A*STAR
GRADUATE
SCHOLARSHIPS
... begin your journey of
scientific discovery
Knowledge creation and exploitation of scientific discoveries for a better world: that is our goal at A*STAR. We do it by fostering world-class scientific research and human capital, to pursue knowledge for the prosperity of Singapore.

The A*STAR Graduate Academy (A*GA) supports A*STAR’s key thrust of human capital development through the promotion of scholarships and other manpower development programmes and initiatives.

A*GA administers the various scholarships awarded by A*STAR – the National Science Scholarships (NSS) and A*STAR Graduate Scholarships (AGS).

A*GA is proud to award the A*STAR Graduate Scholarships in partnership with the Nanyang Technological University (NTU). The AGS aim to provide trans-disciplinary, research-intensive PhD training in selected fields of Biomedical Sciences, Physical Sciences and Engineering. Our scholars will have excellent opportunities to be immersed in a vibrant research environment at A*STAR’s outstanding Research Institutes as well as NTU.

Do you enjoy exploring and acquiring new knowledge? Do you possess the passion for science and the desire to search for answers?

If you do, let the AGS help you to begin your journey of scientific discovery.

Professor Lam Khin Yong
NTU is known for its strengths in research and industry relevance in engineering, science and technology. The University has a thriving and vibrant research culture and sophisticated laboratories and research centres. To date, more than 40 research institutes and centres of excellence, in both engineering and non-engineering fields have been set up in the university.

As NTU expands its disciplines to become a fully comprehensive University, it is well-positioned to provide quality manpower training in PhD studies for the nation and the region. Drawing on the diverse research expertise of the different Schools and its sophisticated research infrastructure, NTU has forged strong R&D links with leading universities, research institutes, and industry, both in Singapore and globally to strengthen its research capabilities.

The AGS is an important collaboration between A*STAR and NTU in graduate education and research. It is a prestigious scholarship which offers high-calibre individuals the opportunity to work on high-impact research projects alongside leading research specialists. Through this scholarship, we hope to nurture individuals with a passion in research to achieve excellence with us in the area of scientific research and knowledge discovery.

An Invitation to be Part of this Collaboration
We hope you will be inspired to consider this prestigious scholarship which offers a challenging and rewarding career in research, and the opportunity to make a significant contribution to the development of science and technology. We invite you to be a part of this important collaboration.

Professor Cheong Hee Kiat
The A*STAR Graduate Academy (A*GA) supports A*STAR’s key thrust of human capital development through the promotion of scholarships and other manpower development programmes and initiatives. A*GA administers the various scholarships awarded by A*STAR, mainly the National Science Scholarships (NSS) and A*STAR Graduate Scholarships (AGS).

A*GA International Advisory Panel

The A*GA is advised by an International Advisory Panel, consisting of several prominent academic staff from various Internationally renowned Universities. The role of the International Advisory Panel is to provide expert advice to A*GA on its array of R&D human capital training programmes, to shape the A*GA policies, and to enhance Singapore’s international academic network that will help the overseas placement of our graduate students and post doctorate fellows.

A*GA’s IAP Members are:

**Sir Keith Peters (Chairman)**
Regius Professor of Physic, and Head of the School of Clinical Medicine, University of Cambridge, President of the Academy of Medical Sciences

**Professor Alice S Huang**
(Deputy Chairman)
Senior Councilor of External Relations, and Faculty Associate in Biology, California Institute of Technology

**Professor Judith Swain**
Chair, Department of Medicine, Stanford University

**Professor William McGinnis**
Department of Biology, University of California, San Diego

**Professor Chris J Leaver**
Head, Department of Plant Sciences, University of Oxford

**Professor Colin Russell Hopkins**
Department of Biological Studies, Imperial College

**Professor Charles Zukoski**
Lycan Professor and Vice Chancellor, Chemical Engineering, University of Illinois at Urbana – Champaign

**Professor Roberto Peccei**
Vice Chancellor (Research), University of California, Los Angeles
What is AGS?

The AGS is a collaboration between A*STAR Graduate Academy (A*GA) and NTU. It offers a “4+2” scholarship – comprising a four-year PhD study tenable at NTU, and a two-year post-doctoral fellowship (PDF) in one of the top overseas universities or research laboratories in the scholar’s chosen field, subject to good performance during the PhD studies. The PhD degree is awarded by NTU. The scholarship aims to provide a research intensive training programme at PhD-level in Biomedical Sciences and Physical Sciences and Engineering to support Singapore’s knowledge-based economy.

A*STAR Research Institutes

Biomedical Research Council (BMRC)
- Bioinformatics Institute (BII)
- Bioprocessing Technology Institute (BTI)
- Genome Institute of Singapore (GIS)
- Institute of Bioengineering & Nanotechnology (IBN)
- Institute of Molecular and Cell Biology (IMCB)

Science & Engineering Research Council (SERC)
- Data Storage Institute (DSI)
- Institute of Chemical & Engineering Sciences (ICES)
- Institute of High Performance Computing (IHPC)
- Institute for Infocomm Research (I2R)
- Institute of Materials Research and Engineering (IMRE)
- Institute of Microelectronics (IME)
- Singapore Institute of Manufacturing Technology (SIMTech)

Please refer to www.a-star.edu.sg for more details on the Research Institutes.
Why Pursue a PhD?

✔ Excellent job prospects. The demand from industry for PhDs has increased as Singapore develops as a knowledge-based economy;

✔ Excellent opportunity to be immersed in a vibrant research – intensive environment at the A*STAR Research Institutes and NTU;

✔ Upgrade yourself to PhD level and brace yourself to new challenges in the exciting research arena.

Why Choose AGS?

✔ Access to a large pool of top scientists from A*STAR RIs and NTU as AGS supervisors;

✔ Great opportunity for trans-disciplinary research training;

✔ 2 years of overseas post-doctoral training*;

✔ Excellent opportunities for exposure to industry;

✔ Challenging employment opportunities. Upon completion of the post-doctoral fellowship, candidates will return to contribute to A*STAR’s Research Institutes (RIs) for a service commitment period of up to 3 years.

* Subject to research area and good performance during PhD studies.
Message from Our Scholars ... 

“Whatever you do, you must have the passion and interest to keep yourself going. The paths in research work are challenging and rewarding. Therefore, it is important to have a positive attitude and determination.”

Lee Hui Mien  
A*STAR Graduate Scholarship (PhD)  
School of Electrical & Electronic Engineering, NTU

“I believe in working towards improving the quality of life of people. It is with this belief and passion that I begin my research career in tissue engineering. Tissue engineering is a multi-disciplinary field that requires expertise from many different specializations to create functional substitutes for diseased tissues or organs. And AGS is a unique scholarship program that provides the right platform to conduct such challenging research. With AGS, I am privileged to be under the tutelage of two supervisors with different specializations from different universities or research institutes. In addition, I am able to gain overseas exposures by attending international conferences and performing the post-doctoral fellowships in top overseas institutions. Through this well-structured curriculum, I am able to make full use of my learning experiences and pursue my dream. My advice to potential candidates is to continue to challenge yourself. Passion is what gets you started, and desire is what gets you there.”

Leong Meng Fatt  
A*STAR Graduate Scholarship (PhD)  
School of Mechanical & Aerospace Engineering, NTU
“AGS has given me the opportunities to work under supervision of great supervisors from whom I have been learning a lot and getting support. The AGS has also provided me with the possibilities to study further at NTU with various allowances and benefits support. I believe that the prospect of the AGS is excellent to expose the scholars to pursue research and to complete their PhDs and postdoctoral with further career with Singapore’s top research institutes. All we need for AGS is the perseverance and confidence to apply for AGS, communicate and work well with the supervisors, constantly pursuing the research career.”

Like Gobeawan
A*STAR Graduate Scholarship (PhD)
School of Computer Engineering, NTU

“The AGS scholarship is one of the most prestigious scholarships for PhD studies. It is my honour to be one of the privileged few to be selected for this scholarship. As Isaac Newton once put it, “if I have seen far it is because I have stood on the shoulders of giants”. I feel that the AGS scholarship is also one of the “giants” that has given me the chance to look farther than before, by allowing me to enter into the world of research which has always been a dream for me. However, this scholarship is not for the faint-hearted, you must have the passion, obsession, energy, constant effort and commitment to walk the research path. Research also requires a lot of patience and will power as it does not guarantee to produce results all the time. However, by staying focus and not giving up when you stumble, you will be able to persevere and find the breakthrough that you’ve been working so hard for. All the best and welcome to the world of research.”

Joseph Teo Chee Ming
A*STAR Graduate Scholarship (PhD)
School of Electrical & Electronic Engineering, NTU
Eligibility

✔ Singaporeans, Singapore PRs, and nationals of ASEAN countries. *
✔ Graduates with 1st Class Honours; or Graduates with 2nd Upper Honours and Good ‘A’ Level results (or Polytechnic Diploma with Merit).
✔ Open to graduates from NUS, NTU or top overseas universities.
✔ Candidates must not concurrently hold any other scholarships or fellowships.
✔ Graduate Record Exam (GRE) tests with a minimum score of 1400 for verbal + quantitative and 4.5 for analytical writing. GRE scores must be submitted with the application for AGS.

* Successful candidates who are not Singapore Citizens are expected to take up Singapore citizenship.

Award Details

✔ Successful candidates will be given support for up to four years of academic pursuit, leading to a PhD.
✔ Successful candidate will receive: monthly allowance; full tuition fees; and other allowances (including computer allowance, thesis allowance, book allowance, conference allowance; and where applicable, full support for overseas attachment).
Application Procedures

Note:
• Only students who fulfil A*STAR’s eligibility requirements may apply.
• Current postgraduate students should not apply.
• Students who applied before need not re-apply.
• Only short-listed candidates will be notified.

Application Period
For intake commencing January 2006
Application period will open in July/August 2005. Details will be announced on the NTU Graduate studies website at – www.ntu.edu.sg/GradStudies/home (under Research Programmes).

Application for July 2006 intake will open in January/February 2006.

Application Procedures
This AGS scholarship application must be accompanied by a separate set of application materials to NTU for higher degree admission.

The following 2 sets of application forms must therefore be completed:
(1) Application Form for AGS
www.ntu.edu.sg/GradStudies/Research+Programmes/
Fees+and+Financial+Assistance/ags+app+procedures.htm
(2) Application Form for Higher Degree Admission by Research to NTU. Please apply on-line at:
www.ntu.edu.sg/GradStudies/Research+Programmes/Admission/
A print-out copy of this application must be submitted together with the scholarship application.

Submission Point
Current students and graduates of NTU should send the two sets of application forms (each set must include the relevant documents required) to their Schools (please mark “AGS Application” on the top left hand corner of the envelope). The application will be processed and re-directed to the Graduate Studies Office for submission to A*STAR. Short-listed candidates will be informed accordingly and will be required to attend two panel interviews with representatives from A*STAR and NTU.
A*STAR offers the A*STAR Pre-Graduate Award (PGA) to Singaporeans who undertake to embark on graduate research programmes leading to PhD in approved research areas.

### Features of A*STAR Pre-Graduate Award

| AWARD DETAILS | Payment of direct tuition fee amount, compulsory miscellaneous fees and monthly stipend of $750 per month for the final year of study in the undergraduate course up to 12 months or up to the date of graduation whichever is earlier. |
| ELIGIBILITY | • Open to full-time Singaporean undergraduates in selected disciplines in Science, Computing and Engineering (as approved by A*STAR) who undertake to embark on a graduate research programme leading to PhD in approved research areas.  
• Applicants must have GCE ‘A’ level qualification or a Polytechnic Diploma with Merit.  
• Applicants are expected to obtain First Class Honours degree.  
• Applicants must have taken the Graduate Record Examination and achieved a minimum score of 1400 for verbal cum quantitative section and a minimum score of 4.5 for analytical section. |
| CONDITIONS | • The recipient may not accept employment or hold concurrently any other scholarship or bursary without the prior approval of A*STAR.  
• The recipient must apply to NTU and if accepted undertake PhD studies under NTU, or elsewhere with A*STAR/NTU agreement.  
• GRE is compulsory, to be submitted together with application. |
| APPLICATION PROCEDURES | More information and application form can be obtained from the following website:  
www.ntu.edu.sg/OAS/Undergraduate+Studies/Scholarships/ASTAR+PGA.htm  
Applications for the A*STAR Pre-Graduate Award together with the required documents are to be sent to:  
Vice President (Academic Services)  
Office of Academic Services  
Nanyang Technological University  
Student Services Centre, Level 1  
42 Nanyang Avenue  
Singapore 639798  
No interview is required. All applicants will be informed of the outcome of their applications by end of June.  
Enquiries on the A*STAR Pre-Graduate Award may be sent to exam@ntu.edu.sg |
The College of Engineering at NTU comprises the following six Engineering Schools:

- School of Chemical and Biomedical Engineering
- School of Civil and Environmental Engineering
- School of Computer Engineering
- School of Electrical and Electronic Engineering
- School of Materials Science and Engineering
- School of Mechanical and Aerospace Engineering

The College of Engineering, together with the School of Biological Sciences and the new School of Physical and Mathematical Sciences, offers a range of multidisciplinary research programmes. These strategic programmes focus on developing leading-edge knowledge and technologies. These programmes are spearheaded by dedicated research groups or Research Centres at the Schools, which provide the infrastructure and expertise for a multitude of research projects to be undertaken.

School of Biological Sciences

The School is committed to implementing current best practices in the training of graduate students towards PhD and MSc degrees in Biological Sciences, with the key objective of producing research scientists who have a wide scope of knowledge in the biological sciences, and the flexibility to engage in research in diverse areas of the life sciences, biomedical and biotechnological industries.

Research Projects

Division of Structural and Computational Biology

- Interaction between polyelectrolytes and DNA
- Biocomputing and tele-medicine
- Structure and function of apoptotic proteins
- X-ray crystallography and structure of viruses
- Spectroscopic studies on membrane proteins
- Bioinformatics

Division of Chemical Biology and Biotechnology

- Peptide therapeutics against viral infection
- Bioenergetics
- Bioorganic chemistry and designer proteins
- Breast cancer biology
- Cholesterol metabolism
- Protein structure and enzyme reaction mechanisms

Division of Genomics and Genetics

- Site-directed DNA recombination and stem cell biology
- Biology of malaria
- Chromosomal engineering and human neurogenetic disorders
- Biofilms and bacterial ecology
- Biology of chloride channels
- Fungal genetics and pathogenicity

Division of Molecular and Cell Biology

- Proteins of the immune system
- HBV and liver cancer
- Regulation of apoptosis of tumour cells
- Mechanism of endocytosis
- Adhesion molecules of leukocytes
- Signal transduction in inflammation
- Alzheimer Disease
- Regulation of cell morphology

School of Civil and Environmental Engineering

The Division of Environmental and Water Resources Engineering at the School of Civil and Environmental Engineering focuses on the following research areas:
• Environmental R&D
• Environmental Technology
Key areas of research includes membrane technology, water reclamation, environmental biotechnology, environmental remediation, environmental fluid mechanics, water resources management, waste recycling and reuse and air toxics management

School of Computer Engineering
www.ntu.edu.sg/sce/
The School of Computer Engineering offers programmes in computer engineering and leads in various areas of research including graphics, infocommunications, and advanced information technology.

Research Focus
1. GRID: Grid technology is the next step in the evolution of computing, enabling new forms of collaboration through the seamless sharing of distributed computing and data resources.

2. Computational Intelligence: the study of natural and/or artificial systems to comprehend the principles that render intelligent behavior possible in complex changing environments and to devise computing systems that can transparently learn, reason, explain, understand data, discover knowledge, build models, etc. and provide solutions to real-world problems.

3. Bioinformatics: analyzing life science data in the form of genes, proteins, expressions, interactions and phenotypes, etc. by using computational and informational techniques to extract biological knowledge for deeper understanding of living systems and discovery of new drugs and therapies.


5. Multimedia & Network Technology: towards ubiquitous computing where communications transcend devices, networks, mobility and activities through deployment of network technology, effectors and location & content-aware enmeshed into our daily lives.

6. Advanced Information Systems: conducts frontier research in critical data analysis and knowledge computing to increase the value and utility of information repositories.

7. Advanced Media Technology: virtual reality seeks to create a realistic immersive environment for the complete learning experience.


School of Electrical & Electronic Engineering
www.ntu.edu.sg/eee/
Adopting the motto E^2: Excellence in Engineering Education, EEE strives for excellence in teaching, research and professional services to industry, so as to achieve eminence in selected niche areas of electrical and electronic engineering.

The School has seven Divisions: Division of Power Engineering, Division of Circuits and Systems, Division of Information Engineering, Division of Control and Instrumentation, Division of Communication Engineering, Division of Microelectronics, Information Communication Institute of Singapore (ICIS).
To support advanced research, the School contributes significantly to thirteen advanced research centres which are well-equipped with sophisticated and state-of-the-art equipment. The Centres and their respective research areas are:

1. Biomedical Engineering Research Centre
   - Medical Image Processing
   - Biomaterials/Biofluids
   - Biomedical Signal Processing/Instrumentation/Telemedicine
   - Biomechanics

2. Centre for Advanced Power Electronics
   - Power Quality Analysis and Enhancement
   - Electrical Energy Conversion Systems
   - Flexible Transmission-Distribution Systems

3. Centre for Information Security
   - Cryptography and Network Security
   - Digital Watermarking
   - Biometrics

4. Centre for Integrated Circuits and Systems
   - RF Integrated Circuits and Systems
   - Mixed-Signal IC and Applications
   - VLSI Design and Embedded Systems

5. Centre for Intelligent Machines
   - Control System Technologies
   - Robotics Research
   - Non-Rigid Point Correspondence for Face Model Adaptation
   - Facial Expression Generation from 3-D Dynamic Face Physical-based Model
   - Tracking and Surveillance
   - Real-time and Embedded Information Systems
   - Machine Learning

6. Centre for Modeling & Control of Complex Systems
   - Modeling and Control Biological Systems
   - Computational Nano-Electronics
   - Computational Electromagnetics
   - Control of Networks
   - Modeling, Optimization and Control Techniques

7. Centre for Signal Processing
   - Multimedia Signal Processing
   - Signal Classification and Pattern Recognition
   - Bio-Signal Processing
   - Statistical and Adaptive Signal Processing
   - DSP System Design and Development

8. Managed Computing Competency Centre
   - Service Management
   - Knowledge Management
   - E-Learning
   - E-Business Technology

9. Microelectronics Centre
   - Compound Semiconductor and Quantum Information
   - Diamond and Diamond-Like Carbon (DLC) Films
   - MEMS and Integrated Microsystems Technology
   - Nanoelectronics
   - Sensors, Actuators and Smart Materials
   - Silicon Technology

10. Network Technology Research Centre
    - Power Line Communications
    - Optical Communications
    - Network Control and Engineering

11. Photonics Research Centre
    - Fibre and Laser Optics
    - Biophotonics
    - Photonics Materials and Devices
12. Positioning and Wireless Technology Centre
   - Wireless Network Research Program
   - RF Identification and Tagging Program
   - Global Navigation Satellite System and Applications Program

13. Satellite Engineering Centre
   - LEO Satellite Space Bus and System Development
   - LEO Satellite Payload and Application Development
   - LEO Satellite Groundstation and Mobile Terminal Development

School of Materials Science and Engineering
www.ntu.edu.sg/mse/

The School of Materials Science and Engineering has become one of the largest materials schools in the region since its establishment. It has two divisions, Division of Materials Science and Division of Materials Technology.

Research Groups

1. Biomaterials
   The Biomaterials Group focuses on using conventional materials (metals, ceramics and polymers) for biomedical applications. Biomaterials are critical components of many biomedical devices. The group’s work involves modification and adaptation of ceramics and polymers to address several needs in the biomedical field.

   Areas of Research
   BioCeramics for Orthopedic Applications
   Biodegradable Polymers
   Hydrogels
   Bioadhesives

2. Microelectronic Materials
   The Microelectronics Materials Group focuses on research and academic programs in Microelectronics Materials, Process Technology, Packaging, and Reliability. Key research areas of focus include Nanostructured Interconnect Materials and Semiconductor Devices & Packaging.

   Areas of Research
   Nano-structured Interconnect Materials
   - Materials & Process Development for Nano-electronics
   - Advanced Silicon Process Technology
   - Process Integration & Reliability

   Semiconductor Devices & Packaging
   - Active & Passive Devices
   - Design & Modeling
   - Microelectronics & Optoelectronics Packaging

3. Ecomaterials
   The Ecomaterials Group conducts research aimed at reducing the production of specific pollutants at source, recycling industrial wastes, and developing materials for clean energy production. The group exploits cutting edge microscopy and diffraction tools to better understand the functionality of ecomaterials and therefore gain insights into solving real world pollution and recycling challenges.

   Areas of Research
   Environmental Catalysis
   Porous Materials (micro-, meso-, macro-) for Pollutant Sorption and Destruction
   Fuel Cell Electrolytes
   Tailored Recycled Ceramics
   Solid State Chemistry of Toxic Metals

Research Areas in NTU

A*STAR GRADUATE SCHOLARSHIPS
4. Nanomaterials
The Nano Materials group focuses on the synthesis, processing, characterization and applications of nano-sized particles across diverse cutting-edge engineering fields like biomaterials, defense, microelectronics and solid oxide fuel cells etc. Current research places emphasis on drug delivery for cancer treatment, ceramic hollow nano-spheres for microelectronics packaging, synthesis of rare earth nano-particles and electrophoretic deposition of nano-particles for medical devices.

Areas of Research
Synthesis, processing and characterization of nano-particles
Bioceramic nano-particles
Rare earth nano-particles
Ceramic nano-particles for medical devices
Ceramic hollow nano-spheres
Magnetic Nanomaterials

School of Mechanical and Aerospace Engineering
www.ntu.edu.sg/mae

The School’s mission is to provide world-class education and achieve international academic eminence and technological advancements for the well-being of the nation. It is committed towards a position of world leadership in research.

The School is organised into the following divisions in Engineering Mechanics, Manufacturing Engineering, Mechatronics & Design, Thermal & Fluids Engineering, Systems & Engineering Management, and Aerospace Engineering.

Key Research Areas
1. Advanced Electronics & Manufacturing Processes
   • Advanced Materials Modeling & Processes
   • Electronics Packaging
   • Thin Film Technology

2. Biomedical and Biomaterials Engineering
   • Biomedical Engineering
   • Biomaterials Engineering
   • Tissue Engineering

3. Engineering Design & Modelling
   • Product Design, Intelligent Modelling & Realisation,
   • Human Factors Engineering
   • Engineering Computation & Modelling
   • Virtual Reality & Soft Computing

4. Intelligent Systems, Logistics & Engineering Management
   • Engineering Management & Logistics
   • Intelligent Machines, Micromachines & Robots
   • Vision and Control

5. Nanotechnology & Micro Systems
   • Micro Electro-Mechanical System (MEMS)
   • Bio-Micro Electro-Mechanical System (Bio-MEMS)
   • Precision Engineering
   • Sensors & Actuators, Smart Materials & Structures

6. Energy and Environmental Technology
   • Fuel Cell
   • Environmental Technologies and Processes

7. Aerospace Engineering
   • Aerodynamics, Boundary Layer and CFD
   • Propulsion, Combustion and Turbomachinery
   • Flight Guidance and Control
   • Intelligent Materials and Adaptive Structures
   • Surface Engineering
School of Chemical and Biomedical Engineering
Division of BioEngineering

The Division of BioEngineering offers research programmes in the following areas:

**Tissue Engineering and Biomaterials**
- Bioactive coatings
- Bio-composites
- Bio-adhesives
- Synthesis of bio-ceramics
- Bio-responsive scaffolds
- Biopolymers for controlled gene and drug delivery
- Biodegradable synthetic polymers
- Tissue engineering of esophagus
- Tissue engineering with stem cells

**Molecular & Cellular Engineering**
- Molecular and cellular mechanics
- Mechano-signal transduction
- Single cell and single molecule assays using nanobiotechnology
- Electrophysiology
- Cell-substrate and cell-cell interactions
- Polymers and proteins at biological interfaces
- Artificial cells

**Bio-nanotechnology/Military Biotechnology**
- Bio-sensors
- Hybrid synthetic and biological systems
- Systems biology for military applications
- Hydrogel for drug delivery

**Bioimaging/Biomedical Imaging**
- Biological signal/image analysis for clinical diagnosis
- Functional and molecular imaging
- Functional brain imaging
- Micro-array and electrophoresis image analysis
- Bioimaging databases

**Bioinformatics and Systems Biology**
- Structural genomics and proteomics
- Biological databases, mining, and visualization
- Computing systems for bioinformatics
- Systems biology

**Biomechanics**
- Muscle mechanics
- Sports engineering
- Rehabilitation engineering
- Modeling and control of muscular-skeletal systems
- Cardiovascular systems modeling and simulation
- Orthopedic engineering
- Artificial organ

Division of Chemical and Biomolecular Engineering
www.ntu.edu.sg/CoE2/CBE/index.htm

The Division of Chemical and Biomolecular Engineering offers research in the following areas:

**Nanotechnology, Catalysis and Reaction Engineering**
- Non-lithographic imprint lithography
- Carbon nanotubes
- Nanowires and nanoparticles patterning
- Nanostructured materials and their self-assembly
- Layered double hydroxides and their intercalation chemistry
Research Areas in NTU

• Applied catalysis and Reaction engineering
• Polymer nanocomposites
• Characterization of nano structures, surfaces and interfaces

Process Systems Engineering
• Optimal model-based control of particulate processes (crystallization, polymerization, fermentation)
• Process development of sonocrystallisation operations for the production of nanoparticles for pharmaceutical applications
• Machine vision for process state characterization
• Modelling, simulation, optimization and control of complex process systems including distributed, discrete-continuous and batch processes.

Industrial Chemistry
• Specialty chemicals
• Flavour and fragrances
• Food and additives
• Colloids

Green Technology
• Bioprocess engineering
• Enzyme processing
• Bioseparation processes
• Renewable resources
• Biobased product development
• Generation of "bio-fuels" using bio-feedstocks
• Separation, purification with adsorption and membrane technologies
• Synthesis, modification, and characterization of microporous sorbents
• Modeling of gas sorption and diffusion processes.

Centre for Biotechnology
• Biosensors
• Tissue Engineering
• Biopolymers
• Drug delivery
• Hydrogels

• Stem Cell
• Gene transfer

Centre of Chiral and Pharmaceutical Engineering
• Process innovation and development:
  Chromatographic processes e.g. SMB, chromatographic reactor
• Enantioselective extraction/Biotransformation
• Fast-filtration technique for chiral compounds e.g., chiral membrane modules
• Nanotechnology for enantioseparations

School of Physical and Mathematical Sciences
http://www.ntu.edu.sg/SPMS/home/

The newly established School of Physical and Mathematical Sciences offers PhD and MSc programmes by research in its three divisions:

Division of Chemistry & Biological Chemistry
• Synthesis Methodology & Catalysis
• Inorganic/Organic/Analytical Chemistry
• Bioinorganic/Bioorganic/Biophysical Chemistry
• Physical/Theoretical/Computational Chemistry
• Medicinal Chemistry
• Green Chemistry
• Total Synthesis of Natural Products & Drugs

Division of Physics & Applied Physics
• Biophysics; Bioimaging; Soft Condensed Matter
• Nanoscience; Nanotechnology; Surface & Interface Science
• Optical Physics; Quantum Electronics; Photonics
• Plasma Technology and Plasma Processing
• Quantum Information Science and Technology

Division of Mathematical Sciences
• Applied & Computational Mathematics
• Statistics & Probability
• Pure Mathematics
• Discrete Mathematics
Enquiries

Please e-mail to:
• Ms Julie Lim, NTU Graduate Studies Office, at e-mail – jlim@ntu.edu.sg, Tel: 6790 6076 or
• Ms Yeo Aik Ser, A*STAR Graduate Academy, at e-mail – yeo_aik_ser@a-star.edu.sg, Tel: 6826 6321.

Final year undergraduates and graduates of NTU may email their enquiries directly to the respective Schools as indicated below:

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<tr>
<th>School</th>
<th>Location</th>
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<th>Email</th>
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<tbody>
<tr>
<td>School of Biological Sciences</td>
<td>SBS-01n-19</td>
<td>6316 2813</td>
<td>Prof Alex Law <a href="mailto:alaw@ntu.edu.sg">alaw@ntu.edu.sg</a></td>
</tr>
<tr>
<td>Office of Vice-Dean (Research)</td>
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</tr>
<tr>
<td>School of Civil and Environmental</td>
<td>N1-01a-28</td>
<td>6790 5308</td>
<td>Prof Tay Joo Hwa <a href="mailto:H-DEWE@ntu.edu.sg">H-DEWE@ntu.edu.sg</a></td>
</tr>
<tr>
<td>Engineering Division of Environmental Water Resource Engineering</td>
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<tr>
<td>School of Computer Engineering</td>
<td>N4-02a-16</td>
<td>6790 5371</td>
<td>A/Prof Francis Lee Bu Sung <a href="mailto:VD-SCE-RES@ntu.edu.sg">VD-SCE-RES@ntu.edu.sg</a></td>
</tr>
<tr>
<td>Office of Vice-Dean (Research)</td>
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<tr>
<td>School of Electrical and Electronic</td>
<td>S1-B1a-03</td>
<td>6790 5428</td>
<td>Prof Yoon Soon Fatt <a href="mailto:VD-EEE-RES@ntu.edu.sg">VD-EEE-RES@ntu.edu.sg</a></td>
</tr>
<tr>
<td>Engineering Office of Vice-Dean</td>
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<td>School of Materials Science and</td>
<td>N4.1-01-03</td>
<td>6790 4259</td>
<td>A/Prof Subbu Venkatraman <a href="mailto:assubbu@ntu.edu.sg">assubbu@ntu.edu.sg</a></td>
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<tr>
<td>School of Mechanical and Aerospace</td>
<td>N3-02a-06</td>
<td>6790 6957</td>
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