PHD PROGRAMME
STUDENT HANDBOOK
Semester 1, AY2018-19
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INTRODUCTION

Welcome to the Lee Kong Chian School of Medicine (LKCMedicine). This handbook provides useful information for PhD students and faculty at LKCMedicine. If you have any questions, please contact the Graduate Studies team:

<table>
<thead>
<tr>
<th>Contact Details</th>
</tr>
</thead>
</table>
| **Office Hours:** | Monday to Thursday: 8.30am to 5.45pm  
Friday: 8.30am to 5.15pm |
| **Location:** | Academic Affairs,  
Level 6, Clinical Sciences Building,  
11 Mandalay Road, Singapore 308232 |
| **Telephone:** | (65) 6904 2067 / (65) 6904 2068 |
| **Email:** | gradprog_LKCMedicine@ntu.edu.sg |
| **Website:** | www.lkcmedicine.ntu.edu.sg/programmes/PhD |

We hope you would find this handbook useful as a student and we wish you a pleasant stay in NTU and a successful and rewarding experience in LKCMedicine.

Key Contacts

If you need clarification on any of the topics listed in this handbook, or if you have queries related to you as PhD programme faculty, please do not hesitate to contact us.

<table>
<thead>
<tr>
<th>Staff</th>
<th>Designation</th>
<th>Contact No./Email</th>
<th>Location</th>
</tr>
</thead>
</table>
| Mr Raymond Lee | Senior Executive | (65) 6904 2067  
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Novena Campus |
| Ms Elaine Lim   | Manager         | (65) 6514 1500  
Layhong.lim@ntu.edu.sg |                                    |
| Mr Edwin Lim    | Deputy Director  | (65) 6904 2068  
Edwinlimyp@ntu.edu.sg |                                    |
Programme Overview

The LKCMedicine PhD by research programme aims to admit the brightest students from a variety of backgrounds – natural science, medicine, social science and engineering - and expose them to a range of topics and disciplines such that on completion, graduates have a deep knowledge and appreciation of both translatable and translational medical research methods.

It is designed to train and equip students with essential skills in research that address the School’s key research themes – Metabolic Disorders, Infection and Immunity, Neuroscience and Mental Health, Dermatology and Skin Biology and Cross Cutting Research.

All students receive broad exposure to a wide range of expertise within the School and NTU before specialising in their chosen research area.

The programme aims to enhance students’ employability and career mobility upon graduation through the unique combination of learning and training experiences. Specifically, it will:

- Train and equip PhD research students with the necessary intellectual and technical skills to develop into independent research scientists; and
- Inculcate students’ clinical awareness and enhance their learning experience through a range of local and overseas placements; and
- Equip students with relevant business awareness and information technology skills develop each student’s interpersonal, presentation and management skills, enabling the graduate to enter the workplace as a future research leader.

Students are expected to complete the programme in four years. The programme is open to applicants who are keen to pursue PhD studies on a full-time or part-time basis (self-financing). The minimum and maximum candidatures are as follows:

- Full-time: minimum 3 and maximum 5 years
- Part-time: minimum 3 and maximum 7 years

Research Themes

A key feature of the LKCMedicine research is the recognition of human health as the output of the operation of a highly complex interacting system and disease as a multifaceted process that transcends the classical distinctions between organ systems. We seek to promote synergies between research themes; for instance, interaction between researchers with expertise in metabolism and neuroscience will address the role of the brain-gut axis in metabolic disorders and obesity; similarly, the relationships between mood disorders and infection can be addressed through
interaction between neuroscientists and infectious disease research. Such a holistic “Systems Medicine” approach is a defining feature of LKCMedicine research and will be the key to its success in maximising impact in a competitive global environment.

Main Research Themes
- Metabolic Disorders:
- Infection and Immunity
- Neuroscience and Mental Health
- Dermatology and Skin Biology

Cross Cutting Research Themes
- Chromosome and Genome Biology
- Developmental and Regenerative Biology
- Health Systems and Population Health
Programme Milestones

Year 1

Clinician students (registered with the Singapore Medical Council) are required to complete the following components in Year 1:

<table>
<thead>
<tr>
<th>S/No</th>
<th>Components</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Confirmation on Supervisors and Research Topic</td>
<td>By end of the second month from enrolment</td>
</tr>
<tr>
<td>2</td>
<td>Formation of Thesis Advisory Committee (TAC)</td>
<td>By end of the sixth month from enrolment</td>
</tr>
<tr>
<td>3</td>
<td>Two Core Courses (6 AUs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. MD9001 The Ethics and Practice of Research, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. MD9101 Biostatistical Methods and Basic Epidemiology</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Two Elective Courses (6 AUs)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Online Collaborative Institutional Training Initiative (CITI) Courses on Research Ethics</td>
<td>By end of Year 1</td>
</tr>
<tr>
<td>6</td>
<td>TAC Meeting</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Attendance at Research Seminars (at least 10)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Information Literacy Programme</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>ERI701: Epigeum Research Integrity Course (ERIC) by first semester</td>
<td></td>
</tr>
</tbody>
</table>

Non-Clinician students (including those who hold MBBS/MD qualification but are not registered with the Singapore Medical Council) are required to complete the following components in Year 1:

<table>
<thead>
<tr>
<th>S/No</th>
<th>Components</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clinical Awareness Attachment (two weeks)</td>
<td>By end of first semester from enrolment</td>
</tr>
<tr>
<td>2</td>
<td>Two four-month Laboratory Rotations</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Confirmation on Supervisors and Research Topic</td>
<td>By end of the eighth month from enrolment</td>
</tr>
<tr>
<td>4</td>
<td>Formation of Thesis Advisory Committee (TAC)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Two Core Courses (6 AUs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. MD9001 The Ethics and Practice of Research, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. Another course related to research topic</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Two Elective Courses (6 AUs)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>HWG702 University Teaching for Teaching Assistants</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>HWG703 Graduate English</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>ERI701: Epigeum Research Integrity Course (ERIC) by first semester</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Online Collaborative Institutional Training Initiative (CITI) Courses on Research Ethics</td>
<td>By end of Year 1</td>
</tr>
<tr>
<td>S/No</td>
<td>Components</td>
<td>Timeline</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>11</td>
<td>Global Health Awareness Attachment (up to two weeks)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>TAC Meeting</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Information Literacy Programme</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Attendance at Research Seminars (at least 10)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Graduate Assistantship Programme / Teaching Assistant Assignment (applicable to RSS-, NPGS-and GRO-funded students)</td>
<td>Years 1-4</td>
</tr>
</tbody>
</table>

**Year 2 and Year 3**

**Clinician and non-clinician students/candidates** are required to complete the following components:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Components</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Qualifying Examination (QE)</td>
<td>Within 12-18 months from enrolment</td>
</tr>
<tr>
<td>2</td>
<td>Commence Main Research Project in Selected Pathway</td>
<td>Commence in Year 2</td>
</tr>
<tr>
<td>3</td>
<td>Research Communication for Graduate Studies (after QE)</td>
<td>By end of Year 2</td>
</tr>
<tr>
<td>4</td>
<td>TAC Meeting</td>
<td>By end of each year</td>
</tr>
<tr>
<td>5</td>
<td>Attendance at Research Seminars (at least 10)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Graduate Assistantship Programme / Teaching Assistant Assignment (applicable to RSS-, NPGS-and GRO-funded, full-time, non-clinician students)</td>
<td>Years 1-4</td>
</tr>
</tbody>
</table>

**Year 4**

**Clinician and Non-Clinician candidates** are required to complete the following components in Year 4:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Components</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Graduate Assistantship Programme / Teaching Assistant Assignment (applicable to RSS-, NPGS-and GRO-funded, full-time, non-clinician students)</td>
<td>Years 1-4</td>
</tr>
<tr>
<td>2</td>
<td>TAC Meeting</td>
<td>By end of Year 4</td>
</tr>
<tr>
<td>3</td>
<td>Attendance at Research Seminars (at least 10)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Thesis Submission</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Viva Voce Examination</td>
<td>After examination of thesis</td>
</tr>
</tbody>
</table>
AY2018-19 Academic Calendar

Notes:
1. All dates are subject to change at the discretion of the University.
2. Research students in graduate programmes are expected to work on their research projects throughout the period of their candidature subject to the student terms, requirements and entitlements
3. You can get updates on the academic calendar at: www.ntu.edu.sg/sasd/oas/AcademicCalendar

Coursework Requirements

All students are required to undertake two core courses and two elective courses, making up a total of 12 Academic Units (AUs) within the first year of candidature. Each course carries three AUs. One AU is equivalent to 13 teaching hours.

Clinic students are to undertake MD9001 The Ethics and Practice of Research and MD9101 Biostatistical Methods and Basic Epidemiology as core courses.
Non-clinician students are to undertake MD9001 The Ethics and Practice of Research as a core and another core relevant to the student’s area of research, in consultation with her/his supervisor.

Courses Offered to LKCMedicine PhD Students

<table>
<thead>
<tr>
<th>S/No</th>
<th>Type</th>
<th>Course Code and Title</th>
<th>Semester</th>
<th>Course Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Core</td>
<td>MD9001 The Ethics &amp; Practice of Research</td>
<td>1 &amp; 2</td>
<td>Assoc Prof Eric Yap</td>
</tr>
<tr>
<td>2</td>
<td>Core</td>
<td>BS7107 Computational Biology and Modelling</td>
<td>2</td>
<td>Assoc Prof Mu Yuguang, School of Biological Sciences (SBS)</td>
</tr>
<tr>
<td>3</td>
<td>Core / Elective</td>
<td>MD9101 Biostatistical Methods &amp; Basic Epidemiology</td>
<td>2</td>
<td>Assoc Prof Josip Car</td>
</tr>
<tr>
<td>4</td>
<td>Core</td>
<td>MD9104 Introduction to Neuroscience: Cellular and Molecular Neuroscience</td>
<td>1</td>
<td>Prof George Augustine</td>
</tr>
<tr>
<td>5</td>
<td>Core / Elective</td>
<td>MD9105 Systematic Reviews and Evidence Synthesis</td>
<td>1</td>
<td>Asst Prof Lorainne Car</td>
</tr>
<tr>
<td>6</td>
<td>Core / Elective</td>
<td>MD9107 Latest Development in Infectious Disease Research</td>
<td>2</td>
<td>Assoc Prof Kevin Pethe</td>
</tr>
<tr>
<td>7</td>
<td>Core / Elective</td>
<td>MD9110 Advanced Genetics in Diseases, Ageing &amp; Cancer</td>
<td>1</td>
<td>Prof Dean Nizetic and Asst Prof Foo Jia Nee</td>
</tr>
<tr>
<td>8</td>
<td>Elective</td>
<td>MD9102 Bio-Entrepreneurship</td>
<td>1</td>
<td>Asst Prof Navin Kumar</td>
</tr>
<tr>
<td>9</td>
<td>Elective</td>
<td>MD9103 Biological Imaging</td>
<td>1 &amp; 2</td>
<td>Prof David Becker</td>
</tr>
<tr>
<td>10</td>
<td>Elective</td>
<td>MD9106 Emerging Omics Technologies for Systems Biology &amp; Personalised Medicine</td>
<td>1</td>
<td>Asst Prof Guan Xue Li</td>
</tr>
<tr>
<td>11</td>
<td>Elective</td>
<td>MD9108 Neural Systems and Behaviour</td>
<td>2</td>
<td>Prof George Augustine</td>
</tr>
<tr>
<td>12</td>
<td>Elective</td>
<td>MD9109 Professional Skills for Researchers</td>
<td>1</td>
<td>Asst Professor Christine Cheung</td>
</tr>
<tr>
<td>13</td>
<td>Elective</td>
<td>BS7001 Foundation Course in Molecular &amp; Cell Biology</td>
<td>2</td>
<td>Dr Sze Chun Chau, School of Biological Sciences (SBS)</td>
</tr>
<tr>
<td>14</td>
<td>Elective</td>
<td>CH7102 Cell Therapeutics Engineering</td>
<td>2</td>
<td>Assoc Prof Chew Sing Yian, School of Chemical and Biomedical Engineering (SCBE)</td>
</tr>
<tr>
<td>S/No</td>
<td>Type</td>
<td>Course Code and Title</td>
<td>Semester</td>
<td>Course Lead</td>
</tr>
<tr>
<td>------</td>
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<td>----------------------------------------------------</td>
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<td>-------------------------------------------------</td>
</tr>
<tr>
<td>15</td>
<td>NTU Compulsory</td>
<td>HWG703 Graduate English</td>
<td>1 &amp; 2</td>
<td>Language &amp; Communication Centre (LCC)</td>
</tr>
<tr>
<td>16</td>
<td>Courses</td>
<td>HWG702 University Teaching for Teaching Assistants</td>
<td>1 &amp; 2</td>
<td>Teaching, Learning and Pedagogy Division (TLPD)</td>
</tr>
<tr>
<td>17</td>
<td>LKCMedicine</td>
<td>Research Communication for Graduate Studies</td>
<td>2</td>
<td>Language &amp; Communication Centre (LCC)</td>
</tr>
</tbody>
</table>

**Brief Introduction of the Courses:**

*Courses Available as Core*

1. **MD9001 The Ethics & Practice of Research**
   This core course aims to introduce fundamental issues in the fields of history and philosophy of science and practical ethics. It enables students to critically evaluate key arguments in these fields. This module examines the fundamental issues of scientific research. Designed as a core module for PhD students with or without training in critical thinking. It aims to provide young researchers a general grasp of foundation of science from a range of theories and case studies. In addition, it offers an opportunity for students to reflect upon their own roles in a team work or a research project before they enter a laboratory. Students will discern the motivation and objectives of scientific research. Eventually, they will be able to distinguish good and bad scientific practices and the philosophical concerns in lieu of or against them.

   - Philosophy of Knowledge and Scientific Revolution
   - Science in Society
   - Sampling methods & sample size calculation
   - The loss of knowledge in the information age
   - Research Application and Commercialisation
   - Research Involving Animal Subjects
   - Research Involving Human Subjects I
   - Research Involving Human Subjects II
   - Responsible Conduct in Research
   - Writing Workshop of Research Proposal for IRB and IAACUC
   - Ethics in Practice
   - Panel Discussion and Debate
   - Student-led Seminar presentations

2. **BS7107 Computational Biology & Modelling**
   In this course, basic ideas for understanding biological phenomena using principles from underlying physical and chemical foundations used in computer modelling approaches are introduced. Emphasis will be on how these computational tools are applied to biological areas such as protein folding, membrane fusion, enzyme activity,
drug-target interaction. These methods are illustrated with modern computer-based laboratory practicals with graphical display of biological molecules. A variety of computational methods and modeling strategies are introduced, such as classical force field based on quantum theory and coarse grained models. Basic sampling techniques, such as Monte Carlo, molecular dynamics and Langevin dynamics simulation will be described.

**Courses Available as Core or Elective**

3. **MD9101 Biostatistical Methods & Basic Epidemiology**
   This course will provide students with a strong understanding of the basic principles and measures used in epidemiology. The course will cover the fundamental concepts and statistics in epidemiology including important topics such as causality and disease surveillance. Real-world cases and data will be used to illustrate key principles, concepts, and techniques.
   - Exploring data
   - Measuring health & disease
   - Sampling methods & sample size calculation
   - Statistical estimation and hypothesis testing I (parametric methods)
   - Testing of hypothesis- II (non-parametric methods), and correlation analysis
   - Introduction to regression analysis (linear, logistic and survival regression)
   - Epidemiological study designs
   - Communicable and chronic non-communicable diseases, and preventive epidemiology
   - Clinical epidemiology and health services research
   - Epidemiology in health policy & planning

4. **MD9104 Introduction to Neuroscience - Cellular and Molecular Neuroscience**
   A general introduction into the concepts, principles and technologies of contemporary cellular and molecular neuroscience. This course is a core course and is intended to be the first part of a two-course introduction to neuroscience. It will be offered in Semester 1; the second course, MD9108, will be offered as an elective in Semester 2 and will focus on systems neuroscience.

5. **MD9105 Systematic Reviews and Evidence Synthesis**
   This course will take a blended learning approach and consists of lectures, small group working sessions and focused discussions. Its aim is to provide knowledge and skills needed to perform a systematic review. The skills gained through this course will also prove to be useful when undertaking research other than systematic reviews, e.g., developing an answerable research question, knowing what information sources are available and how to search them or understanding the principles of research quality assessment and reporting.

6. **MD9107 Latest Development in Infectious Disease Research**
   This course is intended to students interested in the latest development in infectious diseases research. Learning objectives: critical assessment and debate on cutting-edge articles; analyse diagnostic approaches and new therapeutic strategies for viral, bacterial and fungal infections;
discuss the global danger and challenges of antimicrobial resistance; discuss and propose solution for current global health challenges in communicable diseases; develop and defend research global health challenges; analyse the clinical relevance of microbiomes and redefine the Koch postulates.

A project-based learning approach will be followed that includes team-based analysis of cutting-edge papers; team-based development and defence of solutions for medically relevant problems; elaboration and presentation of research proposals to solve global health issues.

- Infectious Arboviruses: research towards a cure
- New drug development for tuberculosis: progresses and application to other bacterial infections
- Emerging superbugs in Asia
- Fungal Infections (aspergillus, candida)
- New approaches to viral and bacterial diagnosis
- The microbiome as a source of infectious diseases: redefining the Koch postulates
- Vaccines/host-directed therapies
- Alternative to antibiotics for controlling bacterial infection
- Regional field research on neglected tropical diseases
- Infectious Disease in the Clinical Setting

7. MD9110 Advanced Genetics in Diseases, Ageing & Cancer
The main aim of this module is to explain the key principles of human genetics, ageing and cancer genetics to the graduate student, and to introduce the fundamental concepts underlying existing methods in the field of genetics and genomics. This module will make them better prepared to contribute to the research and development of this trend, as well as research in other basic science and biomedical applications in general.

The course will consist of 3 main blocks:
(i) Germline Genetic Variants in Human Diseases: Single-gene disorders, complex genetic disorders, population genetics, aneuploidies, GWAS, prenatal diagnostics
(ii) Somatic and Epigenetic changes in Ageing and Cancer: Somatic gene changes, epigenetics, DNA damage-repair, ageing genome, cancer genetics
(iii) Genetic Modelling and Understanding Human Diseases: Disease modelling, genome editing, ethics

Courses Available as Elective

8. MD9102 Bio-Entrepreneurship
Started in 2016, LKCMedicine's 13-week Team-Based Learning Bio-Entrepreneurship module provides post-graduate students with an understanding of the entire drug discovery and development process starting from basic and translational research to creating viable partnerships with BioPharma companies or establishing Spin-Offs. The course is open to students from diverse backgrounds ranging from medicine, life sciences and engineering to humanity and social sciences.
To understand biotech investing, each student will be assigned virtual USD 500,000. Each student will use online analytic tools (e.g. Morningstar) to evaluate BioPharma companies from a list we provide, and then use the USD 500K to create an investment portfolio. Students will track their portfolio during the course, buying and selling shares on a weekly basis. Students with the top three most productive portfolios will receive prizes.

9. MD9103 Biological Imaging
This module will provide introduction to optical microscopy, as well as the wide variety of non-optical imaging modalities in use in modern laboratories.

Developments in Physics, including the description of light in terms of its quantal properties led to new microscopy techniques based on fluorescence phenomena. Further progress led to new ways for studying matter and for imaging: Positron Emission Tomography and X-ray imaging. Developments in spectroscopy using X-rays or Nuclear Magnetic Resonance also provide new high resolution techniques for imaging, such as Functional Magnetic Resonance Imaging (fMRI). Some scientific applications of the medical imaging techniques like fMRI, X-ray, CT-scans, PET and ultrasound, will be discussed. Students will be acquainted with the most prominent modern imaging techniques, such as confocal, fluorescence, NMR/MRI, PET and X-rays. The students will have a chance to expose to various imaging techniques during the theoretical and practical sessions.

The course might evoke a passion for imaging among students or prepare them for the laboratory by giving them a grounding in the principles, concepts, applications and language of Biological Imaging.

10. MD9106 Emerging Omics Technologies for Systems Biology & Personalised Medicine
All biological organisms, whether prokaryotes or the human body comprise a highly complex system of networks that are tightly regulated to maintain physiological and biochemical health. Factors contributing to this complexity are inter-individual differences of genetics and epigenetics, the microbiomes, as well as the external environment. Understanding how these complex networks are controlled is the goal of systems biology, and elucidation of individual variation and pathogenic perturbations could lead to personalised medicine. Advances in technologies that enable systems-scale analyses of biomolecules, from genes, to proteins and metabolites (omics) as well as big-data biocomputational approaches and tools have allowed us to derive novel insights into biological networks, leading to identification of alternative therapeutic approaches or biomarkers for a wide range of human diseases.

11. MD9108 Neural Systems and Behaviour
This course is offered as a follow-up elective course to MD9104 with effect from Semester 2, AY2017-18. Students are encouraged to first take MD9104 but this is not a prerequisite. For students whose research interest is in neural systems and behaviour, they are encouraged to take both courses. The course aims to give students an introduction to systems neuroscience, including sensory and motor systems, behaviour, memory and cognition. Students will understand conceptual foundations of systems neuroscience via textbook readings, lectures, class discussions and in-depth analysis of important research papers in the field.
- Somatosensory System and Pain
- Visual System
- Auditory and Vestibular Systems
- Motor Neuron Circuits and Motor Control
- Modulation of Movement: Basal Ganglia and Cerebellum
- Eye Movements and Sensory-Motor Integration
- Brain Plasticity
- The Association Cortices
- Language and Speech
- Sleep and Wakefulness
- Emotions
- Sex, Sexuality, and the Brain
- Memory

12. MD9109 Professional Skills for Researchers
This course aims to enhance personal and career development of graduate students. Our syllabus is designed on the backdrop of the Vitae Researcher Development Framework which defines the knowledge, behaviour and attributes of successful scientists. Through a series of individual and team-based activities, students will learn soft skills such as leadership and people management, creative problem solving, and effective communication for science outreach. Using their own PhD projects as the foundation, students will get practice on project planning, research commercialisation strategy, thesis writing and publishing research. In making informed career choices, we also provide training on resume preparation and understanding both research and non-research roles in different work settings.

13. BS7001 Foundation course in Molecular & Cell Biology
The aim of this course is to ensure graduate students have fundamental knowledge on topics of molecular and cell biology. Topics covered include: molecular and cellular mechanisms, genomic manipulations, control of gene expression, molecular immunology, virology, cancer biology, and hereditary diseases.

14. CH7102 Cell Therapeutics Engineering
This course introduces students to Tissue Engineering, and covers topics on Tissue Engineering fundamentals, practical Tissue Engineering and case studies. It also provides a forum for discussion on papers in literature and current issues in Tissue Engineering. The objective of this course is to provide students with a good foundation upon which cell and tissue-based therapy can be explored.
**Compulsory Non-AU Courses**

15. **HWG703 Graduate English**
The course aims to help graduate students develop their written and oral communication skills in English in academic settings.

Participants will learn to:
- prepare an academic paper for possible publication;
- plan an oral presentation; to develop their skill in explaining concepts in their areas of specialisation; and
- respond critically, but constructively, to presentations.

HWG703 is a pass/fail course. It consists of 12 two-hour tutorials. Students who are required to take HWG703 need to pass the course before they can enrol for HWG702 (Teaching Assistant Programme).

16. **HWG702 Teaching Assistant Programme**
Offered by the Teaching, Learning and Pedagogy Division (TLPD) at NTU, the University Teaching for Teaching Assistants programme provides Teaching Assistants with a framework for understanding how university students learn so that Teaching Assistants can develop an approach to university teaching.

The programme covers the principles of university teaching (*including a micro-teaching session*), development of skills learners need for effective learning, effective use of educational technology and learner-centred teaching practice.

By the end of the programme, the student will be able to:
- Apply principles of learner-centred learning in your area of discipline
- Plan appropriate learning outcomes for each teaching session
- Identify appropriate learning activities for learners
- Develop blended learning strategies using tools available at NTU
- Identify strategies for giving learners’ feedbacks
- Communicate with confidence in classroom

Candidates need to satisfy the requirement for HWG702 Teaching Assistant Programme before they are allowed to assume teaching duties.

17. **Research Communication for Graduate Studies**
Offered by Language and Communication Centre (LCC), the course aims to enable students to master important elements of research communication with reference to Masters’ dissertations and PhD theses including:

i. The conventions of research communication;
ii. The structure of Masters’ dissertations and PhD theses; and
iii. Presentation skills for seminars and conferences.

This course sets out to improve the productive (writing and speaking) skills of students with particular reference to writing Masters’ dissertations and PhD theses in English.
Two broad subsidiary aims are to increase students’ confidence in the use of academic English, and to provide them with an awareness of tools and resources for continued self-study and enhancement of their abilities. The course is organized intensively, and comprises six 3-hour sessions, and is thematically based in its treatment of research writing and spoken presentations. Most of the coursework will take place in the classroom, but students will be required to carry out preparatory tasks and some homework outside the class. By the end of the course, students will complete writing their own specimen research proposal, relevant to their own field of academic communication. Where appropriate and relevant, this may take the form of a ‘confirmation report’, for PhD students in particular.

Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Tutorial Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be conducted in Semester AY 18-19, Semester 2. Dates to be updated</td>
<td><strong>Scientific communication:</strong> Including principles of academic communication, the structure of a postgraduate dissertation or thesis, and ‘signposting’ in writing.</td>
</tr>
<tr>
<td></td>
<td><strong>Introductions and signposting:</strong> Investigating the introductions to theses and proposals, thinking about titles, and more on signposting.</td>
</tr>
<tr>
<td></td>
<td><strong>From introduction to literature review:</strong> Key strategies in writing literature reviews, using references appropriately, and scaffolding arguments and ideas through the use of key verbs.</td>
</tr>
<tr>
<td></td>
<td><strong>Research proposals and citation systems:</strong> The structure of a research proposal, citation systems, and work on your own research proposal.</td>
</tr>
<tr>
<td></td>
<td><strong>Presenting your research:</strong></td>
</tr>
<tr>
<td>To be conducted in Semester AY 18-19, Semester 2. Dates to be updated</td>
<td><strong>Finishing touches:</strong> Writing conclusions, summarizing findings, discussing limitations and significance and indicating areas for future research.</td>
</tr>
</tbody>
</table>

Learning outcomes

Upon successful completion of this course, the students will be able to:
(i) Understand formal documentation standards relevant to their discipline;
(ii) Recognize and apply patterns of argumentation appropriate to their field;
(iii) Give spoken presentations to academic audiences on their research topics in English;
(iv) Participate actively and meaningfully in seminar and workshop settings;

Student assessment

There is no end-of-semester examination for this course, and continuous assessment will be used for student evaluation instead. This mode of assessment is particularly suited for communication courses as it takes into consideration the development of students’ skills in written and oral communication through the semester. Students will be assessed based on individual written assignments (60%), presentations (20%), and class participation (20%).
20%: Oral presentations - Students will make individual presentations on their own areas of scientific research.

20%: Class participation - The tutorials will be conducted as small-class workshops (15 students) focusing on written and oral communication skills. To encourage students to participate actively in tutorials, they will be evaluated for the quality and quantity of their contributions to classroom tasks.

60%: Written assignments - Students will be required to complete a formal research proposal by the end of the course, in the correct academic form, including a short literature review, appropriate references, and a convincing description of research issues, methods, and the significance of the research. Students who have completed their research proposal prior to the course will be expected to work on other aspects of thesis writing.

Course Exemption

For AU-bearing Courses

Students may apply to the School to be exempted from ONE core/elective course only if they have:

- taken the same course at Master’s level;
- attained at least a B-grade and equivalent number of AU for the course taken; and
- completed other three graded courses with a minimum Cumulative Grade Point Average (CGPA) of 3.5

To apply for course exemption, please complete the “Research Student's Application Form for Course Exemption” provided in Annex A and submit to the Graduate Studies team together with the supporting documents. Application for course exemption is subject to approval from the School and NTU.

Note to NHG Clinicians:

Residents and Associate Consultants (ACs) who have completed the NHG Clinician-Scientist Preparatory Programme (CSPP) would be offered the following options of course exemption:

1) one core and one elective course or,
2) two electives

In choosing CSPP exemption of one core and one elective course, the clinician would still have to attend the first three classes of PhD course, MD9001, “The Ethics and Practice of Research” (with no assessment). This is to ensure the clinician does not miss out areas in MD9001 that are not covered by CSPP. If the clinician chooses CSPP as two electives, s/he would have to undertake PhD courses, MD9001 and MD9101 Biostatistics and Basic Epidemiology as two compulsory core courses in the LKCMedicine PhD programme.
To apply for course exemption, please complete the “Research Student's Application Form for Course Exemption” provided in Annex A, together with a certifying letter on CSPP completion, and submit to the Graduate Studies team.

For Non-AU-bearing Courses

HWG702 Teaching Assistant Programme

As this is a formal course on higher education pedagogy, previous teaching experience alone is not regarded as sufficient ground for exemption.

Exemptions will only be considered for HWG702 on the following grounds:

- Where the student can furnish documentary evidence that s/he has successfully completed an equivalent course in university teaching at another university or equivalent institution.

- Where the student can furnish documentary evidence that s/he has completed other courses that involve pedagogical training (such as from a recognised Institute of Education). This may include diplomas, masters, or other degrees specifically in education. Notwithstanding the completion of pedagogical training from a recognised institution, each application for exemption will still be assessed to ascertain that the qualification is current and relevant to teaching and learning at higher education.

All clinician students are exempted from the course. To seek exemption, non-clinician students are to submit the exemption request form found in Annex B to Teaching and Learning Pedagogy Division via the Graduate Studies team before the end of the Course Registration Period. Students would be required to register for the course themselves via NTULearn, https://ntulearn.ntu.edu.sg/

HWG703 Graduate English

Students who meet any ONE of the criteria listed below can be exempted from the English proficiency course. Please inform the Graduate Studies team if you meet any of the criteria. The Graduate Studies team assists in processing the exemption of the course. You will be asked to register for the course if you are not eligible for exemption.

1. Previous Full-Time Study in English
   A three-year degree from an institution where English is the medium of instruction and the dissertation or final year report was written in English.

2. Graduate Record Examinations (GRE)

   | Old GRE version, taken before Aug 2011 | Obtained at least 600 in the Verbal Reasoning section, OR Obtained at least 4 in the Analytical writing section |
   | Revised GRE version, taken after Aug 2011 | Obtained at least 160 in the Verbal Reasoning section, OR Obtained at least 4 in the Analytical writing section |
3. **Graduate Management Admission Test (GMAT)**
   Obtained a total score of 650 in Verbal and Quantitative sections.

   *Note: Only GRE and GMAT scores obtained within five (5) years prior to enrolment will be considered.*

4. **Test of English as a Foreign Language (TOEFL)**
   - PBT: 600 AND Essay rating 4, or
   - IBT: 100 with a minimum score of 23 for Writing

5. **International English Language Testing System (IELTS)**
   - Achieved Band 6.5 for the Writing sub-test, and
   - Band 6.0 for the Speaking sub-test

   *Note: Only TOEFL and IELTS scores obtained within two years prior to enrolment will be considered.*

**Course Registration**

There are two Registration Periods, i.e., Registration Periods 1 and 2 in each semester.

All registration and add/drop of courses must be completed within the stipulated period, after which students will not be allowed to add/drop any courses.

Priority is given to students registering courses offered by their own programme of study.

PhD students are allowed to register up to 15 AU’s (five courses) per term of study.

Students who fail to register a course and yet proceed to attend classes in that course will not be allowed to take the examination in that course, or no grade will be awarded to that course if it is one that has no formal examination.

Students with outstanding fees will not be allowed to register for courses.

All enquiries pertaining to outstanding fees should be addressed to NSS, Finance [contact number: (65) 6790 4616]

**Before Registering for Courses**

Students are required to refer to Graduate Course Registration System on GSLink for the class timetable when selecting courses to avoid any clashes in your classes. To access GSLink, go to [www.ntu.edu.sg](http://www.ntu.edu.sg) > Login > GSLink.

The University reserves the right to withdraw or change the class timetable of any course listed in the class timetable.
Classes may be rescheduled, cancelled due to unforeseen circumstances or low demand. Students enrolled in a cancelled class will be notified through email.

**How to Register for Courses**

All students are to register for the course(s) they wish to study via the Graduate Course Registration System on GSLink.

It is the responsibility of students to check and ensure that their courses are correctly registered via the Graduate Course Registration System.

Students are reminded to check their student email account and GSLink regularly as important messages regarding registration of courses or changes to the timetable will be conveyed to them through the system.

New matriculated students may access e-services such as Graduate Course Registration System when term commences. Students may also check the courses which their School may have registered for them. For information or assistance on NTULearn (NTU’s e-learning platform), please refer to [https://ntulearn.ntu.edu.sg/](https://ntulearn.ntu.edu.sg/) or email NSS Service Desk at servicedesk@ntu.edu.sg.

**Registration Periods**

Registration Period 1 takes place before the commencement of each semester. All **existing students** must register for courses that they will be reading in the semester unless they have been granted leave of absence by the University.

Registration Period 2 takes place after the commencement of each semester. All **existing students and new students** must register for courses that they will be reading in the semester.

Remaining vacancies for courses will be available to **all existing and new students** during Registration Period 2. Existing students who miss Registration Period 1 may register during Registration Period 2.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Registration Period</th>
<th>Opening Date &amp; Time</th>
<th>Closing Date &amp; Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1, AY2018-19</td>
<td>Period 1</td>
<td>16 July 2018 (Monday), 1100hrs</td>
<td>18 July 2018 (Wednesday), 1700hrs</td>
</tr>
<tr>
<td></td>
<td>Period 2</td>
<td>13 August 2018 (Monday), 1100hrs</td>
<td>23 August 2018 (Thursday), 2359hrs</td>
</tr>
<tr>
<td>Semester</td>
<td>Registration Period</td>
<td>Opening Date &amp; Time</td>
<td>Closing Date &amp; Time</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Semester 2, AY2018-19</td>
<td>Period 1</td>
<td>TBC</td>
<td>TBC</td>
</tr>
</tbody>
</table>

Note:
1. You can log in to GSLink to check your registered courses from **29 August 2018**. If you are not successful in registering for any of your classes, you may try again in Semester 1.

**Registration for Cross-School/Cross-Programme Courses**
(Courses NOT offered to student's programme of study)

<table>
<thead>
<tr>
<th>Registration Period</th>
<th>Opening Date &amp; Time</th>
<th>Closing Date &amp; Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period 1</td>
<td>16 July 2018 (Monday), 1100hrs</td>
<td>17 August 2018 (Friday), 1700hrs</td>
</tr>
</tbody>
</table>

Students can register courses offered by other schools in NTU via the Graduate Course Registration System by the stipulated deadline.

**Withdrawal of Registered Courses**

- Withdrawal of course without penalty: A course dropped within the registration period will not appear in the result slip and official transcript.

- Withdrawal of course with "W" Grade: For a course that is dropped after the registration period, a "W" grade will be indicated in the transcript.

  "W" grade is not a fail grade, it is an indication that the course is dropped after choosing it.

- Withdrawal of course with "F" Grade: For a course that is dropped after registration period, the student will be deemed to have sat and failed the course and a grade 'F' will be reflected in her/his result slip and official transcript.

**Examination**

**Instructions**

Students are responsible for understanding and complying with the University policies and procedures pertaining to examination matters.

All candidates must follow these instructions conscientiously. You will be dealt with by the Board of Discipline for any breach of regulations.
**Absence**

Attention is drawn to the following regulation relating to absence from any examinations:

"A student who does not register or who, having registered, fails to take any examination for which he is eligible to sit, shall be deemed to have sat and failed the examination unless the Board of Examiners is satisfied that there is good and sufficient reason for such failure to register or take the examination."

If you are not able to take an exam and would like the Board of Examiners to give special consideration, then you have to write in to appeal within two working days of absence from the examination. Supporting documents are important as it will help you in the Board's decision-making. Late submission will not be considered.

Example: If you are to be sent overseas by your company, then you have to submit an appeal letter, together with your company’s letter certifying your period of absence and a photocopy of your air-ticket or e-ticket.

**Illness**

A candidate who is absent from an examination for a degree, on account of illness, may be permitted to appear for the examination at the next period of the examination on the condition that:

The candidate has been examined by a registered medical practitioner (registered with the Singapore Medical Council) and a medical report (see Annex C) attached with the original medical certificate be submitted to the Office of Academic Services within **two days** of the date of absence from the examination.

The medical certificate should cover the period of absence from examination.

The medical report form is available at GSLink-Academic-Examination-Request for Medical Report Form. Candidates are responsible to provide the form to their attending doctor.

Any fee payable for the medical examination under the above regulation shall be paid by the candidate. Late submission will not be considered.

**Outstanding Fees**

Attention is drawn to the following examination regulation relating to outstanding fees:

"You may be barred from an examination or have the results of any examination or a course withheld if you are in debt to the University (other than as a result of a loan made by the University). Please approach your School for assistance should you face any difficulty. Otherwise, you may settle your outstanding fees at One Stop@SAC."
**Cheating**

A candidate who is caught cheating in examinations is liable to be expelled from the University.

The University takes a serious view of cheating in examination. All students are to take note of the written examination instructions issued to them as well as the announcement made by the Chief Invigilator during examination.

**Check Tentative Release Dates of Exam Results**

Students are informed through their NTU email account once the results are released.

Students are to print the result slip online via GSLink.

**Request for Review of Results**

If you wish to request a review of your results, please submit your request online via GSLink. The charge for each course to be reviewed is S$10.70 (inclusive of GST) and is not refundable.

Any appeal for review of examination results received after the stipulated deadline will not be processed and the payment made (if any) will not be refunded. All payments for appeals must be made within the closing date. Please use the online form “Request for Review of Result”. Once the outcome of your appeal for review of examination results is known, you will be notified via email.

**Appeal against Outcome of Review**

Students who are dissatisfied with the outcome of the review of their examination results may appeal to the Academic Appeal Board at the University level if you have sufficient grounds for appeal. For more information on the appeal process, please visit www.ntu.edu.sg/sasd/oas/Pages/Academic-Appeal.aspx

**Grade Point Average (GPA)**

**Definition of Grade Point Average**

2. **Term Grade Point Average (TGPA)**

TGPA represents the grade point average of all courses attempted by a student in any term of study.

\[
\text{TGPA} = \frac{\text{SUM of (Grade Point x AU * for course attempted in the term)}}{\text{Total AU * attempted in the term of study}}
\]

Term refers to semester in the programme.
3. Cumulative Grade Point Average (CGPA)

CGPA represents the grade point average of all courses attempted by a student.

\[ \text{CGPA} = \frac{\text{SUM of (Grade Point} \times \text{AU} \times \text{for course attempted to date})}{\text{Total AU attempted to date}} \]

*AU = Academic Unit: Each course is assigned a certain number of AU. It is a measure of the student's workload associated with both class attendance and preparation.

The TPGA and CGPA will be reflected in the student's transcript of academic records.

Grading and Calculations for Grade Point Average

1. Grades With Grade Point

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Grade Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>5.00</td>
</tr>
<tr>
<td>A</td>
<td>5.00</td>
</tr>
<tr>
<td>A-</td>
<td>4.50</td>
</tr>
<tr>
<td>B+</td>
<td>4.00</td>
</tr>
<tr>
<td>B</td>
<td>3.50</td>
</tr>
<tr>
<td>B-</td>
<td>3.00</td>
</tr>
<tr>
<td>C+</td>
<td>2.50</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>D+</td>
<td>1.50</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
</tr>
</tbody>
</table>

2. Notations Without Grade Points

The following notations will also be used in the academic records. They have no assigned grade point and thus will be not be counted in the calculation of TPGA or CGPA.

- * - Course with Pass/Fail grading only
- AT - By attendance only
- IP - In Progress
- W - Withdrawal
- X - Absent
3. Course Exemption and Transfer of Credits
Courses that are exempted and courses with approval to transfer credits will not be counted in the calculation of TGPA or CGPA. However, they will be counted towards the AU requirement for graduation, and reflected in the transcript.

4. Fail Grade
A Fail (F) grade obtained in a course, and a new grade attained for any subsequent repeat, will be counted in the calculation of TGPA and CGPA. The grades for all attempts will be reflected in the transcript.

Graduation Requirements and Academic Performance for Students in Research Programme

1. Graduation Requirements
For graduation, a research student has to fulfil the following conditions:

i. Successful completion of all requirements as prescribed by the programme of study or School; and
ii. After completion of all course requirements, a minimum CGPA of 3.50 must be attained.

2. Satisfactory Academic Performance
In any term of study, a research student is considered to be making satisfactory progress if s/he satisfies the following conditions:

i. Attain a minimum TGPA of 3.50; and
ii. Attain at least Grade Point 2.50 (grade C+) in every course; and
iii. Complete all course requirements within the confirmation period as prescribed under Qualifying Examination

3. Poor Academic Performance
A research student with poor academic performance will be subjected to the following actions:

<table>
<thead>
<tr>
<th>Academic Warning</th>
<th>Termination of Financial Aid and/or Candidature</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. TGPA &lt; 3.50 in any term of study of study; or</td>
<td>i. Fail to complete all course requirements within one year; or</td>
</tr>
<tr>
<td>ii. Any course with Grade Point less than 2.50 (below C+)</td>
<td>ii. TGPA &lt; 2.50 in two consecutive terms; or</td>
</tr>
<tr>
<td></td>
<td>iii. TGPA &lt; 3.00 in three consecutive terms.</td>
</tr>
</tbody>
</table>
Lab Rotations
(applicable to non-clinician students only)

The purpose of the lab rotation is to provide exposure for non-clinician students to a range of different research themes available in LKCMedicine. The lab rotation is not meant for you to explore switching to a different research project/lab.

All non-clinician students are required to fulfil two four-month lab rotations. The lab rotations have to be conducted over two different research themes within LKCMedicine. The first lab rotation refers to the lab and PI whom you have indicated in your PhD programme application. The second lab rotation is to be decided after you have consulted your PI (of the first lab rotation).

The research themes that you can choose from include: Metabolic Disorders, Infection and Immunity, Neuroscience and Mental Health, and Dermatology and Skin Biology.

You are required to nominate a primary supervisor and co-supervisor for the first lab rotation and a supervisor for the second lab rotation.

The list of LKCMedicine faculty (with their associated area of research focus) whom you can engage as the primary supervisor and co-supervisor are as follows:

<table>
<thead>
<tr>
<th>Research Theme</th>
<th>Faculty</th>
</tr>
</thead>
</table>
| Cross Cutting Research                  | Prof Russell Gruen  
|                                         | Prof Philip Ingham  
|                                         | Assoc Prof Karen Crasta  
|                                         | Assoc Prof Joanne Ngeow  
|                                         | Asst Prof Xia Yun |
| Dermatology and Skin Biology            | Prof David Becker  
|                                         | Prof Artur Schmidtchen  
|                                         | Asst Prof Tom Carney  
|                                         | Asst Prof Woo Wei Meng |
| Family Medicine and Primary Care        | Prof Helen Smith |
| Health Systems and Population Health    | Prof John Chambers  
|                                         | Assoc Prof Josip Car  
|                                         | Assoc Prof Konstadina Griva  
|                                         | Asst Prof Lorainne Car |
| Infection and Immunity                  | Prof George Chandy  
|                                         | Prof Annelies Wilder-Smith  
|                                         | Assoc Prof Kevin Pethe  
|                                         | Assoc Prof Eric Yap Peng Huat  
|                                         | Assoc Prof Yeo Tsin Wen  
|                                         | Asst Prof Sanjay Chotirmall  
|                                         | Asst Prof Guan Xue Li  
|                                         | Asst Prof Luo Dahai  
|                                         | Asst Prof Navin Verma |
Once the lab rotations/projects are confirmed, please complete “Proposed Research Topic and Supervisor for Lab Rotation”, available in Annex D, and submit to the Graduate Studies team.

Requests to undertake lab rotations within the same research theme or with other school(s) in NTU will be subject to recommendation from primary supervisor and approval from the PhD Programme Director. Students who are undertaking non-lab-based rotations in Family Medicine and Primary Care and Health Systems and Population Health research themes are allowed to do two rotations within the same theme but with different supervisors.

After completion of each lab rotation/project, students are required to submit a report, in the form of a scientific paper to Graduate Studies team within two weeks for evaluation at the PhD Qualifying Examination in due course.

After completion of two lab rotations/projects, students are to confirm their supervisors and research topic before the first Thesis Advisory Committee (TAC) meeting is held.

Global Health Awareness Attachment *(applicable to non-clinician students only)*

Designed for non-clinician students to gain a better understanding of healthcare services and systems in developing and developed countries, the attachment is to be completed before the student’s Qualifying Exam.
Students are required to attend up to two weeks of a Global Health Awareness attachment in a developing country.

The School provides four options for students to complete the Global Health Awareness attachment requirement:

- To participate in School-organised overseas trip to the Christian Medical College (CMC) at Vellore, India.
- To participate in an Overseas Community Involvement Programme (OCIP). Students looking at this option are expected to jointly organise the trip with MBBS students.
- To attend relevant global health courses held in various institutions in Singapore.
- Propose alternative attachment locations other than those recommended by the School.

For more information on the above options and the selection form, please refer to Annex E. A report has to be submitted to the Graduate Studies team within two weeks from the end of your Global Health Awareness attachment.

**Clinical Awareness Attachment**  
(*applicable to non-clinician students only*)

Non-clinician PhD students must undertake a two-week attachment at the hospital in their first year, normally with one week in wards/clinics and another week in a diagnostic/research lab. Clinical Awareness Attachment is a requirement as part of the Qualifying Examination which is due between 12 to 18 months from enrolment.

Students usually undertake the attachment after the examination period of the first semester from enrolment:

<table>
<thead>
<tr>
<th>Intake</th>
<th>Clinical Awareness Attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 2018</td>
<td>November - December 2018</td>
</tr>
<tr>
<td>January 2019</td>
<td>May - June 2019</td>
</tr>
</tbody>
</table>

**Attachment Requirements**

- Students must be supervised by a clinician/lab or research staff at the hospital/lab.
- Attachment should be relevant to their research area.
- Attachment programme may include guided reading of the current medical literature and attendance at clinical meetings, rounds and seminars. The hospital/lab supervisor could also plan learning activities that are deemed suitable for the research student.
- Students must record their attendance during the attachment with the Teaching Assistant Assignment Timesheet found in Annex F. Each attendance must be endorsed by the respective clinical supervisor.
**Learning Outcomes**

After the completion of the Clinical Awareness Attachment, students are expected to be able to:

- Demonstrate a deeper understanding of the diseases that they are studying and the impact on patients.
- Demonstrate the ability to recognise clinically relevant scientific problems of medicine and the research project in a way that addresses the clinical need.
- Communicate effectively with clinical colleagues.

**Deliverable from the Student**

A written report which includes cover page, a table of contents, information of supervisors and attachment period, background of the healthcare institution and supervisor being attached to, description of activities/tasks performed, pre- and post-attachment experience, the impact on the research project and conclusion. The word requirements for the report is 1,000 – 1,500 words.

Students are required to submit the report together with the Teaching Assistant Assignment Timesheet within two weeks upon completion of attachment to the Graduate Studies team.

**Application Process**

The application is co-ordinated by the School’s primary clinical training partner, National Healthcare Group (NHG). Students will be attached to Tan Tock Seng Hospital or its affiliated institutions/centres e.g. National Skin Centre, Institute of Mental Health, during the attachment.

In the application, students will be required to provide documents including but not limited to the following:

- Curriculum Vitae (CV)
- Application form
- Passport-size photo
- Vaccination records
- Reference letters
- Indemnity / Undertaking letter

Application fees will be funded by the School. Other additional costs incurred, such as vaccination costs, are to be borne by the applicant.

Graduate Studies team will introduce students who wish to undertake the Clinical Awareness Attachment with non-NHG healthcare institution with the respective Educational Development Officer. It is the student’s responsibility to follow up on the application process.
Do’s and Don’ts for Clinical Attachment

Do’s
- Inform your LKCMedicine supervisor about the clinical attachment so they know your whereabouts
- Know the exact time and location to meet your attachment supervisor
- Observe with hands-off
- Dress appropriately for the professional setting
- Arrive early and be punctual
- Treat patients/other people you encounter with courtesy and respect
- Seek clarification if you do not understand
- Get help when you need it
- Be a team player and friendly to the staff
- Use appropriate language
- Carry your matriculation/access card with you at all times
- Inform your attachment supervisor/administrator if you are unwell and unable to work
- Ask for feedback from your attachment supervisor upon completion of the attachment
- Reflect on your experience and write the report
- Enjoy your attachment

Don’ts
- Don’t make changes to the attachment dates if possible
- Don’t perform work duties in the absence of supervision and/or when you are not instructed to
- Don’t ignore the office culture
- Don’t make negative comments about patients/others
- Don’t be afraid to ask questions
- Don’t be too casual when working in a formal workplace

ERI701: Epigeum Research Integrity Course (ERIC)

ERI701 Epigeum Research Integrity Course (ERIC) is a research integrity course with 0 AUs that is applicable to new PhD students who join NTU from AY2018/19.

Students would be auto-enrolled into the course by Office of Academic Services, NTU. Access to the course is via NTULearn, and as an LKCMedicine PhD student, you are to choose Track 1 - Biomedical Sciences, among the Track options.

ERIC has to be completed by first semester, i.e. 16 November 2018, failing which student will be assigned an “F” grade which is reflected in transcript. Students who fail will be auto-enrolled in Semester 2, 14 January 2019.
ERIC certification is valid for three years, after which ERIC-Concise is needed. (Details available at a later date). Details on ERIC can be found in Annex G.

Information Literacy Programme

This compulsory seminar is aimed at providing all NTU PhD students with strong foundational knowledge of current resources, tools, methods and practices in undertaking research in a digital information environment. In recognition of increasing inter-disciplinary research, the seminar will be non-discipline specific (but will direct students to discipline-specific resources and guides for individual exploration beyond the seminar). This approach, along with a small group, discussion-based seminar format will also act as a means by which PhD students will interact with peers outside of their Schools. The seminar will be regularly scheduled throughout the year in the Library Instructional Commons (seating capacity 40). Students will be required to attend the seminar within their first year of matriculation.

Proposed Outline

Three hours, including break

Current Information landscape (~1 hour)
- Types of resources and latest search/access tools
- Managing references and articles (EndNote, Mendeley)
- Keeping up-to-date using digital technologies (Search alerts, Browzine)

Scholarly metrics (~1 hour)
- Research impact, high impact journals, highly cited authors, etc.
- Tools for identifying seminal publications and significant journals
- Traditional metrics and Altmetrics

Research practices overview (~30 min)
- Researcher identity and profiles (ORCID, ResearcherID, etc.)
- Open access, open data
- Research data management

Information research support at NTU (~10 min)
- Subject librarians and research consultations
- Elective workshops
- Online guides and tutorials

Learning outcomes

- Differentiate between the content and capabilities of different information platforms.
- Identify and access subject-specific databases in order to find scholarly publications.
- List the benefits of using digital technologies to store, manage, and share references, papers, and the latest research.
- Find leading journals and influential authors and papers using relevant research tools.
- Recognise current practices for participating in the academic and digital research environment.
- List ways to get research support from the Library.

“Search strategies” are incorporated into various parts of the seminar, e.g. as part of exploring databases, but are not explicitly addressed as part of the learning outcomes. “Reference management” is addressed as part of using digital technologies to store, manage, and share references, etc.

The programme is offered by the NTU Library. Students are to register and book a session through Library Workshops Calendar (https://blogs.ntu.edu.sg/lib-learning/workshops/). For frequently-asked questions, please see NTU Information Literacy Requirements (https://blogs.ntu.edu.sg/lib-learning/ntu-information-literacy-requirements/)

**Attendance at Research Seminars**

Every PhD student has to attend at least 10 seminars per year throughout their candidature. Students can take part in seminars organised by LKCMedicine and/or other NTU Colleges and Schools. The presentations could be led by graduate students, faculty and/or guest speakers. Sessions are usually free. Please use the Research Seminar Record Form found in Annex H to record the number of seminars attended.

**Online Courses on Research Ethics**

Every PhD student has to register for the online courses offered by the Collaborative Institutional Training Initiative Programme (CITI) (https://about.citiprogram.org/en/courses/) through NTU Institutional Review Board. Students can choose from a list of available courses which cover several key regulatory and ethical areas. Students shall subscribe directly to CITI as a PhD student of NTU. Each course takes an average of 30-45 minutes to complete.

Students are required to choose “Biomedical Research Investigators” as the required course.

**Required Courses for “Biomedical Research Investigators”**

<table>
<thead>
<tr>
<th>S/N</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Belmont Report and CITI Course Introduction</td>
</tr>
<tr>
<td>2</td>
<td>History and Ethics of Human Subjects Research</td>
</tr>
<tr>
<td>3</td>
<td>Basic Institutional Review Board (IRB) Regulations and Review Process</td>
</tr>
<tr>
<td>4</td>
<td>Informed Consent</td>
</tr>
<tr>
<td>5</td>
<td>Social and Behavioural Research (SBR) for Biomedical Researchers</td>
</tr>
<tr>
<td>6</td>
<td>Records-Based Research</td>
</tr>
</tbody>
</table>
Genetic Research in Human Populations

Populations in Research Requiring Additional Considerations and/or Protections

Vulnerable Subjects - Research Involving Prisoners

Vulnerable Subjects - Research Involving Children

Vulnerable Subjects - Research Involving Pregnant Women, Human Foetuses, and Neonates

International Studies

Avoiding Group Harms - U.S. Research Perspectives

FDA-Regulated Research

Research and HIPAA Privacy Protections

Vulnerable Subjects - Research Involving Workers/Employees

Conflicts of Interest in Research Involving Human Subjects

Nanyang Technological University

Graduate Assistantship Programme (GAP) / Teaching Assistant Assignment

All full-time, non-clinician PhD Students are required to perform duties under the Graduate Assistantship Programme/Teaching Assistant Assignment as set out in the table below.

- The student will not be paid any remuneration for the hours clocked under the Graduate Assistantship Programme.
- The student should work with the supervisor(s) on the plan to fulfil the required hours on a yearly (Academic Year) basis.

<table>
<thead>
<tr>
<th>Mode of Clocking GAP Hours (Per Candidature)</th>
<th>Maximum % allowable out of the stipulated GAP requirement</th>
<th>Maximum hours allowance for this category during candidature</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Hrs / Laboratory Supervision</td>
<td>100%</td>
<td>208 hours</td>
<td>416 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Official office hours and preparation of the class can be taken into account.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>As a guide, preparation time taken for the assignment done should not take more than half of the time required for the assignment.</td>
</tr>
<tr>
<td>Research Assistant duty, inclusive of research supervision</td>
<td>60%</td>
<td>125 hours</td>
<td>250 hours</td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td>------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>The quality of the research supervision or RA duty needs to be endorsed by the student’s supervisor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No preparation time is to be clocked into this assignment.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The RA duty should go beyond the scope of the research project undertaken by the student to fulfil the requirement of the PGR programme.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other developmental assignments</th>
<th>20%</th>
<th>42 hours</th>
<th>83 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>This includes the Global Health Awareness attachment and Clinical Awareness attachment, community and volunteer service, humanitarian and Overseas Community Involvement Programme, assistance in organisation of conferences, and other assignments with development value approved by Executive Vice-Dean.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Types of Teaching Assignments

<table>
<thead>
<tr>
<th>Mode of Clocking GAP Hours</th>
<th>Types of Teaching Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Hrs / Laboratory Supervision</td>
<td></td>
</tr>
<tr>
<td>Preparation of tutorials and classes (incl. teaching aids, courses)</td>
<td></td>
</tr>
<tr>
<td>Conduct tutorials, classes and seminars</td>
<td></td>
</tr>
<tr>
<td>Assistance to tutor in teaching duties</td>
<td></td>
</tr>
<tr>
<td>Laboratory supervision</td>
<td></td>
</tr>
<tr>
<td>Assignment marking</td>
<td></td>
</tr>
<tr>
<td>Teaching administration</td>
<td></td>
</tr>
<tr>
<td>Laboratory supervision</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mode of Clocking GAP Hours</th>
<th>Types of Teaching Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Assistant duty, inclusive of research supervision</td>
<td></td>
</tr>
<tr>
<td>Assistance to supervisor in literature search, data collection, data organisation, etc</td>
<td></td>
</tr>
<tr>
<td>Assistance to faculty on research outside their own areas</td>
<td></td>
</tr>
<tr>
<td>Research administration duties</td>
<td></td>
</tr>
</tbody>
</table>
| Other developmental assignments | - Assistance rendered in events (e.g. Open House, seminars, conferences)  
- Clinical Awareness Attachment  
- Global Health Awareness Attachment |

Students may register to be a Teaching Assistant (TA) or subject for LKCMedicine’s undergraduate science practical sessions upon passing the HWG702 Teaching Assistant Programme. The Office of Medical Education will send the schedule and registration details closer to the start of each new Academic Year.

You are required to record the hours clocked during your TA duties with the Teaching Assistant Assignment Timesheet available in Annex F. Please submit the endorsed timesheets at the end of each semester to the Graduate Studies team. The hours clocked would be reported to the Ministry of Education annually at the end of each Academic Year.

**Confirmation on Proposed Research Topic and Supervisors**

Students are to submit the Proposed Research Topic and Supervisor for Higher Degree Candidates by Research form found in Annex I. Please follow the timeline indicated below.

<table>
<thead>
<tr>
<th>Type of Students</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinician Students</td>
<td>By the second month from enrolment.</td>
</tr>
<tr>
<td>Non-Clinician Students</td>
<td>By the eighth month from enrolment.</td>
</tr>
</tbody>
</table>

**Criteria for Supervisor-selection**

Each student will normally be supervised by a primary supervisor and a co-supervisor from LKCMedicine. One of the supervisors must be medically qualified.

**Main supervisor:**

i. must hold a PhD and/or Doctor of Medicine degree, and  
ii. must be a full-time faculty in LKCMedicine (Full/Associate/Assistant Professor)

**Co-supervisor:**

i. must hold a PhD and/or a medical degree, and  
ii. must be a Full/Associate/Assistant Professor in LKCMedicine (includes Visiting and Adjunct faculty)
If the co-supervisor is nominated from beyond LKCMedicine, a second co-supervisor from LKCMedicine must be nominated.

Students who undertake an attachment in Imperial College London (Imperial) will, in addition, be supervised by a member of Imperial’s faculty. In this case, the Imperial faculty must be identified in advance and provide a written agreement to act in this capacity.

**Change of Supervisor(s)**

Request for changing supervisor(s) will only be considered before the student’s Qualifying Examination. The student is required to seek approval from the current supervisor and the new proposed supervisor before filling in the “Change/Add Supervisor(s) Request Form” found in Annex J. Completed forms are to be submitted to the Graduate Studies team, for approval by Executive Vice-Dean.

**Thesis Advisory Committee (TAC)**

The TAC must be formed by the 6th month (for clinician students) or by the 8th month of the student’s enrolment (for non-clinician students). The student and the primary supervisor must complete and submit the nomination form for the School’s approval. The Nomination of Thesis Advisory Committee (TAC) form can be found in Annex K.

The TAC meeting is to be conducted annually and the student is responsible for planning each TAC meeting i.e. scheduling a date/time and venue with supervisors and TAC members.

**Composition of TAC Members**

The TAC comprises:
- Chairperson from LKCMedicine who is a full-time Associate Professor and above (Adjunct and Visiting Professors are not allowed to be nominated as TAC Chairperson/Members)
- One full-time faculty from LKCMedicine
- One faculty from NTU, NUS, Duke-NUS, A*Star, Imperial, other research institutes or healthcare institutions
- Main supervisor
- Co-supervisor

**Responsibilities of TAC Members**

- Student must discuss the nomination with the supervisors
- TAC members should have given their consent for the nomination
- TAC members should be willing to remain on the TAC for the duration of the student’s candidature
- All TAC members should be present at each TAC meeting
• TAC should assist to monitor the progress of a student's work and advise student about the development of her/his research project
• Student is responsible to convene the subsequent TAC meeting in due course

Prior to TAC meeting

Student should consult the supervisor on the length of the report. The report:
• must be submitted to the TAC at least three weeks before the TAC meeting
• should present an outline of the project, proposed methodology and preliminary results if available. The project should be one of the two laboratory rotations (if applicable) that the student is likely to choose as the final thesis

Reports for subsequent TAC meetings should include updates to the research plan and the student's progress in her/his thesis.

On the day of TAC meeting

The candidate should make a presentation of no more than 30 minutes followed by a discussion with the TAC.

Post-TAC meeting

The TAC must prepare and submit the Thesis Advisory Report within one week from the TAC meeting to the Graduate Studies team. The report, no more than two pages, should include the following:
• Name of student
• Title of research project
• Details (date/time/venue) of the meeting
• Assessment on the student's progress
• Recommendations for further work where appropriate
• Recommendations for renewal of scholarship and continuation of candidature
• Signatories of all TAC members

Supervisor(s) must prepare and submit a Progress Report within one week from the TAC meeting to the Graduate Studies team. The report should not be more than two pages. It should include the following:
• Name of student
• Title of research project
• Details (date/time/venue) of the meeting
• Assessment on the student's progress
• Recommendations for further work where appropriate
• Signatories of all supervisors
Upon receiving the Thesis Advisory and Progress reports, the Graduate Studies team will attach the continuation of Candidature and Scholarship Renewal form to the reports for the Executive Vice-Dean's approval.

Please see the Thesis Advisory Report and Progress Report forms found in Annexes L and M respectively.

**Stipend Renewal**

The schedule for stipend renewal for Nanyang President’s Graduate Scholarship (NPGS) and NTU Research Scholarship (RSS) is as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>NPGS</th>
<th>RSS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td>Renewed for a further six months. If the 1st TAC Report and 1st Progress Report are not received by the 12th month (from matriculation), the stipend will be suspended. The backlog stipend up to a maximum of six months would be returned to you once the TAC Report and Progress Report are submitted.</td>
<td>Auto-renewed at the 12th month (from matriculation), for a further six months. If the 1st TAC Report and 1st Progress Report are not received within three months from the 12th month, the stipend will be suspended. The backlog stipend up to a maximum of six months would be returned to you once the TAC Report and Progress Report are submitted.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>NPGS</th>
<th>RSS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 2</strong></td>
<td>Stipend will be suspended if QE Report is not received by the 18th month (from matriculation). A back-pay of up to six months of stipend will be given to student who does not complete the QE within 18 months but completes the QE by the 24th month. Upon passing QE, stipend renewal will be for a period of six months. Upon submission of the 2nd progress report at the end of the 24th month, stipend will be renewed for 12 months.</td>
<td></td>
</tr>
<tr>
<td><strong>Year 3</strong></td>
<td>Students is expected to conduct their 2nd TAC by the 30th month (from matriculation). Once the 2nd TAC report and 3rd Progress Report have been submitted, the renewal will be for a further six months after the 36th month (from matriculation).</td>
<td></td>
</tr>
<tr>
<td><strong>Year 4</strong></td>
<td>At the 42nd month (from matriculation), the stipend will be auto-renewed for a final six months. The 3rd and final TAC report has to be submitted by the 45th month (from enrolment) or the stipend will be suspended.</td>
<td></td>
</tr>
</tbody>
</table>

**Qualifying Examination (QE)**

The Qualifying Examination (QE) shall be held between 12 and 18 months from enrolment.

Nominations of examiners must be made **three months** before the QE.

**Pre-requisites**
Students must have successfully completed the curriculum requirements. For coursework, students must have attained a minimum CGPA of 3.50.

Students must submit the completed Nomination of Examiners for PhD Qualifying Examination form (found in Annex N) together with the Curriculum Requirements Checklist and supporting documents/reports to the Graduate Studies team.

Following are the curriculum requirements for clinician and non-clinician PhD students:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Clinician</th>
<th>Non-Clinician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two core courses</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Two elective courses</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>ERI701 Epigeum Research Integrity Course (ERIC)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Online Courses on Research Ethics</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Attendance at Research Seminars</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>HWG703 Graduate English, if applicable</td>
<td>NA</td>
<td>✓</td>
</tr>
<tr>
<td>HWG702 Teaching Assistant Programme, if applicable</td>
<td>NA</td>
<td>✓</td>
</tr>
<tr>
<td>Report for first laboratory rotation</td>
<td>NA</td>
<td>✓</td>
</tr>
<tr>
<td>Report for second laboratory rotation</td>
<td>NA</td>
<td>✓</td>
</tr>
<tr>
<td>Report for Clinical Health Awareness attachment</td>
<td>NA</td>
<td>✓</td>
</tr>
<tr>
<td>Report for Global Health Awareness attachment</td>
<td>NA</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Composition and Responsibilities of QE Panel**

Please obtain consent from the QE Panel before submitting the nomination form. The QE panel comprises the Chair and at least two examiners. Members of the panel should hold doctoral degrees or equivalent:

a. The Chair is the representative of the Dean who is a full-time Associate Professor or above (Adjunct and Visiting Professors are not allowed to be the QE Chairman / Examiners)

b. The first examiner could be a Thesis Advisory Committee (TAC) member or nominated from LKCMedicine

c. The second examiner could be nominated from LKCMedicine or different school

d. QE panel members must not have joint publications with the student

The supervisor and/or co-supervisor will be invited to attend the QE. They cannot, however, serve as members of the QE panel.

**Prior to QE**
Students shall submit three ring-bound copies of the research proposal to the Graduate Studies team three weeks before the QE. Please see following guidelines on proposal format.

The proposal should be no more than 100 pages in length (font size 12 and double-sided A4 page with 1 inch margin) and includes the following:

a. Background to the study and research objectives  
   (If the topic of study has deviated from the original proposed topic, an explanation should be provided)

b. Literature review

c. Methodology

d. Preliminary results, if any

e. Discussion of preliminary results, if any

f. A plan of action that should include work done to date and methodology suitable for the next stage of work and that is achievable within the remaining timeframe of the candidature. A detailed schedule should be included as far as possible

g. A description of possible challenges and how the candidate intends to meet those challenges

**Candidate’s Responsibilities**

The candidate should:

- Keep track of her/his own candidature and work together with the supervisor(s) to begin preparing for the confirmation of candidature six months before the deadline stipulated by the university.
- Ensure that the research proposal is submitted to the School three weeks before the QE.
- Discuss and work together with the supervisor(s) to produce a research proposal in a form ready and acceptable for examination.
- Declare that the research proposal has been screened for plagiarism against previously published works.
- Indicate clearly if the supervisor’s approval has been obtained before submitting the research proposal.
- Treat the QE with utmost importance by preparing well for the presentation and anticipate the questions that may be asked.
- Dress appropriately for the occasion to reflect the significance and importance of the QE.
- Present her/his points clearly and professionally.
- Be prepared to consider the recommendations and advice of the panel.

**On the day of QE**

- The candidate is required to make a presentation followed by a question and answer session on the work done.
• The presentation will be in the format of an open seminar. The presentation shall not exceed 30 minutes.
• The Chair has the discretion whether to allow questions from the audience.
• The open seminar will be followed by a closed-door session at which the QE Panel will pose its questions to the candidate.
• The candidate may be asked to leave the room when the QE Panel needs to make its deliberations.
• The candidate should take note of her/his responsibilities as indicated above.

**Post QE**

The QE panel must submit a report with recommendations for renewal of scholarship and/or confirmation of candidature or termination of candidature to the School within one week from the date of the QE. The supervisor and co-supervisor are required to submit a progress report to the Graduate Studies team.

Upon receiving the report, the Graduate Studies team will complete and submit the Assessment on Research Student’s Progress Renewal of Scholarship form for Executive Vice-Dean’s approval.

All PhD candidates are allowed to submit their research proposal up to a maximum of two times, subject to the time allowed for confirmation of candidature as stated in the letter of offer. For a PhD student, if the second attempt is still considered to be below the standard required for candidature, s/he will be recommended to withdraw from the programme.

**Selection of Research Pathway**

PhD candidates are required to select their Research Pathways from the following:

**Pathway 1 - Mainstream**
- Undertake project at LKCMedicine

**Pathway 2 – Industry-aligned**
- Undertake project at LKCMedicine with industrial placement (six to 12 months) in Year 3

**Pathway 3 - Dual centre**
- Undertake project conducted at LKCMedicine and Imperial College London (12 to 18 months) from second half of Year 2 to Year 3

Any personal expenses associated with the attachment at Imperial are to be borne by the students. LKCMedicine will only cover the administrative costs of the attachment at Imperial. Students are required to return to Singapore to complete their main project at LKCMedicine and prepare their thesis for submission.
PhD Thesis and Viva Voce Examinations

Candidates are required to submit the thesis in a form ready and acceptable for examination before the expiry of their maximum candidature, or they will have to submit a request for extension of candidature through their supervisors.

Candidates are required to discuss with their supervisor at least three months before the end of scholarship if an extension is required and if funding to support the candidate is available. If it is deemed that an extension is required, the “Application for Extension of Candidature of Higher Degree Candidates (by Research)” form (found in Annex O) is to be submitted to the Office of Academic Services, through the Supervisor and Executive Vice-Dean. For candidates who are on a self-funding basis, request for extension should be submitted at least three months before the end of candidature.

Appointment of Thesis Examiners

Candidates must discuss their progress with supervisor(s) before initiating the process of nominating thesis examiners.

The nomination should be made at least three months before the expected date of thesis submission for examination.

The candidate and supervisor must submit the following:

- Form for Initiation of Action to Nominate Examiners for Thesis Examination (Annex P)
- Examiner’s acceptance of appointment
- Examiner’s curriculum vitae and examiner’s publication list

Thesis Examiners

A PhD thesis requires at least three independent examiners: one internal and two external examiners.

- The internal examiner must be a faculty from LKCMedicine – Professor, Associate Professor or Assistant Professor. NTU’s lecturers and senior lecturers cannot be internal examiners.

- The external examiner should be an academic staff with good international standing in her/his field of research. S/he must be a senior faculty staff of the rank of Associate Professor or full Professor from a top university or a senior researcher in an international research institution.
In the case of a senior researcher from a reputable international research organisation who is invited to be an external examiner, s/he should have some prior experience in supervising and examining PhD students. A list of graduated students and students currently under supervision would have to be provided.

Both external examiners cannot be from research organisations only. At least one of the external examiners should come from an internationally recognised reputable university.

Visiting Professors may be appointed as external examiners provided they have already left NTU when the thesis is ready for examination.

Both the external examiners should not be from:
- local institutions only
- same overseas university
- research institutions only (without any academic affiliation or prior PhD supervision experience)
- universities of low international ranking

As a general guide, an external examiner should have a strong publishing record with a good number of papers in top SCI (Scientific Citation Index) journals in the given research area. The School is expected to carry out such verification especially for external examiners who did not obtain her/his PhD from top established universities.

Prior to Submission of Thesis

The thesis should take the form of a monograph and must be a record of the candidate’s own research, written in her/his own words and not an assemblage of papers documenting the work of multiple contributors. It should describe problems and failures as well as successes. Data obtained in collaboration with other researchers may be included, but its provenance should be explicitly indicated in the text. It is an expectation, though not a strict requirement that the research undertaken will lead to the publication of one or more peer reviewed publications. Papers or patents arising from the research may be submitted together with but not in lieu of the thesis.

The candidate is required to prepare the following documents before submission of thesis:

- Receipt of examination fee (Students admitted before AY2017-18 are required to pay an examination fee when they submit their thesis, unless the examination fee is covered under the terms of the research scholarship and the thesis is submitted within the prescribed scholarship period. The examination fee is $214.00. For students admitted in AY2017-18 & onwards, the examination fee is inclusive in student's billing).
- PDF copy of your final thesis. It should include the following Declaration Statements:
  I. Statement of Originality (Annex Q)
  II. Supervisor Declaration Statement (Annex R) and,
  III. Authorship Attribution Statement (Annex S)
- Academic records which you can download from GSLink.
- Abstract (150 words or less).
- Turnitin Originality Report (only the 1st page with the percentage shown is required). The current guide for plagiarism checking is ≤ 15%. If the percentage exceeds the maximum, the thesis must not be submitted and candidate is required to follow up with supervisor. Please submit a pdf copy of your final thesis to her/his for plagiarism checking. To access TurnitIn Plagiarism Detection Tools, please login to NTULearn (https://ntulearn.ntu.edu.sg) using your NTU network ID and Password.

You are required to hand your Turnitin Originality Report in person to the Graduate Studies team before your online thesis submission.

Submission of Thesis

The documents that you would be required to upload are:

- Pdf copy of your final thesis with the following Declaration Statements:
  I. Statement of Originality,
  II. Supervisor Declaration Statement and,
  III. Authorship Attribution Statement
- Academic records
- Abstract (150 words or less)
- Receipt of examination fee
  (Students admitted before AY2017-18 are required to pay an examination fee when they submit their thesis, unless the examination fee is covered under the terms of the research scholarship and the thesis is submitted within the prescribed scholarship period. The examination fee is $214.00. For students admitted in AY2017-18 & onwards, the examination fee is inclusive in student’s billing)

Please upload the above mentioned documents to the Thesis Submission Portal at GSLink → Academic → Thesis →Thesis Submission

Important Notes:

- The date on which the supervisor endorses the thesis to be in an acceptable form for examination online will be taken as the date of submission.
- Ensure the thesis that you uploaded onto the portal is the final version of the thesis that is to be read by the examiners. No changes are allowed once your thesis is uploaded onto the portal.
• Candidates who submit the thesis in a form ready and acceptable for examination before or within the first two teaching weeks of a semester will not be liable for tuition fee for that semester.
• Candidates who are in the programme of study for more than two weeks of a semester are liable for tuition fees for that semester as long as they have not submitted their thesis in a form ready for examination.
• Candidates who submit their thesis before 30 September (for Semester 1) or 31 March (for Semester 2) may pay half a semester’s fee. Students who submit their thesis beyond 30 September (for Semester 1) or 31 March (for Semester 2) shall be liable for full fees for the semester.
• Candidates are to seek thesis-approval from their supervisor before the online submission.
• Supervisors are given up to a maximum of 1 week to approve the online submission of candidate’s thesis.
• Once you have submitted all required documents, a pop-up window will appear. You may then enter the proposed new thesis title which is subject to approval. Please ensure you “allow pop-up” on your browser so that you can key in the amended thesis title.
• Please do not use iThenticate to get your report. iThenticate is another type of plagiarism checker software used solely by researchers and faculty.

Post-Thesis Submission
The thesis examiners are given up to two months to complete their examination of the thesis. All examiners will receive a soft copy of the thesis for their evaluation and hard copies will be given only upon request.

Thesis Amendments/Re-examinations
For minor amendments, the School will proceed to arrange the Viva Voce examination and student shall be given one month to make amendments.

For major amendments, the candidate shall be given three months to amend the thesis. The amended thesis will be reviewed by examiner and deemed satisfactory before proceeding to the Viva Voce examination.

About the Viva Voce Examination
The Viva Voce examination (also known as “oral defence”) is the final assessment of a candidate’s research by the University. It is compulsory for all PhD candidates. In NTU, the oral examination is conducted after a candidate’s thesis has been examined by three or more examiners and the required (major) amendments made to the satisfaction of the examiner(s), as indicated in the outcome of the thesis examination. At the PhD Viva Voce examination, the candidate first present her/his work. This is
followed by questions from the examiners on selected aspects of the candidate’s entire thesis.

**Appointment of the Viva Voce Examination Panel**

The nomination should be made at least three months before the expected date of thesis submission for examination.

**Viva Voce Examiners**

- The Chair is the representative of the Dean who is an Associate Professor or above.
- Adjunct and Visiting Professors are not allowed to be the Chair.
- Internal/University Examiner 1 (from the same or a different School from the PhD candidate, can be TAC member).
- Internal Examiner 2 (from the same or a different School from the PhD candidate, can be TAC member, who will ask questions posed by the external examiner).
- Additional Examiner(s) as appropriate and approved.

**Responsibilities of Viva Voce Examiners**

- TAC members can be appointed as PhD Viva Voce examination panel members provided that there is no conflict of interest and they have not published any paper with the PhD candidate.
- The supervisor and co-supervisor cannot serve as members of the Viva Voce examination panel.
- The Viva Voce examination is open to all to attend, except in cases where intellectual property issues may be involved. In these latter cases, the supervisor and PhD candidate can seek the approval of the Chair of the School for a ‘closed door’ Viva Voce to be conducted by the panel.
- The Industry TAC member cannot serve as a member of the candidate’s Viva Voce examination panel.
- Both the supervisor and co-supervisor can only act as observers with no voting rights.
- External examiners are not required to be present but may attend the Viva Voce examination as voting members.
- In exceptional circumstances, the Viva Voce examination can be held by video-conferencing or by other remote means as granted by the Executive Vice-Dean with the approval of the Associate Provost (Graduate Education).

**When to Arrange the Viva Voce Examination**

The Viva Voce examination shall be arranged by the School after the thesis examination or re-examination has been completed and amendments stipulated by the examiners have been reviewed and certified by the examiner(s) as satisfactory and acceptable.
Preparing for the Viva Voce Examination
Candidates should ensure that they are thoroughly familiar with the content of the thesis and anticipate questions that the panel may ask. Students should practise summarising their thesis out loud with a friend and speak to colleagues who have recently completed their degrees and been through the Viva Voce examination process.

On the Day of the Viva Voce Examination
- The Viva Voce examination consists of two parts:
  i. an open seminar not exceeding 45 minutes and
  ii. private discussion with the panel
- Candidates are expected to answer questions raised by the audience.
- Candidates must attend the Viva Voce examination in Singapore.
- Video conferencing will only be allowed in certain circumstances, subject to the permission of the School.
- If the Viva Voce examination is conducted via video conferencing, the School will liaise with the candidate on the details and resources, and all costs shall be borne by the candidate.

Post-Viva Voce Examination
- Candidates have to pass the Viva Voce examination and submit: two hardbound copies of the thesis for distribution to the LKCMedicine Library and the NTU Library (An email would be sent from Office of Academic Services-Graduate Studies to submit your hard bound thesis to OneStop@SAC (https://ossac.wis.ntu.edu.sg/NTUSACSSWPWeb/Home/Public)
- a soft copy of the thesis to NTU Library via https://repository.ntu.edu.sg/drntu/procedure.htm

Format of final thesis
The final thesis, after examination and amendments (if any), must be submitted in the form given below:
- The copy must be cyclostyled or printed and bound with hard covers in international size A4 (210mm x 297mm);
- Each page must have a margin of 3.7cm to allow for binding;
- The thesis must be preceded by the following in the order given: title page, acknowledgements, table of contents, and summary, all of which must be bound with the thesis;
- The title page and acknowledgement page should be printed on single pages. From the content page onwards, the pages should preferably be printed double-sided, if possible, to reduce the thickness.
- The title and author's name must be given in block letters on the cover of the thesis;
- The title or an abbreviation thereof and the author's name must be given on the spine of the thesis;
- The thesis must be bound in matte dark blue with gold lettering not exceeding 16pts;
- Pages must be numbered in one continuous sequence in Arabic numerals. Where a thesis consists of more than one volume, one sequence must be used.
- A sample format of the thesis can be found on Annex T.

**Conferment of Degree**

**Process of Conferment of Degree**

The process of conferment of degree is as follows:

Students complete all requirements for award of degree.

Students will be put up to the monthly Board of Graduate Studies (BGS) and Associate Provost for approval of award of degree. (1)

The conferment list will subsequently be presented to Pro-Chancellor to confer the degrees. (2)

Upon Pro-Chancellor's conferment of degree, the Office of Academic Services will issue the conferment letters to students. (3)

1. Research students must have completed the thesis examination/re-examination and passed the oral examination with no further amendments required in order to be presented to the monthly Board of Graduate Studies for award of degree. Also, if the oral examination report is received from the School after the deadline for the current month's BGS, the student will be included in the next month's BGS instead.

2. Conferment letters can only be issued upon the conferment by the Pro-Chancellor.

3. Students with outstanding fees owed to the University will have their conferment letters withheld till the outstanding fees are settled in full.

4. The entire conferment process may take at least two months (from the date of receipt of the oral examination report from the School certifying the student has passed the oral examination) before the conferment letter can be issued. In the meantime, the University can issue an official certification letter to certify the student's latest status. The request for this letter can be submitted via GSLink.
5. Conferment letters will be sent to students’ mailing address. It is students’ responsibility to update any changes in mailing addresses via GSLink.

**Replacement of NTU Degree Certificate**

The degree scroll is a record of static information – the graduate’s name, degree earned, prevailing University signatories, as at the time the degree was conferred by the University Pro-Chancellor. In addition, with the evolution of the University’s governance structure, the appearance as well as the signatories on degree scrolls may have changed over the years.

NTU will provide a replacement degree certificate in situations where the original is lost or damaged. The replacement degree certificate will be printed using the prevailing NTU certificate format with the current NTU signatories and will contain the statement “Replacement copy” on the reverse page of the certificate. The name printed in the replacement degree certificate must be identical to the original in accordance with the NTU official records. Any name change after graduation will not be reflected in the replacement degree certificate.

Please complete and submit the request form (available in Annex U) together with the relevant supporting documents to:

*Office of Academic Services*
*Nanyang Technological University*
*Student Services Centre, Level 2*
*42 Nanyang Avenue*
*Singapore 639815*

Supporting documents include statutory declaration/police report for loss and original certificate if it is damaged. For statutory declaration/police reports which are not in English, they are to be submitted together with translations in English. In the event that the original degree certificate is recovered after the replacement degree certificate has been issued, please return the replacement copy to NTU.

The replacement fee is $107.00 (inclusive of GST) which must be made at the time of submitting your request. The request will only be processed upon receiving all documents required and the full payment of relevant fee. The processing time is about four weeks on receipt of request and payment. The replacement fee is non-refundable. For more information on Degree Certificate and Transcript, please contact the following:

<table>
<thead>
<tr>
<th>Enquiry</th>
<th>Contact Number</th>
<th>Email Address</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Thesis Matters</td>
<td>6592 2526</td>
<td><a href="mailto:Thesis-Research@ntu.edu.sg">Thesis-Research@ntu.edu.sg</a></td>
<td>Student Services Centre, Level 2</td>
</tr>
<tr>
<td>Transcripts / Degree Certificates</td>
<td>6790 4704</td>
<td><a href="mailto:higherdeggrad@ntu.edu.sg">higherdeggrad@ntu.edu.sg</a></td>
<td>42 Nanyang Avenue Singapore 639815</td>
</tr>
</tbody>
</table>
Graduate Student Link (GSLink)

The GSLink (accessible by clicking the “Login” button on the NTU homepage and then select GSLink) is a one-stop service point for Graduate Students which offers administrative and transactional services:

- Change of Personal Particulars (Please access GSLink > Administrative > Update Personal Particulars)
- Academic (thesis, examination and course registration)
- Financial (outstanding fees and enquiries on stipends)
- Administrative (letters of certification\(^1\) and applications for leave of absence)
- IT Services
- Rules, Regulations and Code of Conduct

Updating of Personal Particulars

Throughout your studies, students are responsible for keeping their personal particulars updated in the University’s records in a timely manner. The University will not be accountable for delayed or lost correspondence due to incorrect or outdated students’ addresses or contacts.

Update of Contact Information

Students can update changes to their personal particulars such as addresses, contact number, and personal email address via GSLink > Administrative Matters > Update Personal Particulars. The particulars that students update should be true, accurate and complete.

For students who have changed their name but fail to inform the University in a timely manner, the name as presently reflected in the University official records will be used for the printing of the academic transcript and degree certificate. Students will bear any possible consequence arising from inaccurate, incomplete or false information given or any omission of information required.

Update of Citizenship/PR Status/Name/Passport No.

For changes to name, international passport, Singapore Citizenship, Singapore Permanent Resident status, please produce the original documents and student matriculation card in person (as indicated in the table below) for verification at the One Stop @ SAC - https://ossac.wis.ntu.edu.sg/NTUSACSSWPWeb/Home/Public.

<table>
<thead>
<tr>
<th>Information to be Updated</th>
<th>Original Documents to be Furnished</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change of Name</td>
<td>Passport (International Students)</td>
</tr>
<tr>
<td></td>
<td>NRIC AND Deed Poll</td>
</tr>
<tr>
<td></td>
<td>(Singaporeans &amp; Singapore PRs)</td>
</tr>
</tbody>
</table>

\(^1\) Please visit website - http://www.ntu.edu.sg/Students/Graduate/AdminServices/Pages/Letter-of-Certifications.aspx for details.
<table>
<thead>
<tr>
<th>Change to Singapore Citizenship</th>
<th>Pink NRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change to Singapore PR Status</td>
<td>Blue NRIC AND Re-entry Permit</td>
</tr>
</tbody>
</table>

**Timeline for Updating**

Students who are in their final semester of study are reminded to submit changes to their particulars (specifically name, citizenship, NRIC, passport number, or marital status) and the supporting documents prior to the submission of thesis for examination.

**Upon Graduation**

To stay connected, alumni can submit changes to their personal particulars to the Alumni Affairs Office - [http://www.ntu.edu.sg/Alumni/Pages/StayConnected.aspx](http://www.ntu.edu.sg/Alumni/Pages/StayConnected.aspx).

**NTULearn**

There will be occasional scheduled maintenance on NTULearn and its learning services by the University. During this period, students will not be able to access their course content, learning activities, quizzes, assignment submission and etc.

**Student Feedback on Teaching**

The online Student Feedback on Teaching is usually conducted two weeks before the start of each semester examination or the end of the teaching period. All student responses will be kept anonymous and student feedback will be disseminated to the respective Course Lead after the release of course results. Students will be notified by the Graduate Studies team to provide feedback via GSLink (“Graduate Student Feedback on Teaching”).

**Vacation Leave**

Full-time PhD students may be granted vacation leave of up to a maximum of 21 working days in a calendar year, subject to satisfactory academic progress of the student and approval of the School.

Students have to apply for leave via GSLink > Administrative > Leave Application for Research Students > Graduate Student Leave System (Research).

**Leave of Absence**

When you apply for the following categories of leave application (collectively called “Leave of Absence”), the online leave application system does not apply and you will not have access.

1. Outpatient Medical Leave
2. Hospitalisation Medical Leave
3. Maternity Leave
4. Compassionate Leave
5. Reservist / In-Camp Training
6. Leave of absence for one semester

**How do you apply for these categories of leave application then?**

To apply for any of the above-mentioned categories, please email your PI (and attach any supporting documents, if relevant), and cc gradprog_LKCMedicine@ntu.edu.sg. If your application is approved, please ensure a copy is made available to gradprog_LKCMedicine@ntu.edu.sg for it to be validated and for record-keeping purposes. For the last category of leave application (i.e. item 6 “Leave of absence for one semester”), final approval needs to be sought from the Executive Vice Dean (via the Graduate Studies team).

**Outpatient Medical Leave, Hospitalisation Medical Leave & Maternity Leave**

A graduate research student shall be granted medical leave according to the period prescribed in the medical certificate up to a maximum total of 60 days in a calendar year, out of which Outpatient Medical Leave may be given up to a maximum of 14 days. The remaining period of medical leave permitted may be granted in the form of Hospitalisation Leave or Maternity Leave. The medical certificate as mentioned above is to be issued in Singapore by a medical practitioner registered with the Singapore Medical Council or a dental officer registered with the Singapore Dental Council. Medical certificates issued by overseas medical practitioners or dental officers are not acceptable.

**Compassionate Leave**

A research student shall be granted compassionate leave of up to 3 working days on the bereavement of an immediate family member. The compassionate leave may be taken any time either consecutively or within 7 calendar days of decease date of the immediate family member. For the purpose of this provision, an immediate family member refers to student’s spouse, child, parent, parent-in-law, siblings and grandparent.

**Reservist / In-Camp Training**

Applicable to male Singapore citizens only. Students on scholarship would have their stipend paid during this period.

**Leave of Absence**
Students who are not attending any lessons in a term of study are expected to be working on their thesis/dissertation and are liable for tuition fee for that entire term, unless they are granted leave of absence for that period. Hence, students who are not attending classes and are not working on their thesis/dissertation are advised to apply for leave of absence. Otherwise, they shall be liable for full tuition fees.

A research student can only apply for leave of absence after s/he has consumed 21 days of vacation leave. The period under leave of absence will be counted towards the permitted maximum candidature.

Stipend (for those under NTU-funded scholarships) will not be paid during the period of absence.

Application for leave of absence is subject to the approval of the School. Request for leave of absence must be submitted to the School for approval at least seven working days in advance of the leave.

Reasons for the application must be clearly indicated and relevant supporting documents must be attached. Application for leave of absence submitted after the absence period will not be processed, and tuition fees paid will not be refunded.

Students who are granted leave of absence after having attended lessons for more than two weeks of the term shall be liable for tuition fees for the entire term.

Students who are granted leave of absence but have not attended lessons beyond the second week of the term shall not be liable for tuition fees for the term. They will, however, be liable for an administrative fee of $53.50 for each term of leave granted.

Students are not allowed to attend any classes or submit dissertation/thesis when they are on leave of absence. Students who submit their dissertation/thesis during leave of absence shall be liable for tuition fees for the entire term.

Students who submit their dissertation/thesis for examination immediately after their leave of absence will be liable to pay the tuition fees for one semester, even if the dissertation/thesis is submitted within the second teaching week of the semester.

Full-time international students granted leave of absence for more than three months consecutively are to cancel and surrender their Student's Pass as required by Immigration & Checkpoints Authority (ICA), and re-apply for a new Student's Pass when they resume study. Students are to inform the University at least four weeks before their return from leave, for the University to put up a re-application for their Student’s Pass to ICA. International students may email One Stop @ SAC at ossac@ntu.edu.sg for further enquiries on Student's Pass or immigration matters.

Returning the Student’s Pass (applicable for International Students)

You are required to return your Student's Pass to ICA when:
• You have converted to **part-time studies** or **terminated your studies** or are taking leave of absence.

You must report to the ICA or any ICA Immigration Exit Counter as you leave Singapore with your passport, for cancellation of your Student's Pass and Disembarkation & Embarkation Card within seven days of the cessation of studies.

Students whose Student's Passes are due to expire and are waiting for the release of their results must surrender their Student's Passes to the Student's Pass Section, ICA before the expiry of the Student's Pass. The Address is 4th Storey, ICA Building, 10 Kallang Road (next to Lavender MRT Station).

Please read Section on Cancellation of Student's Pass at [www.ica.gov.sg](http://www.ica.gov.sg) for more information. Students who surrender their Student's Passes will be granted a short stay in Singapore.

**Resolving Problems and Formal Complaints**

From time to time, students may wish to report a grievance related to their experience at the University. Before lodging a grievance, students should ensure that any procedures relating to the situation, including appeal, have been completed. The University is open to receive feedback and complaints in our efforts to enhance the quality of NTU graduate education.

As a general proposition, a student should first discuss the problem and seek solution with the individuals most directly involved. If informal means of resolution prove unsuccessful, the student should detail in writing the substance of the issue, the grounds for it and evidence on which it is based, and efforts taken to date to resolve the issue. For timely resolution, a student should submit her/his report of a grievance to the Dean to reach a resolution.

Reports of grievance can also be submitted directly to the Associate Provost (Graduate Education). These will similarly be investigated by the Dean.

For a grievance pertaining to the graduate student’s supervisor, the graduate student may first seek the assistance of the external TAC member or the Executive Vice-Dean.

Only reports submitted by the affected student will be accepted. Students may jointly report a grievance when more than one student has been affected. If two or more reports are received independently about the same matter, they may be considered jointly by agreement of all parties concerned.

The University recognises that timely and effective communication is critical when attempting to resolve difficulties experienced by students. A student can expect to have their report of a grievance promptly acknowledged by Graduate Studies team.

Students must report grievances as soon as possible after the event or action which is the subject of the report. Reports that are frivolous, malicious or lacking in substance will not be investigated. Any student will not suffer discrimination or disadvantage as a direct result of reporting a grievance.
Confidentiality

All parties involved must maintain confidentiality about the grievance and the process (of reporting, investigation and resolution). Information and records shall be kept confidential and only divulged to employees of the University with direct involvement in the process. The University will seek to maintain the confidentiality of all parties involved.

Access to Campuses

You will be issued a matriculation card which will also serve as a security pass, giving you access to parts of the campus authorised by LKCMedicine. You are required to carry your matriculation card with you at all times when on campus and at clinical sites.

To use your matriculation card to access the Experimental Medicine Building (EMB) at NTU campus at Yunnan or the Clinical Sciences Building (CSB) at the Novena campus, please complete the forms found in Annexes V and W, and submit to Operations & Resources, LKCMedicine @ Novena HQ Level 2.

To access CSB, please show your matriculation card to the security personnel on duty.

Student Services & Support

Please approach the Graduate Studies team for curriculum matters.

Additionally, the NTU Student Wellbeing Centre (SWC), staffed by professional counsellors, offers a supportive environment for students seeking assistance and guidance for any personal issues or challenges.

The NTU Medical Centre at Yunnan campus provide walk-in and by-appointment medical consultations.

Student Conference Funding

To better equip and prepare our students for future challenges in their field, the School encourages students to attend or participate at relevant local, regional, and international academic conferences. Participation in high quality conferences provides excellent opportunities for LKCMedicine students to keep themselves up-to-date with the latest developments in their areas of research, and network with professionals and students from other institutions.

Students would be able to tap on the funding support to participate at relevant local, regional, and international academic conferences.

Local Conference Allowance
The School provides local conference attendance allowance of $200 per student, and local conference presentation allowance of $700 per student during their candidature at LKCMedicine.

This allowance may be used for payment of conference registration fee at approved local conferences only.

To apply for local conference presentation allowance, applicant must be the 1st or co-presenting author of an oral/poster/paper/abstract presentation.

Subject to meeting the above conditions, as applicable, the maximum number of local conference funding allocations per academic year is two.

**Overseas Conference Allowance**

Applicant must be the 1st author of an oral/poster/paper/abstract accepted for presentation at the approved overseas conference. Funding will be limited to one conference presentation per student per candidature.

The terms of conference funding:
- Reimbursement of actual economy-class return airfare* based on the lowest airfare quotation (using NTU’s appointed travel agent);
- Up to 100% of registration fee; and
- Accommodation and transportation expenses, subject to approval.

* Travel insurance fee is not covered by the School’s funding. The fee is to be borne by the student.

The total financial funding for overseas conference is subject to a maximum quantum of funding cap as shown below:

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Maximum Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States, Canada &amp; Europe (Region 1)</td>
<td>S$2,500</td>
</tr>
<tr>
<td>Asia Pacific &amp; India (Region 2)</td>
<td>S$1,600</td>
</tr>
<tr>
<td>Other countries (Region 3)</td>
<td>S$1,000</td>
</tr>
</tbody>
</table>

Students are required to complete the Student Conference Funding Support Application form (Annex X) with supporting documents and submit to Graduate Studies staff (for Ph.D. students) at Clinical Sciences Building, Academic Affairs Office, Level 6.
**PhD Award**

The PhD Award covers administrative expenses to be paid to Imperial College London (Imperial) or other overseas universities, and the establishment of a travel grant to help defray the expenses incurred by PhD students (e.g. those on Pathway 3) who are required, as part of their LKCMedicine PhD curriculum requirement, to spend an attachment period of 12 to 18 months at an overseas university.

The PhD Award is given to one PhD student on a 12-15 month attachment and one PhD student on a longer attachment of up to 18 months in each academic year.

The one-time travel allowance includes a sum for return air tickets and settling-in allowance.

<table>
<thead>
<tr>
<th>Attachment Duration</th>
<th>Quantum</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 – 15 months</td>
<td>S$5,000 (including one return air ticket estimated at S$3,000 and settling-in allowance of S$2,000)</td>
</tr>
<tr>
<td>&gt; 15 months to 18 months</td>
<td>S$8,000 (including two return air tickets estimated at S$6,000 and settling-in allowance of S$2,000)</td>
</tr>
</tbody>
</table>

The recipients of the PhD Award would be PhD students who have successfully received a place under Pathway 3 in the PhD programme or where LKCMedicine PhD students are required to spend a significant part of their candidature in an overseas university.

Recipients of the PhD Award are subject to the recipient meeting the following conditions in any term of study:

a. Attain a minimum of TGPA of 3.50; and  
b. Attain at least Grade Point 2.50 (grade C+) in every module; and  
c. Complete all course requirements within the confirmation period as prescribed under the Qualifying Exam.

Recipients are required to submit the PhD Award application form at least 3 months before the commencement of their attachment (Annex Y) with supporting documents and submit to Graduate Studies staff at Clinical Sciences Building, Academic Affairs Office, Level 6.

**LKCMedicine Emergency Grant**
To alleviate the financial constraints of students who may have a need to finance a temporary financial hardship caused by an emergency, students can apply to the LKCMedicine Emergency Grant. Eligibility will be assessed on a case-by-case basis by Academic Affairs in consultation with Executive Vice-Dean. Each successful application will be awarded up to $10,000. To apply, please refer to the application form found in Annex Z. Completed forms are to be submitted to the Graduate Studies team at Academic Affairs, CSB, Novena campus.

**Part-Time Work in NTU**

Students on the NTU Research Scholarship Scheme are not allowed to take up paid part-time employment.

Full-time international students who are not supported by scholarship and wish to work on a part-time basis must apply for permission from the International Student Centre (ISC). All students are required to obtain support from their supervisor(s) before applying for approval through the Graduate Studies team. For international students, they are to obtain Letter of Endorsement from ISC before commencing work.

Students who have been granted permission, may work a maximum of 16 hours a week during term time and full-time during the vacation.

**Dress Code**

During your clinical attachment (for non-clinician students), you are expected to dress professionally at all times, in a manner that will not cause offence to patients, their relatives or colleagues. Conservative dress is required in clinical settings. Please consult your clinical attachment supervisor if you are unsure of the dress code.

**Professional Conduct**

You are expected to conduct yourself in a professional manner at all times. Disciplinary action will be taken against students who have violated any University/School regulations. Expulsion is possible to students who do not adhere to the rules & regulations. Students who violate the laws of Singapore may face immediate expulsion from the University.

**Honour Code**

All students by virtue of admission to NTU are committed to uphold the Honour Code and to pledge their agreement to abide by it. You can read more about the Honour Code at [www.ntu.edu.sg/sao/Pages/HonourCode.aspx](http://www.ntu.edu.sg/sao/Pages/HonourCode.aspx)
Responsibilities of Research Student

1. The student shall abide by the Honour Code of Nanyang Technological University and act as a responsible member of the University’s academic community.

2. The student shall be responsible for her/his own research activities, for fulfilling the requirements of her/his higher degree programme, and for committing the necessary time and effort to complete the programme within the period stipulated by the University.

3. The student is expected to take responsibility for independent learning and demonstrate initiative to acquire the necessary skills and knowledge to work on the chosen research area.

4. The student is expected to conform to University, School and programme requirements for the degree, especially with regard to research ethics, copyright issues, registration and graduation requirements, thesis format and quality standards.

5. The student is expected to conform to basic principles of academic integrity and professionalism in the development of a mature and objective relationship with the supervisor, the Thesis Advisory Committee (TAC) members, and other scholars.

6. The student is expected to develop, in consultation with the supervisor, an intended time-table for completion of all stages of the research, and work to realise the timetable, and meeting appropriate deadlines.

7. The student is expected to meet regularly with the supervisor to review progress. The frequency of such meetings will vary according to the discipline involved and the stage and nature of the student’s work, but shall normally occur at least once a month. S/he will also interact with other members of the TAC as appropriate.

8. The student is expected to seek advice from her/his supervisor in an active manner and recognise that it is her/his responsibility to have her/his own questions to raise with the supervisor. S/he is to take the initiative in raising problems and difficulties that s/he is encountering in her/his graduate studies and research to the attention of her/his supervisor in the first instance.

9. The student is expected to contribute to the research environment of the School as appropriate by taking up opportunities to present work at seminars/conferences and engaging in discussion with other researchers. S/he is to undertake teaching or other duties as may be directed from time to time by the School to which s/he belongs to.
10. The student shall establish with the supervisor the frequency and duration of formal meetings to discuss the progress of the research, assigned readings, problems encountered, and experimental procedures or data gathering techniques.

11. The student shall document the outcomes of the meetings with the supervisor. A copy of the write-up should be given to her/his supervisor as soon as possible after each meeting.

12. The student ought to be aware of all relevant developments within the subject and read up relevant literature.

13. The student should be familiar with issues on time management, documentation, and storage of data, confidentiality, ethical, health and safety issues, intellectual property rights, integrity in research, cheating, plagiarism, falsification /tampering, and false declaration.

14. The student is expected to prepare written work and progress reports as required for comment and discussion with the supervisor and TAC members.

15. The student is expected to keep the supervisor informed of where and how s/he may be contacted, and respond appropriately to all communications received. S/he is to inform the supervisor in good time, should s/he plans to be away from the University.

16. The student is expected to take into account that the supervisor and other members of the TAC may have other teaching, research and service obligations which may preclude immediate responses.

17. The student is expected to give serious consideration and respond to the advice and criticism received from the supervisor and the TAC.

18. The student is expected to decide when to submit the thesis taking due account of the opinion of the supervisor, which is necessarily only advisory and whose agreement to submission is not a guarantee of success. The supervisor shall be provided with a complete draft of the thesis in an agreed reasonable time to provide comment and feedback. The endorsement of the TAC has to be obtained before the thesis can be submitted for examination.

19. The student is responsible to arrange the meetings with his TAC on a regular basis and the outcome of these meetings can be incorporated into the student’s progress reports.

20. At least two weeks before each meeting of the TAC, the student must provide each member with a written statement, about two-three pages in length, of her/his progress from the last meeting and plans for the following months. This will include self-development activities such as participation in relevant courses, seminars and conferences. Each member of the committee shall also receive a copy of the previous committee report and the student’s previous progress report.
Health & Safety

Working in Lab After Office Hours

Students are advised not to work alone in the laboratory after office hours for safety reasons. S/he must be accompanied by the supervisor or another research student.

Accident and Incident Reporting

All accidents/near misses on campus and clinical sites must be reported immediately to a senior staff present and also to:

- the faculty if the student is on campus;
- the Clinical Supervisor if the student is on clinical placement; and
- the LKCMedicine Health and Safety Department.

Working in Clinical Areas

Students are to check with their clinical attachment supervisor(s) on the kinds of vaccination needed before commencing attachment. Personal effects, e.g. bags and coats, should not be taken into treatment areas, including patient bed areas. Remove wrist watches and jewellery before commencing any activity that may contaminate such items. Students are to adhere to the infection control regulations in place, e.g. hand washing protocol or personal protection equipment regulations.

Fire Alarms and Building Evacuations

Students are to familiarise themselves with the location of fire escape routes, emergency exits, AED equipment and evacuation protocols on both campuses and at clinical placement sites. Students are not to attempt to deal with a fire themselves or re-enter an area in which there is a fire, chemical spillage or other significant hazard.

Graduate Student Club

The LKCMedicine Graduate Student Club aims to serve as the official body that seeks to represent the interests of LKCMedicine graduate students and articulate these interests to the School Management and University Administration in the best possible manner. It also acts to improve the student life of LKCMedicine graduate students by playing a key role in the support, organisation, and management of initiatives, which include, but may not be limited to, academic, social, cultural, sporting, industrial, career-related purposes and foster a strong working relationship between the graduate student population and the School Management/University Administration.
The current Management Committee of the LKCMedicine Graduate Student Club is as follows:

President: Miss Jeannie Lee Xue Ting
Vice President: Mr Wee Soon Keong
Honorary General Secretary: Mr Quek Jun Ping
Treasurer: Miss Ng Tze Hui Krystle Joy
Events Director: Mr Low Zun Siong

The Graduate Student Club room can be found on the 8th floor of the Clinical Sciences Building, which includes a lounge and club space. This room is accessible to all LKCMedicine graduate students.

**Parking Facilities**

**Novena Campus**
Students who are driving may park at the Novena Campus car park lots which are marked in white. You may enter the carpark via the entrance along Jalan Tan Tock Seng.

Due to the limited number of lots available, parking will be on a first-come-first-serve basis. Parking lots marked in red and red/white are reserved for staff. The hourly parking charges are as follows:

<table>
<thead>
<tr>
<th>Time</th>
<th>Charges</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 am to 6 pm Mondays to Fridays</td>
<td>$0.02/min</td>
<td>5 lots (white) will be designated for parking by students / public.</td>
</tr>
<tr>
<td>After 6 pm Mondays to Fridays, Saturdays, Sundays and Public Holidays</td>
<td>Free</td>
<td>Open for students / public in any available lots, except red coloured lots.</td>
</tr>
</tbody>
</table>

To enjoy the above parking rate, please register one car with the School by emailing your car plate number and IU number to Graduate Studies team at her/his. Each student is only allowed to register one car.

During official events, the car park may be reserved and students can park at the car parks listed below (subject to availability and applicable car park charges):

- Tan Tock Seng Hospital;
- National Skin Centre (NSC);
• NSC’s open car park at junction of Mandalay/Martaban Road; or
• URA car park lots along Mandalay Road.

Yunnan Campus
Information on parking in NTU Campus can be found at the Office of Housing & Auxiliary Service website - http://www.ntu.edu.sg/has/Carparks/Pages/index.aspx

Withdrawal from PhD Programme

Students who wish to withdraw from their PhD programme should write in to Office of Academic Services, through their Supervisor and Executive Vice-Dean

Information contained in this handbook is correct at the point of posting (20 August 2018)