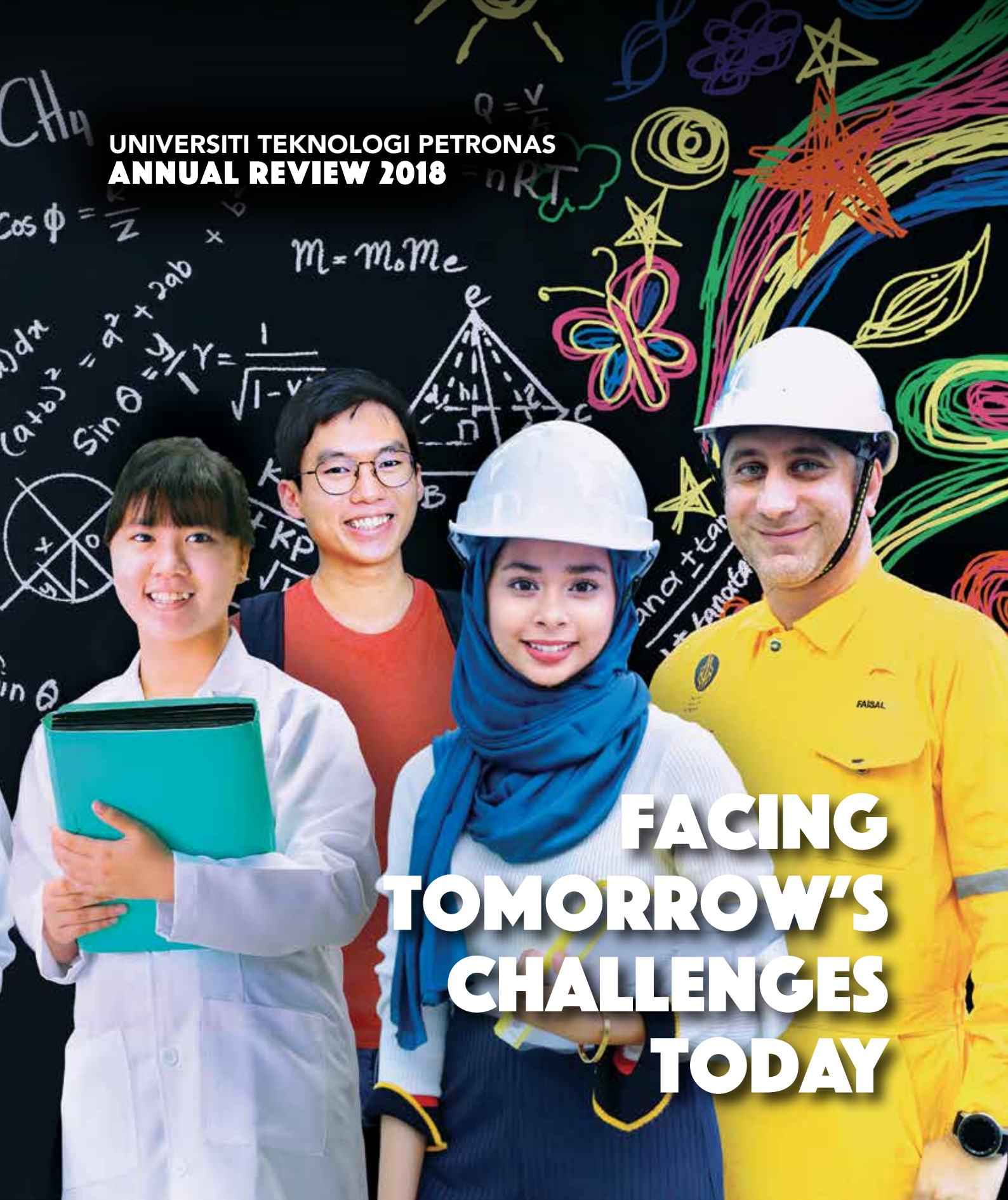
UNIVERSITI TEKNOLOGI PETRONAS

ANNUAL REVIEW 2018



FACING TOMORROW'S CHALLENGES TODAY

$$P = \frac{m}{V}$$

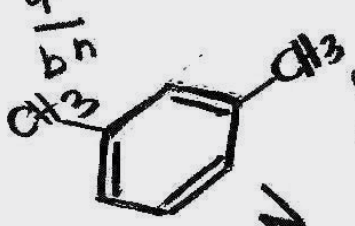
$$a^2 + b^2 = c^2$$

$$S_n = \frac{a(1-r^n)}{1-r} \quad \text{if } r < 1$$

$$\frac{d}{dx}(x) = 1$$

$$e^{i\pi} + 1 = 0$$

$$P = \rho g h \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$



$$\lim_{x \to a} f(g(x)) = f\left(\lim_{x \to a} g(x)\right) = f(c)$$

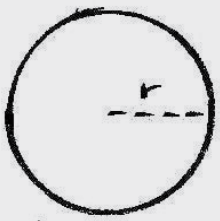
$$P_1 V_1 = P_2 V_2$$

$$\frac{d}{dx}(\sec x) = \sec x \tan x$$

$$\Delta U = Q - W$$

$$G = H - TS$$

$$\Delta\theta = \frac{\Delta s}{r}$$



$$Q = mc\Delta T$$

$$E = mc^2$$

$$V = IR$$

$$T = mg$$

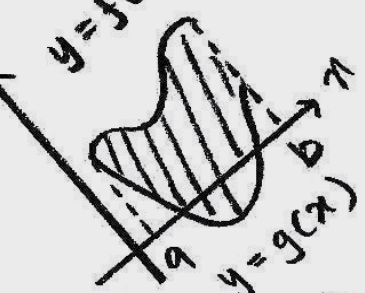
CH_4

$$A = \pi r^2$$

$$C = 2\pi r^2$$

$$Q = \frac{V}{t}$$

$$PV = nRT$$



$$\cos\phi = \frac{R}{Z}$$

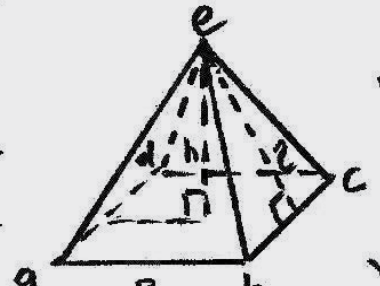
$$m = m_0 m_e$$

$$A = \int_a^b f(x) - g(x)\,dx$$

$$(a+b)^2 = a^2 + 2ab + b^2$$

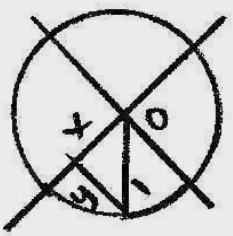
$$\sin\theta = \frac{y}{r}$$

$$\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$$



$$V = \frac{1}{3}Bh$$

$$E_k = \frac{1}{2}mv^2$$



$$\theta = \frac{kp}{1+kp}$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$A \underset{k_2}{\overset{k_1}{\rightleftharpoons}} B \xrightarrow{k_3} C$$

$$\tan(\alpha \pm \beta) = \frac{\tan\alpha}{1}$$

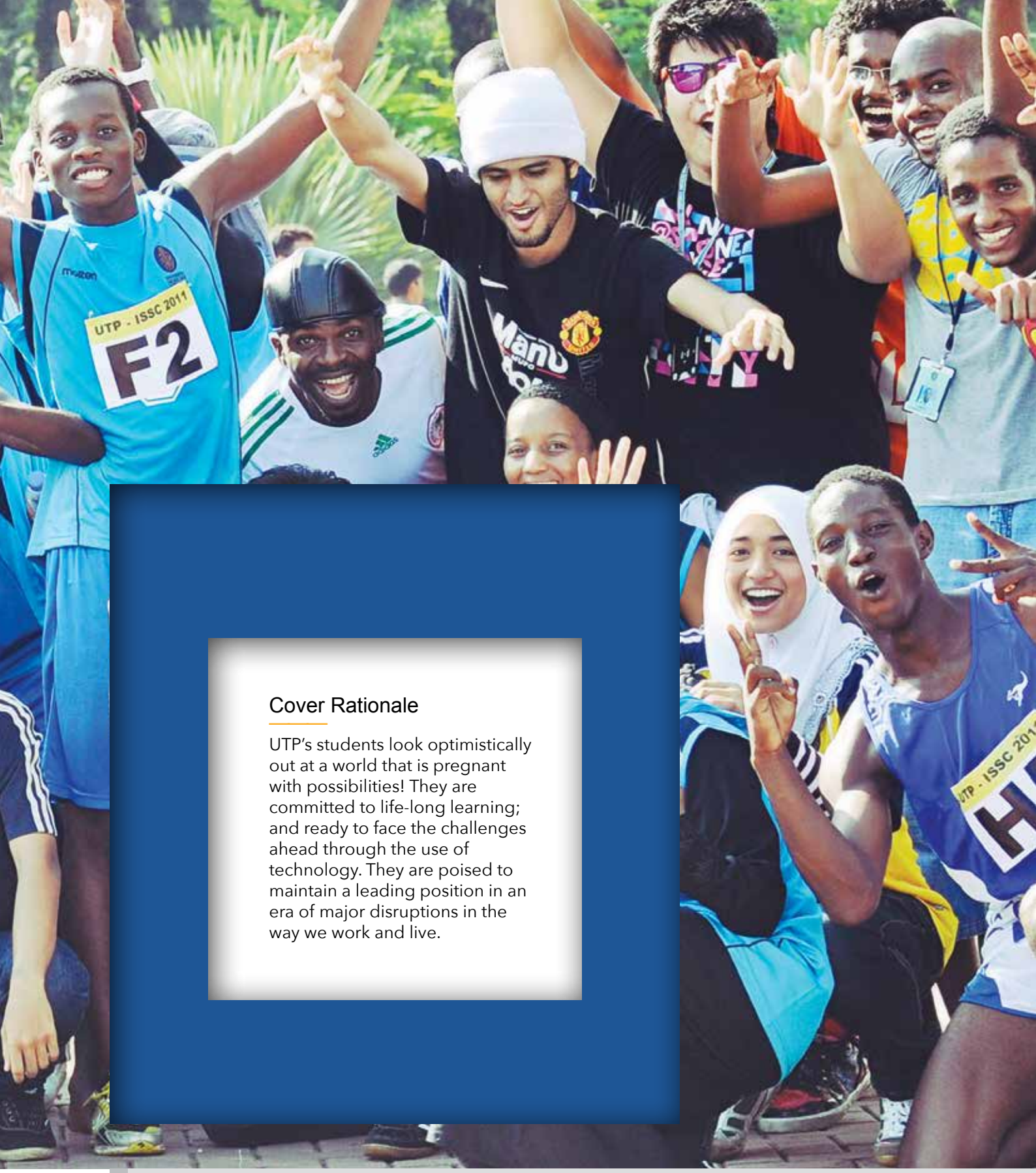
$$\frac{V}{\quad} \sin\theta = m$$

FACING TOMORROW'S CHALLENGES TODAY

UNIVERSITI TEKNOLOGI PETRONAS
ANNUAL REVIEW 2018


UNIVERSITI
TEKNOLOGI
PETRONAS
Kompleks
Canselor

what's inside



Cover Rationale

UTP's students look optimistically out at a world that is pregnant with possibilities! They are committed to life-long learning; and ready to face the challenges ahead through the use of technology. They are poised to maintain a leading position in an era of major disruptions in the way we work and live.

About UTP

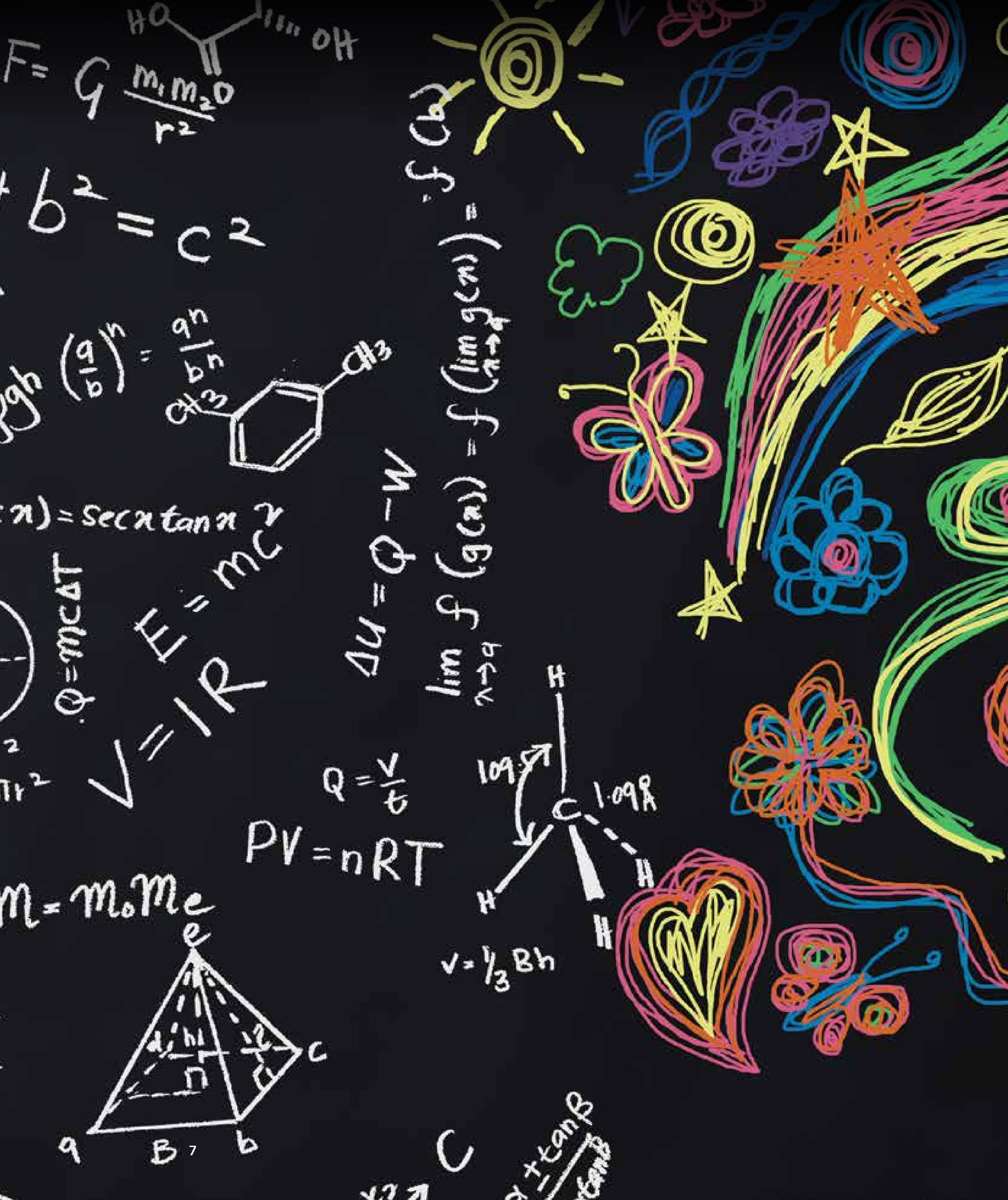
UTP is a leading private university in Asia, consistently ranked highly for excellence in technology education. It has pioneered distinctive research and created a vibrant and dynamic learning hub. Over 21 years, it has produced more than 15,000 graduates from 60 countries.

UNIVERSITI TEKNOLOGI PETRONAS

Six Things That Matter To Us

1. Leadership in technology education
2. Developing creativity & innovation
3. Excellence in research
4. Transforming lives
5. An international outlook
6. An outstanding student experience

A VISION FOR THE FUTURE


PV=nRT
V=IR
Q=mcΔT
ΔU=Q-W
Q=V/t
v=1/3 Bh
1.09Å
(x)=secx tanx

A VISION FOR THE FUTURE

UTP STANDS COMMITTED IN PREPARING STUDENTS TO BE FUTURE READY

Universiti Teknologi PETRONAS (UTP) is a world class teaching and learning institution. Over the last year we continued to seek creative ways to innovate and invest in student programmes and services that would ensure long lasting excellence. It has been a year of solid progress. We have kept a steady focus on the future of education which is underpinned by innovation, academic-corporate collaboration and advances in new technology.

We have invested in creating digital learning opportunities for all our students and UTP stands committed in preparing students to be future ready with the right skill sets and knowledge to deal with a spectrum of disruptions already taking place with Industry 4.0.

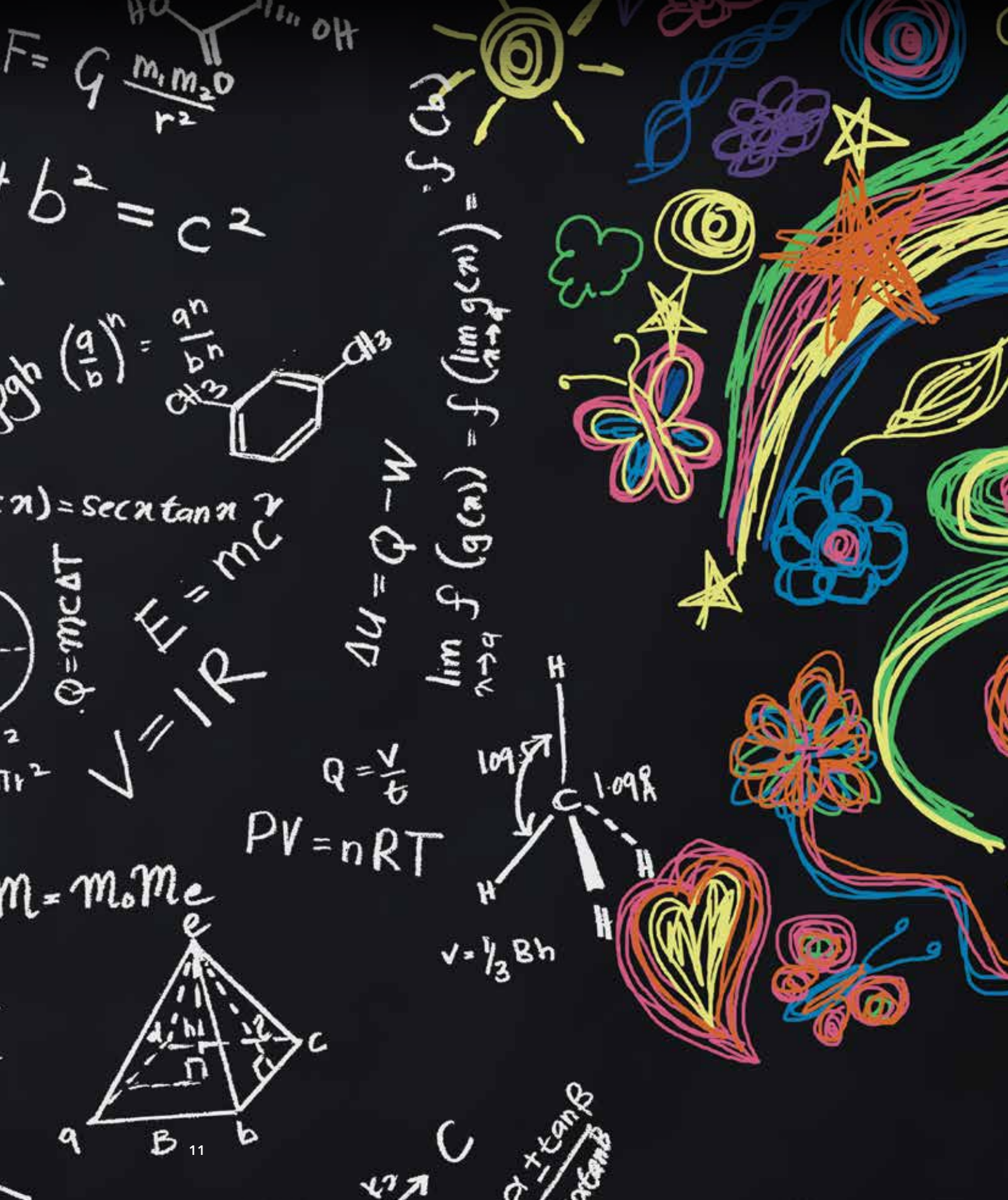
In the past year, we persevered in preparing our students and graduates to face a world transformed by technology. The internet, cloud computing, and social media created different opportunities and challenges. It defined student learning and created opportunities for spontaneous innovation. We put in place enough digital access for our students to seek new ways to form cohesive communities, because at UTP we believe in digital equity. Within the university, we are seeing a new generation of students whose thinking and learning trajectories are powered by artificial intelligence and other tools of the 21st century education. However, we realise that there remains an urgent need for critical thinking, emotional intelligence and cognitive flexibility. Therefore, embedded in all our courses are mechanisms that will help our students ride the new wave of change; change that will impact research and learning, knowledge exchange and fresh enterprise.

Personally, I am excited to see what our new student intake brings in terms of changing student expectations. We know from various studies that Generation Z is already disrupting the way learning is done. We know that they thrive in social learning environments where they are active learners and in fact an integral part of the learning process. UTP is doing everything possible to give all our students a fully immersive educational experience.

Finally, I would like to take this opportunity to thank each and every one of our stakeholders for creating here in UTP, a rich eco-system where the building of knowledge, honing of skills and embracing right-thinking mindsets is made possible. To our Vice Chancellor and UTP staff, the management as well as the members of faculty, I would like to register my utmost gratitude and thanks.

DATO' RAIHA AZNI ABD RAHMAN
Chairman

THINKING AHEAD


F= G m1m2 / r2
a2 + b2 = c2
Q=mcΔT
V = IR
E = mc2
ΔU = Q − W
PV = nRT
Q = V/b
V = 1/3 Bh
109.5°
1.09Å
m = m0me

THINKING AHEAD

THE UNIVERSITY IS NOW AT 99 COMPARED TO 101 THE PREVIOUS YEAR. WE HAVE LEAPFROGGED 92 PLACES IN JUST FIVE SHORT YEARS.

At the heart of all our efforts is a firm commitment to providing a transformative educational experience that will equip our graduates with the knowledge and skills to make a positive national and global impact. So, it is a matter of great pride and satisfaction that UTP continued on its upward trend and became the first private university in Malaysia to make it to the top 100 list of the 2019 Quacquarelli Symonds (QS) Asia University Rankings.

The university is now at 99 compared to 101 the previous year. We have leapfrogged 92 places in just five short years. This has great significance for UTP, highlighting our growing reputation for research and excellence in education. Our goal now is to claim a spot in the top 50 by 2020.

We also maintained our position in the 601-800 band of the Times Higher Education (THE) World University Rankings, reflecting international recognition and a heartening endorsement of our achievements.

Looking ahead, UTP faces significant challenges. Our focus on maintaining and improving our track record of teaching and research excellence is putting financial resources and sustainability under increasing pressure. The world is changing rapidly for universities with the overall decline in the student population, particularly those opting for STEM fields. With technology advancing at a dramatic speed, we need to meet the needs of a generation of young people that will function in a very different workplace.

Moving forward, we have put in place strategies that will position UTP for future success through strong governance structures, forward-looking academic programmes, innovative research and enriching student experiences.

HIGHLIGHTS OF UTP'S 18TH CONVOCATION:

- The highest number of graduates in a year to date
- The largest number of PhD graduates
- Graduates from 38 countries – the highest number of countries in a year to date
- The first batch of graduates from Applied Physics and Applied Chemistry

Adapting Education to a Changing World

We are highly conscious of the need to future-proof the university in the face of the current forces of disruption. Technology is evolving faster than ever before, changing the nature of work and the skills that will be needed in the workplace.

Many of the jobs in high demand today didn't exist a few years ago, and the pace of change will continue to accelerate. Today's graduates will need to relearn, unlearn, reskill and upskill throughout their careers. UTP has created roadmaps to navigate the challenges of this increasingly complex future. Our goal is to enable our graduates to adapt to any industry at any time of their lives.

We made a strategic decision to flip from teacher-centred to student-centred learning. The university's Centre for Excellence in Teaching and Learning (CETaL) has crafted new and more exciting approaches that involve more activity-based and applied learning.

We are rethinking how we should educate engineers for a future where they will have to address complex work and societal challenges resulting from a new generation of machines, materials and systems. Given that data is driving decisions no matter what the field of engineering, our graduates will need to be savvy enough to make sense of all available information. We have therefore put Data Science on board our undergraduate curriculum to embed this critical capability in our students.

The effort to future-proof the university was also reflected in our 2018 World Engineering, Science & Technology Congress (ESTCON). We believe Industry 4.0 will open up immense possibilities in a wide range of fields in science, technology and engineering. The conference was an important platform to give students, academics and the public a comprehensive insight into the challenges and opportunities of a world shaped by Industry 4.0.

Encouraging Innovation and Creativity
Tomorrow's talent will be required to bring not just hard skills, but also innovative and creative problem-solving skills to the table. Experts are predicting that artificial intelligence will replace nearly half the world's workforce within the next two decades. While processes can be automated, creativity cannot.

Today's students want to be engaged and technology is very much a part of the way they live, work and play. We have therefore focused on building a more immersive teaching and research environment that uses technology and active learning techniques to nurture creativity and give students the freedom to experiment and take risks. This is embedded in our student-led learning modules and collaborative research approach.

Our courses are designed to help students acquire the mindset and skills needed to approach problems and issues from multiple perspectives, spark connections across disciplines and generate new ideas and solutions that will have relevance to the industries and communities that they will serve.

Making learning count

In the face of a higher education landscape that is becoming increasingly competitive, UTP is working hard to overcome constraints and build our capabilities and resources. Underscoring these efforts is our commitment to provide clear value to our students and staff, employers, alumni and the nation.

UTP's employability strategy is geared to preparing students for a successful and meaningful career path, building skills and capabilities that are relevant to their lives and their future employers. As a result, in 2018, more than 90 per cent of our graduates found work within six months of completing their studies.

Over 70 programmes were conducted during the year to support our graduate employability targets. We also initiated two programmes for our first-year undergraduates with a view to giving them important insights into current and future job scenarios.

We see workplaces as powerful sites for learning, and employers as a critical part of the education process. In view of this, we have boosted efforts to foster collaboration with industry partners and alumni in pursuit of innovative and creative solutions to the complex demands of today's world.

UTP's partnerships and industry engagement activities encourage an exchange of ideas and insights. In 2018, we partnered with over 300 new companies, which resulted in 124 internships and almost 200 job opportunities.

Alongside our efforts to stimulate innovation and creativity, there is a strong emphasis on developing a job creator or entrepreneurial mindset in our graduates. Students are offered mentoring and coaching in designing their business models as well as space and facilities for fabrication. The idea is to develop technopreneurs who can combine tech savvy with strong business know-how and leadership skills.

Putting Values into Practice

Today, the entire range of academic disciplines is being affected by the ethical consequences of their own innovations. The inculcation of values is therefore part and parcel of the education process, more so now than ever before.

Rapidly advancing development and globalisation has deepened the need for humanity, wisdom and positive values. UTP believes higher education has a crucial role in building more inclusive societies by inculcating tolerance and a greater understanding of social and cultural differences.

As we educate future engineers and leaders for tomorrow's job market which is being transformed by automation, new technology and other forces, we need to equip them with the right balance of hard skills, positive values and progressive thinking.

We are therefore moving to introduce a strong liberal arts component to integrate the humanities and arts into our science, technology and engineering curriculum. This will give our graduates meaningful economic mobility and enhance their professional value.

UTP has always tried to reinforce positive values in our students alongside their academic studies and social activities. We believe these values will help them build important life skills and make them valuable members of any organisation.

A framework of core values has also been introduced which sets out the standards expected of UTP staff and students to ensure we establish an environment and reputation that attracts the brightest and best to work and study here. This is being reinforced at all levels of the UTP community through events and activities as well as collaterals.

Equally important for a balanced personality are qualities such as shared responsibility, passion, respect, team spirit, compassion and loyalty.

We have promoted qualities such as adaptability, perseverance, professionalism, resilience, accountability and integrity to help them weather challenges that they will confront in the working world.

Equally important for a balanced personality are qualities such as shared responsibility, passion, respect, team spirit, compassion and loyalty. We also encourage voluntarism and community service with a strong focus on capacity building and empowerment.

Creating Great Outcomes
With a view to creating a campus environment where student learning is supported and individual growth enhanced, UTP has put in place a strategic planning process called the Student Evolution & Excellence Development (SEED) Lab.

We have so far been focusing on developing well-rounded work-ready graduates. Last year the SEED Lab deepened its efforts with an intensive review of outcomes achieved so far and those required for the future.

The Lab gathered in-depth feedback and ideas from staff and students on the way forward for student development. The study, which included survey results from employers and alumni on 21st century skills, showed a significant need for a global mindset among our graduates.

As a result, we are looking at establishing a well-structured Student Development Framework (SDF) based on the attributes needed to shape graduates into model global citizens. The SDF will take both credited courses and non-credited activities into account.

SEED LAB

Student Evolution & Excellence Development Lab

Widening Access to Education
We have sustained our commitment to give every deserving student the support they need to get a strong start towards a successful future through a world-class university education. Close to half of our students face financial roadblocks that make the difference between finishing their degree or dropping out.

Through Yayasan UTP (YUTP), we offer full or partial scholarships to tide them over tough times. More than 1,400 students have benefited from this programme to date. In 2018, YUTP introduced a scheme to provide education grants for 100 students. This represents a total investment of RM6 million in 2018.

In addition, YUTP enabled 250 students to participate in overseas academic competitions, internships, exchange programmes, research attachments, leadership programmes, field trips and expeditions.

Deserving technopreneurship initiatives of students are supported by YUTP. In 2018, we moved about 22 projects worth around RM52,000.

YUTP is greatly dependent on PETRONAS, corporations and alumni for support. We are currently developing new funding mechanisms that we hope our donors will find attractive.

As we move forward, we will continue to work towards inculcating a more global outlook through the recruitment of international students and staff, engaging with alumni and partner organisations around the world, and increasing our overseas research collaborations. There are currently over 100 countries represented on our campus. This has greatly enriched our community and enhanced our reputation as an inclusive and rewarding place to study.

I would like to take this opportunity to welcome Datuk Ahmad Nizam Salleh, the Chairman of PETRONAS, who joined us in August 2018 as the Pro Chancellor. I am sure that his advice and inputs will boost our efforts to make UTP more agile, more dynamic and more innovative.

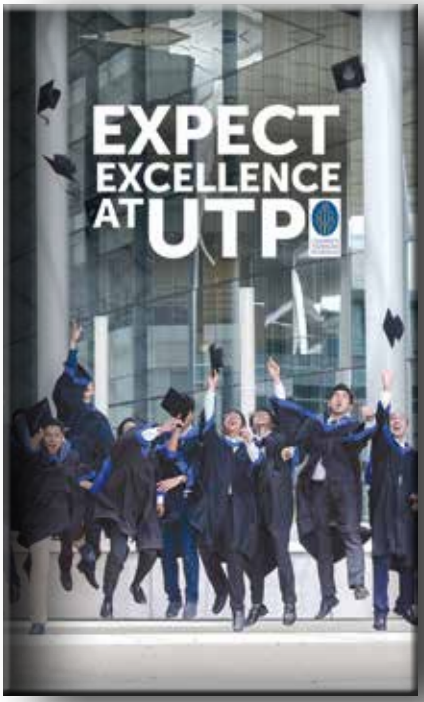
Our successes are based on the commitment and enthusiasm of our staff and students, as well as the support of our alumni and our partners. I would like to extend my thanks to all involved in positioning UTP for a strong and successful future.

PROF DR MOHAMED IBRAHIM ABDUL MUTALIB
Vice Chancellor

RECOGNISED FOR HUMAN RESOURCE EXCELLENCE

The annual flagship Conference & Exhibition 2018 of the Human Resources Development Fund (HRDF), attended by the region's leading human resource professionals, global business leaders and management gurus, recognised UTP for excellence in its human resource management. The university received the Certificate of Excellence in the Employer Category of the HR Development Award.

The Conference theme, "HR Excellence: Change is Fundamental to Survival - Challenge Everything," reflected UTP's approach, not only in human resource but in the entire management of the university going forward.



MOST CREATIVE APPROACH TO STUDENT RECRUITMENT

UTP's marketing booklet – "Expect Excellence at UTP" - won the QS Apple Creative Award for the Best International Student Recruitment Brochure for 2018. The award reflects the importance of creative and compelling designs in effective communications and brand-building.

The award was presented at the QS-APPLE 2018 conference and exhibition themed "Future Universities in The Asia-Pacific: The Changing Face of Higher Education," held in Seoul, South Korea.

THE STORY OF PERAK'S ROYAL LINEAGE

UTP has published a book documenting the rich history and tradition of the sultanate in Perak. The book, "Perak Sultanate: The Historic Royal Glory of Perak Tengah," was produced in collaboration with the New Straits Times Press (NSTP).

The book, which highlights key events that shaped the Sultanate over the past 500 years, was jointly written by Assoc Prof Dr Shahrina Md Nordin, senior director of UTP's Project Management Office, and Datuk Seri Abdul Jalil Hamid, CEO of the NSTP.

The Sultan of Perak, Sultan Nazrin Muizzuddin Shah ibni Almarhum Sultan Azlan Muhibuddin Shah Al-Maghfur-Lah, launched the book in Kuala Lumpur. He commended UTP for its unwavering commitment to preserving the past.

He said the book contained a unique collection of some of the major aspects of the culture and heritage of the Perak Sultanate. It offers a greater understanding of the past and inspiration for the future.

DELIVERING EXCELLENCE

TOP PRIVATE UNIVERSITY

UTP made it to the top 100 universities in Asia. It ranked 99th in the 2019 edition of the Quacquarelli Symonds (QS) Asia University Rankings compared to 101 in the previous year. Since its debut in 2014, the university has leapfrogged 92 places.

Significant improvements were seen in three indicators: papers per faculty, international faculty and inbound and outbound exchange students.

The first indicator provides an indication of the overall research productivity of the university, the second reflects the university's internationalisation and the final indicates the size of each institution's inbound and outbound student exchange programmes.

THE ASIA UNIVERSITY RANKINGS

UTP jumped 36 places to the 114th spot in the 2018 Times Higher Education (THE) Asia University Rankings. The universities are judged across all of their core missions – teaching, research, citations, international outlook and industry income.

UP 88 PLACES IN QS WORLD UNIVERSITY RANKINGS

In the (QS) World University Rankings by Broad Subject of Engineering and Technology 2018, UTP climbed 88 spots to be ranked 145th, the highest jump by the university in all of its rankings so far.

UTP's higher ranking can be attributed to its improved overall scores of 74.2 in academic reputation, employer reputation, citations per paper and h-index citations components.

The QS World University Rankings for this year analysed more than 22 million papers, producing nearly 200 million citations. A total of 1,130 institutions of higher learning were ranked across 48 subjects, creating 14,000 published entries.

2018 MILESTONES

FEBRUARY

THE WORLD UNIVERSITY RANKINGS 114 ASIA

Leaped 33 places from 2017 and is now ranked 114th in the Times Higher Education Asia University Rankings 2018.

MARCH

6 MyRA

Retained its 6-Star Rating under Malaysia Research Assessment (MyRA) as the only private university in Malaysia to be given such recognition.

QS WORLD UNIVERSITY RANKINGS 145 ENGINEERING & TECHNOLOGY

Improved its ranking to 145th for Engineering and Technology in the QS World University Rankings by Subject 2018.

QS WORLD UNIVERSITY RANKINGS 250 ELECTRICAL & ELECTRONIC ENGINEERING

QS WORLD UNIVERSITY RANKINGS 300 COMPUTER SCIENCES & INFORMATION SYSTEMS

QS WORLD UNIVERSITY RANKINGS 150 CHEMICAL ENGINEERING

QS WORLD UNIVERSITY RANKINGS 200 MECHANICAL ENGINEERING

Maintained its standing in the QS World University Rankings by Subject 2018. Electrical & Electronic Engineering and Computer Sciences & Information Systems retained their position within the Top 250 and Top 300 respectively.

MAY

THE WORLD UNIVERSITY RANKINGS 77 EMERGING ECONOMIES

Ranked 77th in the (THE) Emerging Economies Rankings 2018 from its previous ranking of 91st.

QS WORLD UNIVERSITY RANKINGS 521-530

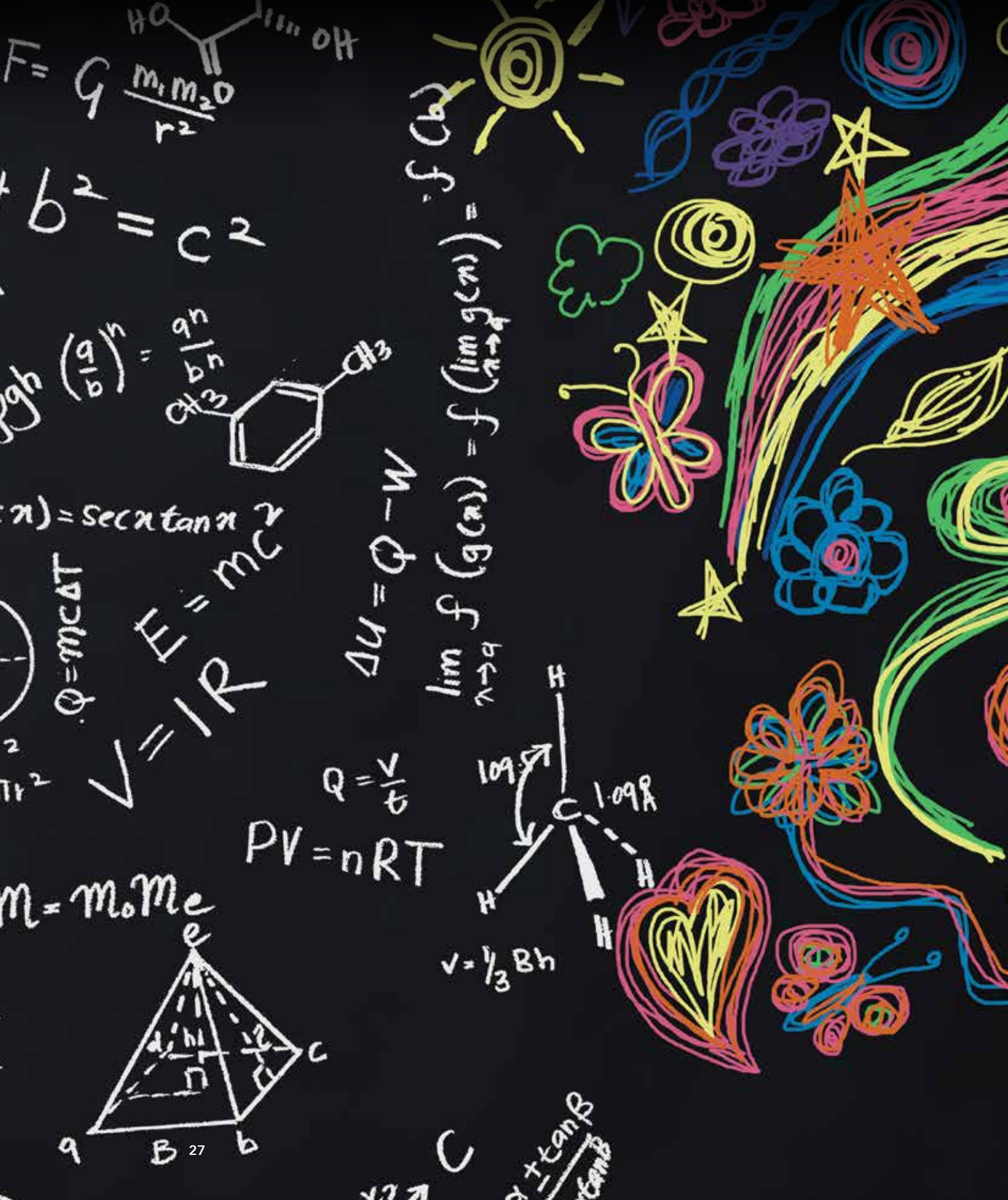
Climbed 80 places into the rank range of 521-530 in the QS World University Rankings 2019 from 601-630.

SEPTEMBER

THE WORLD UNIVERSITY RANKINGS 601-800

Retained its position in the THE World University Rankings 2019 601-800 band.


BUILDING
ACADEMIC
STRENGTH


F= G m1m2 / r2
a2 + b2 = c2
Q=mcΔT
V = IR
E = mc2
ΔU = Q − W
PV = nRT
Q = V/b
m = m0me
V = 1/3 Bh
109.5°
1.09Å
B
27

BUILDING ACADEMIC STRENGTH

NEW IDEAS ARE FERTILISED AND INTERESTING APPROACHES TO LEARNING PIONEERED

UTP is committed to ongoing efforts to distinguish itself from other universities by building a student-centric academic eco-system. Here new ideas are fertilised and interesting approaches to learning pioneered. Our vision is to establish an unparalleled intellectual environment that is rich in content and easily applicable in industry and in the community.

Our emphasis is very much on experiential learning. Science, Engineering, Technology and Mathematics (STEM) are central to all teaching and knowledge building. However, business, entrepreneurship and commercialisation are elements worked into the core curriculum. During the year, the university continued to place a strong emphasis on research and innovation.

UTP has always believed in equity and universal access to learning. All students with academic ability and potential, regardless of background, can access UTP's academic, research and digital facilities. This is especially important as 40 percent of its student population is from financially vulnerable families.

Our approach is one of building equity into all forms of academic pursuits. What distinguishes us as an institution of higher learning is that we use obstacles to open 'windows of intelligence'. By working to support our financially and socially disadvantaged students and understanding their particular challenges, we are able to design our academic programmes with a high degree of clarity. UTP's academic programmes are both pragmatic and aspirational.

Pushing the Boundaries of Knowledge

In 2018, we geared ourselves up towards having programmes that were much more marketable with high levels of student appeal.

In the interests of effective student learning we changed to a three-semester year aimed at streamlining the undergraduate and foundation courses. The implementation of Student Learning Time (SLT) further enhanced the effectiveness of our programmes.

We also introduced three new programmes during the year: Masters in Information Systems, PhD in Information Systems and the Undergraduate Degree Programme in Computer Science. Our challenge was to change mindsets across campus.

During the year we worked hard at increasing staff and student comfort levels with available technology. The benefit of optimising the use of technology in teaching and learning is already evident in the remarkable increase in staff and student intellectual output.

Our approach is one of building equity into all forms of academic pursuits. What distinguishes us as an institution of higher learning is that we use obstacles to open 'windows of intelligence'.

However, the real opportunity that UTP offers is not just the ability to work with some of the best people in the field but, more importantly, to become part of a vibrant academic eco-system. This gives students a chance to put ideas into conversation with other points of view, other experiences, and different methodologies across a broad range of disciplines.

Several initiatives like CETaL and Garage 21 were expanded during the year to ensure that there are always seamless learning opportunities among lecturers, facilitators and students. We are happy to report that we witnessed numerous instances of exciting and spontaneous discoveries made that took UTP to the cutting edge of academic excellence.

2018 saw the university working hard at getting students, lecturers and sponsors on board with a new implementation strategy, one that enriches student experiences and strengthens teaching and learning. To this end we put in place several sessions that helped heighten awareness among lecturers. They were urged to not just focus on imparting knowledge but to enhance the creation of a cadre of students who are themselves capable of contributing to the existing body of knowledge to become thought leaders.

Mix and Match

An interdisciplinary approach to learning resulted in many positive outcomes. What is taking shape at UTP is a new way of approaching teaching, learning and training the next generation. We find ways and means for students and lecturers to "connect fields and ask questions that can only be answered at the intersection of disciplines".

UTP's initiatives during the year demonstrated that the synergies derived from 'conversations' between colleagues from a spectrum of different areas of interest strengthened. Quantitative fields like mathematics, statistics, and engineering benefitted from collaboration with those in content development, business and enterprise. Going forward we look to harnessing vast quantities of data to examine fundamental questions in areas such as AI and robotics.

The 'sage on stage' approach to teaching STEM courses is fast being phased out. In its place we have lecturers employing more active learning methods. Engaging students through group activities and encouraging independent, self-directed inquiry. Working on the premise that each student is unique with innately different abilities, UTP directs lecturers to play more pivotal roles to enhance competency among students and build leadership skills.

PROF DR HILMI MUKHTAR
Deputy Vice Chancellor, Academic

HIGHPOINTS IN THE ACADEMIC YEAR 2018

Programme Marketability
UTP's enhanced and harmonised academic programmes found greater appeal among both local and international students, with recruitment numbers increasing year on year.

Online Distance Learning
Preparations have begun to introduce online distance learning. By 2020 UTP will be offering Master's programmes online. In this way, it will be able to broaden its student base and widen appeal for UTP's unique programme offering.

RE-INVENTING THE FUTURE WITH ESTCON 2018

THE THEME SCIENCE, TECHNOLOGY AND HUMANITIES: REINVENTING THE FUTURE, FLOWED THROUGH 10 CONCURRENT CONFERENCES, OFFERING THE MOST COMPREHENSIVE AND UP-TO-DATE CONVERSATION ABOUT THE OPPORTUNITIES AND CHALLENGES OF INDUSTRY 4.0.

ESTCON brought together a community of over 1,000 international and local experts, academics, businesses, scientists, engineers, government officials and other interest groups and individuals in an effort to understand the potential impacts and implications of converging technologies.

It looked at the impact of rapidly advancing technology on innovation, manufacture, trust and cyber-security, talent, the future workplace, consumers and sustainable prosperity.

The four keynote speakers included Dr David Wood, Chair of London Futurists and a pioneer of the smartphone industry. He offered critical insights and perspectives on how the cyber and physical worlds are merging and urged that planning for the radical change lying ahead, should be happening today.

Prof Datuk Dr Asma Ismail, head of the Academy of Science Malaysia (ASM) shared some of the strategies and policy interventions being designed by ASM to help Malaysia navigate current and future challenges which she hoped might "future proof the nation."

Participants at ESTCON 2018 were the first to benefit from the insights shared by the man who helms Malaysia's standards body, SIRIM Berhad. President and Group CEO Prof Ir Dr Ahmad Fadzil Mohamad Hani reviewed what the standardisation experts say about the future and Industry 4.0 in terms of smart manufacturing.

Nobel prize-winning economist and Founder of the Grameen Bank Prof Mohammad Yunus, ended the congress with his keynote on "A World of Three Zeros" – the new economics of zero poverty, zero unemployment and zero net carbon emissions. This reflected his proposal to fixing the economy and environment at the same time. It's what he describes as businesses existing to solve human problems rather than existing solely for profits.

The event also saw the signing of an agreement to forge stronger ties between four Malaysian government-linked universities and five Indonesian institutions of higher learning.

More than 700 papers were presented at the conference covering oil and gas, engineering, energy, information sciences, advanced materials and the humanities. Plenary speakers and forum sessions discussed the impact of Industry 4.0 on higher education and on future students.

A highlight of the conference was the Innovation Pitching programme which allowed innovators and inventors to pitch new technologies to potential investors for commercialisation.

THE FUTURE FOR HIGHER EDUCATION

The university's Academic Advisory Council (AAC) met in August 2018 to discuss the emerging future and sustainability of higher education. Among the members present for the first time were Nobel Laureate Prof Muhammad Yunus, Founder of the Grameen Bank and the Yunus Centre, and Futurist Dr David Wood of UK Management Consulting.

The Council provided valuable insights and inputs on the strategic direction for future universities in preparing well-rounded, workforce-ready graduates in the face of the changing dynamics. Globally, academic institutions across the world were developing contemporary approaches to teaching and learning.

The emphasis was on cross-disciplinary education, industry experience, lifelong learning programmes and a healthy dose of co-curricula activities.

While the focus on employability was vital given industry expectations, it was also critical to inculcate the right mindset and capabilities that would enable graduates to use technology and innovation in developing services and solutions to address social challenges and improve lives in the communities where they worked.

NOBEL LAUREATE ROBERT LAUGHLIN INSPIRES UTP STUDENTS

Professor Robert B. Laughlin, winner of the 1998 Nobel Prize in physics, took 2,000 students and professors at Universiti Teknologi PETRONAS (UTP) on an inspiring journey into the world of scientific exploration and discovery.

He encouraged students to pursue their dreams, regardless of the challenges they may have to overcome. "Great people come from all walks in life," he said. "Stay true to yourself, stay focused, and you will succeed."

Laughlin's visit was part of the Honeywell Initiative for Science & Engineering (HISE) which aims to encourage students to pursue careers in science, technology, engineering and math (STEM).

UTP's collaboration with Honeywell reflects the university's strong commitment to creating and sharing new knowledge that promotes a lifelong desire among students to learn, discover and innovate. The opportunity to learn from a Nobel laureate and interact with professional engineers gave students an important insight into a working world where success comes not just from their knowledge of STEM subjects, but what they are able to do with that knowledge.

Great people come from all walks in life.Stay true to yourself, stay focused, and you will succeed.

Prof Robert

NATIONAL BOOK AWARD FOR UTP PRESS

UTP Press won a National Book Award 2018 in the Best General Book (Construction Category) for publishing "Design of Reinforced Concrete Elements to Eurocode 2" written by Associate Professor Dr Bashar S. Mohamed.

The award is held annually to recognise local authors, publishers, editors and book designers across the country.

Encik Mohd Ashraf Mohd Ibrahim, a Principal Engineer from Project Delivery and Technology Division, PETRONAS giving an Adjunct Lecture on Process Safety and Operational Excellence for Process Safety and Loss Prevention on 22 November.

BRIDGING THE EMPLOYABILITY GAP

A top priority at UTP is to produce career-ready graduates by equipping them with the skills and attributes that will enhance their employability and build up their entrepreneurial abilities. The university has established an active community of adjunct lecturers who play a pivotal role in adding value to the work being done by its faculties and departments to maintain industry relevance and awareness of current developments in the workplace.

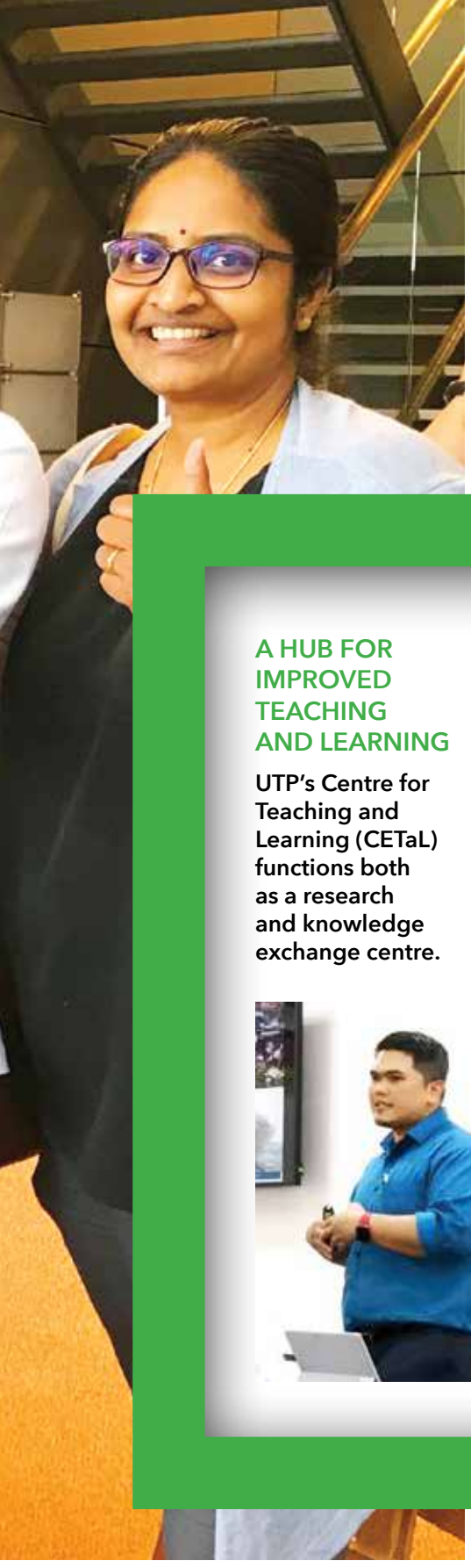
The programme has helped UTP to develop extensive networks and strategic partnerships with a wide range of professionals and businesses.

Currently, UTP has 172 adjunct lecturers and professors who are helping to integrate industry experience and practice into the curriculum and provide students with a better understanding of real-life situations in their various fields of expertise. These include oil and gas companies as well as communications consultancies. Among these are top companies like PETRONAS, TechnipFMC, Halliburton and Transwater as well as homegrown companies, e2B Consulting, Tanjung Pinang Development (TPD) and NanoVerify Sdn Bhd, to name a few.

UTP PRIORITISES RESEARCH AND PUBLICATIONS

On May 6th 2018, UTP launched a book "My Journey into Perak: Mining the State History" by Associate Professor Dr Azrai Haji Abdullah, a lecturer in UTP's Department of Management and Humanities. The book was initially a PhD thesis which was completed in 2007. It has been recognised as making an important contribution to not just Perak but to Malaysia in general.

The early reviews of the book praised it for the way it 'brought to life' Perak's socio-economic development from earliest times to the present day. In 2018 90% of our lecturers receiving research grants were chosen as Principal Investigators in several cutting-edge research projects. Books such as this publication will add to the growing repository of knowledge and will become part of the research 'treasury' of the nation.



A HUB FOR IMPROVED TEACHING AND LEARNING

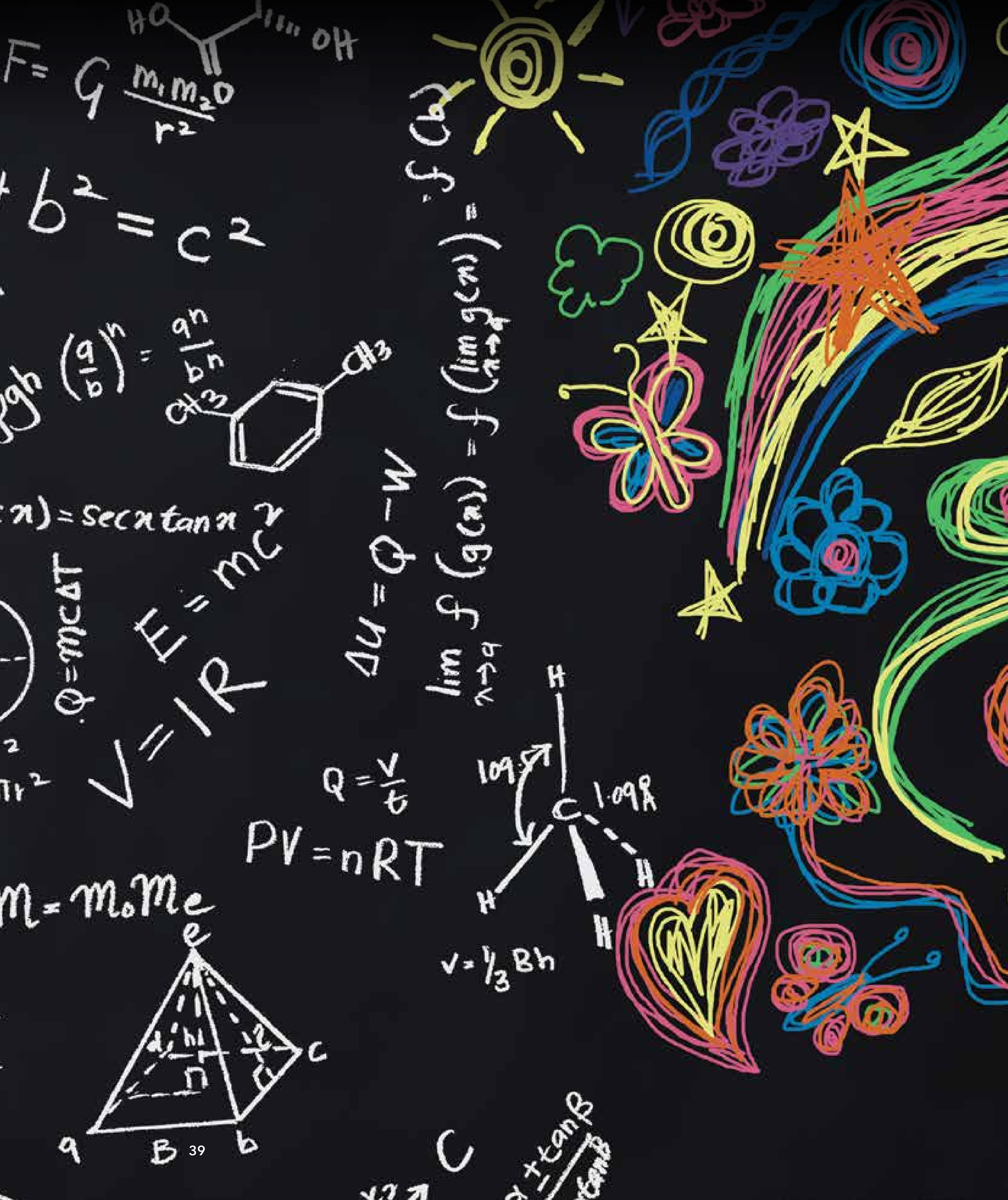
UTP's Centre for Teaching and Learning (CETaL) functions both as a research and knowledge exchange centre.

CETaL turned to well-accepted education psychology which it viewed in four constructs. The first is knowledge, which is to know a subject and to apply it. Second, the student, whom the educator must understand intimately in order to disseminate knowledge. Third, assessment, so that students get feedback all year instead of only at grading time. New tools – apps, games, software – give students fairly instant assessments and an insight into themselves as well. And fourth, community. Students are offered high comfort levels to interact, to speak up in class and to one another.

The idea is to simulate real-life education and learning processes by way of "mock-up" classrooms. During the year UTP made available 11 mock-up Flipped Classrooms in Block 13. By 2019 a total of 30 Flipped Classroom will be in place. This is consistent with the university's forward-looking teaching and learning methodology. With "think, pair, share", a typical class forces students to engage with one another, even as a lecture progresses. Their projects have enough complexity for challenging group work.

In problem-based learning, students figure out on their own what they need to read up to solve a problem. Lecturers facilitate this process by planning field trips or inviting an external expert. Sometimes lectures are delivered online before students go to class and group activities are an extension of that lecture to deepen understanding and to build competence.

RESEARCH WITH IMPACT



PV=nRT
E=mc²
V=IR
Q=mcΔT
ΔU=Q−W
Q=V/t
v=⅓Bh
1.09Å

RESEARCH WITH IMPACT

TO STRENGTHEN OUR RESEARCH AND INNOVATION CAPACITY AND CAPABILITY IN SCIENCE, ENGINEERING AND BUSINESS.

In 2018, we continued to strengthen our Research and Innovation capacity and capability in science, engineering and business. This formed the basis on which we hope to continue building our research future.

At UTP, research and innovation is seen as fundamental to shaping students to become future workforce-ready graduates. We seek to ensure that all research and education is underpinned by a deep understanding of what it essentially takes to become high-calibre individuals who are industry-savvy.

During the year, we kept working towards a greater level of acceptance of academic research among enterprises and the corporate sector. The Vice Chancellor and members of faculty used every opportunity to interface with the different stakeholders and demonstrate that UTP's research projects and capability are a valuable cache of information that enterprises can depend on for use in their crucial processes and operations.

In keeping with the university's approach to act courageously and innovatively when pursuing new opportunities, we forged strong working relationships with other institutes of higher learning internationally.

During the year UTP continued to journey towards realising phase 5 of its strategy called Global Prominence. We are happy to report that the university is on-track towards making this premier university globally relevant.

In Asia, the university kept a sharp focus on Indonesia, Philippines and countries in the Indo-China region such as Myanmar, Thailand, Cambodia and Vietnam. The university also expanded its footprint to the Middle East specifically Oman, Qatar, Saudi Arabia and United Arab Emirates.

Significant collaboration efforts were reflected in the formalisation of the Malaysia-Indochina Industrial Institutional Initiatives (MIIII), the Philippines-Malaysia Industrial Institutional Initiatives (PMIII), the Indonesia-Malaysia Industrial Institutional Initiatives (IMIII) and the Middle East-Malaysia Industrial Institutional Initiatives (MeMIII).

This ensured that research undertaken continues to be industry relevant. It also makes it possible for research projects to remain sustainable even in challenging times.

UTP's research projects and capability is a valuable cache of information that enterprises can depend on for use in their crucial processes and operations.

UTP will look for more varied revenue streams by diversifying and intensifying our consultancy and commercialisation capability.

During the year, UTP engaged with industry, researchers from different disciplines and even public stakeholders. This approach remains the basis upon which UTP and its partners seek to maintain best practice in higher education. This intertwining and moving towards a shared vision helped address complex challenges better.

There was a marked improvement in the way our faculty and students adopted a multidisciplinary approach to research. Only by bringing together expertise from different disciplines can we solve today's challenges of a rapidly changing environment and enable us to navigate the complexities of Industry 4.0.

Efforts were made during the year to embed our educational experience in a lively research-led programme design. Students learnt alongside researchers who were experts in their field to gain practical and entrepreneurial experience.

Industry engagement is vital part of this process. In 2018, a total of 23 institutions across industry and public sector agencies engaged in B to B ventures aimed at building a viable and sustainable collaboration ecosystem. Interestingly, the B to B partnerships helped facilitate technology development and enhance technology readiness levels.

We also intensified efforts during the year to work closely with industry experts to become a reliable and innovative research partner and technology provider of choice.

Moving forward, UTP will look for more varied revenue streams by diversifying and intensifying our consultancy and commercialisation capability. We will steer UTP towards becoming a self-sustainable university. To achieve this the university will put in place further measures to boost performance in consultancy and commercialisation.

In 2019 UTP will continue to seek and seal collaborative research that combines complex real world business challenges with academic enquiry. Commercialisation will remain at the heart of UTP's research and innovation ecosystem.

UTP aims to study global megatrends that point to a world of shifting realities. It is predicted that technology breakthroughs could create entire paradigm shifts and make us reconsider how we engage with our different stakeholders. We have to be prepared for all our tomorrows today.

PROF IR DR MOHD SHAHIR LIEW
Deputy Vice Chancellor,
Research and Innovation

STRENGTHENING THE RESEARCH AGENDA

- In 2018, a total of 33 agreements signed with Indonesia, 6 with the Philippines and 1 with Saudi Arabia.
- Successfully secured an international fund of RM 3.6 million with 30 percent coming via a partnership strategy.
- Laid the groundwork for commercialisation of UTP's home-grown technologies that could compete in the international market. UTP-developed technologies that gained most traction were the ones that addressed water and energy security for communities in remote areas.

PLATFORM TECHNOLOGY TRACK

At the International Conference on Science, Management, and Engineering (ICSME) held from October 21-24, 2018, Universiti Teknologi PETRONAS (UTP) and Indonesian Strategic Management Society (ISMS) brought together different stakeholders to discuss a wide range of topics.

In keeping with the conference theme "The Future is Now – How Strategy and Technology Determine Winners of Tomorrow," participants looked into the future of science, technology, research and innovation. Topics that elicited widespread discussion covered conversion, efficiency and renewable energy development.

Spotlighted were lean, smart and sustainable energy systems. The focus was also on energy finance, energy policies and regulation as well as the mitigation of energy pollutants.

The importance of public-private partnership for energy development, innovation, strategy formulation and execution was given special emphasis. Leadership in the area of the new and emerging technologies led to serious debate and discussion. Given the realities of IR 4.0, disruptive technology and its ramifications was given great prominence. Management experts at the conference also extrapolated scenarios of business model platforms. This helped build awareness of what the new technology landscape will look like.

Discussions on cutting-edge research led to an exciting exchange of ideas on the extent of readiness of the Asia Pacific to become globally competitive in terms of strategies and technology. The conference deliberations found what was needed was high quality research produced by academicians, practitioners, and researchers which were submitted and published at this event. This important conference brought together scholars and practitioners to challenge current strategic management concepts by addressing digitalisation, innovation, disruption and renewable energy to ensure competitive advantage.

Selected outstanding papers were reviewed and published in indexed journals such as Scopus, Clarivate, and Web of Science: Strategic Planning for Energy and the Environment, Academy of Strategic Management Journal, International Journal of Energy Economics and Policy, Asia Pacific Journal of Marketing and Logistics, and Asia Academy of Management Journal.

The importance of public-private partnership for energy development, innovation, strategy formulation and execution was given special emphasis.

FROM PEST TO PROFIT

Asia's padi farmers don't get early warnings for devastating attacks by the Golden Apple Snail. Instead, they rely on signs that come at snail mail pace, in fact after the damage is done. But that's going to change.

UTP's Mazeyanti Mohd Ariffin and her team at the Faculty of Science & Information Technology have developed Preditack, a proprietary device that can ultrasonically predict a snail attack. With a warning, the farmer can zoom in at the right moment to save the crop.

The Golden Apple Snail was brought from South America to Asia in the 1980s as a new high protein food source for humans but instead it became a dreadful invasive pest, especially to rice. The snails rip off young, emerging plants from their stems with a voracious appetite. They are capable of devastating newly-planted rice fields overnight and causing yield losses as high as 50% as they spread through rivers, streams, reservoirs and canals.

Natural predators include ants, ducks, rats and birds but the Golden Apple Snail reproduces at the speed of light. Preditack is an ecological solution for farmers to get rid of the snails speedily and with some ingenuity, perhaps harvest snails for the restaurant trade and profit from a pest.

The snails rip off young, emerging plants from their stems with a voracious appetite.

The android app, now available on Google Play, delivers vocal learning exercises any time and anywhere.

STUTTER NO MORE

Not every stutterer can get to a speech therapist regularly enough to make a difference. So why not bring therapy-style exercises to the stutterer via an engaging smartphone app. That's exactly what Dr Noreen Izza Arshad of UTP's Faculty of Science and Information Technology did in a collaboration with KPerak Inc, a state-linked ICT company. The android app, now available on Google Play, delivers vocal learning exercises any time and anywhere.

Through the app, the speech pathologist can monitor and track progress, and provide feedback. The many exercises within Stutter Manager were developed from face-to-face speech therapy techniques and can be adjusted to suit a stutterer's progress. Users can watch and listen to themselves speak which helps them identify difficult words that require extra practice. And, ever so gently, develop the confidence to speak to others and in public.

POWER BY WORMS

We know that compost is the universal soil improver. Most of us know about vermicompost – the super quality product created by armies of hungry worms which have had a go at regular compost. Now, what if we took it a notch higher on the waste-to-wealth totem pole and drew on vermicompost to create electricity?

UTP's Azry Borhan and his team extracted humic acid from vermicompost and with few additives packed it into vermibatteries that could generate 0.31-0.44V. Think of all those mighty landfills quietly decomposing into potential energy. With a patent already in hand, this is expected to become a true green battery.

THE CALL OF NATURE

An innovative design to efficiently treat sewage in an eco-friendly way for communities in remote locations is expected to be a game-changer in the small industry sector as well.

The Integrated Suspended Growth BioReactor (i-SGBR) developed by Professor Shamsul Rahman Mohamed Kutty of UTP's Department of Civil & Environmental Engineering began as a solution for rural communities and eco-tourism. But it would fit right in at small factories whose process wastewater contains organic biological waste, like food processing.

The i-SGBR's compact design keeps the footprint small. For example, a reactor to serve a population of 500 would need a 4.5m diameter concrete tank which will house all its pumps and gadgetry.

The i-SGBR treats wastewater as soon as it receives it, keeping relevant processes aerobic. A signature feature is a sludge digestion system which converts the final residue into a safe material to be released into the environment. The i-SGBR is expected to work well on oil rigs, small islands and at isolated highway stops.

AWARD-WINNING RESCUE MONITOR

A smart monitoring system developed for rescuers to monitor their physiological activity during rescue operations won the Research & Business Partnership Award worth RM130,000 at the Malaysian Commercialisation Year (MCY) 2018.

MCY is organised annually by the Ministry of Energy, Science, Technology, Environment & Climate Change (MESTECC) to showcase commercialisation initiatives of local products. Out of 212 products submitted in 2018, only 27 products were shortlisted for the MCY Award.

The inventor of the Rescue-I Monitoring System was Assoc Prof Dr Ahmad Kamil Mahmood. UTP's industry partner for the product is Semarak Motivasi Sdn Bhd.

The system has been successfully tested by the Fire and Rescue Academy of Malaysia. This product will boost confidence among rescuers even in high-risk situations.

FIGHTING FIRE

A tiny flickering spark can escalate into an uncontrollable blazing inferno in minutes, sometimes enabled by construction materials like those in walls and doors which can transfer heat so rapidly that people have no time to escape.

Can flames and fumes be held at bay? Yes, for up to two hours to be exact. An innovative paint product developed by UTP's Professor Dr Faiz Ahmad is designed to decrease heat transfer and its purpose is to delay the catching, or spreading, of fire. It minimises collapsing structures and toxic fumes, and creates more time for the evacuation of people and assets.

This intumescent fire retardant paint is expected to radically change the way fire is controlled inside a structure and bring a sense of safety at an affordable cost.

CHAMPIONING COST EFFECTIVE OFFSHORE DEVELOPMENT

How we can make future offshore development more cost competitive in the global energy market? This was the challenge posed to universities in the Offshore Technology Conference (OTC) Asia 2018 University R&D Showcase.

UTP came up with the winning project, "Poseidon: An Autonomous Structural Health Monitoring System for Offshore Facilities". Not only did the project comply with the theme, but the technology, invented by Prof Ir Dr M Shahir Liew and proposed by the team that represented Prof Liew and UTP, was relevant to the current oil and gas trends of automation, unmanned facilities and data analytics to support decision making.

This was a major achievement for UTP as it had to compete against top-ranking world universities such as National University of Singapore, Kyoto University Japan, Monash University Australia, University of Western Australia and Chulalongkorn University Thailand.

The OTC Asia 2018 University R&D Showcase and Challenge was held in conjunction with OTC ASIA 2018. It provides universities the opportunity to share with attendees their current and planned R&D projects that are relevant to offshore technology and collaborate with industry professionals to develop innovative ideas to address challenges facing the offshore energy industry.

The UTP team included Lee Hsiu Eik, Muhammad Imran, Dr Ahmad Mahamad Al-Yacouby and Ir Lim Eu Shawn (postgraduate and researchers from Offshore Engineering Centre UTP).

It was supported by key industry professionals – PETRONAS' Malaysia Petroleum Management Head of Planning and Control Asset Decommissioning Ir M Nasahie Akbar Ali, PETRONAS Group Technical Solutions Civil Technical Custodian Ir M Nazri Mustafa, IEV Malaysia Sdn Bhd Managing Director Juzer Norman and Merit Composites Sdn Bhd Technical Director Jeffrey de Jong.

AWARDED FOR PRODUCING HIGH IMPACT ARTICLES

UTP's researchers did their university proud, putting it in the spotlight as the only private university recognised as a publisher of high impact articles in the various fields most sought after by researchers globally. This achievement was recognised at the Malaysia Research Star Awards (MRSA) 2018 in Sepang.

The data used for MRSA 2018 is based on citation of research articles published in quality journals indexed in WoS by Clarivate Analytics and Scopus by Elsevier the global leader in providing trusted insights and analytics to enable researchers to accelerate discovery. This collaboration, with the Ministry of Education, is in its fourth year.

UTP also received an award for "Research and Innovation Excellence". This award is conferred on one research university and one non-research university for excellence in commercialised research.

NATIONAL ECO AWARD FOR UTP LECTURER

Dr Subarna Sivapalan, Head of the Centre for Social Transformation for Sustainable Lifestyles, was named the National Eco-Lecturer for 2018 under WWF Malaysia's National Eco-Champions Awards programme.

She has been an active advocate for sustainable living and implemented several projects both on and off campus. As Co-Chair of the National Education for Sustainable Development Work Group hosted by WWF Malaysia, Dr Subarna has improved the lives of indigenous communities by forging close collaboration with Camfil Malaysia.

Her next objective is to develop a set of indicators aligned to the UN's Sustainable Development goals that can be used by higher education institutions who want to evaluate or integrate eco-curriculum development into their eco-campus blueprint.

Dr Subarna has improved the lives of indigenous communities by forging close collaboration with Camfil Malaysia.

To develop a set of indicators aligned to the UN's Sustainable Development goals that can be used by higher education institutions who want to evaluate or integrate eco-curriculum development into their eco-campus blueprint.

MERDEKA AWARD FOR UTP RESEARCHER

Postgraduate student Aishah Ismail received the 2018 Merdeka Award Grant for International Attachment. The award will support her research efforts to develop a screening tool for early stroke detection.

Aishah is currently a PhD candidate at UTP's Centre of Intelligent Signal and Imagining Research (CISIR). She is working on identifying stroke biomarkers through examining ocular blood flow using Ocular Imaging and Laser Speckle Flowgraphy.

The results of her findings so far include the eye images at different stages. These can be enhanced by implementing deep learning to grade the severity levels of stroke.

Aishah will be undergoing her attachment at Massachusetts Institute of Technology at Cambridge, USA.

The award was introduced in 2012 to nurture promising young Malaysians and support them in their journey towards research excellence.

These can be enhanced by implementing deep learning to grade the severity levels of stroke.

UTP'S GOLD RUSH!

SIRIM INVENTION, INNOVATION & TECHNOLOGY EXPO – 5 GOLD MEDALS

UTP participated in the SIRIM Invention, Innovation & Technology Expo (SI2TE) 2018 which was held on the 17 & 18 April 2018. This event was held at Advanced Materials Research Center (AMREC), SIRIM Berhad,

Gold

INVENTOR
Assoc Prof Dr Bashar S. Mohammed
PRODUCT
Green Nano-silica Modified ECC

INVENTOR
Ir Dr Suhaimi Hassan
PRODUCT
Development of Potential Solid Fuel Briquette from Poultry Sludge Waste in Malaysia

INVENTOR
Assoc Prof Dr Ahmad Majdi Abdul Rani
PRODUCT
Spiral Track Gauge PDC Bit

INVENTOR
Prof Dr Fabrice Meriaudeau
PRODUCT
Smart Veins Locator with depth and thickness information

Gold + Best Woman Inventor

INVENTOR
Prof Ir Dr Suzana Yusup
PRODUCT
Natural hydro-low-transition-temperature mixture (NH-LTTM) as sustainable green solvent for biomass delignification

INVENTOR
Dr Mior Azman Meor Said
PRODUCT
Thermal Electrical Generator System (TEGS) for Small Passenger Car

INVENTOR
Assoc Prof Dr Khamaruzaman Wan Yusof
PRODUCT
24 hours constant drinking water production using a solar still with a solar power system

INVENTOR
Dr Thar Mohammed Albarody
PRODUCT
Ball Socket Pipeline Jacket for Subsea flowlines Protection Systems

INVENTOR
Dr Montasir Osman
PRODUCT
Optimisation Numerical Tool for Semisubmersible Mooring Lines Parameters

INVENTOR
Assoc Prof Ir Dr Mokhtar Awang
PRODUCT
WC-DLC Tool

INVENTOR
Assoc Prof Dr Wan Fatimah Wan Ahmad
PRODUCT
Autism Social-Aid

INVENTOR
Assoc Prof Ir Dr Rosdiazli Ibrahim
PRODUCT
General neural network tool for fast and efficient industrial data analytics

Kulim, Kedah and supported by the Ministry of Science, Technology and Innovation (MOSTI), Malaysia.

UTP walked away with five Gold Medals in the SIRIM Invention, Innovation & Technology Expo 2018. It also won 13 silver and six bronze medals from 24 products submitted. It was also declared the OVERALL winner (SI2TE 2018 Special Award) in the competition which included participation from Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), Universiti Malaysia Perlis (UniMAP) and other Institutions of Higher Learning.

In addition, special congratulations goes to Prof Ir Dr Suzana Yusup for being awarded the Best Woman Inventor Award.

Silver

INVENTOR
Prof Ir Dr Muhd Fadhil Nuruddin
PRODUCT
Plastic & Paper Waste Geopolymer Brick (ppwGeoBric)

INVENTOR
Prof Dr Hilmi Mukhtar
PRODUCT
A Novel Asymmetric Mixed Matrix Nanofiltration Membrane (MMM) for Water Purification

INVENTOR
Mohd Redzuan Ramsaid
PRODUCT
Human-Powered Washing Machine

INVENTOR
Azry Borhan
PRODUCT
Vermicompost-Derived Biobattery

INVENTOR
Mohamad Azhan Ab Rahim
PRODUCT
Palm Kernel Shell as Additive in Drilling Fluid

INVENTOR
Chua Siong Chin
PRODUCT
Sesbania Seed Gum, natural Coagulation-Flocculation

Bronze

INVENTOR
Assoc Prof Dr Lau Kok Keong
PRODUCT
CUAS: Compact Ultrasonic Absorption System for efficient gaseous separation

INVENTOR
Prof Dr Shamsul Rahman Mohamed Kutty
PRODUCT
Integrated Suspended Attached Growth Bioreactor System (I-SAGS)

INVENTOR
Prof Ir Dr Muhd Fadhil Nuruddin
PRODUCT
Microwave Electromagnetic System for Geopolymer Concrete testing (EMgeoNDT)

INVENTOR
Yeong Yoon Chow
PRODUCT
Facepass: A Facial Recognition-based Ticket Scanning System

INVENTOR
Dr Mohamed Shuaib Mohamed Saheed
PRODUCT
Highly Selective PDMS-CNT Based Absorbent for Oil Removal From Water

INVENTOR
Dr Chew Thiam Leng
PRODUCT
Rapid Synthesis of Zeolite RHO with 75% Reduction in Synthesis Time Via Ultrasonic-Assisted Hydrothermal heating

ICOMPEX 2018 GOLD AWARD

A tiny turbine designed by UTP engineers spins energy from rivers for people in remote villages and settlements in rainforests with minimal disruption and cost.

The R3PH, or Rural Run River Pico Hydro, won the gold medal at ICompEX'18, the annual national innovation and invention competition through exhibition organised by Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS) in Jitra, Kedah.

This was the third accolade for R3PH. The first was an ITEX 2015 gold medal. The second was the Best of the Best Award at the SIRIM Invention, Innovation & Technlogy Expo in 2017.

Not one but three medals and here's why: River power is to eventually work side by side with solar and wind power making it a true source of renewable energy. And, the R3PH is destined to open up a whole new frontier in communications for our forest dwellers because it is to be equipped with remote monitoring systems.

R3PH was designed by a UTP team led by mechanical engineer Mohd Faizairi Mohd Nor, a lecturer at the Faculty of Engineering. The other members were Ir Dr Suhaimi Hassan (Energy), Faizal Ahamd Fadzil (IT), Dr Mohd Azman Zakariya (Comm), Dr Gunawan Witjaksono Djaswadi (Sensor), Dr Huzein Fahmi B Hawari, Dr Mohd Haris Mohd Khir (Sensor), Hj Kamal Ariff Zainal Abidin (Reliability) and Dr Taib Ibrahim (Electrical Motor).

It was supported by the Royal Belum-Temengor Project team under the AIOT group from Institute of Transport Infrastructure for Smart Mobility headed by Prof Dr Abd Rashid B Abd Aziz.

SEVEN GOLDS AT ITEX

All 13 products submitted by UTP were judged best of the best in the 29th International Invention, Innovation and Technology Exhibition (ITEX) 2018. Seven products won gold medals and the other six bagged silver. The event featured more than 1000 inventions from 23 countries.

ITEX is an international platform for local and international inventors to showcase their inventions and innovations, and opens up opportunities for commercialisation of unique products and ideas by potential investors.

The gold medalists included Mohd Syaifuddin Mohd, who also walked away with the IENA 2018 Special Prize for his Solar Powered System for Interior Temperature Regulation of Parked Vehicles.

Gold + Special Prize Of IENA 2018

INVENTOR
Mohd Syaifuddin Mohd
PRODUCT
Solar Powered System for Interior Temperature Regulation of Parked Vehicles

Gold

INVENTOR
Prof Ir Dr Suzana Yusup
PRODUCT
CO_2-Assisted Hydrothermal Liquefaction of Biomass for Phenolic-rich Bio-oil Production

INVENTOR
Assoc Prof Dr Bashar S. Mohammed
PRODUCT
Geopolymer Interlocking Rubberized Bricks

INVENTOR
Assoc Prof Ir Dr Masri Baharom
PRODUCT
Single-cylinder Air-cooled Gasoline Crank-Rocker Engine

INVENTOR
Assoc Prof Dr Khamaruzaman Wan Yusof
PRODUCT
"OFAM-B MODULE" Optimized Flow Attenuation Module in BIOECODS for Flood Mitigation

INVENTOR
Assoc Prof Dr Zahiraniza Mustaffa
PRODUCT
Smart Application for Vehicles Stability in Floodwaters

INVENTOR
Dr Cheab Sovuthy
PRODUCT
Microwave Multiband Filter (uMF)

Silver

INVENTOR
Assoc Prof Ir Dr Hisham Mohamad
PRODUCT
Smart Geo-Pipe

INVENTOR
Assoc Prof Dr Aamir Saeed Malik
PRODUCT
EEG based Long-Term Memory Grading System

INVENTOR
Assoc Prof Dr Wong Peng Wen
PRODUCT
Chained-Function Waveguide Filter for 5G and Beyond

INVENTOR
Assoc Prof Dr Bawadi Abdullah
PRODUCT
Ceria Code

INVENTOR
Dr Lavania Baloo
PRODUCT
Seaweed as Biocomposite in Green Construction Material

INVENTOR
Dr Mohamed Shuaib Mohamed Saheed
PRODUCT
Hybrid PDMS-CNT Absorbent for Oil Spill Clean Up

Gold + Best Invention Award & Special Award By IENA

INVENTOR
Assoc Prof Ir Dr Hisham Mohamad
Development of Distributed Fibre Optic
PRODUCT
Inclinometer for Landslide and Geotechnical Application

Gold

INVENTOR
Assoc Prof Dr Zahiraniza Mustaffa
PRODUCT
Smart Application for Vehicles Stability in Floodwaters at Low-Lying Roads

Silver

INVENTOR
Assoc Prof Ahmad Mustafa Hashim
PRODUCT
Interlocking Concrete Unit-V (ICUV)

INVENTOR
Assoc Prof Dr Khamaruzaman Wan Yusof
PRODUCT
Optimised Flow Attenuation Module in BIOECODS for Flood Mitigation (OFAM-B Module)

Bronze

INVENTOR
Dr Muslich Hartadi Sutanto
PRODUCT
Portable Testing Device for Interface between Pavement Layers

INVENTOR
Assoc Prof Dr Khamaruzaman Wan Yusof
PRODUCT
Impacting Inadequate Drainage (INDRA)

10TH MALAYSIA ROAD CONFERENCE INVENTION AND INNOVATION COMPETITION – 2 GOLDS

Five out of the six products submitted for the Malaysian Road Conference Invention & Innovation Competition (MRC – IIE) 2018 won medals for UTP.

The six UTP products ranged from slope protection to signage gadgets for roads & bridges. UTP bagged two gold, two silver and one bronze medal. In addition, the Development of Distributed Fibre Optic Inclinometer for Landslide and Geotechnical Application by Assoc Prof Ir Dr Hisham B Mohamad was declared the Best Invention Award and also won the Special Award sponsored by IENA 2018.

MRC is a biennial event jointly organised by the Ministry of Works, Malaysia, Public Works Department of Malaysia, Malaysian Highway Authority, World Road Association (PIARC) and the Road Engineering Association of Malaysia in collaboration with the Construction Industry Development Board, Malaysia, International Road Federation Global and Road Engineering Association of Asia & Australasia.

It brings innovators and the relevant industries together to pave the way for better quality roads in Malaysia.

IT'S ALL GOLD AT PERINTIS 2018

UTP turned in a shining performance at the 2018 Invention & Innovation Competition of Private Higher Education Institutions (PERINTIS). From fire-proof coating to green pesticide, all five inventions submitted by the university grabbed gold medals.

The products have made a strong impact, very much in line with the theme for the 2018 event, Transforming Lives Through Innovation.

PERINTIS is supported by the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) and the Ministry of Education (MOE) Malaysia.

It provides a platform for both researchers and practitioners around the world to present innovations on recent developments in multidisciplinary fields, as well as to showcase and promote the products' potential.

Gold

INVENTOR
Prof Dr Faiz Ahmad
PRODUCT
Fire Save Coating For Structures

INVENTOR
Prof Dr Norani Muti Mohamed
PRODUCT
Integrated Dye Solar Module

INVENTOR
Prof Dr Shamsul Rahman Mohamed Kutty
PRODUCT
i-SBGR

INVENTOR
Prof Ir Dr Suzana Yusup
PRODUCT
BIOPEST

INVENTOR
Assoc Prof Dr Ahmad Majdi Abd Rani
PRODUCT
A Slip On Sprocket for Torque Booster

Gold

PROJECT LEADER
Muhammad Luqman Hasan
DEPARTMENT
Petroleum Engineering
TITLE
Improving Learning Experience Through Gamification

PROJECT LEADER
Assoc Prof Bawadi Abdullah
DEPARTMENT
Chemical Engineering
TITLE
A Flipped Classroom Technique In Improving Students' Grade Of Transport Phenomena Course

PROJECT LEADER
Dr M Syafiq Hazwan Ruslan
Assoc Prof Dr Suriati Sufian
DEPARTMENT
Chemical Engineering
TITLE
Understanding And Incorporating Chemical Engineering Fundamentals Through Chem-E-Car Integrated Project

PROJECT LEADER
Siti Nur Fathiyah Jamaludin
DEPARTMENT
Geoscience
TITLE
Color Scheme Tracing In Active Learning Setting In Helping Students With Color Deficiencies

Silver

PROJECT LEADER
Mazlin Idress
DEPARTMENT
Petroleum Engineering
TITLE
Implementation Of Cooperative Learning To Enhance Student Learning In Well Stimulation Technique Class

PROJECT LEADER
Khairul Nisak Md Hasan
DEPARTMENT
Electrical And Electronics Engineering
TITLE
Implementation Of Student Response System (Srs) To Promote Active Learning In Power Electronics Class

4 GOLD MEDALS AT K-NOVASI 2018

UTP won four gold, two silver and five bronze medals from 11 projects submitted for Universiti Kebangsaan Malaysia's (UKM) Karnival K-Novasi Pengajaran dan Pembelajaran 2018.

The competition aims to spark innovation in Teaching and Learning products and innovations and share ideas and insights on key issues.

Bronze

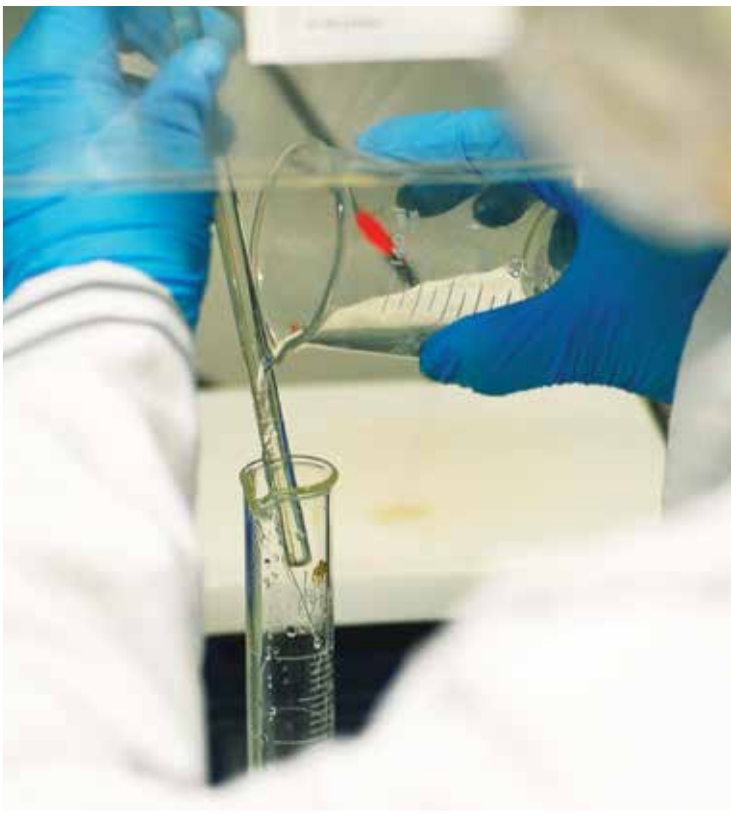
PROJECT LEADER
Dr Shuib Basri
DEPARTMENT
Computer And Information Sciences
TITLE
The Adoption Of Cooperative Learning Method (Cclm) In Enhancing Students' Visualisation Ability Of Software Engineering Related Courses.

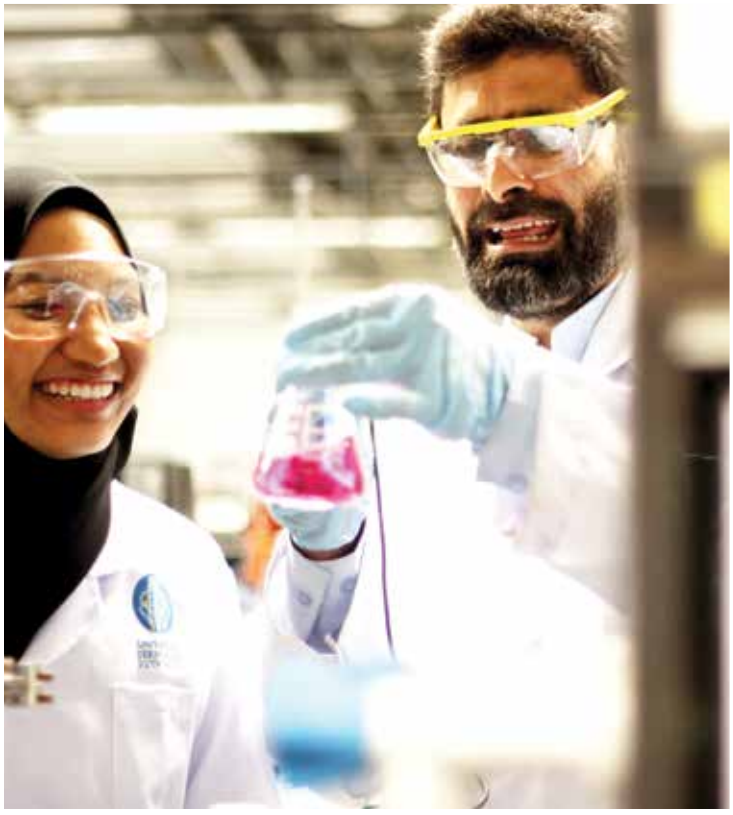
PROJECT LEADER
Dr Lila Iznita Izhar
DEPARTMENT
Electrical And Electronics Engineering
TITLE
What Your Brain Says About Your Characteristics? A Pilot Study On Intervention Strategy For Introvert During Group Discussion Using Eeg Brain Signals

PROJECT LEADER
Khalidah Khalid Ali
DEPARTMENT
Management And Humanities
TITLE
Enculturating Ethics Through Active Learning: A Study On Technical Students At A Private Malaysian University

PROJECT LEADER
Dr Mohana Sundaram Muthuvalu
DEPARTMENT
Fundamental And Applied Sciences
TITLE
Increase Students' Engagement And Understanding Through Cooperative Learning For Large Ordinary Differential Equations Class

PROJECT LEADER
Azman Zainuddin
DEPARTMENT
Centre For Fundation Studies
TITLE
Study On The Levels Of Students' Preparations For Successful Implementation Of Flipped Classrooms In Introductory Physics Course





PATENTS GRANTED
2018

FACULTY	PATENT ID / NO.	STAFF NAME	TITLE
Chemical Engineering	MY-164662-A	Azry Borhan	An Electricity Storage Device with Vermicompost as Electrolyte
	MY-165961-A	Suzana Yusup	Process for Conversion of Polymeric and Biomass Waste to Syngas Field of Invention
	MY-165962-A	Suzana Yusup	System for Conversion of Polymeric and Biomass Waste to Syngas field of Invention
	MY-166431-A	Lau Kok Keong	Parameters Prediction And Simulation of Hollow Fiber Membrane System
	MY-166572-A	Nejatollah Rahmanian	Footwear For Diabetic Patients
	MY-168920-A	Harvin Kaur Gurchran Singh	Cavendish Banana Peel Polymer as Drag Reduction Agent and A Method of Synthesizing the Same
	MY-168919-A	Zakaria Man	A symmetric Polysulfone/Polyimide-Nanosilica Mixed Matrix Membranes for CO2 Separation from Natural Gas
Electrical & Electronic Engineering	MY-164734-A	Irraivan Elamvazuthi	System for Feedback Control of Three-Phase Separator Using Bacteria Foraging Strategy
	MY-164907-A	Aamir Saeed Malik	Method For Vegetation Encroachment Monitoring Relative to an Object of Interest
	MY-165029-A	Nidal Kamel Selman	System For Detecting Driver's Cognitive Distractive Distraction Using EEG Subspace-Based Detection
	MY-164734-A	Irraivan Elamvazuthi	System for Feedback Control of Three-Phase Separator Using Bacteria Foraging Strategy
	MY-164907-A	Aamir Saeed Malik	Method For Vegetation Encroachment Monitoring Relative to an Object of Interest
	MY-165029-A	Nidal Kamel Selman	System For Detecting Driver's Cognitive Distractive Distraction Using EEG Subspace-Based Detection
	MY-166807-A	Aamir Saeed Malik	Method Of Classifying And Quantitatively Ascertaining Severty And Grading Of Acne Lesions From Image
	MY-166969-A	Ahmad Fadzil Mohamad Hani	Methodology For Determining Concentration of The Types of Melanin Pigment In The Skin
	MY-168915-A	Aamir Saeed Malik	Method of Obtaining Motion Vectors for Tracking EEG signals using Block-Based Motion Estimation Algorithm with Brain Lobe as Search Area

PATENTS GRANTED 2018

FACULTY	PATENT ID / NO.	STAFF NAME	TITLE
Mechanical Engineering	MY-165540-A	Abd. Rashid Abd Aziz	Vibration Based Magnetic Massage Device
	MY-165540-A	Abd. Rashid Abd Aziz	Vibration Based Magnetic Massage Device
	MY-166599-A	Faiz Ahmad	Process of Producing Nanocomposite Feedstock for heat Dissipaters for Electronic System
	MY-167112-A	T Nagarajan	Method for Actuating Pseudo Wrist Motion using SMA Wire and Split-Tube
	MY-168144-A	Nagarajan Thirumalaiswamy	A System and Method for Homeostasis Control in an Enclosed Environment
	MY-168913-A	T Nagarajan	System for Actuating Pseudo Wrist Motion using SMA Wire and Split-Tube
Fundamental Applied Sciences	MY-166430-A	Anita Ramli	Bifunctional Heterogeneous Catalyst for Production of Biodiesel
	MY-167557-A	Samir Brahim Belhaouri	System and Method for Optimised Face Biometrics Authentication Based on K-Near to Mean Cluster Classification Algorithm
	MY-167868-A	Norani Muti Mohamed	Method of Production of Nanotube Based Hydrogen Sensor
Geo Sciences And Petroleum Engineering	MY-168912-A	Sonny Irawan	A Beneficiation Method of Bentonite
Civil & Environmental Engineering	MY-168914-A	Ahmad Mustafa Hashim	Interlocking Concrete Unit V (ICU-V)
	MY-168918-A	Shamsul Rahman Mohamed Kutty	Method of Removing Toxic Elements
	MY-168916-A	Muhd Fadhil Nuruddin	Construction Materials And Compositions Containing Same
	MY-168917-A	Muhd Fadhil Nuruddin	Non-Pozzolanic Geopolymer Brick

PATENTS FILED
2018

FACULTY	FILING ID / NO.	STAFF NAME	FILING NAME
Civil Engineering	UI2018700423	Shamsul Rahman Mohamed Kutty	An Integrated Suspended Growth System (I-SGS)
	PI2018701232	Hisham Mohamad	Instrumentation System and Method for Landslide Monitoring
	PI2018701803	Khamaruzaman Wan Yusof	Module in Bio-ecologial Drainange System in Urban Drainage Management
	PI2018000672	Lavania Baloo	Composition for Construction Material
	PI2018703035	Mohd Shahir Liew	Steel Beam Structure Having Enhanced Fire Withstanding Capability
Mechanical Engineering	PI2018701058	Morteza Khalaji Assadi	A Cover Glass
	PI 2018701394	Morteza Khalaji Assadi	An Antireflection Coating
	PI2018000673	Mohd Syaifuddin Mohd	Solar Powered System for Vehicle Interior Temperature Regulation
	PI2018702448	Shaharin Anwar Sulaiman	Device For Compressibility Determination Of Gelled Waxy Crude Oil In Pipelines
	PI2018001145		A Cover
	PI2018002983	Faiz Ahmad	A Method of Producing Graphene Reinforced Metal Composite
	PI2018002984	Faiz Ahmad	A Method Of Grafting Metallic Species On Graphene Nanoplatelets
	PI2018003007	Mokhtar Che Ismail	An Apparatus and Method for Measuring Corrosion in a Process Stream
Chemical Engineering	PI2018701355	Masaharu Komiyama	Method Of Producing Hydrocarbons By Oxidative Coupling Of Methane Using Water
	PI2018701675	Mohammad Tazli Azizan	A Method of Producing a Diol from Renewable Resources
	PI2018701698	Hilmi Mukhtar	A Gas Separation Membrane
Fundamental and Applied Sciences	PI2018701801	Mohamed Shuaib Mohamed Saheed	An Absorbent And Method Of Preparing Thereof
Electrical and Electronics Engineering	PI2018701793	Wong Peng Wen	Systems & Methods of Waveguide Filter
	PI2018701797	Cheab Sovuthy	Microwave Multiband Filter
Petroleum Engineering	PI2018702266	Sonny Irawan	A Method for Monitoring Fluid Propagation
	PI2018001248	Ismail Mohd Saaid	Silicate Scale Inhibitor
Computer & Information Sciences	PI2018703132	Mazeyanti Mohd Ariffin	System and Method for Controlling Pests such as Snails in Paddy Field Using IOT Platform and Ultrasonic Technology

PRODUCTS COMMERCIALISED
2018

No	INVENTOR	INVENTION
1	Prof Dr Shamsul Rahman M Kutty	i – SGBR (Integrated Suspended Growth Bioreactor System)
2	Assoc Prof Ts Dr Ahmad Kamil Mahmood	Rescue-I Monitoring System
3	Assoc Prof Dr Zahiraniza Mustaffa	PRIA (Pipeline Reliability & Intergrity Assessment)
4	Assoc Prof Ir Dr Mokhtar Che Ismail	MiCorr (Mobile In-situ Corrosion Monitoring Equipment)
5	Assoc Prof Dr Nurlidia Mansor	Diallydisulfide (DADS) as Soil Urease Inhibitor for Enhanced Efficiency Fertiliser

OTHER INTELLECTUAL PROPERTY RIGHTS (IPRs)
2018

	NAME OF IP	TYPE (COPYRIGHT, TRADEMARK, INDUSTRIAL DESIGN, ETC.)
Universiti Teknologi PETRONAS	A New Method For High-Resolution Seismic Diffraction Imaging	COPYRIGHT
	Comprehensive Board Diversity and Firm Performance Model	COPYRIGHT
	A Stable And Fast Seismic Anisotropic Depth Imaging Algorithm	COPYRIGHT

FACULTY/DEPARTMENT	STAFF NAME	NAME OF IP	TYPE (COPYRIGHT, TRADEMARK, INDUSTRIAL DESIGN, ETC.)
Computer & Information Sciences	Mazeyanti Mohd Ariffin	Preditack	COPYRIGHT
	Noreen Izza Arshad	Stutter Manager	COPYRIGHT
		The User Interface of Stutter Manager	COPYRIGHT
	Lukman AB Rahim	Large Data Compression Code for Small Form Factor GPU-Based Devices	COPYRIGHT
		Large Data Decompression Code for Small Form Factor GPU-Based Devices	COPYRIGHT
		Large Data Decryption Code for Small Form Factor GPU-Based Devices	COPYRIGHT
		Large Data Encryption Code for Small Form Factor GPU-Based Devices	COPYRIGHT
		Large Data Error Control Code for Small Form Factor GPU-Based Devices	COPYRIGHT
		Large Data Error Correction Code for Small Form Factor GPU-Based Devices	COPYRIGHT
		Large Data Pattern Deconstruction Code for Small Factor GPU-Based Devices	COPYRIGHT
		Large Data Pattern Generation Code for Small Form Factor GPU-Based Devices	COPYRIGHT

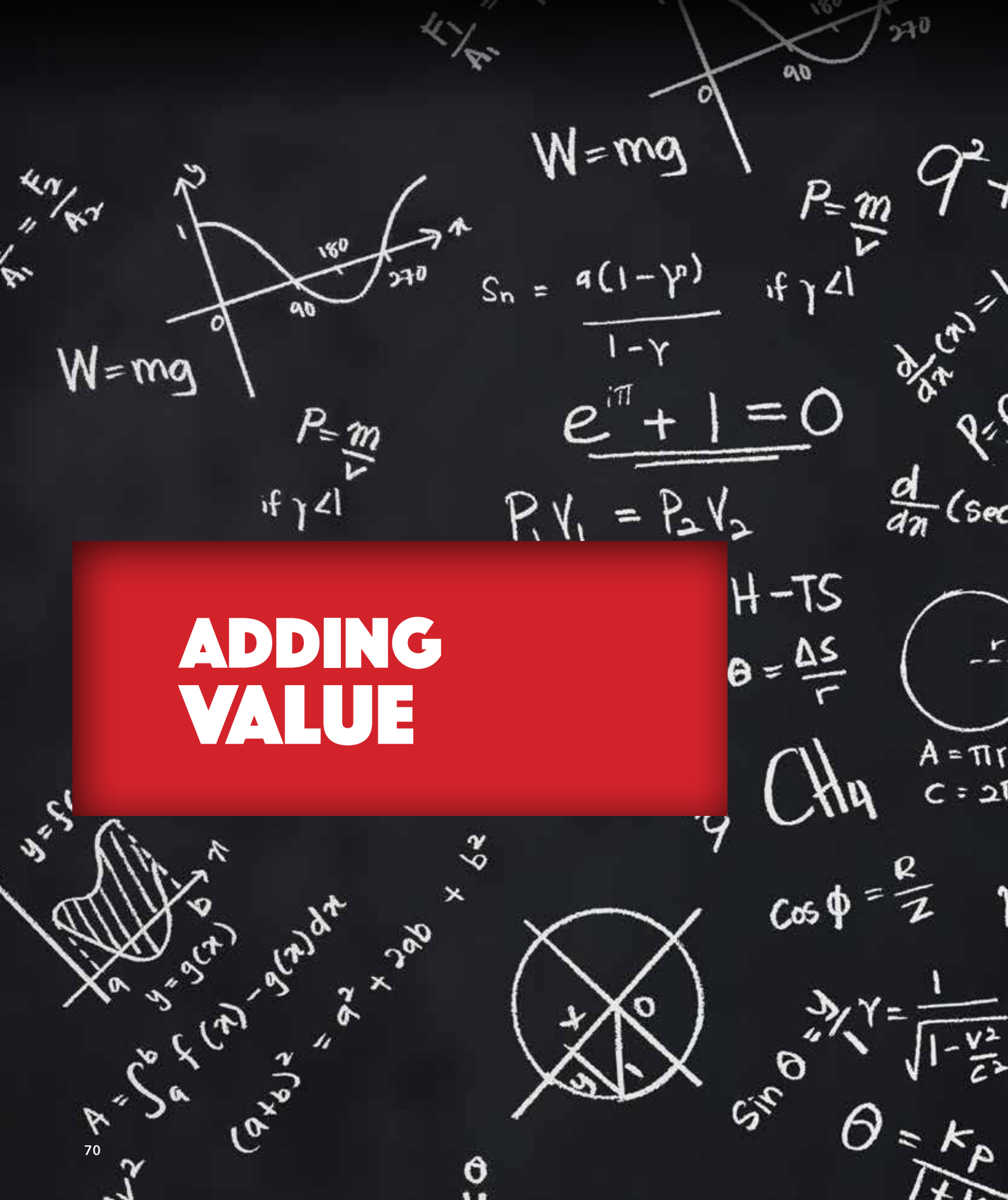
OTHER INTELLECTUAL PROPERTY RIGHTS (IPRs)
2018

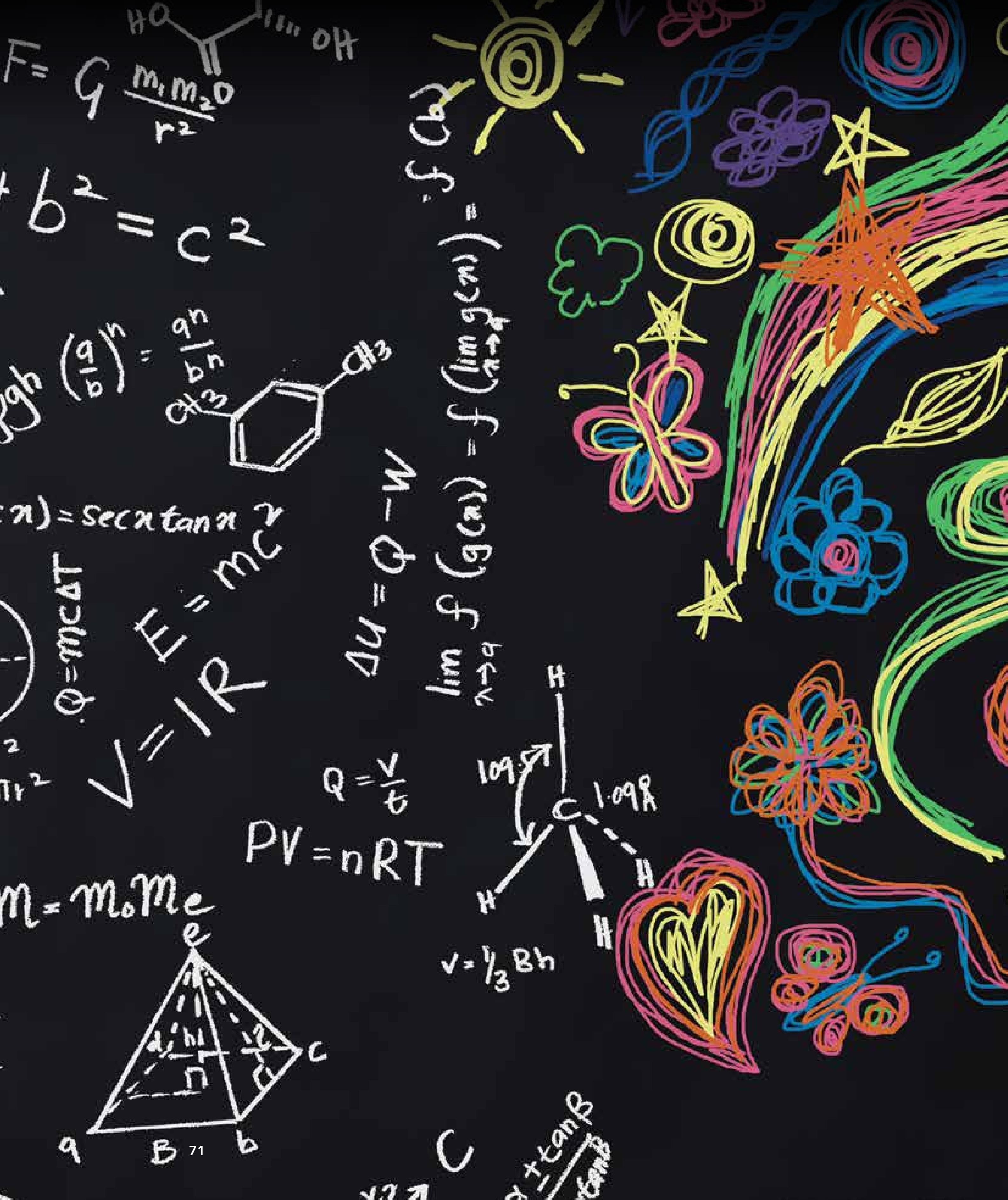
FACULTY/DEPARTMENT	STAFF NAME	NAME OF IP	TYPE (COPYRIGHT, TRADEMARK, INDUSTRIAL DESIGN, ETC.)
Computer & Information Sciences	Maythem Kamal Abbas Al-Adilee	The Development Of A Doorbell Alert Wristband For People With Hearing Impairment (PHI)	COPYRIGHT
		An Internet Of Things (Iot) Application To Monitor And Control Vehicles Status	COPYRIGHT
		The Development Of Reading Aid Wristband For Color Blind People	COPYRIGHT
		The Development Of A Microscopic Inspection System For Semi-Conductor Defect Detection	COPYRIGHT
	Noreen Izza Arshad	S	TRADEMARK
Electrical & Electronics Engineering	Micheal Drieberg	CGMON Cooking Gas Weight Monitor System	COPYRIGHT
	Rosdiazli Ibrahim	Scilab Based Toolbox for Fractional-Order Systems	COPYRIGHT
		Gui Toolbox For Approximation Of Fractional-Order Parameters	COPYRIGHT
	Nordin Sa'ad	Chroma Apps - An Intelligent Chromametry Measurement Of Food Quality And Safety Via Mobile Phone	COPYRIGHT
	Tang Tong Boon	BRAIN-NAVI	TRADEMARK
Civil Engineering	Indra Sati Hamonangan Harahap	Integrated Software Framenwork for Time Dependent Reliability Analysis of Jack Up	COPYRIGHT
	Mohd Shahir Liew	Gui Toolbox For Downtime Cost Analysis Of Offloading Operations Implementing Partially Standing Waves	COPYRIGHT
		POSEIDON	TRADEMARK
		POSEIDON	TRADEMARK

OTHER INTELLECTUAL PROPERTY RIGHTS (IPRs)
2018

FACULTY/DEPARTMENT	STAFF NAME	NAME OF IP	TYPE (COPYRIGHT, TRADEMARK, INDUSTRIAL DESIGN, ETC.)
Geoscience Department	Micheal C. Poppelreiter	Applied Microfacies Module	COPYRIGHT
		Carbonates Rock Physic Manual	COPYRIGHT
		Geological-Geophysical Assessment of the Kinta Limestone of Lafargeholcim Quarry in Kanthan, Perak	COPYRIGHT
		Journey Management Module Thousand Island, Jakarta, Indonesia	COPYRIGHT
		Kinta Valley Outcrop Workshop Module	COPYRIGHT
		Marine New Geological Area Scouting Visit Journey Management & HSE Module	COPYRIGHT
		Microfacies Characterisation of a Carbonate Build-Up Central Luconia (WELL X11-2) Offshore, Sarawak	COPYRIGHT
		Mukah Field Trip Report	COPYRIGHT
		Seismic Interpretation E-11 Field Report	COPYRIGHT
		Subis Platform Outcorp Workshop Module	COPYRIGHT
Mechanical Engineering	Shahrul Kamaruddin	ASaPT	TRADEMARK
	Abd. Rashid Abd Aziz	ITI	TRADEMARK
Centre for Advanced and Professional Education (CAPE)	Azuraien Japper @ Jaafar	CAPE	TRADEMARK


TEMPORARY
PASS


ADDING
VALUE



E = mc²
V = IR
Q = mcΔT
ΔU = Q − W
Q = V/t
PV = nRT
v = ⅓ Bh

ADDING VALUE

WE INVESTED IN A SERIES OF INTERESTING PROJECTS THAT WOULD ENGAGE STUDENTS IN A WAY THAT WOULD HELP THEM TRANSITION SEAMLESSLY INTO THE WORLD OF WORK.

Universiti Teknologi PETRONAS (UTP) is sharply focussed on being a leader and innovator in education. The university believes that excellence in education encompasses the entire student experience. In 2018 it introduced several new initiatives both in terms of expanding student facilities as well as offering a wider spectrum of cultural and social activities. These were aimed at delivering an unrivalled student experience.

We invested in a series of interesting projects that would engage students in a way that would help them transition seamlessly into the world of work.

One very successful project where students 'ideate and innovate' is Garage @21. It is a powerful concept and has been the cause of much excitement among both students and faculty alike. Although the idea is not new nor unique to UTP, it is one that is being enthusiastically embraced by UTP's on-campus population.

Garage@21 is a creative space provided for students to give free reign to their intellectual pursuits and imagination. The University allocated a space in Block 21. It is more than a physical location equipped with 3 D printers and other facilities; it is a space where one can expect 'cradling' of new ideas.

Creativity and innovation are made possible with the help of expert inputs from members of faculty and even possible collaboration with entrepreneurs. The benefits of this are often clear. The highly-skilled among UTP's graduates become much sought after globally.

Creativity and innovation are made possible with the help of expert inputs from members of faculty and even possible collaboration with entrepreneurs.

Equity@UTP

The university is cognisant of the fact that close to 47 percent of its students come from what the World Bank classifies as the bottom 40 percent. We are therefore putting in place support mechanisms that will help students stay in university.

While many get help through PTPTN, the Zakat Funds and Yayasan UTP, the university has established what is called Jobs on Campus opportunities. We have come up with a Jobstreet-like portal where students augment their income working in jobs made available in the University. This has meant that attrition rates are sharply reduced and students are happy to remain on campus.

On-campus Technopreneurs

Our students are encouraged to use technology to enable them to build businesses. This not only boosts incomes but it also teaches them some important financial and management skills. Most fresh ideas such as retail and food businesses are facilitated through the offer of space for retail outlets.

However there is a dedicated department under the DVC Student Affairs and Alumni that handles Technopreneurship. Currently a range of start-ups are benefitting from the technopreneurship development initiatives of the university. Support by way of mentorship and even seed funding is part and parcel of efforts to make our graduates market ready. If the investments are more substantial, then UTP and the student entrepreneurship proponent will co-share the Intellectual Property Rights (IPRs). One such project is SolviePro. (See Box Story)

Cultivating Culture for Inclusivity

Every year UTP organises a number of cultural activities. But one stands out as a definitive event that has had a wide-ranging impact on the university and student community. The Red Sonata Fiesta 2018, a Chinese orchestral competition was organised by UTP and the Federation of Chinese Associations Malaysia (Huazong).

A multi-ethnic team of students organisers took the opportunity to immerse themselves in classical Chinese music. Competitions, showcases and masterclasses brought more than 5,000 participants to the UTP campus over two days. UTP had a chance to showcase the University and its facilities to a largely ethnic Chinese community.

It is hoped that events such as this will help further efforts to develop a multi-ethnic, multi-cultural student mix.

Health and Well Being
For students to excel it is important that a sound academic environment is complimented by an equally comprehensive physical and mental well-being 'habitat'. UTP started its mental health awareness campaign during the official mental health week launched by the Ministry of Health.

Since then we have been regularly engaging with students through counselling and other psychology services. Eating habits, nutrition and availability of healthy food is also an important consideration. Well appointed gymnasiums, including one just for ladies, are well utilised pointing to the fact that the student population is quite health-conscious.

An Alumni that Inspires
Engaging with past students who have achieved national and global prominence has led to strong aspirational values among current students at UTP. We formalised this through the establishment of a Student Development Advisory Council on which alumni serve as advisors. There is also an Industry Advisory Panel. This brings to the UTP campus captains of industry who provide direction and scrutinise curriculum to ensure it remains contemporary and relevant.

ASSOC PROF DR NOR HISHAM HAMID
Deputy Vice Chancellor,
Student Affairs and Alumni

STUDENT ENTREPRENEUR PAR EXCELLENCE

Information Systems graduate Abdul Qayyum Halid was awarded the Chancellor's Gold Award. His rise as an entrepreneur was propelled by UTP's Technopreneurship Centre. This graduate founded Solviepro Malaysia Sdn Bhd with his colleagues and became the Executive Director of Technology at the company. The company has enhanced the lives of many people by successfully opening up part-time jobs to more than 3,500 individuals over its 14 months of operation. During this time it has generated over RM500,000.00 in revenue.

The success of Solviepro Malaysia Sdn Bhd qualified UTP for the Varsity Entrepreneurship Skills and Talent (V.E.S.T) Competition in 2017. The team was named the Overall Champion and received the Best Business Special Award presented by Y.A.B Prime Minister of Malaysia. Solviepro Malaysia Sdn Bhd continues to grow strongly and is valued at RM2million by Khazanah Nasional. The company is set to expand its business empire to Surabaya, Indonesia. Thisis an outstanding achievement for both Abdul Qayyum Halid and UTP. Solviepro is now being rolled out in Libya, Croatia, Uganda and Mauritius.

The team behind Solvie Pro, a UTP startup that made it big at national level.

BUILDING KNOWLEDGE BRIDGES

An international student exchange and community engagement called MySurabaya2 was successfully organised between Universiti Teknologi PETRONAS (UTP), Malaysia and Universitas Airlangga, Indonesia (UNAIR). 20 students from UTP and 30 students from Universitas Airlangga participated.

The Faculty of Computer and Information Sciences, UTP and Universitas Airlangga's Faculty of Economics and Business held various activities and knowledge exchange programmes as well as community engagement projects. UTP students learnt by immersion applied economics, business and environmental issues.

Cultural exchanges, a mini symposium and discussions on Industrial Revolution 4.0 proved mind-opening for all participants. They had to come to grips with "Blockchain Certificate Storing Systems", "Enzyma Detection using IoT Device" and "Crowdfunding as the source of startup capital in Indonesia".

The students also had a chance to visit Universitas Internasional Semen Indonesia, Gresik (UISI). This helped them understand the cement industry in Indonesia. Students came away from this knowledge exchange programme with the understanding that relevant education energises industry.

BI-LATERAL COLLABORATION

UTP and Universitas Airlangga Indonesia (UNAIR) students paid a visit to Baitulmal Wat Tamwil (BMT Muda) to observe and learn how BMT Muda helped small and medium enterprise in Indonesia to grow. UTP students were given the task of developing a marketplace website for a BMT Muda subsidiary company known as PT Tajir Global Persada while also promoting digital marketing, ecommerce and social media marketing. Friendly games, cultural exchanges and familiarisation tours gave students a comprehensive view of small and medium scale industry as well as an idea of the history, demographic profile and geography of Indonesia.

NURTURING ENTREPRENEURSHIP ASPIRATIONS

The spirit of entrepreneurship is booming at UTP with students actively exploring opportunities to grow their knowledge and skills for starting up and running a company.

Among these students are Nisha Fairuz Mazlan and Wan Muhamad Fadzli Wan Abdul Hamid who bagged the second spot at the ASEAN Young Entrepreneurs Challenge (AYEC) 2018.

They showed exceptional ability as they completed a series of tasks including identifying industry problems, writing business proposals and presenting marketing plans to a panel of industrial players such as Big Centure Sdn Bhd and Malaysian Agricultural Research and Development Institute (MARDI).

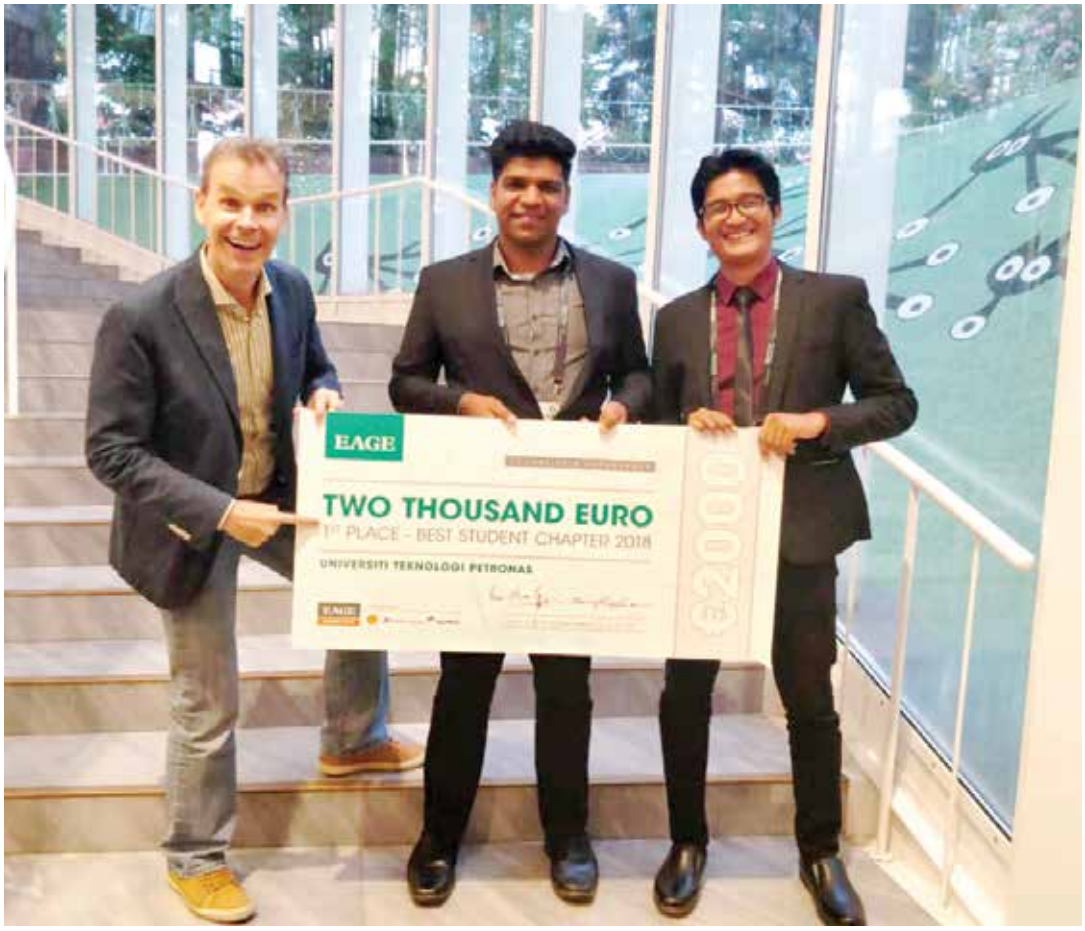
UTP was among 15 teams from various ASEAN countries that went head-to-head in the challenge.

HIGH PERFORMANCE

A 22-member student team from UTP turned in a strong performance the 2018 National Chemical Engineering Symposium (NACES).

The team competed in seven categories, emerging champion in the Technical Debate, Technical Powerpoint Presentation and Technical Video Presentations competitions. It was placed second in both the Technical Case Study and Technical Essay Writing categories and third in the Plant Process Design.

The team was led by Eddy Kong Chung Poh and managed by Agash Anbalagan and Tanesh Selvaraju.



BOOSTING THE GEOSCIENCES

The UTP Student Chapter of the European Association of Geoscientists and Engineers was announced as the "Best Student Chapter Worldwide" at the 80th EAGE Conference and Exhibition 2018 Student Programme at Copenhagen, Denmark. It was awarded 2000 euros for this achievement.

It was the first in the Asia Pacific region to receive this recognition for its consistent efforts to promote the geosciences and to network its members with like-minded communities.

The annual EAGE Conference & Exhibition is the largest and most comprehensive multi-disciplinary geoscience event in the world, bringing together industry players and stakeholders to showcase the latest technology, products and services.

The EAGE-UTP Student Chapter hosted the Asia Geoscience Student Conference & Exhibition during the year. Over 400 students, industry experts and technical gurus gathered at UTP to discuss "Fuelling Geosciences, Mapping Careers."

SHOWCASING TALENT & SKILLS

As part of its ongoing efforts to develop well-rounded graduates through involvement in art and culture, UTP once again teamed up with the Federation of Chinese Associations Malaysia (Huazong) to organise the Red Sonata Fiesta in 2018.

The two-day competition proved to be one of the most uplifting Chinese cultural competitions. It attracted participation by over 5,000 participants, winning a place in The Malaysia Book of Records for the 'Largest Participation in a Chinese Art and Music Championship.' Participants and judges came from Taiwan, China, Singapore and Malaysia.

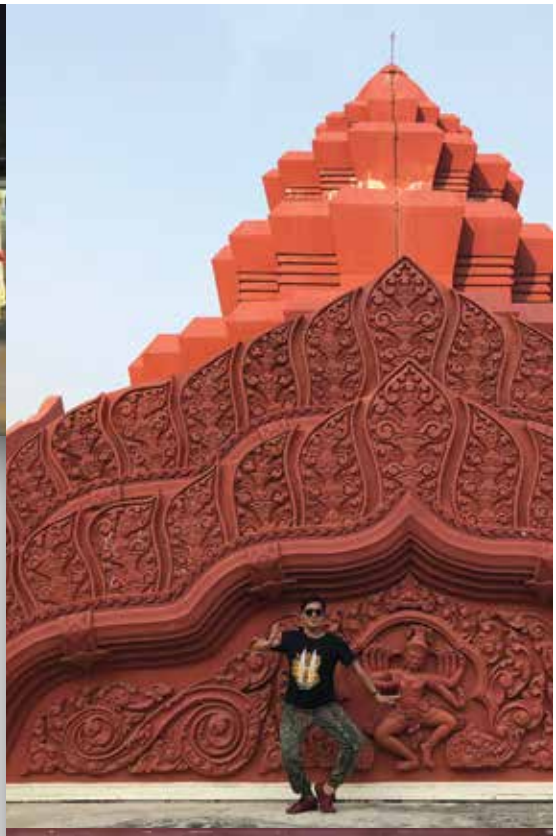
The event is an important highlight on the calendar of Chinese orchestra enthusiasts. It offers an opportunity to showcase their talent and skills across several categories of music and dance.

ENRICHING EXPERIENCE

They may be studying to be top class engineers and technology experts, but a group of 20 UTP students proved they could also dazzle with their dancing skills when they took to the stage in Cheonan, South Korea.

The UTP Performing Arts Group competed against professional dance groups from 16 countries in one of the most prestigious dance competitions in the world. They were placed second in the Street Dance Parade Competition and third in International Folk Dance.

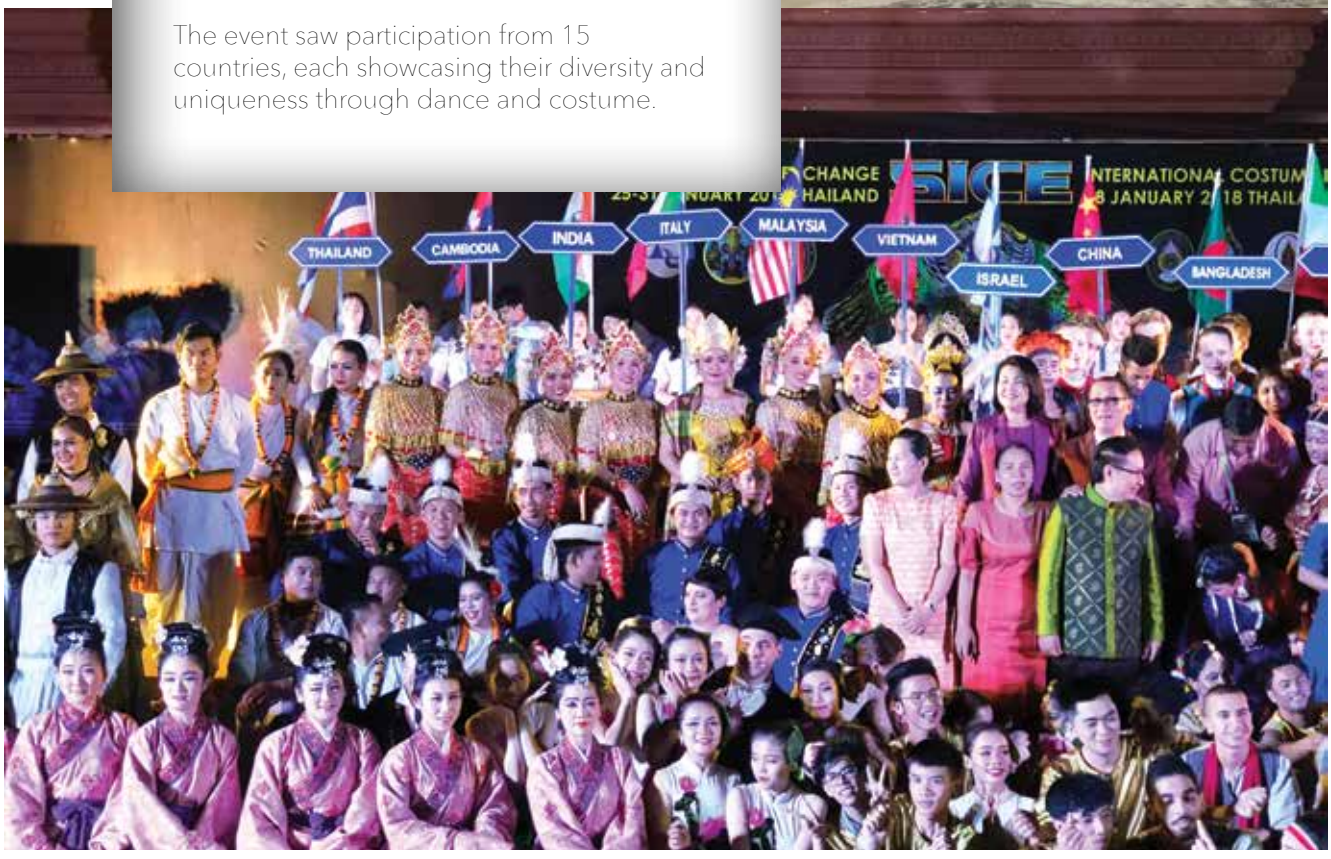
Participation in events such as the Cheonan World Dance Festival is part and parcel of UTP's efforts to create well-rounded and culturally aware students through development of soft skills, tolerance and a more inclusive mindset.



REWARDING CULTURAL EXCHANGE

A team from the UTP Performing Arts Group did their bit to promote cultural harmony at the Surin International Culture Exchange Festival (SICE) 2018 and was awarded The Loveliest Performance title for their efforts.

The event saw participation from 15 countries, each showcasing their diversity and uniqueness through dance and costume.



KEEPING TRADITIONAL MUSIC ALIVE

The passion and technique of UTP's gamelan troupe, Sanggar Kirana, resonated with an international audience in Surakata, Central Java as it put the spotlight on the beauty and authenticity of this popular form of traditional music.

Sanggar Kirana was invited by Prof Dr Rahayu Supanggah, the Director of International Gamelan Festival Solo 2018, to represent Malaysia in this prestigious and popular festival together with groups from 16 other countries.

The festival has become a highlight on the calendar of gamelan enthusiasts worldwide.

DRILLING DOWN FOR THEIR FIRST BIG WIN

It was what many in UTP had been waiting for. A defining moment when its rugby team, the UTP Drillers, finally claimed their first-ever victory in the MASISWA 15s 2018 Rugby Championship. This victory made the Drillers the top rugby team among private institutions in Malaysia.

The team beat UniKL RC 27-24 in the finals and defeated City University of Malaysia, 45-12 in the semi-finals. As champions, the Drillers walked away with a trophy, medals and RM1,500.

They are now in line to participate in the coveted Super 8 IPT Rugby Championship that features only the best eight rugby teams of higher education institution all over Malaysia. The championship is organised annually by the Ministry of Higher Education.

SETTING A NEW RECORD WITH KINETIC ART

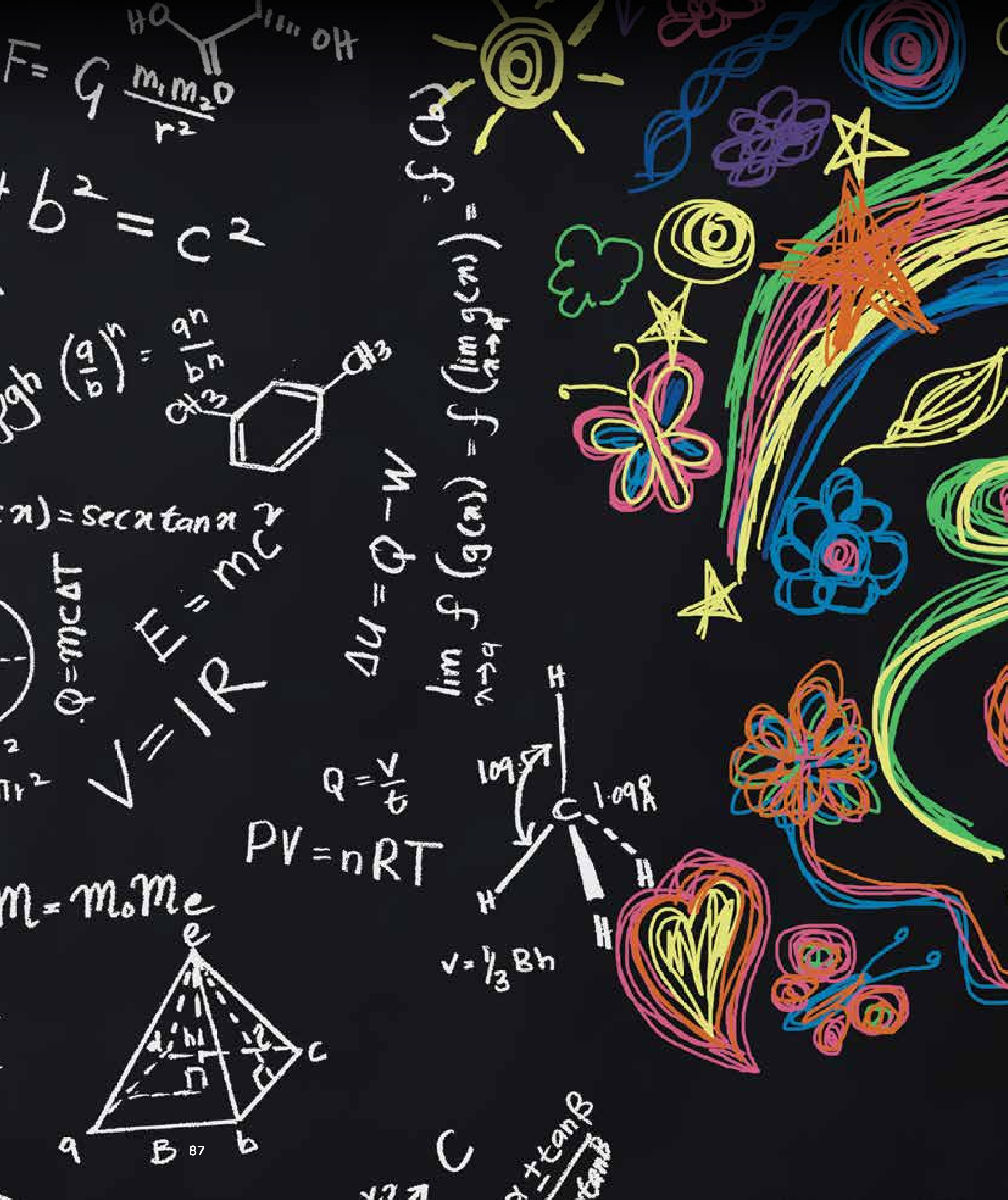
A group of 46 students set out on an engineering adventure which landed them in the Malaysia Book of Records. They created stick bombs using 30,050 sticks and over 700 metres in length.

A stick bomb can be almost anything that is constructed from flat sticks that are woven together and held under pressure. When a key stick is removed the entire structure flies apart displaying the basic principles of physics and kinetic energy.

The event was organised by the American Society of Mechanical Engineers UTP Student Chapter with Associate Professor Dr Mokhtar Awang as the advisor. It provided a platform for mechanical engineering students to develop both their technical and soft skills and apply them in the real world. It also helped equip students with the ability to synthesise issues and communicate effectively.

This was the second record set by UTP. Earlier a team of engineering students successfully made it into the MBOR for the first time for the longest great ball contraption machine. The 26.18 metre long machine incorporated 50 engineering, scientific and programming concepts, and showcased 34 basic principles of physics.

TRANSFORMING LIVES


PV=nRT
V=IR
E=mc²
Q=mcΔT
ΔU=Q−W
v=⅓Bh
1.09Å

TRANSFORMING LIVES

STAFF AND STUDENTS USE THEIR SKILLS AND TALENT TO BENEFIT THE COMMUNITY AROUND THEM.

Community engagement is considered a key element in strengthening UTP's relationship with local communities, ensuring a positive social impact, and providing UTP students with rich, real-life learning experiences beyond the lecture room. There are many ways in which staff and students use their skills and talent to benefit the community around them.

During the year, UTP reviewed its social responsibility activities with a view to boosting effectiveness and impact. The University Social Responsibility Steering Committee was set up to provide guidance, leadership and prioritisation for programmes and activities. It is chaired by Prof Ir Dr M Shahir Liew, Deputy Vice Chancellor of Research and Innovation.

EFFECTIVE VOLUNTEERISM

An increasing number of students are volunteering to make a difference in their communities and the environment. The Regional Conference on Student Activism (RECONSA) has become an important platform for students from all over ASEAN to network and exchange ideas on making student volunteerism more effective.

UTP hosted RECONSA 2018 which brought together more than 100 participants from ASEAN. The event was organised in collaboration with the Students Volunteer Foundation, a wholly-owned entity of the Ministry of Higher Education, and the Malaysian Consultative Council for Islamic Organisations.

Participating institutions included Indonesia's Institut Teknologi Sepuluh Nopember, Myanmar's Yangon University of Education and Malaysia's International Islamic University. The conference looked at ways to mobilise volunteers through sustainable forward-looking strategies which would ensure that global activist networks which have been asking for technology, efficient governance and maximisation of resources, would have greater impact.

Among the speakers at the five-day conference were Singaporean Tony Tay, winner of the 2017 Philippines Ramon Magsaysay Award, and Mohd Hakim Mohd Nor, a UTP alumni who is General Secretary of the Serantau Muslim Welfare Organisation and a recipient of the Hang Tuah Award at the Malay and Islamic World Convention in Medan, Indonesia.

GREEN ENERGY FOR ORANG ASLI VILLAGE

Students from UTP's Green Energy Cluster applied their knowledge and skills in a community project to bring solar power to an orang asli village in Perak. More than 80 residents of Kampung Sungai Karah near Lenggong, received electricity for the first time, from a 5 kW solar farm.

The rural electrification project was implemented in collaboration with PETRONITA, the Wives and Women Staff Association of PETRONAS, and the Department of Orang Asli Development.

Set to provide the villagers with electricity 24 hours a day, the project is expected to improve their livelihood by giving them ownership over the system's usage and maintenance besides minimising safety and health hazards from continuous usage of candles and kerosene lamps.

ENABLING CLEAN WATER FOR INDIGENOUS COMMUNITY

Most of us take clean drinking water for granted. But for the 250 students and 50 teachers at Sekolah Menengah Pos Raya in Simpang Pulai, Perak, it has been a luxury.

Now, thanks to a simple water filtration system created by a group of engineering students from UTP, this orang asli school community has fresh, purified water on tap.

The filtration system was created by the students in UTP with the assistance and guidance of the project supervisor, Dr Roil Bilad. The water system was carefully tested in the lab before being installed in the school.

The system is very affordable as it works without electricity, solar energy or batteries. It costs around RM 2000 to supply clean drinking water to more than 250 students in the school.

SAFE WATER FOR VILLAGERS

Treating drinking water for rural villages can be difficult. And for the community at Kampung Pecah Batu in Perak the situation was even more complex because of contamination at the source of their water supply.

But a group of engineering students from UTP came to the rescue. In collaboration with Swasta Pintar Sdn Bhd, the UTP H2OPE group put green technology to work in filtering out contaminants and ensuring a constant supply of clean drinking water. They installed a filtration system provided by German-based water treatment specialist, Watch Water GmbH.


RUGBY TEAM
DRILLERS

CONVERTING WASTE TO ENERGY

A group of UTP engineering students have installed a biodigester for farmers and other members of the Papan Agro Valley community in Pusing, Perak, under the university's "Enlighten their Life" project.

Animal waste is a valuable source of nutrients and renewable energy. When left to decompose in the open it can be an environmental hazard as it emits harmful air pollutants such as methane, nitrous oxide, ammonia, hydrogen sulphide and volatile organic compounds.

With the introduction of anaerobic digestion technology which converts animal waste to methane biogas, the Papan Agro Valley community now has an easily accessible and sustainable source of renewable energy.

The UTP project team briefed and trained workers drawn from the community on the use of the bio-digester. They are also working with their industry partner, Papan Agro Valley, to spread greater awareness of this waste management solution among other farming communities and organisations.

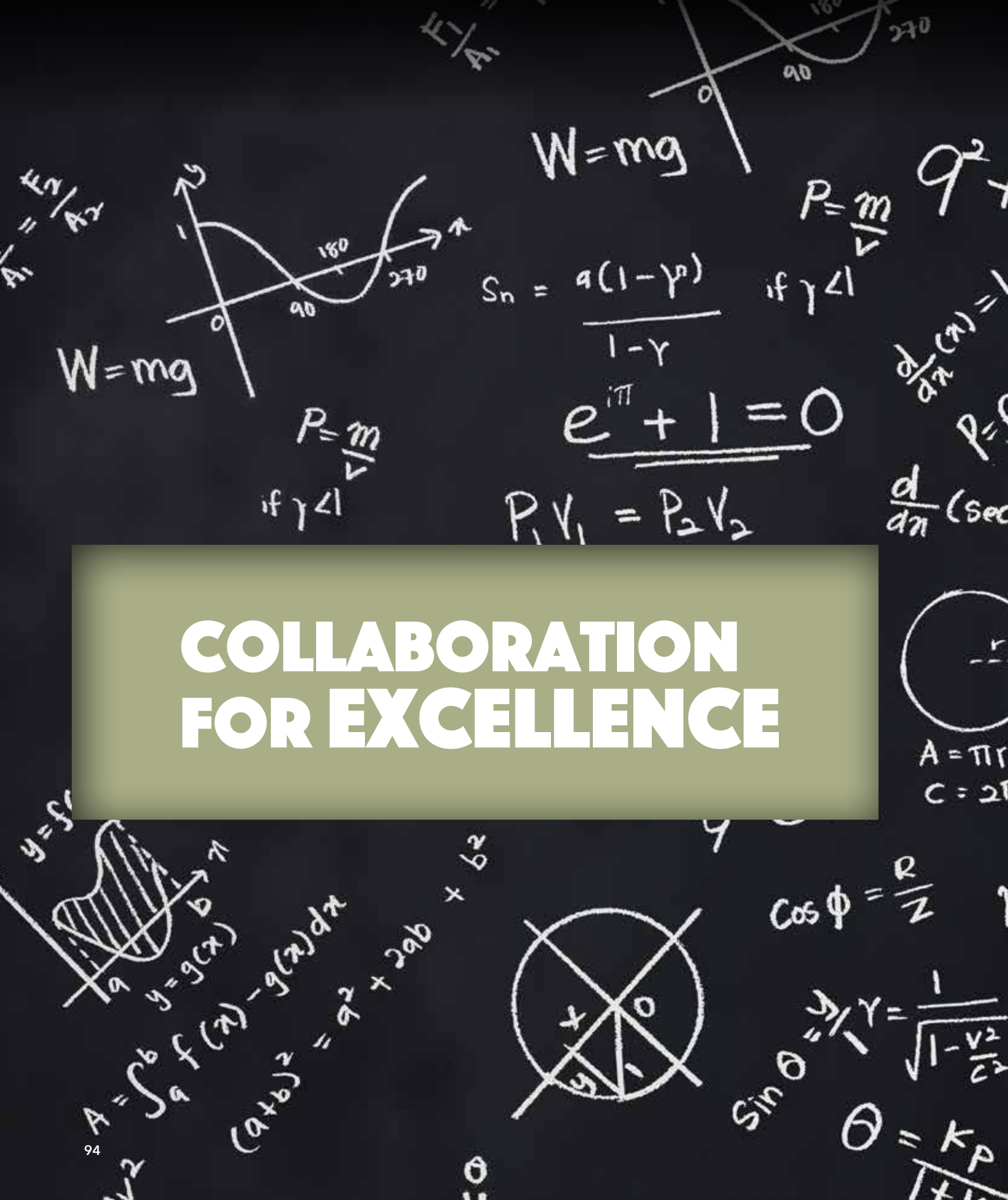
JOURNEY OF DISCOVERY

UTP's emphasis on community engagement took a group of its undergraduates to a primary school in Narathiwat, Thailand, to promote awareness of the importance of English, the most widely spoken language in the world.

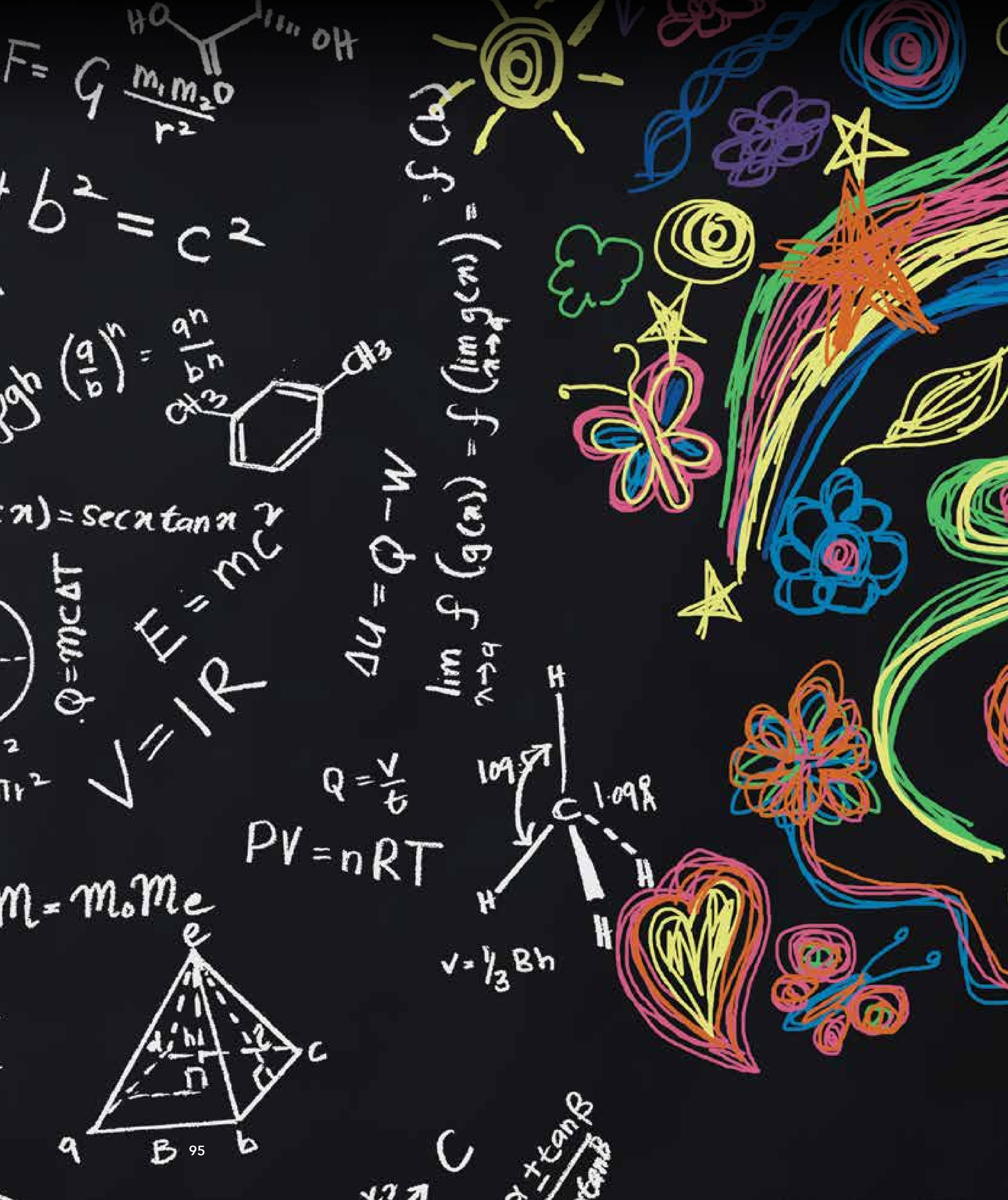
The students and their supervising lecturer from the Department of Management and Humanities rolled out a carefully planned week-long programme which included interactive learning modules, outdoor classroom and charades to engage the interest of the schoolchildren.

It was a unique opportunity for the UTP undergraduates to hone their leadership skills and gain a deeper awareness and understanding of a different community and culture through interaction and collaboration.

The students ended their visit to Thailand with a day at a secondary Islamic school to share experiences and thoughts about university life at UTP.



COLLABORATION FOR EXCELLENCE


PV=nRT
V=IR
E=mc²
Q=mcΔT
ΔU=Q−W
Q=V/t
v=⅓Bh
1.09Å
secx tanx

Strategic Partnerships

UTP values educational experiences and opportunities that enhance academic success. It recognises that collaboration with other teaching and learning institutions and with industry is an important factor in this success, and has encouraged cooperation and interaction. In 2018, the university signed several agreements with both academic and industry organisations.

Improving Education Standards

Indonesia's Universitas Islam Riau (UIR) and Universiti Teknologi PETRONAS are collaborating to achieve educational excellence and produce game-changing technologies for the energy sector.

The two universities have agreed to exchange faculty members, students and academic material, and jointly undertake research, organise seminars, meetings and special short-term academic programmes.

Speaking at the signing of a Memorandum of Understanding, UTP Vice Chancellor Prof Dr Mohamed Ibrahim Abdul Mutalib said the collaboration would enable UIR and UTP to make their mark as world-class research and training institutions in the region.

Developing Solutions for O&G

Hyundai Heavy Industries Co Ltd (HHI) and UTP are working in close collaboration to develop technology solutions for the energy sector. A five-year agreement signed in 2018 involves joint research and developing comprehensive offshore process technologies. HHI and UTP will also exchange information on successful R&D projects, jointly organise conferences and seminars, and undertake student internship programmes and staff attachments.

Schlumberger is sponsoring two UTP students enrolled in the Master of Science in Drilling Engineering programme.

A strategic alliance with Ground Data Solutions (GDS) will give UTP students access to internship opportunities at a high-tech company. UTP will collaborate with GDS in various consulting and R&D projects and engage company employees as adjunct lecturers.

A Position of Trust

UTP became the trustee of waqf for three years under a Memorandum of Agreement signed with the Islamic Religious Council and Malay Customs Perak (MAIPk) in 2018. Following the signing ceremony which was witnessed by UTP's Chairman Dato' Raiha Azni Abd Rahman, 72 deserving students received zakat contributions.

Enhancing the Entrepreneurial Ecosystem

UTP is among five universities with whom PETRONAS Dagangan Bhd (PDB) is collaborating to build entrepreneurial skills among undergraduates and encourage youth to start up small businesses.

PDB will invest RM50 million in this important initiative which supports the Government's plan to advance the country's digital economy.

Regional Collaboration

UTP and the Telkom University of Indonesia have forged a partnership that will allow students and staff from both institutions to exchange knowledge and cross-cultural experiences. The two universities will exchange staff and students and conduct joint research projects.

An agreement was signed by UTP and three other Malaysian government linked universities, as well as five member institutions of the Indonesian Aliansi Perguruan Tinggi Swasta Berbasis Badan Usaha Milik Negara (APERTI-BUMN) to enhance student experience.

Engineers and scientists from Pakistan's National Engineering & Scientific Commission will pursue postgraduate studies at UTP under an agreement signed during the year.

UTP and the Directorate General of Oil and Gas Indonesia have agreed to work together in sharing and disseminating knowledge and information on oil and gas policy.

O&G Education Hub

UTP and the Energy Institute of the UK have come together to set up an Oil and Gas Industry Education Hub (OGIE-HUB) to build up professional expertise and skills.

Given the rapidly changing energy landscape, the OGIE-HUB will provide the next generation of energy professionals with vital support in their education journey.

Under the guidance and direction of Prof Ir Dr Mohd Shahir Liew, Deputy Vice Chancellor Research & Innovation, it will boost knowledge, understanding and competence, and create a breeding ground for research ideas and solutions.

Staying on the Cutting Edge

Bureau Veritas (M) Sdn Bhd has renewed its agreement to provide UTP's Department of Civil & Environment Engeering with advanced software. This gives undergraduate and postgraduate students access to the company's Hydrostar, Ariane and Homer applications in modelling and simulation studies, particularly for offshore engineering.

The partnership has also paved the way for high-impact R&D collaboration and internship opportunities.

High-Impact Partnership

UTP Proper temperature control is crucial for the efficiency and reliability of LED products which are increasing in popularity. UTP has teamed up with Nano Malaysia on research projects exploring the effectiveness of nanotechnology in thermal management solutions.

Some of these involve the use of carbon-based nanocomposites such as carbon nanotubes for application in the electronics, automotive and information technology sectors.

Expanding Expertise in Statistics

UTP is set to deepen its expertise in statistical science through a strategic partnership with the Department of Statistics Malaysia.

This will involve research projects, a sharing of resources and the development of high quality education and training programmes.

Strengthening Interest in Science & Technology

UTP believes it has an important role in encouraging scientific and technological vocations. It is working with the German-Malaysian Institute (GMI) to strengthen Technical and Vocational Education and Training (TVET). The aim is to equip young Malaysians with the knowledge and skills to tackle the challenges of Industry 4.0.

GMI graduates will now be able to further their studies at UTP. The two institutions will also collaborate on innovative staff and student development programmes.

UTP is collaborating with the RE2 International Computer School to deepen interest in STEM related subjects. Students at the school will benefit from access to the university's state-of-the-art facilities, learning modules, research experts and industry partners.

Boosting Graduate Employability

UTP has established a partnership with JobStreet.com, a leading online marketplace in Asia, to strengthen its Graduate Employability Programme. With access to JobStreet.com's workplace expertise, UTP students will acquire critical knowledge and understanding to strengthen their career prospects.

A partnership with Solutas Consultancy Sdn Bhd will strengthen the employability of final year students from the B40 group.

Fostering Cooperation for Mutual Benefit

The university has forged strategic alliances with:

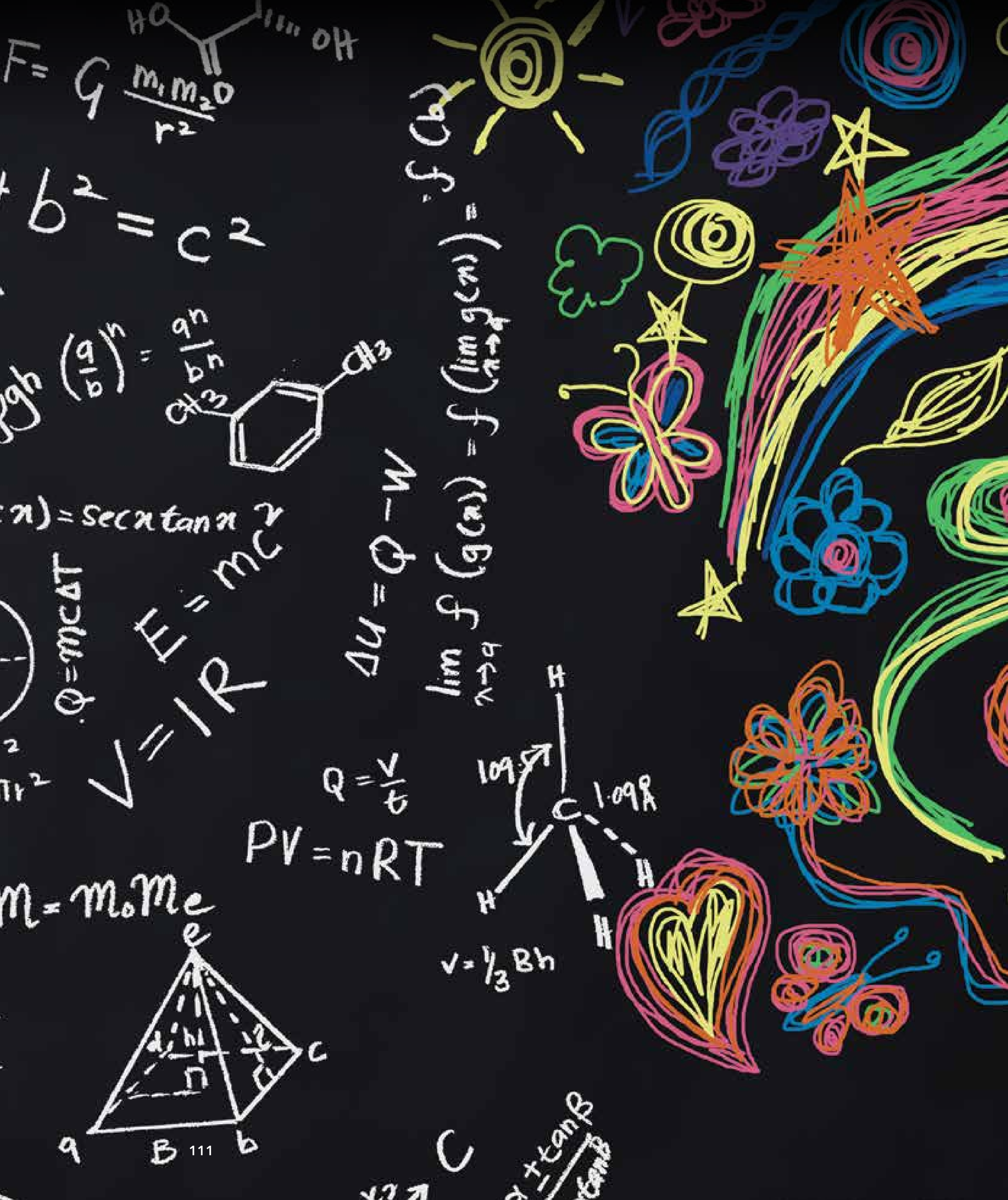
Universiti Malaya – to promote an integrated system of lectureship and research, especially for the Fundamental and Applied Sciences Department and the Electrical and Electronic Engineering Department.

Universitas Syiah Kuala (UNSYIAH) – to cement UTP's position as a partner of choice in a wide range of activities and collaborations.

Westlake International School in Kampar – to strengthen and enhance the quality of their science, technology and innovation programmes.

Universitas Teknologi Sumbawa, Indonesia – to boost their student mobility and staff development efforts.

GOVERNANCE



PV=nRT
V=IR
E=mc²
Q=mcΔT
ΔU=Q-W
Q=V/t
v=⅓Bh

CHANCELLOR
Tun Abdullah Ahmad Badawi

Tun Abdullah Ahmad Badawi:
"Malaysian graduates of UTP must become a part of the country's development process and must use the knowledge gained in a creative and innovative way to add value and to bring prosperity to the community and the country. In order for Malaysia to become a respected global player we must understand each other and take advantage of each other's strengths to face the world as one. For this reason it is critical that educational institutions from kindergartens through to universities focus on quality instruction, affordability and an educational ethos that respects, understands and incorporates the county's cultural, religious and ethnic diversity"

Tun Haji Abdullah Haji Ahmad Badawi was on born on 26 November 1939. He had a career as a civil servant, political leader, diplomat and statesman that spanned 45 years. He became Prime Minister of Malaysia in 2003 – 2009. He is also referred to as the "Father of Human Capital Development" (Bapa Pembangunan Modal Insan). Tun Abdullah focussed on human capital development as a key pillar of his Administration. He advocated for the country to build a strong Science and Technology platform emphasising the need for innovation and creativity. He was appointed Chancellor of Universiti Teknologi PETRONAS (UTP) in March 2016.

PRO CHANCELLORS

Datuk Ahmad Nizam Salleh • Tan Sri Wan Zulkiflee Wan Ariffin

Datuk Ahmad Nizam Salleh:
"UTP sees student learning as an experiential journey and one that shapes their plans and dreams. We journey with them to help them secure a future filled with a potential for excellence."

Tan Sri Wan Zulkiflee Wan Ariffin:
"At UTP we focus on real education that builds knowledge, skills and confidence. Every student must feel valued, their dignity affirmed and self-respect kept intact. Climbing to the top demands strength, perseverance and clarity of vision. There is a lot of hard work undertaken by Faculty and Staff of UTP to ensure students graduate with not just a degree but with life skills that will make each one a successful individual and an asset to the organisation they serve."


1
2
3
4
5
6
7
8

The Board places high importance on integrity, transparency, accountability and professionalism in its commitment to meet the high expectations of stakeholders.

CHAIRMAN

1. **Dato' Raiha Azni Abd Rahman**

MEMBERS

2. **Datuk Mohd Anuar Taib**
3. **Freida Amat**
4. **Ir Mohamed Firouz Asnan**
5. **Mazuin Ismail**
   From 26 April 2018

VICE CHANCELLOR

6. **Prof Dr Mohamed Ibrahim Abdul Mutalib**

COMPANY SECRETARY

7. **Ahmad Nabil Azizan**
   Until 31 October 2018
8. **Syed Marzidy Syed Marzuki**
   From 1 November 2018


1


2


3


4


5


6


7


8


9


10


11


12

The Executive Management Committee assists the Vice Chancellor particularly in regard to achieving the objectives of UTP's strategic action plan.

Universities face a challenging future. UTP is well set to embrace the new and exciting opportunities ahead.

1. VICE CHANCELLOR (CHAIRMAN)
Prof Dr Mohamed Ibrahim Abdul Mutalib

2. DEPUTY VICE CHANCELLOR, ACADEMIC
Prof Dr Hilmi Mukhtar

3. DEPUTY VICE CHANCELLOR, RESEARCH & INNOVATION
Prof Ir Dr Mohd Shahir Liew

4. DEPUTY VICE CHANCELLOR, STUDENT AFFAIRS & ALUMNI
Assoc Prof Dr Nor Hisham Hamid

5. REGISTRAR
Assoc Prof Dr Azrai Abdullah

6. CHIEF FINANCIAL OFFICER
Andrew Bernard Shanta

7. CHIEF STRATEGY OFFICER
Ir Dr Aidid Chee Tahir

8. CHIEF SUPPORT SERVICES OFFICER
Solihuddin Ahmad Nasarudin

9. CHIEF HUMAN RESOURCES OFFICER
Zamri Yusof

10. SENIOR DIRECTOR, CORPORATE COMMUNICATIONS
Shamsina Shaharun

11. SENIOR DIRECTOR, PROJECT MANAGEMENT OFFICE
Assoc Prof Dr Shahrina Md Nordin

12. SENIOR MANAGER, LEGAL SERVICES (SECRETARY)
Haslina Noor Hasni


2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17

1. VICE CHANCELLOR (CHAIRMAN)
Prof Dr Mohamed Ibrahim Abdul Mutalib

2. DEPUTY VICE CHANCELLOR, ACADEMIC
Prof Dr Hilmi Mukhtar

3. DEPUTY VICE CHANCELLOR, RESEARCH & INNOVATION
Prof Ir Dr Mohd Shahir Liew

4. DEPUTY VICE CHANCELLOR, STUDENT AFFAIRS & ALUMNI
Assoc Prof Dr Nor Hisham Hamid

5. DEAN, FACULTY OF ENGINEERING
Assoc Prof Dr Fakhruldin M Hashim

6. DEAN, FACULTY OF SCIENCE & INFORMATION TECHNOLOGY
Assoc Prof Dr Jafreezal Jaafar

7. DEAN, CENTRE FOR FOUNDATION STUDIES
Assoc Prof Dr Balbir Singh Mahinder Singh

8. DEAN, CENTRE FOR GRADUATE STUDIES
Assoc Prof Ir Dr Rosdiazli Ibrahim

9. DIRECTOR, CENTRE FOR STUDENT DEVELOPMENT
Assoc Prof Dr Nurlidia Mansor

10. DIRECTOR, RESEARCH MANAGEMENT CENTRE
Assoc Prof Dr Abdul Rahim Othman

11. PROFESSOR, FACULTY OF ENGINEERING
Prof Ir Dr Suzana Yusup

12. PROFESSOR, FACULTY OF SCIENCE & INFORMATION TECHNOLOGY
Prof Dr Bahruddin Saad

13. CHIEF FINANCIAL OFFICER
Andrew Bernard Shanta

14. CHIEF STRATEGY OFFICER
Ir Dr Aidid Chee Tahir

15. CHIEF SUPPORT SERVICES OFFICER
Solihuddin Ahmad Nasarudin

16. SENIOR MANAGER, LEGAL SERVICES
Haslina Noor Hasni

17. REGISTRAR (SECRETARY)
Assoc Prof Dr Azrai Abdullah

The Senate is the supreme academic body of the university and supervises and regulates teaching and discipline.

ACADEMIC ADVISORY COUNCIL

CHAIRMAN

Dato' Raiha Azni Abd Rahman
Senior Vice President
Group Human Resource Management
PETRONAS

MEMBERS

Prof Muhammad Yunus
Nobel Laureate, Social Entrepreneur and Founder of Grameen Bank
Chairman of Yunus Centre

Prof Dr Abid Khan
Deputy Vice Chancellor and Vice President (Global Engagement)
Monash University, Australia

Prof Dr Choi Han Suk
Professor of Graduate School of Engineering Mastership
Pohang University of Science and Technology (POSTECH)

Prof Dr Reiko Kuroda
Fellow, The World Academy of Sciences for the Advancement of Science in Developing Countries (TWAS)

Dr David Wood
Futurist, Catalyst, Singularitarian, London, United Kingdom Management Consulting

Tan Sri Dato' Azman Hashim
Chairman, AmBank Group

Briand Greer
President ASEAN Honeywell International Incorporation, USA

Prof Emeritus Tan Sri Dr Zakri Abdul Hamid
Former Science Advisor to the Prime Minister of Malaysia

Prof Dr Feng Da Hsuan
Special Advisor to the Rector and Director of the Global Affairs Office, University of Macau
Senior Fellow, Institute of Advanced Studies, Nanyang Technological University

Prof Dr Michael A Celia
Director, Princeton Environmental Institute & Theodora Shelton Pitney Professor of Civil and Environmental Engineering, Princeton University, USA

Prof Dr Deo Karan Prasad
Chief Executive Officer, CRC for Low Carbon Living Ltd
University of New South Wales, Australia

Senapathy Gopalakrishnan
Head of Executive council of Infosys Ltd
Vice President of Confederation of Indian Industry
Managing Director of Infosys Limited, India

Andrew Frederick James Gould
Former Chairman & CEO, Schlumberger, USA

Prof Dr Shih Choon Fong
Advisor to the Chinese Academy of Sciences & Peking University, Taiwan

Prof Dr Mohamed Ibrahim Abdul Mutalib
Vice Chancellor and Managing Director/CEO
Universiti Teknologi PETRONAS

SECRETARY

Ir Dr Aidid Chee Tahir
Chief Strategy Officer
Universiti Teknologi PETRONAS

The Academic Advisory Council offers a platform for the exchange of ideas between the university and experts from various sectors. It provides guidance and strategic direction for the university's development.

RESEARCH ADVISORY COUNCIL

CHAIRMAN

Prof Dr Mohamed Ibrahim Abdul Mutalib
Vice Chancellor and Managing Director/CEO
Universiti Teknologi PETRONAS

MEMBERS

Dato' Dr Zainal Abidin Mohd Yusof
Former President/CEO, SIRIM Berhad

Dato' Kamarul Redzuan Muhamed
Managing Director/CEO, UZMA Group

Dato' Ng Wan Peng
Chief Operating Officer, Multimedia Development Corporation (MDeC)

Dr Nasir Darman
Head GR&T, PETRONAS

Ahmad Rizan Ibrahim
President & CEO, MIMOS Berhad

Zainal 'Abidin Abd Jalil
Group Managing Director, DNeX

You Soon Tiong
Director/Manager, Halliburton Technical Excellence Centre Malaysia

Prof Datuk Dr Asma Ismail
President, Academy of Sciences Malaysia
Vice Chancellor, Universiti Sains Malaysia (USM)

Prof Dr Abid Khan
Deputy Vice Chancellor/Vice President (Global Engagement)
Monash University, Australia

Prof Saman K Halgamuge
Director, Research School of Engineering
Australian National University College of Engineering & Computer Science

Dato' Dr Zulkifli Mohamed Hashim
Senior Director (Commercialisation & Planning Programme), Malaysian Nuclear Agency

Sid Vinyard
Chairman, HTC Midtown

Prof Ir Dr Mohd Shahir Liew
Deputy Vice Chancellor, Research & Innovation
Universiti Teknologi PETRONAS

SECRETARY

Assoc Prof Dr Abdul Rahim Othman
Director, Research Management Centre
Universiti Teknologi PETRONAS

UTP's vision is to produce outstanding research that transforms lives and drives innovation and creativity.

In today's highly competitive research environment, UTP's Research Advisory Council has a vital role in helping the university meet its research and innovation goals. It is made up of a wide cross-section of industry experts.

STUDENT DEVELOPMENT ADVISORY COUNCIL

UTP is constantly looking for ways to enrich campus life in its efforts to provide an engaging learning environment and an outstanding student experience.

CHAIRMAN

Prof Dr Mohamed Ibrahim Abdul Mutalib
Vice Chancellor and Managing Director/CEO
Universiti Teknologi PETRONAS

MEMBERS

Dato' Dr Adnan Alias
Former Chief Executive Officer, The Islamic Banking and Finance Institute Malaysia (IBFIM)

Datuk Chin Leng Sim @ Marina Chin
Former Director Sports Division, Ministry of Education

Mohd Suhaimi Baharudin
Director, Technip Geoproduction (M) Sdn Bhd

Ainul Azhar Ainul Jamal
Board of Director, PETRONAS

Dato' Ng Wan Peng
Chief Operating Officer, Multimedia Development Corporation (MDeC)

Dato Dr Ismail Alias
Vice President, Persatuan Kaunseling Malaysia (PEKAMA)

Kamal Bahrin Ahmad
Vice President, PETRONAS Gas Berhad

Nan Yusri Nan Rahimy
Group Managing Director, Deleum Berhad

Goh See Wee
Executive Director, Astir Technology Sdn Bhd

Mac Chung Jin
Deputy Chief Executive Officer, Muhibbah Engineering (M) Sdn Bhd

Azlan Rudy Abdul Malik
Chief Executive Officer, 1Malaysia For Youth (iM4U)

SECRETARY

Assoc Prof Dr Nor Hisham Hamid
Deputy Vice Chancellor, Student Affairs and Alumni
Universiti Teknologi PETRONAS

The Council comprises a number of corporate leaders who provide industry perspectives on the various student development initiatives at UTP that can enhance graduate employability.

INTERNATIONAL EXTERNAL EXAMINERS

CHEMICAL ENGINEERING
Prof Dr Klaus Hellgardt
Professor of Chemical Engineering
Campus Imperial College of London, UK

CIVIL AND ENVIRONMENTAL ENGINEERING
Prof Dr Bjorn Birgisson
Director, Centre for Infrastructure Renewal
TEES Distinguished Research Professor
Honorary Professor at Aston University, UK
Professor of Civil Engineering at Texas A&M University, USA

ELECTRICAL & ELECTRONIC ENGINEERING
Prof Jamie Evans
Professor and Deputy Dean (Academic)
Melbourne School of Engineering
The University of Melbourne
Australia

MECHANICAL ENGINEERING
Prof Paul D Funkenbusch
Professor of Mechanical Engineering and Professor of Materials Science
University of Rochester, USA

PETROLEUM ENGINEERING
Prof Dr Mohamed Y Soliman
Department Chair & William C. Miller Chair
Petroleum Engineering Department
University of Houston, Texas, USA

GEOSCIENCES
Prof Dr Klaus Regenauer-Lieb
Head Of School Petroleum Engineering
University of New South Wales, Australia

BUSINESS INFORMATION SYSTEMS
Prof Andy Koronios
Head of School
Information Technology and Mathematical Sciences
Division of Information Technology Engineering & Environment
University of South Australia, Australia

INFORMATION & COMMUNICATION TECHNOLOGY
Prof Dr Wolfgang Slany
Professor of Computer Science
Head of the Institute for Software Technology
Institute Fur Softwaretechnologie
Technische Universitat Graz Inffeldgasse, Austria

APPLIED CHEMISTRY
Prof Paul D Lickiss
Professor of Organometallic Chemistry
Imperial College, UK

APPLIED PHYSICS
Prof Michael Christopher Payne
Director of EPSRC Centre for Doctoral Training in Computational
Professor, University of Cambridge, UK

MANAGEMENT & HUMANITIES
Prof John M Luiz
Visiting Professor at the Graduate School of Business (GSB) at the University of Cape Town, South Africa
Professor of International Business at the School of Business, Management and Economics
University of Sussex, UK

Quality assurance is an integral part of UTP's efforts to ensure its programmes meet the highest international standards. This group of international examiners provides invaluable inputs on curriculum development, examinations, staff development and engineering education trends.

CHEMICAL ENGINEERING

Datuk Sazali Hamzah
Vice President
Managing Director
Chief Executive Officer
PETRONAS, Chemical Group Berhad

Razak Rahman
Project Manager
Malakoff Corporation Berhad

Julianna Kamaruddin
General Manager
NGC Energy Sdn Bhd

Paul R Ellis
Managing Director
Schaefer Kalk (M) Sdn Bhd

Ir Fauziah Ali
Custodian Engineer (Advanced Process Control)
Group Technical Solutions

CIVIL AND ENVIRONMENTAL ENGINEERING

Prof Ir Hj Mohamed Haniffa Hj Abdul Hamid
Chief Operating Officer
Indah Water Konsortium Sdn Bhd

Ir Wan Anuar Wan Endut
Managing Director and Civil Engineer
Arup Jururunding Sdn Bhd

Ir Liam We Lin
Technical Director
RPM Engineers Sdn Bhd (Civil & Structural Engineering Consultancy Services)

Wan Mohammad Sobri Wan Abdullah
Principal Engineer (Water Technology)
PETRONAS Group Technology Solution (GTS)

Ir Noorul Khairi Mohd Nor
CEO
Petrofac RNZ

Kapt. (B) Dato' Ir Hj Anuar Hj Yahya
Deputy Director General (Specialist Sector)
Department of Irrigation and Drainage

ELECTRICAL & ELECTRONIC ENGINEERING

Dr Aznan Ezraie Ariffin
Head (Solar Business), New Product Development, Distribution Divisor
Tenaga Nasional Berhad (TNB)

Shah Rizal Dahlan
Custodian Engineer Instruments & Controls
PETRONAS Group Technical Solution (GTS)

Ir Tan Shiew Sun, Johnson
Vice President Process Automation
Digital Factory / Process Industries & Drives
Head of Regional Vertical Sub-Segment (VSS) Glass & Solar ASEAN
Business Segment Coordinator for Process Instrumentation ASEAN
Siemens Malaysia Sdn Bhd

Ir Salmey Abdul Halim
Project Director / Custodian Electrical
Pengerang Cogeneration Plant (PCP)
Pengerang Transmission Line Projects (PTL)
PD&T Division, PETRONAS

Andrew Thuan
Vice President, IT & Cloud
ERICSSON

Eng Ling Ho
Principal Engineer
Intel Corporation

Dato' Noor Kamarul Anuar Nuruddin
Chief Special Project Officer
Celcom

Mohd Farid Zainal Abidin
CEO & Founder
Elvira Systems Sdn Bhd

MECHANICAL ENGINEERING

Ir Rosli B Hj Yusof
Principal Engineer
Product Technology (Rotating Equipment) Cluster
Mechanical Engineering Department
Group Technical Solutions, Technology & Engineering Division, PETRONAS

Ir Roznan Abdul Rashid
Technical Services Manager
General Electric Power

Ir Nasir Abdul Hamed
Director of Expert Service
Mechanical Engineering Branch PWD
PWD Headquarters, Kuala Lumpur

Ir Akmal Hisham Hamzah
Lead Pipeline Engineer
RNZ Integrated (M) Sdn Bhd

This panel of industry experts was established to ensure that UTP's teaching and learning approaches remain relevant to the workplace.

PETROLEUM ENGINEERING

Dr Bazlee Mat Zain
Founder/ Director
Amaray Pty Ltd/ Amaray Innive Sdn Bhd

Dr Raj Deo Tewari
Custodian, Reservoir Engineering
PETRONAS Carigali Sdn Bhd

Abd Rahman Harun
Reservoir Engineering Advisor
EnQuest Petroleum Developments Malaysia Sdn Bhd

Dr Marco T Rincon Torres
Baroid Central Asia Technical Manager
Halliburton

Bahrom Madon
Custodian, Production Technologist
PETRONAS Carigali Sdn Bhd

Syahir Luthfi Chan
Managing Director (Thailand, Cambodia and Laos)
Schlumberger Overseas S.A.

PETROLEUM GEOSCIENCES

Muhammad Kamal Embong
General Manager
Upstream Business Exploration
Geology & Reservoir Solutions

Ahmad Hatta Kamaruzzaman
Managing Director, Engineering Malaysia
Aker Engineering Malaysia Sdn Bhd

Abdul Hanan Ahmad Nadzeri
Deputy General Manager
FUGRO GEODETIC (Malaysia) Sdn Bhd

Azmi Ismail
Head, Project Delivery & Operations
Vestigo Petroleum Sdn Bhd

Dato' Yunus Abd Razak
Chairman
Board of Geologists Malaysia
Board of Geologists (BoG)

Zuraida Mat Isa
General Manager Geophysics/ Petrophysics
Energy Quest Sdn Bhd

COMPUTER & INFORMATION SCIENCES

Dr Dzaharudin Mansor
National / Regional Technology Officer
Microsoft Malaysia

Mohd Nizam Abdul Rahim
Head of IT Services
Sime Darby Global Services Centre

Johan Affendi Johan Shah Steven
Business Chief Information Officer - Corporate
PETRONAS ICT Sdn Bhd

Wan Ahmad Kamal Wan Halim
Executive Vice President - Enterprise
Telekom Malaysia Bhd

Afizulazha Abdullah
Head of Operational Excellence
CELCOM AXIATA Berhad

Dr Ettikan Kandasamy Karuppiah
Director, Developers Ecosystem
Enterprise Business, South East Asia
NVIDIA Singapore

Abu Bakar Ngah
Executive Director & Performance Consultant
People Performance Sdn Bhd

Mohd Asrul Abdul Aziz
Managing Director
Uzma Integrated Solution Sdn Bhd

APPLIED CHEMISTRY & APPLIED PHYSICS

Dr Chuah Chaw Teo
Executive Director
Spritzer Bhd

Dr Rezal Khairi Ahmad
Chief Executive Officer
NanoMalaysia Berhad

Mohd Rezuwan Shah Zakaria
Senior Vice President
R&D and Innovation Department
Johor Biotechnology & Biodiversity Corporation

Dato' Ir Muhamad Guntor Mansor Tobeng
Managing Director
Gading Kencana Sdn Bhd

Dr Shahrul Yazid Yahaya
R&D Manager, System Test Hardware Development Kulim
Intel Technology Sdn Bhd

Dr Ahmad Riza Ghazali
Head of R&D Exploration Technology
Group Research and Technology PETRONAS Research

MANAGEMENT & HUMANITIES

Datuk Seri Abdul Jalil Abdul Hamid
Chief Executive Officer
The New Straits Times Press (M) Bhd

Rosli Ismail
Senior Manager, Corporate Communications
Permodalan Nasional Berhad

Mohd Redzuan Mohd Sofian
Head of Department (Business Eco System)
Iskandar Regional Development Authority (IRDA)

Nik Mohd Hasyudeen Yusoff
Founder
Inovastra Capital Sdn Bhd

The UTP Annual Review 2018 includes reports, activities and events of Universiti Teknologi PETRONAS from 1 January to 31 December 2018. It is available in both print and online version.

Universiti Teknologi PETRONAS
32610 Seri Iskandar, Perak Darul Ridzuan, Malaysia

Tel: 1-300-22-8887

$P = \frac{m}{V}$

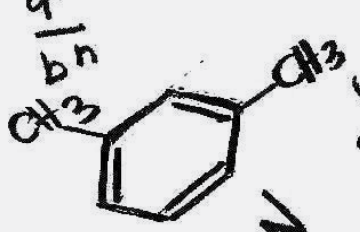
$a^2 + b^2 = c^2$

$S_n = \frac{a(1-r^n)}{1-r}$ if $r < 1$

$\frac{d}{dx}(x) = 1$

$e^{i\pi} + 1 = 0$

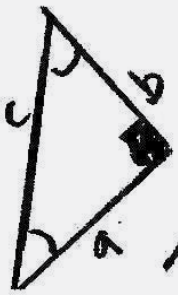
$P = \rho g h \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$



$P_1 V_1 = P_2 V_2$

$\frac{d}{dx}(\sec x) = \sec x \tan x$

$\lim_{x \to a} f(g(x)) = f(\lim_{x \to a} g(x)) = f(a)$

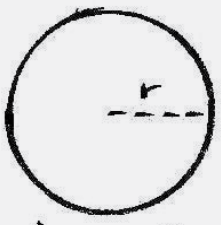


$G = H - TS$

$\Delta\theta = \frac{\Delta s}{r}$

$F = ma$

CH_4



$A = \pi r^2$

$C = 2\pi r^2$

$Q = mc\Delta T$

$E = mc^2$

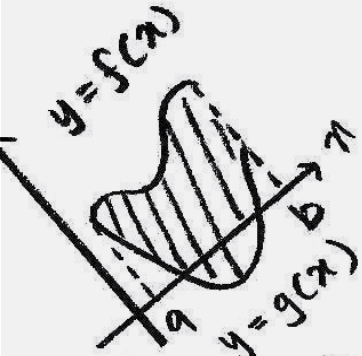
$V = IR$

$\Delta U = Q - W$

$Q = \frac{V}{t}$

$PV = nRT$

$\cos\phi = \frac{R}{Z}$



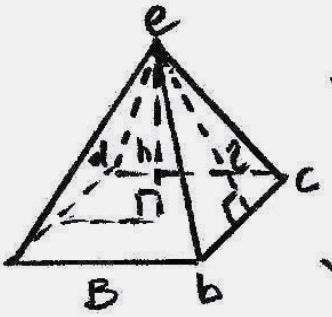
$A = \int_a^b f(x) - g(x)\,dx$

$(a+b)^2 = a^2 + 2ab + b^2$

$\sin\theta = \frac{y}{r}$

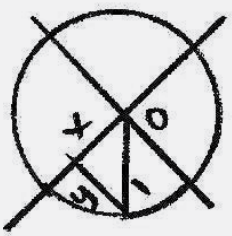
$\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$

$m = m_0 m_e$



$V = \frac{1}{3}Bh$

$E_k = \frac{1}{2}mv^2$



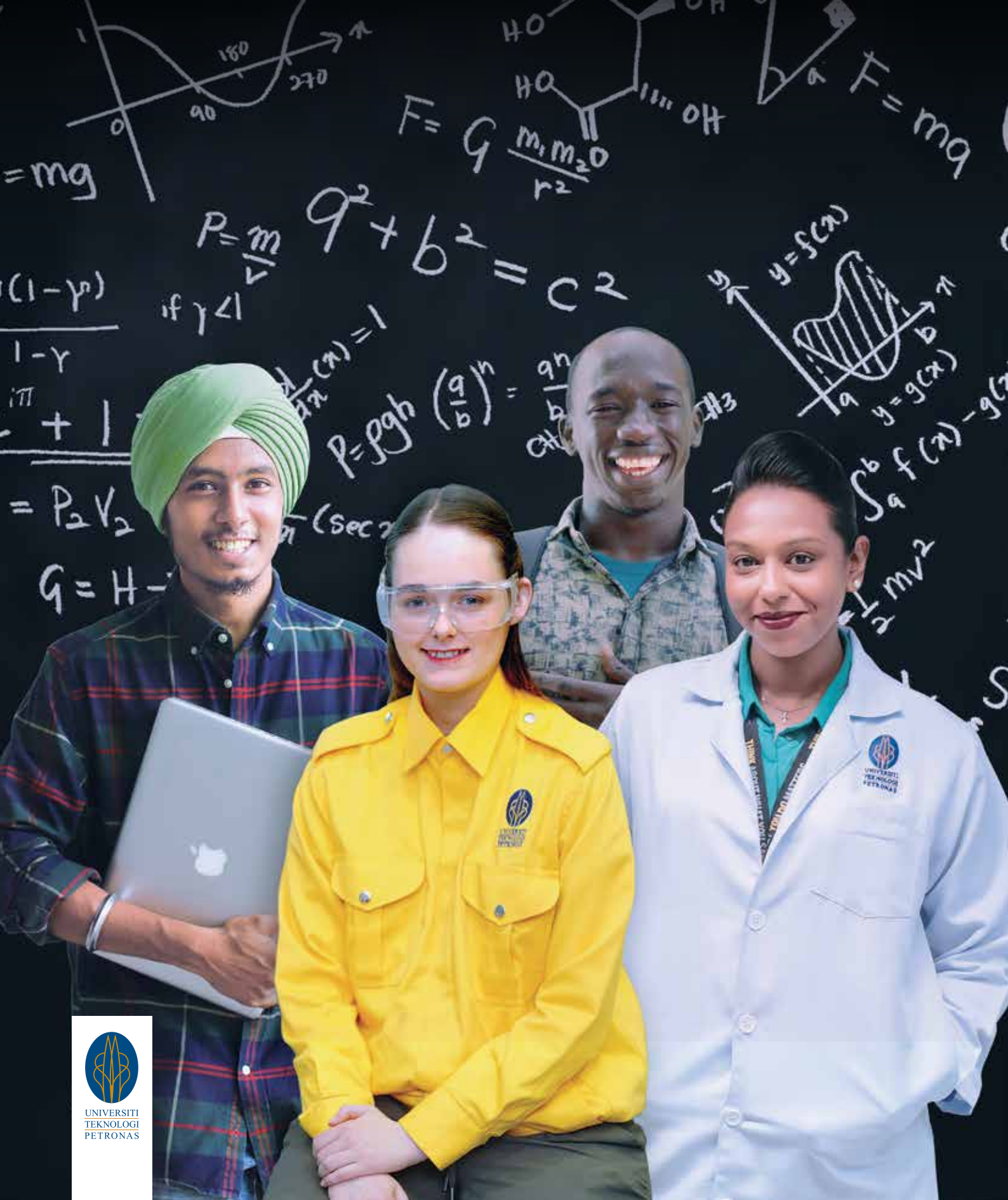
$\theta = \frac{kp}{1 + kp}$

$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$A \underset{k_2}{\overset{k_1}{\rightleftharpoons}} B \xrightarrow{k_3} C$

$\tan(\alpha \pm \beta) = \frac{\tan\alpha \pm \tan\beta}{1 \mp \tan\alpha \tan\beta}$

$\frac{V}{\lambda} \sin\theta = m\lambda$


UNIVERSITI
TEKNOLOGI
PETRONAS