Research Area: Enhancement of Human Performance & Assistive Technology

- Sport 4.0
- HSE (Health, Safety, Environment) 4.0
- Medicine & Food Tech
- Classroom of the Future
- Assistive Technology Lifestyle





#### **Research Centres**

- IJN UTM Cardiovascular Engineering Centre (IJN-UTM)
- Media and Game Innovation Centre of Excellence (MaGICX)
- Medical Devices and Technology Centre (MEDITEC)
- Sports Innovation & Technology Centre (SITC)
- ▼ INSTITUTE OF HUMAN CENTERED ENGINEERING (IHumEn)
  Department of Deputy Vice-Chancellor (Research & Innovation),
  Universiti Teknologi Malaysia,
  81310, Johor Bahru, Johor, Malaysia
- **©** 07-555 8577
- ihumen.utm.my





- Centre of Electrical Energy Systems (CEES)
- UTM Ocean Thermal Energy Centre (UTM OTEC)

- INSTITUTE OF FUTURE ENERGY (IFE) Level 2, Block N29, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia.
- **©** 07-553 6388/ 07-553 5809
- ☑ ife@utm.my
- ife.utm.my



# Institute of Future Energy (IFE)

Institute of Future Energy (IFE) is an outfit dedicated to developing technologies associated with renewable and sustainable energy to ensure energy security and to support the growing energy demands. Currently, our research and development activities emphasize on technology enhancements for solar, hydrogen, ocean thermal and biomass related energy sources, in addition to enabling technologies such as safety engineering, power electronics, and material sciences. Supported by dynamic multidisciplinary talents, IFE provides research, consultancy, training, and advisory services to the energy industry and the general public. We have state of the art facilities to support our works in both UTM campuses – Johor Bahru and Kuala Lumpur.

#### Core Research Area: Renewable and Sustainable Energy

- Energy Efficiency and Demand Side Management
- Fuel Cell Technologies & Applications
- Emerging Material
- Renewable Energy
- Process System and Safety
- Hydrogen Production & Utilization
- Smart Power Grid
- Electrical Energy Markets and Generation Studies
- Ocean Thermal Energy Conversion
- Power Quality





# Centre of Excellence (CoE)

Our Centre of Excellence has a specific, indepth focus area aligns their resources towards being recognized as the referral centre for their scientific contribution.

#### CONSULTATION AND TRAINING

- Laboratory accreditation ISO IEC17025
- Lightning protection system for building
- Protection system for power network
- Grounding system installation
- Low voltage & telecommunication surge protective devices
- Electrical safety seminar
- Short course on high voltage technology & testing

#### **ACCREDITED TESTING**

 Power Cable AC Voltage Withstand Test 2 kV – 180 kV at 50 Hz

#### NON-ACCREDITED TESTING

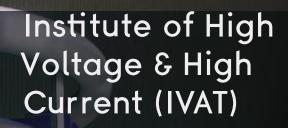
- Solid breakdown test
- Dielectric conductivity / leakage current
- Grounding resistance Measurement
- Electric field measurement
- Insulation resistance measurement

#### **ACCREDITED CALIBRATION**

- AC up to 180 kV RMS
- DC up to 180 kV
- Impulse 50 140 kV
- High Current up to 1000A
- INSTITUTE OF HIGH VOLTAGE AND HIGH CURRENT (IVAT) Blok P06, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia
- **©** 07-553 5615
- ☑ ivat@utm.my
- ivat.utm.my







The Institute of High Voltage and High Current (IVAT) was established in responses to the national need for a centre that focuses on research, development, test, and calibration works in high voltage areas. This is to ensure that efficient technologies and power system apparatus can be effectively transmitted and distributed to the electrical energy consumption.

IVAT is accredited to handle high voltage test and calibration works according to MS ISO/IEC 17025 which involves on-site calibration and the scope of calibration up to 180 kV AC (alternating current), 180 kV DC (direct current) and 140 kV impulse.



UTM-MPRC Institute for Oil and Gas (IFOG) was established to focus on oil and gas research, development, and professional services. IFOG has also been awarded as the industrial centre of excellence (ICoE) status by the Ministry of Education Malaysia for its excellent service in oil and gas professional training as well as recruitment activities.

IFOG also collaborates with National Bodies and Organisation in producing Standards, Acts and Guidelines for professional development program.



#### **Accredited Professional Training**

- 1. Accredited by Suruhanjaya Tenaga
- Gas Engineer and Gas Engineering Supervisor
- Gas Fitters Class I, II, and III
- Responsible Person
- Gas Safety
- 2. Accredited by DOSH
- OSH Certification

#### Calibration System

- ISO 17025 Accredited Laboratory Services
- UNIPEM Petroleum and Liquid Analysis
- Calibration Service for Pressure and Temperature
- UTM-MPRC INSTITUTE FOR OIL AND GAS N29A, Jalan Lengkuk Suria, Universiti Teknologi Malaysia, 81310, Johor Bahru, Johor, Malaysia
- **©** 07-553 5653
- utmifog@utm.my
- www.utm.my/mprc

#### **Consultation Specialization**

- 1. Gas Fuel Characterization
- 2. Gas Pipeline Control System Design
- 3. Natural Gas for Vehicle System
- 4. Gas Equipment Design and Safety
- 5. Gas Pipeline System and Integrity
- 6. LPG Storage System
- 7. Gas Pipeline Safety Analysis
- 8. Catalytic Combustion
- 9. Renewable Energy System
- 10. Gas Burner Design
- 11. Gas Pipeline Network Analysis
- 12. Software, Multimedia and Website
- 13. Gas Combustion System Design





#### Core Research Area

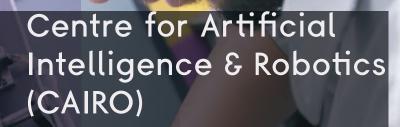
- Smart Manufacturing
- Internet of Things (IoT)
- Artificial Intelligence
- Robotics
- Control & Automation Systems

#### Services

- Professional Training Program (Smart Manufacturing & Internet of Things)
- Consultation
- Postgraduate Research Programmes
- © CAIRO LAB JB
  School of Electrical Engineering,
  Universiti Teknologi Malaysia,
  81310, Johor Bahru, Johor, Malaysia.
- **©** 03-2615 4456
- □ nenny.kl@utm.my
- kl.utm.my/cairo







CAIRO was established to focus on specialized in Artificial Intelligence, Robotics, and Control & Automation. CAIRO has strong linkages and networking with both academic institutions and industrial sectors. The research activities that take place in CAIRO has a strong reputation in intelligent systems, artificial intelligence, robotics and mechatronics, control and automation systems.

# Centre for Engineering Education (CEE)

Universiti Teknologi Malaysia (UTM) as Malaysia's premier university in engineering and technology, has been actively involved in conducting training, research and seminars in engineering education. The Centre for Engineering Education (CEE) is a centre that promotes the advancement of Engineering Education, particularly in the South East Asian region.

The centre also aims to provide a platform for engineering educators, students, policy makers and the public in general to be involved in the improvement of Engineering Education, to contribute to the area, as well as to assist each other to collaborate and learn to increase knowledge and skills in Engineering Education.



The Centre for Engineering Education (CEE) organises various activities such as:

#### Academic degree programmes

PhD in Engineering and Master of Philosophy in Engineering Education by research.

#### **Conferences**

- Regional Conference of Engineering Education (RCEE)
- Research in Higher Education (RHEd)
- These conferences have been organised biannually in 2005, 2007, 2010 and 2012.

Seminars, consultation and training courses by UTM academics and visiting professors to promote active delivery, curriculum design and rigorous research in engineering education.

- Publication of the ASEAN Journal on Engineering Education (AJEE) an online journal
- Research & research collaboration with other universities globally, to improve engineering education.

- © CENTRE FOR ENGINEERING EDUCATION Level 2, Block T02 FBME Cluster Universiti Teknologi Malaysia 81310, Johor Bahru, Johor, Malaysia
- © 07-561 0225 | 07-5<u>61 0226</u>
- dvcri@utm.my
- tree.utm.my





#### Services

- 1. Research and Development of Composite **Materials**
- 2. Short Courses and Training on Composite Fabrication Techniques and Quality Control
- 3. Design and Fabrication of Composite **Products**
- 4. Structural Testing and Composite Failure **Investigations**
- 5. Engagement Projects with Industry and Community



- 81310 Skudai, Johor Bahru, Johor, Malaysia. **c** 07-553 5993
- www.utm.my/cacm

Faculty of Engineering,

Universiti Teknologi Malaysia,





UTM Centre for Advanced Composites Materials was first established to educate and promote the composites technology through teaching, training, and consultation to the public. CACM focuses on strategic applied research, product development and training through a smart partnership with government agencies, local institutions, and private sectors.

CACM addresses problems associated with the design, manufacture, and behaviour of composite materials through training, research, and consultation. Additionally, CACM organises training and research activities in the field of polymer and metal composites within UTM. Furthermore, CACM provides specialised services to industries in the country and be the link between UTM and other research and higher learning institutions and industries.

# Innovation Centre in Agritechnology for Advanced Bioprocessing (ICA)

UTM Innovation Centre in Agritechnology for Advanced Bioprocessing (ICA) was established in 2017 to improve the quality of life through the pursuit of research and innovation in food and agritechnology. The centre provides unique opportunities for researchers, postgraduate students and industrial partners to carry out progressive research on food and agricultural technology. ICA applies modern biotechnology to comprehensively study bioactive food products, nutrient-dense foods and sustainable agricultural technology. To ensure the impact on the community, the findings are applied to medical, environmental, agriculture and food sciences, leading to innovative solutions. In essence, we specialise in Bioactive Food Production and Validation, Nutrient-Dense Foods and Sustainable Agriculture Technology.







# ENGINEERING & TECHNOLOGY IN AGRICULTURE

UTM is committed to implement a comprehensive innovation to develop, promote agriculture and food industries through the application of engineering and technology in agriculture. The technology developed is expected to effectively enhance productivity, as well as modernise and add value to the agricultural sector.

#### **HIGH-VALUE BIOPRODUCTS**

We focus to develop high value bioproduct available for commercialisation and advanced bioprocessing technology development to meet the need of downstream agriculture. DIVERSIFY AGRICULTURAL PRODUCTS
Advanced bioprocessing technologies aimed at adding value and diversifying agricultural products include functional foods, nutraceutical, cosmeceutical, bio fertilizers and biomaterials.

#### SUSTAINABLE FARMING

We conduct specific studies on sustainable farming and sustainable agriculture methods in intelligent biotic as well as taking into account the interests and the hydrological cycle in the farm ecosystem. The "biorefinery" strategy is the method of processing agricultural materials into an integrated bio-product. The combination between intelligent biotic agriculture and strategic 'biorefinery' will help in adding economic value to the agricultural sector.

- INNOVATION CENTRE IN AGRITECHNOLOGY FOR ADVANCED BIOPROCESSING (ICA) Universiti Teknologi Malaysia – Pagoh, Jalan Edu Hub UTM 2, Hub Pendidikan Tinggi Pagoh, 84600 Pagoh, Muar, Johor Darul Takzim
- **c** 06-974 2888
- ica-utmpagoh@utm.my
- pagoh.utm.my







# Benefits

At UTM, we focus on forging long term relationship and collaboration with our industry partners. We see our industrial partners as part of the innovation ecosystem and not as an external entity.

By collaborating with UTM, we aim to add value to your resources. We encourage industries to leverage on our expertise (staff and students) and state of the art facilities by investing in Contract R&D. Together, we could search for solutions, develop proprietary product and process to ensure that our industry partners are at the forefront of their businesses. Additionally, this would impact the livelihood of our surrounding community.

On the business side, companies are eligible for a different mode of tax incentives when investing with us. Companies may also benefit through access to our laboratories and resource centers. Additionally, companies may acquire competent skills by providing scholarships to students and host graduate internship programs.

### Tax Incentives

Companies granting UTM with Industrial Contract Research are eligible for Double Tax Deduction (DTD) Incentives. The amount of deduction is twice the amount of funding granted to the project. Companies will not only benefit from new cutting edge inventions to increase their productivity but also benefit through increased business profitability via positive cash flow.

Reduce significantly on Tax Paid

Improved Cash Flow



**Acquire New** Technology for Competitive Edge



Increase Productivity via UTM **R&D Solutions** 





- PROMOTION & INDUSTRIAL LINKAGES UNIT Research Management Centre, Universiti Teknologi Malaysia, 81310, Johor Bahru, Johor, Malaysia
- **©** 07-553 7807
- □ amirulshahrin@utm.my
- ermc.utm.my

### Acts

# Terms



Section 34(B) Income Tax Act 1967 Certified as Registered Research Institute Since 1991

Special Deduction of cash contribution for Research Grant to an approved and registered Research Institute



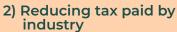
# What's Included

### **Benefits**



Total cash contributed inclusive of 5% UTM service charge

1) Improving productivity and problem solving via research activities







# RMC provide

Consultation to the company and researchers. Prepared all the documentation for submission to LHDN



Contribution is towards funding for R&D Activities Payment is for the use of UTM R&D Services Funds must be credited through UTM Research Management Centre for DTD





## Our Experts, Your Choice

UTMexperts serves as a searching platform for the public to access information on our experts comprising of various disciplines.

Simply fill in the details of your requirements and UTMexperts will match your needs with our researchers.

experts.utm.my







# Services and Facilities

To support our innovation ecosystem, UTM is equipped with a wide range of state-of-the-art instrumentation, technologies, and facilities available for use by students, researchers, industries and other universities.

Our one-stop analytical service is managed by the University Laboratory Management Centre (UPMU) and serve as the focal point for our laboratory services in UTM.

## Laboratories: Sample Analysis & Testing

# MASS SPECTROMETRY AND MOLECULAR SPECTROSCOPY wirl-masspectro@utm.my

- 1. Circular Dichroism Spectrometer (CD)
- 2. High Performance Gas Chromatography Tandem Mass Spectrometry Of Triple Quadrupole (HP GCMS-MS -Tq8040)
- 3. High Performance Gas Chromatography Mass Spectrometry (GCMS-QP2010 Series)
- High Performance Liquid Chromatography Tandem Mass Spectrometry Of Quadrupole Time-Of-Flight (HP LCMS-MS QTOF)
- 5. High Performance Liquid Chromatography Tandem Mass Spectrometry of Triple Quadrupole (HP LCMS-MS Q3)
- 6. Laser Particle Size Analyzer (LPSA)
- 7. Matrix Assisted Laser Desorption Ionization Time of Flight Mass Spectrometer (MALDI-TOF-TOF MS/MS)
- 8. Nanoparticle Size Analyzer With Zeta Potential
- 9. Polarimeter (POL)
- 10. Polarization Microscope
- 11. Semi Preparative High Performance Liquid Chromatography For Small Scale Separation and Isolation (LC Prep)
- 12. TCSPC Fluorescence Spectrophotometer
- 13. Total Organic Carbon Analyzer (TOC)
- 14. UV/VIS/NIR Spectrophotometer (UV-VIS NIR)

#### X-RAY & THERMAL ANALYSIS

- uirl-xray@utm.my
- 1. Atomic Force Microscopy (AFM)
- 2. ermogravimetry Analyzer Interface with FTIR (TGA-IR)
- 3. RAMAN Labram HR Evolution (RAMAN) Spectroscopy
- 4. RAMAN Xplora Plus (RAMAN-AFM)
- 5. Small Angle X-Ray Scattering (SAXS)
- 6. Termogravimetry Analyzer with DSC (TGA)
- 7. X-Ray Diffraction (XRD)
- 8. X-Ray Photoelectron Spectroscopy (XPS)

#### MICROSCOPY AND IMAGING

- uirl-microscopy@utm.my
- 1. Biological Transmission Electron Microscope (BIO-TEM)
- 2. Energy Dispersive X-Ray (EDX)
- 3. Field-Emission Scanning Electron Microscope (FE-SEM)
- 4. Focused Ion Beam (FIB)
- 5. Scanning Transmission Electron Microscope (STEM)
- 6. Ultramicrotome
- 7. Variable Pressure Scanning Electron Microscope (VP-SEM)

#### CHEMICAL ANALYSIS LABORATORIES

- □ uirl-chemanalysis@utm.my
- 1. Advanced Electrochemistry System
- 2. Capillary Electrophoresis Time of Flight Mass | Spectrometer (CE-TOF/MS)
- 3. Capillary Electrophoresis with Diode Array Detector(CE-DAD)
- 4. Carbon, Hydrogen, Nitrogen, Sulphur/Oxygen ElementalAnalyzer (CHNS)
- 5. Flame and Longitudinal Zeeman Graphite Furnace AtomicAbsorption Spectrometer System (AAS)
- 6. Gas Chromatography (GC) with Flame Ionization Detectorand Electron Captured
  Detector
- 7. Gas Chromatography Mass Spectrometer (GCMS) with Headspace System
- 8. High Performance Liquid Chromatography (HPLC) withPhotodiode Array and Fluorescence Detector
- 9. High Performance Liquid Chromatography (HPLC) withPhotodiode Array Detector (PDA) and Fluorescence Detector
- 10. Inductively Couple Plasma Optical Emission Spectrometer(ICP-OES)
- 11. Inductively Coupled Plasma Mass Spectrometer (ICP-MS/MS)
- 12. Microwave Oven Digester
- 13. Surface Area And Pore Analyzer
- 14. Temperature-Programmed Desorption, Oxidation, Reduction and Pulse Chemisorption Analyzer (TPDRO)
- 15. Ultra Performance Liquid Chromatography (UPLC) withEvaporative Light Scatting Detector (ELSD)

#### **NUCLEAR MAGNETIC RESONANCE**

- 1. Nuclear Magnetic Resonance Bruker 300 MHZ Fourier
- 2. Nuclear Magnetic Resonance Bruker 400 MHz Avance II
- 3. Nuclear Magnetic Resonance Bruker 400 MHz Avance III(Solid/Liquid)

#### MICRO/NANO FABRICATION & MACHINING

- 1. 3D Printer Dimension SST 1200es
- 2. EDM (Hybrid Micro Electrical Discharged Machine)
- 3. Laser Writer, PG101 Tabletop Micro Pattern Generator
- 4. MIDAS System Mask Aligner, MDA-400M-O6
- 5. PCB Plotter (Printed Circuit Board Plotter)
- 6. Spin Coater

- UNIVERSITY LABORATORY MANAGEMENT CENTRE T03 Building, University Industry Research Laboratory, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia.
- 607-555 7583
- □ labdirector@utm.my
- www.utm.my/upmu



## **Facilities**

Our facilities are also available for use by the industry, universities and the public. We have a range of laboratory and business incubators to assist industries in carrying out joint R&D in testing proprietary processes and technologies. Additionally, we have our own Technology Park that houses university startups and ventures. Our industrial partners will be a part of a dynamic innovation ecosystem in UTM and access to our local and international network.





### **Technovation Park**

The UTM Technovation Park is spread across 100.3 acres land that currently houses over 40 tech companies located in Skudai, Johor Bahru, Johor. Managed by the UTM Innovation & Commercialisation Centre, UTM Technovation Park offers a conducive environment for the incubation and start-up. Here, we provide incubator spaces to encourage the commercialization of R&D culture and expedite the advancement process of new businesses. As such, we are pleased to welcome everyone to collaborate with us to develop the Technovation Park whilst utilizing the university's technology and research output for the social benefit and advancement.





We encourage innovative ideas and invite collaborations in the UTM Technovation Park to stimulate further development for the benefit of all parties involved. Offering various types of rental spaces for various types of events and programmes, we hope that we could be of great assistance to the university and the community residence to ensure the smoothness of their events and activities. As such, we greatly welcome any type of fruitful collaborations that will greatly increase the efficiency of our business development and income generation activities.



- TECHNOVATION PARK DEPARTMENT
  Innovation and Commercialisation Centre,
  Universiti Teknologi Malaysia
  81310, Johor Bahru, Johor, Malaysia
- **©** 012-720 4847
- technovationpark@utm.my
- www.utm.my/icc/technovation-park/

# Accredited ISO Laboratories



We understand the need for industries to have an end-to-end, a one-stop institution for research and consultation service for its products and services. To ensure that we provide added value services to our clients, UTM has various analytical service laboratories that can meet your needs and adhere to an internationally recognized quality standard. Five of our laboratories is accredited with ISO/IEC 17025, a known quality accreditation that has the competency to operate and generate valid results. This is, in turn, will ensure that our clients will be able to use the test reports and certificates for business and international trade purposes.





Institute Of Bioproduct Development (IBD)

MS ISO / IEC 17025:2005 since 2009. Field s of Testing : Chemical and Microbiology



Unit Perkhidmatan Makmal (UNIPEM) Fakulti Kej. Kimia Dan Kej. Tenaga

MS ISO/IEC 17025:2005 since 2014. Field s of Testing : Chemical - Petroleum and Petroleum Products, Polymer material



Pusat Perkhidmatan Analisis (PPA) Fakulti Sains

MS ISO/IEC 17025 since 2018. Fields of Testing: Laboratory testing, analysis, monitoring and consultancy services in the field of chemistry.



Institute of High Voltage And High Current (IVAT)

MS ISO/IEC 17025:2005 since 2015. Field s of Testing: High voltage electrical calibration (extended up to 180 kV AC (alternating current), 180 kV DC (direct current) and 140 kV impulse)



Civil Engineering Testing Unit (CETU)

MS ISO/IEC 17025 since 2017.
Fields of Testing: Construction test for structures and material & geotechnical including compression strength, water absorption, flexural, indirect tension, tensile etc.





## Innovation & Commercialization

For businesses and economy to remain competitive and resilient in the local and global market; it is essential for businesses to constantly innovate and adopt cutting edge processes and technologies. UTM facilitates our industrial partners through UTM Innovation & Commercialization Centre.

The centre functions as a technology transfer and innovation business entity to drive commercialization of UTM's invention from the laboratory to the marketplace. UTM ICC assists in securing and protecting novel innovations through intellectual property processes and identify applicable commercialization strategies for the IP's as well as incubator programs.



- NNOVATION AND COMMERCIALISATION CENTRE Industry Centre, Technovation Park, Universiti Teknologi Malaysia, 81300 Johor Bahru, Johor, Malaysia.
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- managers@icc.utm.my | pengurus@icc.utm.my | info@icc.utm.my
- www.icc.utm.my





### **TECHNOLOGY LICENSING (TL)**

TL based on translational research with competitive value than can be commercialized locally and internationally.



#### **BUSINESS NURTURING**

Various range of ready products from consumables to high end products marketed through UTM's spin-off companies.



#### INCUBATOR SPACE FOR START-UPS & SPIN OFF COMPANIES

Incubator, office and event spaces to assist start-ups and newly formed spin-off company to be situated in UTM ecosystem.



### ENTREPRENEURSHIP DEVELOPMENT PROGRAMME

Tailored for researchers with in an interest on becoming academic entrepreneurs.



#### PRODUCT COMMERCIALIZATION

Various range of ready products from consumables to high end products marketed through UTM's spin-off companies.



### FORMATION OF SPIN-OFF COMPANIES

Spin-off companies based on technology/products that have commercial value.





### Human Capital Development Programmes

At UTM, our courses and training programmes have been designed to suit the ever-changing landscape and needs of the industry. We offer accredited courses (i.e BEM, HRDF) and our trainers are a blended team of academics and practitioners from the local and international sector.







Structured Internship



Practic

Practical Training



Adjunct Lecturers



Talks, Coaching, Mentoring



Scholarship

**Awards** 



Industry University CSR Programme



(ICoE) Programme



Ind-E-Zone







CEO @ Faculty



Entrepreneurship Programme



2u2i

## Professional Certification

Our programmes are designed by understanding the viewpoint of employers and industry through global and local lenses. We understand the need to offer programmes that fit into one's career development.













- Part time Diploma and
  Bachelor Degree Programme
- Professional Short Courses
- Executive Short Courses



- ♥ UTM SPACE (JB)
  Level 4 & 5, Blok T05,
  Universiti Teknologi Malaysia,
  81310, Johor Bahru, Johor, Malaysia.
- **©** 07-53 8000
- enquiry@utmspace.edu.my
- utmspace.edu.my



#### **SCHOOL OF GRADUATE STUDIES**

- MSc , PhD, Eng.D, & MBA Full Time Programmes
- Doctorate of Business
  Administration
- Open Distance Learning



- SCHOOL OF GRADUATE STUDIES Blok L51, Universiti Teknologi Malaysia, 81310, Johor Bahru, Johor, Malaysia.
- **©**07-553 8833
- ⊠ecareer@utm.my
- @www.utm.my/careercentre





### University Social Responsibility

UTM has a longstanding commitment to engaging and serving our communities. We do so by imparting new knowledge and innovation developed by our researchers and students.

Increasing social complexity creates an imperative for the University and communities to work together and share ideas, knowledge, and expertise in critical issues such as health and wellness, social justice, education, science, business, the environment, and community wellbeing.

At UTM we focus on meaningful, impactful and sustainable community engagement programs by working hand in hand with industries, government agencies and NGO's to achieve the desired goals.

Impact
Driven
Community
Engagement





# UTM Community Development Focus Areas

UTM carries out research based CSR hand in hand with industries and NGO's on 5 Community Engagement Focus Areas.

### Social Entrepreneurship

To build a strong collaboration between university & community's economic growth and innovation capability & to foster entrepreneurship.

### Improving Livelihood

To pilot an experiential learning model to strengthen quality of life & better graduate training and engagement of the university and its immediate community and to mentor champions.

### **Education Enhancement**

To develop holistic students with A high interest in science and technology & at the same time engaging the community in promoting STEM and English proficiency.



### Capacity Building

To engage, train and strengthen the skills and & abilities of staff, students and stakeholders to take effective action and leading roles in the development of their respective communities.

### **Environmental Sustainability**

To promote and engage communities in activities that will enhance and sustain the environment through such events, as it is that positive change will contribute to sustainable livelihoods at the community level.

# How can you take part in making a difference to the community?

Investing in Community Engagement Projects with UTM provides you a chance to be part of our nation and society building. By working together, we could provide viable solutions and open up access to communities in need.

Companies are also eligible for Tax Incentives and reap intangible returns such as the improvement of community livelihood.





### Donators are eligible for

Single Deduction Sub-Section 44(6) Income Tax Act 1967





UTM Centre for Community and Industry Network (CCIN) is the focal unit in UTM that facilitates our Community Engagement Programs. Connect with this team via:-

- © CENTRE FOR COMMUNITY AND INDUSTRY NETWORK
  Department of Deputy Vice-Chancellor (Research and Innovation),
  Universiti Teknologi Malaysia,
  81310, Johor Bahru, Johor, Malaysia.
- 07-5537884
- ccin@utm.my
- ccin.utm.my



One Contribution. Many Solution.



# Philanthropic, Donation & Investment



UTM strives to make everyone feel at home. It does so by providing a caring, welcoming environment where experiences are gained and memories are made. Additionally, the campus is equipped with state of the art facilities and space for learning, experimenting and innovating. Ample accommodation is provided for all students through on- and off-campus residential colleges. However, UTM will not be able to sustain the needs of our university community without the assistance of our donators and Alumni's and this is how UTM Cares was established as a platform to encourage the culture of giving for the greater good.





We welcome Alumni's, industries and individuals to donate and create opportunities for UTM's students and enhance their campus experience by contacting:

ADVANCEMENT DIVISION UTM Alumni House, Universiti Teknologi Malaysia, 81310, Johor Bahru, Johor, Malaysia



☑ advancement@utm.my

www.utmcares.utm.my







### **Testimonials**

"Coming together is the beginning. Keeping together is progress. Working together is a success." Henry Ford

Here is what our industrial collaborators and partners have to say.

The findings showed likely origin and causes of the fault, was presented to the OEM for remedial actions.



"

Ir Ahmad Asri Head, Generating Facility 3 Kapar Energy Ventures, SSAA Power Plant

Root causes were identified by UTM upon which remedial measures were implemented. Damaged state structural integrity and fatigue life were determined upon which decisions were made on the long term operability of the plant.



We are making billion dollars decision on this.



Dr Goh Kok Tong Petronas Group Technology Now, Principal Integrity Engineer Wood Group Integrity, Australia

As part of our desire to be in research, we sign MoU with UTM to establish IJN-UTM Cardiovascular Engineering Centre.
And we are proud to see the progress of research that has been done.



Dato' Seri Mohd Azhari Yakub (CEO of IJN)
IJN CEO Talk Program
7th May 2018
Sultan Ibrahim Chancellery Building (BCSI), UTM Johor Bahru

We were involved in the acoustics design and construction submission with on-site supervision during the entire construction process. We also undertook comprehensive acoustics testing during constructions and handover.



UTM is a key member of the Project Team



Gerald Soosay Construction Manager Sunway Construction Bhd

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Coordinated & Designed by:
Office of Deputy Vice Chancellor (Research and Innovation),
and Centre for Community & Industry Network (CCIN)