HIGHLIGHTS

THE STATE AND FUTURE OF STEM EDUCATION
NEW MASS SPECTROMETRY CENTRE: SINGMASS
NEW ACADEMIC PROGRAMMES

OUR STUDENT REFLECTIONS

Our students share their experiences as a mountaineer, an intern in Sweden and a leader of a community project!

ALUMNI STORIES

Hear from our alumni Ms Shirley Khng and Dr Alfred Ang

STUDENT LIFE

Inaugural Student Events
NUS Science Student Events
Industry-Student Engagement Events

The Science Behind Our Scientists
“My goal is to develop complex analysis to become a sharper and more efficient tool box for other branches in mathematics.”

Prof Dinh Tien Cuong
Department of Mathematics

LEARNING JOURNEYS TO NUS SCIENCE

The Faculty continually engages youths through various outreach activities
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With thanks to contributors from sections, departments, industry partners and students societies.
New Academic Programmes

We continue to increase our suite of academic programmes to provide students with the breadth and depth of educational training to face an increasingly complex future. The following programmes admitted their first batch of students in Academic Year 2018/2019.

B.Sc. (Hons) in Pharmaceutical Science

This programme equips students with understanding of the drug discovery and development process, complemented with strong foundational knowledge of the regulatory and commercial environment.

New Mass Spectrometry Centre: SingMass

The NUS Protein and Proteomics Centre, together with the Singapore Lipidomics Incubator and the Functional Proteomics Laboratory of the Agency for Science, Technology and Research (A*STAR) received a National Research Foundation (NRF) Shared Infrastructure Support (SIS) grant to establish a national mass spectrometry centre, named Singapore National Laboratory for Mass Spectrometry (SingMass).

SingMass commenced in April and is led by Prof Ganesh ANAND (Department of Biological Sciences (DBS)), and co-led by Prof Markus WENK (DBS and A*STAR), Prof Brian BURKE (YYLSoM), Dr Radoslaw SOBOTA and Prof Brian BURKE (both from A*STAR).

The three research groups have complementary expertise and mass spectrometry platform technologies in structure proteomics, quantitative proteomics, lipidomics and metabolomics. SingMass will integrate their expertise to provide one-stop analytical research capabilities to mass spectrometry users within Singapore and beyond. It will also collaborate with local and international researchers and industry in relevant research and development programmes.

Joint Degree Programme (JDP): NUS Life Sciences with University of Dundee (UoD)’s Biological Sciences/Biomedical Sciences

In addition to delving into drug discovery and design expertise, this is the first-of-its-kind joint Honours programme enabling our students to complete a full-year research project at UoD, where they gain hands-on training in drug optimisation and design.

Concurrent Degree Programme (CDP) with The University of Melbourne Doctor of Veterinary Medicine (UoMelb DVM)

This integrates the two degree programmes so that it is possible to accelerate and complete the programme in 5.5 years. Students will acquire theoretical, practical and clinical training in veterinary medicine, which deals with the prevention, diagnosis and treatment of disease in animals, as well as veterinary science, which deals with the health and well-being of animals.

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Over 100 university educators from ASEAN and local institutions attended a symposium on 24 and 25 May, which marked the official launch of the STEM (Science, Technology, Engineering, Mathematics) for University Educators in ASEAN Programme.

This was the first time the Faculty, together with Temasek Foundation International, brought together academia from institutes of higher education in ASEAN to a dialogue on the changing face of STEM education.

Through plenary talks, panel discussions and interactive sessions, leaders in education and industry shared on the role of STEM education in the future economy, the challenges and opportunities afforded by disruptive technologies, and strategies adopted by various institutions to raise interest in STEM.

Prof HO Teck Hua, NUS Senior Deputy President and Provost, opened the symposium by painting the landscape for Singapore’s economy and workforce, and expressing his concern that universities should be ready to deliver relevant education in a time of rapid technological change.

At the plenary, speakers issued the call to students and educators on the pressing need for continual learning. Attendee Datin YM Woo Keat, Senior Lecturer and Head (Education Unit), School of Data Sciences at Nanyang Technological University, said, “Learn, Unlearn and Relearn!” - this point rekindled why we are in this job - to guide students towards the right attitude for lifelong learning.”

Participants also attended workshops led by lauded NUS educators, where they learnt different teaching techniques and the use of technology to encourage higher order thinking skills and deeper learning. On Prof SOW Chong Haur’s Minds-On Science demonstration, Prof Chittanon BURUNACHAI from Chulalongkorn University said, “His three-step learning process of Predict-Observe-Explain through simple yet creative demonstrations really got my attention. It is so simple yet I never thought about it this way.”

Prof Louie John VALLEJO from the University of Philippines Diliman found his assumptions challenged when he attended the workshop by Prof Victor TAN. “I was impressed with Prof Tan’s extensive use of technology in teaching mathematics. I may have to review my perception that the discipline of logic can only be effectively transferred through face-to-face instruction, and tried blending learning in the future.”

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“I have always been intrigued by drugs and their effects on the body. This course, which fosters self-directed learning and critical thinking, was the obvious choice for me.”

“I learnt from the firsthand experiences of my professors who themselves worked on many drug discovery projects. I acquired up-to-date knowledge of the industry which will be useful in the future.”

“The programme not only teaches us about drug discovery, but also provides opportunities for practical experience in the field.”

“This CDP gives me the opportunity to pursue what I truly love and am passionate about. The increasing urgency to conserve and protect what is left on our earth makes this course one of the most interesting for me.”

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KONG Qi Herng
Inaugural Pharmaceutical Science cohort

Deborah FONG Yuhui
Inaugural Life Sciences - Dundee JDP cohort

Nicole ONG Wen Pei
Inaugural Life Sciences - Dundee JDP cohort

Pooja BHAGWAN
Inaugural CDP with UoMelb DVM cohort
Sharon Yeo (first from right)

challenges through coding. At KTH Royal Institute of Technology, Sharon participated in business ideation and shaping solutions for healthcare issues through digital innovations. "I gained a headstart in healthcare enterprise by conceptualising and executing business ideas, and shaping solutions for healthcare issues through digital innovations." Sharon YEO

"This experience was entirely new to me. I faced the adversity of traversing through unfamiliar terrain - but this compelled me to discover more." GOH Jin Hao

"There is an art and science to understanding and describing the world around us." GOH Jin Hao

Scaling Tserko Peak

GOH Jin Hao, Year 1 Life Sciences, was part of a team of 14 NUS Mountaineering members who participated in the Winter Technical Mountaineering Course in December 2018, where they scaled the 5,740m Tserko Peak.

In ascending the snow-capped Himalayan peak, Jin Hao enjoyed a picturesque view of the Langtang Valley, towering mountains and gaping crevasses.

Living and Working in Stockholm

Year 3 Pharmacy student Sharon YEO fell in love with Stockholm during her year-long NUS Overseas Colleges (NOC) internship programme which commenced in August 2018.

She interned at Swedish medical technology company Byon8, where she helped develop a digital medical service powered by artificial intelligence, while also undertaking market research, human resources and business development.

At KTH Royal Institute of Technology, Sharon participated in business ideation projects and OpenHack Stockholm, which seeks to solve humanitarian challenges through coding.

Serving the Community with Heart

Rebekah ANG, Year 3 Life Sciences, believes in giving back to the community.

She led the organising committee for Grant A Wish, a signature project under the NUS Students Community Service Club. Focusing on underprivileged children and the elderly this year, the project granted the wishes of some 180 seniors and children from AMKFSC Community Services Ltd and REACH Community Services Singapore.

"Community service is very meaningful for me. I saw firsthand how gifts donated by the NUS community through Grant A Wish brought joy to the less privileged." Rebekah ANG

Reflected on her time, she says, "I gained a big head start in understand digital innovations." LIVING AND WORKING IN STOCKHOLM Sharan Yeo (first row, first from right)
INAUGURAL STUDENT EVENTS

STUDENT LIFE AWARDS 2019
29 January

CONGRATULATIONS TO OUR STUDENTS WHO WERE HONOURED FOR THEIR CONTRIBUTIONS IN LEADERSHIP, COMMUNITY SERVICE AND SPORTS!

Leadership Award (Merit)

“Winning the award was a bonus, what I truly won was the experience and the journey.”

Amos Lim, Year 4 Pharmacy (right), received the Leadership Award (Merit) for his role as the Organising Chairman of the Inter-Hall Games 2017/2018, and in driving fund-raising efforts for Eusoff Hall Bursary.

Athlete of the Year Award (Distinction)

“I am honoured to receive this award on behalf of my team who paddled alongside me.”

Rowena Lim, Year 3 Pharmacy, received the Athlete of the Year Award (Distinction) for her accomplishments in the NUS Dragon Boat Team (Women). She placed first in the Singapore Dragon Boat Festival and World University Dragon Boat Invitational Race.

Athlete of the Year Award (Merit)

“It is great that NUS nurtures both academic and sporting excellence.”

Nur Marina Chan Shi Min Alif Abdullah, Year 1 Life Sciences received the Athlete of the Year Award (Merit) for her accomplishments in the NUS Swimming Team. She was a Gold Medalist in the Southeast Asian Games (2015) and was a record holder for four events in SUniG (2017).

Community Engagement Award (Merit)

“The award will motivate future committee members to organise bigger and better events to engage a larger community.”

Xavier Chan, Year 2 Life Sciences, who received the Community Engagement Award (Merit) on behalf of the Science Sports Games team. The team introduced more sports activities and drove a twofold increase in participation.

Community Service Award (Merit)

“We hope that this will inspire more people to make an impact on the lives of others.” - Leong Enci, Year 3 Chemistry

Goh Kai Jie, Year 3 Chemistry, received the Community Service Award (Merit) on behalf of the Project Angel XXI team. The team undertook a potable water project in Chiang Mai.

PROJECT MERAKI 2019
11 to 23 May

12 students from the Food Science and Technology (FST) Programme joined FST Society’s first Overseas Service Learning Project to Paksong, Laos, under the newly formed group, YEP Project Meraki. They engaged farmers on simple food processing methods like sterilisation and fermentation, and sanitation practices. This helped farmers to preserve fresh harvested crops.

Emma Chew
Year 2 FST student

“Currently, the impact may be on a small scale and only specific to a few farmers. But we believe that the continuity of the project would have a ripple effect in influencing the mindsets and behaviours of other farmers, aiding the farming community in the future.”

Amelia Chew
Year 2 FST student

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Community Engagement Award (Merit)
The diversity of our campus community offers our students an energising environment where they can work and play hard, as well as give back to the community.

**NUS Science Student Events**

**SCIENCE DAY 2019**
25 January
Forging a sense of belonging in Science

Organised by the NUS Students’ Science Club, some 450 participants enjoyed a day of fun-filled activities at games booths, where they experienced the vibrancy of university life. They also gained exposure to different Science disciplines through familiar childhood movies which aimed to reignite the spirit of childlike curiosity.

**Chinese New Year Celebration for the Elderly**
26 January
Nurturing volunteering

35 elderly beneficiaries from the Caregiver Welfare Association, a voluntary welfare organisation, were treated to festive Chinese New Year games and activities organised by volunteers from the NUS Science Volunteer Corps (SVC). The SVC also organised bi-weekly sessions from 31 March to 30 May where the volunteers, grouped according to their dialect proficiencies, interacted with beneficiaries through conversations, activities and games.

**Statistics Career Talk 2019**
12 February
Connecting students to employers

The talk organised by NUS’ Statistics Society aimed to connect students with potential employers and highlight internship and job opportunities related to mathematics, statistics, data science and computer science. Speakers from Shopee, Accenture, TBWA and NUS’ Data Analytics Consulting Centre also shared on the skills in demand by employers.

**LITTLE MARCHALLERS**
23 March
Giving back to the community

Children from lower-income families supported by the Young Women’s Christian Association went on a learning journey to the Singapore Botanic Gardens where they were tasked to complete an activity booklet on the 3Rs (Recycle, Reuse, Reduce), global warming and local flora. The NUS Science Volunteer Corps also mentored the children at regular teaching sessions.

**MENTORSHIP PROGRAMME**
Bi-weekly programme from 30 January
Cultivating an early interest in science

The NUS Science Volunteer Corps collaborated with the Young Women’s Christian Association on a mentorship programme for primary school children which covers science enrichment and character development classes. Scientific concepts are taught through fun and easy experiments under the guidance of student mentors. Our students also serve as role models to impart values and life skills to the children.

**illumiNUS NIGHT CYCLING**
17-18 May
Promoting peer bonding and a healthy lifestyle

The NUS Science Sports Sub-Committee organised an overnight cycling event for students to promote peer bonding and a healthy lifestyle. Over 90 cyclists traversed a scenic trail which included the East Coast Park and Marina Barrage. They also explored eateries such as Swee Choon Restaurant and Al-Alzhar, and concluded their journey at Punggol Town, covering a total distance of 39 km.

**STEPUP! Charity Run Walk**
25 May
Running for charity

At the charity run/walk organised by the NUS Students’ Science Club, runners and walkers comprising faculty, alumni, staff and students, embarked on a route covering University Town and West Coast Park.

**Science Sports Games 2019**
23 February
Building teamwork amongst students, alumni and staff

Participants took a break from school life at a rousing day of competitive games such as captain’s ball and futsal. At the carnival-style recreational games comprising arcade basketball, laser tag, archery tag, rock climbing and dance battle, participants went through five stations to win lucky draw prizes.
Our alumni donned their walking shoes and gamely participated in several outings to various scenic spots in Singapore.

On 15 December, they went on an excursion of Petai Trail, MacRitchie Reservoir Park. Guided by students from nature group the BES (Bachelor of Environmental Studies) Drongos, our alumni got a taste of colourful flowering plants which filled the air with scents, and sightings of fauna like the long-tailed macaque.

On 9 February, our alumni toured cultural landmarks like the Singapore Maritime Gallery and the old Keppel Harbour, where they learnt about Singapore’s rich maritime heritage and how it evolved to become a global maritime hub today.

INDUSTRY-STUDENT ENGAGEMENT EVENTS

Through industry engagement events covering diverse growth sectors, the Faculty hones our graduates’ industry-relevant skills to prepare them for the workplace of the future. Here we highlight recent events.

**Date** | **Speaker** | **Topics**
--- | --- | ---
13 February | Dr Partha DUTTA  
Senior Vice President and Head (Data Science), Sembcorp Industries | How advanced analytics technologies like Artificial Intelligence were used to improve Sembcorp Industries’ business performance.
6 March | Mr YIP Hon Mun  
Chief Strategy Officer (Global Business), NOROO Holdings | How technological innovations are transforming the agricultural industry.
7 March | Mr Patrick O. BROWN  
Founder, Impossible Foods | How Impossible Foods, which creates meat and dairy products from plants, is on track to achieve its vision of eliminating the need for animals in the food system by 2035.
29 March | Ms Eugenia GOH  
Senior Statistical Specialist (Analysis), Manpower Research & Statistics Department, Ministry of Manpower | How timely labour market information, such as areas of growth in the economy, trending jobs, and internships can help students’ career planning and job search.
Dr Murugesan SETHU  
Senior Manager (Strategic Partnerships and Development), Faculty of Science | Presentations by Racer Technology, INEX Innovations Exchange, JN Medsys, KroniKare and Doctor Anywhere
2 April | Dr Priyabrata PATTNAIK  
Head (APAC Biologics), Merck Singapore | How Artificial Intelligence and machine learning are transforming the fast-growing life sciences industry, and how students can acquire skills to leverage new technologies for future careers in emerging areas like healthcare, personalised medicine, etc.
Mr Andy NAYLOR  
Head (Digital Strategy & Transformation), Merck APAC | How technological innovations are transforming the agricultural industry.
Ms Rachel FOO  
Country Head (Human Resources), Merck Singapore |
RESEARCH HIGHLIGHTS

THE SCIENCE BEHIND OUR SCIENTISTS

The Faculty is at the forefront of cutting-edge scientific research.

Our researchers are realising this vision in their various fields by breaking new ground and gaining acclaim for their work.

In this column, our researchers share their achievements, the challenges and rewards of their work, and their plans moving forward.

“My goal is to develop complex analysis to become a sharper and more efficient tool box for other branches in mathematics.”

Prof DINH Tien Cuong
Department of Mathematics

Prof Dinh is a leading researcher in complex dynamics in higher dimensions, solving several important problems, and introducing new concepts and methods to the field. He also contributed significantly to the theory of foliations, the study of Fekete points, random polynomials and scattering resonances for Schrödinger operators. Prof Dinh received the Humboldt Prize (2018) and the Faculty’s Outstanding Scientist Award (2018). He was appointed as NUS Provost’s Chair Professor in 2017.

“I was drawn to the beauty of mathematical ideas alongside the rigour. These abstract ideas can be efficient in an amazing way.

In 1998, I decided to work with French mathematician Prof Nessim SIBONY in an exciting research area he founded - complex dynamical systems. This is where an evolution rule describes future states following the current one. We study systems’ long-term qualitative behaviour using tools from many branches of pure mathematics.

I was fortunate to gain insights from working closely with Prof Sibony as I delved into my research domain of dynamical systems of several complex variables. Each new discovery gives me great satisfaction. Our ideas help to develop the general theory of dynamical systems which has applications to various fields, like mathematics, physics, biology, chemistry, engineering, economics, and medicine.

As research becomes more specialised, discoveries are often the result of collaborations between different domains. I enjoy learning different mathematical fields and applying my knowledge to solve problems beyond my domain of expertise. I am gratified that my contributions to algebraic geometry and some mathematical physics problems are recognised by scientists in these fields.”

Prof SHEN Zuowei Recognised in SIAM Fellows Programme

On 29 March, Prof SHEN Zuowei, Dean, Faculty of Science, was recognised as a Class of 2019 SIAM Fellow by the Society for Industrial and Applied Mathematics (SIAM), for his significant contributions to approximation theory, wavelet theory and image processing.

The Fellowship honours SIAM members who are recognised by their peers for their distinguished contributions to the fields of applied mathematics and computational science, as well as for their exemplary research.

Prof SCHEN Zuowei
Department of Mathematics

Prof Vincent TAN Receives Young Researcher Award

Prof Vincent TAN, Department of Mathematics, received the Young Researcher Award at the NUS University Awards 2019 ceremony on 28 May.

Prof Tan is known internationally for his works on finite-length fundamental limits which shape the design of low-latency networked communication systems.

One of his most significant achievements is in establishing an impossibility result for point-to-point communication systems that matches Strassen’s achievable result from the 1960s. No communication protocol can improve on this performance bound. Together with his collaborators, Prof Tan has also derived similarly stunning results for multi-user networks.

New mathematical theorems constitute by-products of these analyses and are applicable to machine learning tasks, such as the estimation of graphical networks from data.

UNIVERSITY AWARDS 2019
On 30 January, the Faculty held its annual Faculty Awards Ceremony, which recognises faculty and staff who excel in teaching, research and service. Prof CHEN Tsuhan, Deputy President (Research and Technology) was the Guest of Honour.

Honour Roll
3 Recipients
- Prof DINH Tien Cuong
  Department of Mathematics
  Prof Cuong was recognised for his research in complex dynamics in higher dimensions and significant contributions to the theory of foliations, the study of Fekete points, random polynomials and scattering resonances for Schrödinger operators.

Outstanding and Young Scientist Awards
2 Recipients
- Prof CHNG Shu Sin
  Department of Chemistry
  Prof Chng was recognised for his contributions to bacterial lipid trafficking and membrane homeostasis.

Faculty Teaching Excellence Award
18 Recipients
- Dr NG Wee Seng
  Department of Mathematics
  "Teaching as a scientific experiment, the process of exploring and executing new teaching methods, analysing feedback, and refining teaching - is an adventure that yields not just intermittent setbacks but also satisfaction and rewards."

- Prof Darren YEO
  Department of Biological Sciences
  "Teaching as a scientific experiment - the process of exploring and executing new teaching methods, analysing feedback, and refining teaching - is an adventure that yields not just intermittent setbacks but also satisfaction and rewards."

Full-time and Part-time Teaching Assistant Awards
19 Recipients
- Mdm Adeline CHIA and Mrs LEE Soo Mien
  Department of Physics, each celebrated 45 years with the Faculty.

Outstanding Service Award
9 Recipients
- Ms Joan TAY, Director of the Centre for Future-ready Graduates,
  highlighted the importance of integrating academic learning with real-world experience, and how internships enhance students’ employability.

Long Service Award
124 Recipients
- Dr Abel YANG, Department of Physics, shared how he integrates authentic learning in his module GET1042 Sky and Telescopes through hands-on activities, active learning and peer instruction.

Ms Joan TAY, Director of the Centre for Future-ready Graduates, highlighted the importance of integrating academic learning with real-world experience, and how internships enhance students’ employability.

Dr LIU Mei Hui, Food Science and Technology (FST) Programme, spoke on FST modules that enable students to apply knowledge in industry-relevant contexts.

The workshop concluded with a panel discussion on the topic “Incorporating and Assessing Internships in Undergraduate Education” where the panelists discussed how internships can be incorporated into the undergraduate education, with appropriate assessment tasks to determine the achievement of learning outcomes. The panelists included Prof Cynthia HE, Department of Biological Sciences; Prof Ryan BETTENS, Department of Chemistry; Ms TAN Mui Ling, Department of Pharmacy; and Prof LIM Tiong Wee, Department of Statistics and Applied Probability.
The Faculty welcomed more than 500 prospective students and their families to our annual Open House on 11 May.

Academic Talks
Prospective students gained firsthand insights into our academic programmes, as well as our special programmes such as the study abroad programmes and the Special Programme in Science.

"We are constantly improving our programmes, and enhancing the balance between fundamental knowledge and practical application."

Dean of Science, Prof SHEN Zuowei

Tours
To experience the dynamism of our campus, attendees went on tours covering key facilities at the Faculty, the General Chemistry Teaching Laboratory, the Food Science and Technology Laboratory, as well as the Protein and Proteomics Centre, Centre for Bioimaging Sciences, and a butterfly demonstration at the Department of Biological Sciences.

Master Classes
Our award-winning and dedicated professors piqued the attendees’ interest in science through invigorating talks on various topics, including how science demonstrations are used to teach physics, and how a data science technique is used to produce actionable insights into high-value customers for targeted marketing campaigns.

Sharing Sessions
Students KIM Mu Young (Physics), LIM Cheng Kai (Life Sciences) and LIM Shu Xin (Chemistry) took to the stage to share their diverse learning journeys at NUS Science through their participation in academic and enrichment programmes, and various co-curricular activities.

Career Advice
Friendly advisors were at hand to provide information on internship programmes, career advice and other initiatives to prepare students to be work-ready.

Student Booths
Our student societies set up booths which featured interesting games and information on freshmen orientation projects.

Performances
Visitors got a preview into our vibrant student life when Science RAG dancers staged snippets from their Science RAG 2018 performance.
The event drew about 140 participants, including industry practitioners, academia and students. A participant felt it was “very informative across all areas of industry”, and another said that the forum gave “great insights from industry experts in understanding where industries are heading”.

23rd Biological Sciences Graduate Congress

The annual congress provides a platform for graduate students and delegates from partner universities and other institutions to exchange ideas and present their latest research findings. It was held from 18 to 20 December 2018 at Chulalongkorn University, with the theme “Stepping into the Unknown.”

A total of 37 postgraduate students from the Department of Biological Sciences (DBS), together with participants from partner universities and other universities, participated in the oral and poster presentations in four areas, namely: Applied Science and Biotechnology; Biochemistry and Physiology; Biodiversity, Ecology and Systematics; and Cell and Molecular Biology.

Nine DBS students received prizes for their research, including Vaishnavi SRIDHAR’s ‘Overall Best Poster’ and Ian CHAN’s ‘Overall Best Oral Presentation’ awards. DBS’ Prof CHAE Eunyoung also gave an inspiring keynote lecture titled ‘Natural Variation in the Plant Immune System and its Contribution to Hybrid Performances’. She shared on the genetics of speciation and genetic incompatibility that contribute to mechanistic understanding of adaptation, as well as the translation of current knowledge gained from a model system to improve breeding practices.

The congress is organised by graduate students from three collaborating universities: the National University of Singapore, University of Malaya, Malaysia, and Chulalongkorn University, Thailand.
The Department of Chemistry hosted the conference from 9 to 14 December 2018, together with the Chemistry and Biological Chemistry Division, Nanyang Technological University.

The conference brought together 345 participants from 27 countries. 167 lectures were delivered on the latest research advances in themes like Bioinspired Catalysis and Coordination Chemistry; Bioorganometallics; Computational Bioinorganic Chemistry; Molecular Sensing and Elemental Imaging; Metal Homeostasis, Toxicity and Metallomics; Metalloproteins and Metalloenzymes; Coordination Chemistry; Bioorganometallics; Computational Bioinorganic Chemistry; Molecular Sensing and Elemental Imaging; Metal Homeostasis, Toxicity and Metallomics; Metalloproteins and Metalloenzymes; Molecular Sensing and Elemental Imaging; Metal Homeostasis, Toxicity and Metallomics; Metalloproteins and Metalloenzymes; and Bioinorganic Materials and Nanotechnology. More than 150 poster presenters shared their work in two separate poster sessions.

For the first time, a YouTube video competition was held to encourage young researchers to creatively showcase their research ideas through new media platforms.

Co-organised by NUS’ Department of Chemistry, Nanyang Technological University (NTU) and the Singapore National Institute of Chemistry (SNIC), the conference was jointly chaired by Prof WU Jishan (NUS), Prof ZHAO Yu (NUS) and Prof ZHAO Yanli (NTU).

Engaging the Power of Community: From Tertiary Care to Patient Empowerment
21 to 22 January

A workshop on the shifting focus in health delivery beyond tertiary care hospitals to the community was organised by the Pharmaceutical Innovation & Research Centre, Department of Pharmacy.

Topics covered included the vision and direction of integrated community care, features of quality training programmes and the importance of pharmacist involvement in delivering value-added community care. The session ended with a hands-on activity on medication therapy management for community wellness programmes.

Experts present included Prof Kelly GOODE, Director (Community Pharmacy Practice and Residency Programme), Virginia Commonwealth University and Dr CHOW Wai Leng, Director (Health Services Integration and Development Division), Ministry of Health.

Healthcare in the Era of Big Data and Artificial Intelligence
28 February to 1 March

The workshop, comprising specialist talks, expert panel discussions and networking, focused on the impact of Big Data on the healthcare sector.

Healthcare professionals gained insights on how Big Data can improve work efficiency, and enable caregivers to deliver more personalised healthcare through better patient monitoring and understanding of diseases and treatments.

Dr Jacques TURGERON, Chief Scientific Officer of Tabula Rasa Healthcare, spoke about how clinicians’ decision-making can be augmented by a support system based on data analytics, in his talk “Putting Science Back to Pharmacy Practice”.

The highlight was a special talk on diabetes management during the Ramadan observance by guest speaker Dr SK ABDUL SHAKOOR, an endocrinologist from Tan Tock Seng Hospital.

The participants attended lectures and small group clinical case discussion sessions that were crafted to fit the real-world management of diabetes.

9th Foundation of Clinical Diabetes Management
24 to 26 April

The workshop focused on managing diabetes, a pressing health issue in Singapore.

A multidisciplinary team of professionals and specialists in diabetes care, covering endocrinology, family medicine, pharmacy, physiotherapy, diabetes nutrition, podiatry and ophthalmology, was put together for the workshop.

The highlight was a special talk on diabetes management during the Ramadan observance by guest speaker Dr SK ABDUL SHAKOOR, an endocrinologist from Tan Tock Seng Hospital.

The participants attended lectures and small group clinical case discussion sessions that were crafted to fit the real-world management of diabetes.
Department of Chemistry

The Department of Chemistry organised a half-day programme on 23 April which commenced with Prof ANG Wee Han’s talk on the Chemistry undergraduate curriculum, covering the syllabus, its relevance to industry and graduates’ career prospects. Year 4 student SHUAI Dongxing also shared on his undergraduate experience.

After the talks, the students engaged in hands-on practicals on the synthesis of coordination network of solid copper(I) iodide at the General Chemistry Teaching Laboratory.

Visitors also interacted with alumni who work in various industries, such as Mr Eugene YANG from Amica Law LLC.

Food Science and Technology Programme

The Food Science and Technology (FST) Programme’s event on 26 April, attended by more than 50 visitors, showcased the varied career paths of FST graduates. Dr LEONG Lai Peng shed light on how students could enhance their degree through special programmes, industrial attachments and overseas exposure opportunities.

Over 240 visitors attended the Department of Biological Sciences (DBS) engagement event on 26 April. The visit started with a welcome address by Head of Department Prof YU Hao, followed by Prof Henry MOK’s sharing on the undergraduate programme.

Visitors also learnt about DBS’ various modules / specialisations and multidisciplinary programmes. Prof HUANG Danwei discussed the Ecology, Evolution and Biodiversity modules; Prof Timothy SAUNDERS spoke on the Biophysics, and Molecular and Cell Biology modules; while Dr LONG Yun Chau, Yong Loo Lin School of Medicine discussed the Biomedical Science programme; and Prof Greg TUCKER-KELLOGG the Computational Biology programme. The session ended with Dr Zeehan JAAFAR sharing on the Life Sciences Society.

The half-day programme on 24 April commenced with a talk on the Mathematics undergraduate curriculum by Prof Victor TAN.

Six undergraduates majoring in Mathematics, Applied Mathematics and Quantitative Finance were invited to share their experience studying Mathematics at NUS at a panel session. Thereafter, NUS Mathematics Society students brought visitors on a tour of the department’s facilities.

The programme ended with the option to attend a mini lecture by Dr WANG Fei.

Environmental Studies Programme

On 16 April, the Bachelor of Environmental Studies (BES) Programme hosted an engagement event which commenced with a welcome address by Programme Director Prof Edward WEBB. This was followed by an overview of the curriculum and the different specialisations by Prof Matthias ROTH. Dr Joanna COLEMAN discussed the environmental crisis and elaborated on the courses she teaches, and Dr Sorain RAMCHUNDER spoke about internship opportunities. The BES student committee and nature-guiding group BES Drongos then shared about student life in BES, and their nature-guiding experience, respectively.

The highlight was a tour to three research facilities. Visitors were brought to the Biological Physics Laboratory where Prof YAN Jie’s team studies biophysical research. He explained about DNA mechanics and showed the cutting-edge research technologies in his laboratory. At the Centre for Ion Beam Applications, visitors learnt from Prof Sow about novel proton beam applications, from detecting fakes gems to cancer therapy. At the Centre for Quantum Technologies, Prof Kai DIECKMANN explained about his group’s experimental research in ultrasolid quantum gases. Visitors were enthralled by the laboratory’s attempts to generate and direct laser beams to cool atoms.

"I enjoyed the tours, specifically the quantum technologies laboratory and the part on the particle accelerator. They showcased cutting-edge facilities and impressive research discoveries." - Afiya GEORGE, student

"The laboratory tours were informative and engaging. I like the fact that students can have a chance to be involved in research. I got to witness the inside of a research facility which is most interesting to me." - Nicholas MAK, student

Department of Physics

Over 40 prospective students and their parents attended the event on 27 April.

Head of Department Prof SOW Chorng Haur shared how the Physics programme inculcates critical scientific thinking skills and the range of career options for graduates, from biotechnology and electronic engineering to data analytics for e-commerce businesses.

Prof Valerio SCARANI then explained how physics has evolved over time: from motional forces to proton beam therapy.

"The session provided insights into the applicability of the FST programme, in both the local and global contexts. I appreciate the inspiring stories shared about how FST graduates could diversify into many industries." - Justin OH Li-Ern, student
On 25 April, the Department of Statistics and Applied Probability (DSAP) and the Department of Mathematics hosted some 160 participants. DSAP’s Prof LIM Tiong Wee spoke about trends in data science, the Data Science and Analytics (DSA) curriculum, opportunities for experiential learning, and the Co-Operative Education Programme. Participants then broke out into groups to learn about the Data Analytics Consulting Centre’s educational initiatives from Prof Carol HARGREAVES and Dr Vikneswaran S/O GOPAL. Year 3 DSA student Somesh Dev S/O MOHAN, who worked on a maritime-related project, gave his insights on how students can participate in data analytics consulting projects, while Mr Dhirender Singh RATHORE of VISA and Ms Shilpa JAIN of Kantar Worldpanel spoke on the use of Artificial Intelligence in industry.

On 8 February, Dr Matthew LIM delivered a talk at Victoria Junior College (VJC) on “The Effects of Climate Change on Living Organisms in Singapore.” 21 VJC students attended the insightful and interesting talk, which was catered to cover content that was directly relevant to the students’ ‘A’-Level biology syllabus.

On 23 April, the Department hosted about 100 prospective Pharmacy students and their parents, and about 37 prospective Pharmaceutical Science students and their parents. Prof HO Han Kiat and Dr YAU Wai Ping introduced the department and its two programmes. Dr YAP Kai Zhen captivated the audience with RetroZfect, an award-winning game for virtual role play on real-world pharmacy skills. Alumni like Prof Christine TENG (Department of Pharmacy and Principal Clinical Pharmacist at Tan Tock Seng Hospital) spoke on the Pharmacy programme, while Dr KANG Tse Siang (Head of Regulatory Affairs (Singapore and West ASEAN Cluster), Pfizer Singapore) shared his journey with Pharmaceutical Science attendees. Thereafter, faculty members and research staff provided guided tours to the Pharmacy Practice Skills Hub, GEA-NUS and Pharmaceutical Biology Research Laboratory.

On 25 April, the Department of Statistics and Applied Probability (DSAP) and the Department of Mathematics hosted some 160 participants.

31st Science Research Congress (SRC) 2019

The Science Research Congress (SRC) and the Science Research Programme (SRP) celebrates 31 years in 2019. The event, jointly organised by the Faculty and Ministry of Education (MOE), was held on 27 April.

This year, the SRC showcased the research findings of 78 students from 14 junior colleges and Integrated Programme schools. 20 of the projects clinched awards at the Singapore Science and Engineering Fair (SSEF) on 6 and 7 March, garnering 6 Gold, 1 Silver, 4 Bronze, 6 Merit and 4 Special Awards.

Keynote speaker Prof TAN Meng Chuan shared on “String Theory and Its Pivotal Role in the Future of Mathematics and Religion.”

SRP students, who were given opportunities to work alongside scientists on STEM research, also presented their project research findings to fellow SRPians at concurrent sessions.

Prizes were also presented at the Congress. GU Jiahao from Raffles Institution represented his group to receive the Top 5 Popular Research Poster award from Prof Tan, SRP Chairman and the Faculty’s Assistant Dean (Outreach and Admissions).

On 28 May, Prof Nalin PUNIAMOORTHY was invited to Anglican High School’s Career Day where she shared with students the potential career paths a graduate in Life Sciences could venture into. About 70 students attended the talk.

Department of Biological Sciences Talks at Victoria Junior College and Anglican High School

On 8 February, Dr Matthew LIM delivered a talk at Victoria Junior College (VJC) on “The Effects of Climate Change on Living Organisms in Singapore.” 21 VJC students attended the insightful and interesting talk, which was catered to cover content that was directly relevant to the students’ ‘A’-Level biology syllabus.

Data Science and Analytics Programme

The Department held their engagement event on 25 April, where Prof LIM Tiong Wee introduced the statistics curriculum as well as the diverse learning opportunities at NUS.

Science alumnus Dr Murphy CHOY, Director of Analytics, Operations and Technology, SSON Analytics, shared how data science techniques could be applied to tackle fake news.

Dr FENG Ling, Scientist, Institute of High Performance Computing, spoke on the representation of numerous datasets ranging from transport to social media, in the form of networks comprising individuals and their connections. He also noted how the analysis of such data structures requires its own mathematical tools.
To nurture interest in science, the Faculty continually engages youths through various outreach activities.

**Jurong Pioneer Junior College and Yishun Innova Junior College**

Prof YAP Von Bing, Assistant Dean (Outreach and Admissions), gave an overview of the Faculty’s academic programmes, and the plethora of our special programmes and student activities to students from Jurong Pioneer Junior College (JPJC) and Yishun Innova Junior College (YIJC), on 10 December and 8 January, respectively. 38 JPJC students and parents, and over 30 students and teachers from YIJC attended the respective sessions, where they learnt more about the well-rounded learning experience offered by NUS Science.

YIJC students also heard from Prof Adrian ROELLIN, Department of Statistics and Applied Probability, who explained the similarities and differences between statistics and data science, coupled with examples of data science applications in the real world. Dr Amy CHDONG, Department of Biological Sciences, gave an overview of the Life Sciences major, curricular roadmaps, and cross- and interdisciplinary academic programmes.

**Nan Hua High School at the Department of Biological Sciences**

As part of Nan Hua High School’s 2019 learning journey programme, 40 Secondary Four students and their teachers visited the department on 9 January to gain a deeper understanding of university life and the curriculum. Prof Henry MOK gave an overview of the Life Sciences programme, while Prof Alex IP delved into topics like time management and how to cultivate lifelong learning.

Two groups of Nan Hua High School alumini also shared on undergraduate life. The first group introduced the Life Sciences Society and spoke on their specialisations in Biomedical Science and Environmental Biology, while the second group shared on life at the Ridge View Residential College (RVRC). This was followed by a guided tour of RVRC.

**Eunoia Junior College and City University of Hong Kong at the Department of Chemistry**

On 24 May, 40 students and two teachers from Eunoia Junior College were introduced to the NUS Chemistry undergraduate programme by Dr ONG Yue Ying, and given an overview of anticancer drugs by Prof ANG Wee Han. They also visited the General Chemistry Teaching Laboratory, the Mass Spectroscopy Laboratory and the Nuclear Magnetic Resonance Laboratory.

On 28 May, 33 students, Prof Nora TAM and Dr Richard KONG from City University of Hong Kong learnt about undergraduate and postgraduate programmes, and research activities at NUS Chemistry. They also visited four research laboratories and two teaching laboratories, and toured University Town.

Jessie WONG, Year 3 Life Sciences student and Yishun Junior College alumna, wrapped up the visit with a light-hearted sharing session of her learning experiences in NUS. She described her participation in the Special Programme in Science and internship programmes, as well as her rewarding stint in the NUS Overseas Colleges programme which enabled her to translate her hobby in delicate handicraft-making into a startup.

**NUS Mathematics Learning Journey 2019**

Since the launch of its learning journey in 2015, the Department of Mathematics continues to organise sessions every January to April, to introduce pre-university students to NUS’ Mathematics course.

This year, the department hosted 135 students from nine schools – Anglo-Chinese Junior College (JC), Catholic JC, and River Valley High School on 31 January; NUS High School of Mathematics and Sciences, and Temasek JC on 25 March; Anderson Serangoon JC and Jurong Pioneer JC on 25 April, as well as Eunoia JC and Millenia Institute on 26 April.

At the sessions, students were given an overview of the department and its programmes; enrichment talks related to the topics in ‘A’ Level H2 mathematics such as calculus, sequences and series, and probability; the opportunity to interact with our professors and undergraduates; and a hands-on activity to experience graph plotting using Maple software.

“We were exposed to many fields of mathematics and learnt how we could apply these topics to real life scenarios, such as finance. The session definitely piqued my interest in mathematics.”

- Michael HOON Yong Hau, Jurong Pioneer JC student
### What's Up?

Check out the events from June to December 2019!

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<td>Science Volunteer Corps- Singapore Children’s Society Mentorship Programme</td>
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<td>3 June - 4 August</td>
<td>NUS Amgen Scholars Programme 2019</td>
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<td>4 June 2019 - 6 June 2020</td>
<td>200: a natural history by Lee Kong Chian Natural History Museum</td>
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<td>6 - 7 June</td>
<td>Department of Biological Sciences’ Two-Day Teachers’ Workshop</td>
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<td>7 June</td>
<td>Appreciating Lives, Initiating Volunteerism Everyday! (ALIVE!)</td>
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<td>7 June</td>
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<td>27 September</td>
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