**PROGRAMME SPECIFICATION FOR THE FIVE-YEAR
NTU MBBS DEGREE PROGRAMME – AY2024-25**

Programme Information	
Award(s)	MBBS
Programme Title	Medicine
Programme code	NA
Awarding Institution	Nanyang Technological University (NTU)
Teaching Institution	NTU
College	Lee Kong Chian School of Medicine
Department	Medicine
Associateship	NA
Mode and Period of Study	5 academic years full-time
Cohort Entry Points	Annually in August
Relevant reference points	- Ministries of Education and Health, Singapore - Singapore Medical Council
Total Credits	Students who complete this programme will not be awarded credits.
External Accreditor(s)	Singapore Medical Council

Specification Details	
Student cohorts covered by specification	2024-25
Person responsible for the specification	Prof Jennifer Cleland, Vice-Dean (Education)
Date of introduction of programme	August 2024
Date of programme specification/revision	June 2024

Description of Programme Contents

The programme content is designed around 3 primary domains that run throughout the programme: the scientific basis of medicine, clinical management and patient-centred care, and healthcare delivery and professional standards:

Primary Domain 1: Scientific Basis of Medicine (PD1)

This theme includes the basic sciences underpinning human structure and function in health and disease, scientific enquiry (the principles underlying research and evidence-based medicine) population health, social and behavioural science, pharmacology and technology in Medicine.
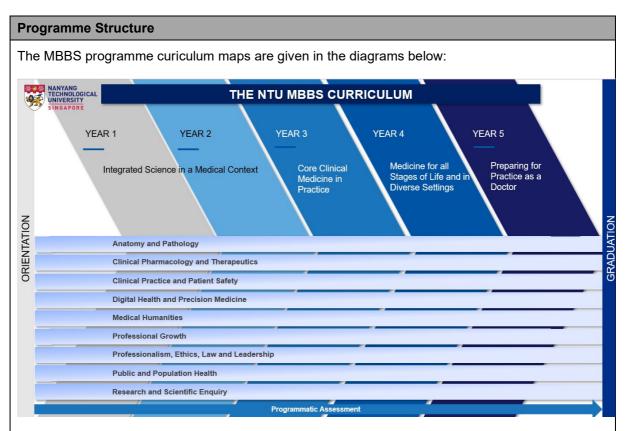
Primary Domain 2: Clinical Management and Patient-Centred Care (PD2)

An overarching theme throughout the course will be that of enhancing patient care through acquisition of clinical assessment skills, interpretation of clinical findings and clinical management. It includes shared decision-making and effective communication, including medical language/dialect skills (Malay, Mandarin and Hokkien, as appropriate).

Primary Domain 3: Healthcare Delivery and Professional Standards (PD3)

This theme will include ethics, law and professionalism, organisation of care, health service policy and organisation and professional development.

A curriculum overview documenting progression through the 5-year programme is shown in the Programme Structure section of this document.

Programme Structure

The MBBS programme curiculum maps are given in the diagrams below:

The NTU MBBS curriculum's Vertical Themes are:

a. Anatomy and Pathology
b. Clinical Practice and Patient Safety
c. Clinical Pharmacology and Therapeutics
d. Digital Health and Precision Medicine
e. Medical Humanities
f. Professional Growth
g. Professional, Ethics, Law and Leadership
h. Public and Population Health
i. Research and Scientific Enquiry

Years 1 and 2: Integrated Science in a Medical Context

In Years 1 and 2, students will learn the science underpinning each body system through our distinctive Team-Based Learning pedagogy and hands-on science practicals. You will develop foundational clinical and communication skills in the Clinical Practice and Patient Safety vertical theme. Through the Longitudinal Community Experience and Medical Humanities vertical themes, you learn to appreciate illness and healthcare from the patient's perspective. Below are the modules in Years 1 and 2:

Year 1:

a. Foundations of Medicine
b. Cardiorespiratory System
c. Endocrine System
d. Renal and Urinary System

e. Gastrointestinal System

Year 2:

a. Musculoskeletal System
b. Skin
c. Blood and Lymphatic System
d. Infection
e. ENT
f. Nervous System
g. Visual System
h. Mental Health
i. Female Reproductive System
j. Child Health and Development
k. Ageing
l. Family Medicine and Community Health

Year 1 students will also enrol in two NTU Interdisciplinary Collaborative Core courses, selecting from the list below:

Key Transferable Skills – 2-AU* courses:
• Navigating the Digital World
• Ethics & Civics in a Multi-Cultural World

Grand Challenges – 3-AU* courses:
• Science and Technology for Humanity
• Healthy Living and Wellbeing

AU: Academic Unit

Year 3: Core Clinical Medicine in Practice

In Year 3, both generic themes such as clinical skills topics and SEEM, and stream-specific themes would be taught. Additionally, the Student-Researcher Immersion Programme (SRIP) will be incorporated into the SEEM curriculum and SRIP prepares the students for the Scholarly project in Year 4. SRIP consists of four hours preparation, two sessions of two hours mentoring with the researcher and eight hours for poster preparation and presentation, which will be spread over eight weeks. Prior to clinical postings, the students will have two weeks of Integration and Front-Loading learning on campus, followed by ten weeks of clinical training at the healthcare institutions.

The Year 3 postings consist of Medicine, Surgery (General Surgery, Urology and Orthopaedics), and short postings (Infectious Diseases, Anaesthetics, Dermatology and Venereology, ENT and Ophthalmology).

Year 4: Medicine for All Stages of Life and in Diverse Settings

Year 4 students will be rotated through the different clinical postings in Paediatrics, Family Medicine, Rehabilitation Medicine, Palliative Medicine, Psychiatry, Obstetrics and Gynaecology, Geriatric Medicine, Emergency Medicine and Critical Care. These postings range from the minimum of one week to a maximum of eight weeks. In addition, students will also be involved in a six-week Scholarly Project.

Year 5: Preparing for Practice as a Doctor

To start off Year 5, students will undertake an overseas elective, a structured attachment/internship, or a research based scholarly project over a six week-block. Students will undertake a four-week student-selected specialty attachment (Selective) and there will also be postings in Integrated Care – Medicine and Integrated Care – Surgery. Following the final examinations, there will be a period of structured supervised internship, known as 'Student Assistantship Programme', which includes rotations in Medicine, Surgery, Family/Paediatric/Emergency Medicine. During these rotations there will be robust in-course assessment of clinical competencies.

Programme Outcomes

A student graduating from the programme will be able to achieve competency in the following four roles:

Role 1: As a scientist, educator, and scholar

- Use sound knowledge of normal human structure and function, and the factors that impair them across the lifespan, to diagnose medical conditions.

- Demonstrate self-directed learning, the ability to apply findings from scientific literature to patient care, and the ability to educate others, both healthcare professionals and patients.

- Contribute to the generation and dissemination of new medical knowledge through actively engaging with research.

Role 2: As a practitioner

- Perform medical assessments (e.g., history taking, physical examination and investigational skills) and interventions (e.g., prescribing and procedural skills) efficiently, effectively and safely.

- Use logical reasoning to integrate scientific knowledge with patient-derived information, best medical evidence, and population-level data to thoroughly assess the patient's health.

- Communicate effectively and work collaboratively with the patient, and where relevant, the patient's family, fully mindful of the patient's individual rights, preferences and socio-cultural diversity, to derive a management plan that achieves high-quality, value-based and patient-centred care within the Singapore healthcare guidelines and system.

Role 3: As a health advocate

- Advocate ethically on behalf of the patient and identify opportunities to improve the quality and safety of patient care.

- Be able to use data and information to contribute to improvements in healthcare and patient safety, and to contribute to health promotion and preventive education of individuals and diverse communities.

Role 4: As a professional and leader

- Demonstrate self-awareness through analytical reflection on their practice, recognition of their limits, and continual improvement of their knowledge and skills to enhance their performance as doctors and leaders.

- Take responsibility for their own physical, emotional, and mental health and that of their colleagues, to better meet the needs of their patients.

- Work effectively and respectfully with colleagues from all health care professions and community partner groups.

- Adhere to ethical standards, and values such as integrity, honesty, altruism, humility, respect for diversity, and transparency with respect to potential conflicts of interest.

Entry Requirements	
Academic Requirement	Students with the following qualifications will be considered: 'A' levels, International Baccalaureate, NUS High School Diploma and Polytechnic Diploma, or international equivalent. Applicants should possess as a minimum: *Singapore-Cambridge GCE A-level Certificate* • H2 Pass in Chemistry and H2 Pass in either Biology or Physics • All H2 subjects and attempted General Paper (GP) or Knowledge & Inquiry (KI) must be taken at one sitting • Meet Mother Tongue Language (MTL) requirement. *International Baccalaureate Diploma* • Pass in HL Chemistry and Pass in either HL Biology or Physics • Fulfills MTL requirement. *National University of Singapore High School Diploma* • Major CAP of 2.0 in Chemistry and either Biology or Physics • CAP of 1.0 in one other major and in English Programme *Polytechnic Diploma* A good GPA in a relevant Health Science-related diploma
English Language Requirement	Applicants must meet NTU's standard English Language requirements.
Admissions Test	• University Clinical Aptitude Test (UCAT)
Non-academic Requirements	• **A Personal Statement** • Screening and vaccination requirements as stipulated by the Ministry of Health, Singapore • Criminal record disclosure (NB. Possession of a criminal record does not automatically prevent a student from successfully entering medical studies, rather, as part of the application process, such information will be considered in the light of its relevance to the MBBS programme and the medical training students will undertake). • Applicants must be at least 18 years of age on or before the programme start date.

If a candidate fulfils the minimum entry requirements, his or her application will be passed to a selection panel, who will decide whether to offer an interview. Assessment is based on consideration of:

- Academic results
- UCAT scores

Applicants assessed as suitable will be invited for interview. The format of the interviews will involve multiple mini interviews (MMI).

The programme's competency standards document can be found in Annex A of this document.

Learning & Teaching Strategy	
Scheduled Learning & Teaching Methods	- Team-based learning (TBL) - Anatomy and Science Practical sessions - Simulation - Communication skills training - Small group tutorials - Clinical learning
E-learning & Blended Learning Methods	- Voice Over PowerPoint (VOPPT) lectures - Interactive content - Videos
Placement Learning Methods	- Ward rounds - Supervised patient clerkings in teaching clinics, outpatient clinics and hospital wards - Small group tutorials Theatre sessions

Assessment Strategy	
Assessment Methods	• TBL quizzes and application exercises • Written assignments • Project reports • Quizzes • Work-place based assessments (on iFolio) • Written Exams • Multiple Choice Questionnaires • Objective Structured Clinical Examinations (OSCEs) • Anatomy Practical Tests (Year 1 and Year 2)

Academic Feedback Policy

Students will receive regular performance feedback through their house tutors, faculty and peer evaluations. Additional sources of feedback will include course leads and peers, with peer evaluation being a component of TBL in-course assessment. All students receive detailed feedback on exam performance via a diagnostic report.

The diagnostic report spells out a student's performance in the various sections of the test/examination relative to the cohort. Borderline students and those that do not achieve a satisfactory grade will be required to meet the Assistant Dean of the relevant year to review their performance and discuss strategies to improve their academic standing.

Workplace Based Assessments (WBAs) have an in-built feedback mechanism to ensure that students benefit maximally from the clinical educators' observation and comments. The WBAs are completed on iFolio.

During Years 3 to 5 there will also be the support of Core Tutors, allocated to supervise and mentor students in each posting. Core Tutors will take responsibility for discussing personal learning plans with students during each posting.

Timelines
Feedback on in-course assessments are normally provided within two to three weeks of submission.

Students receive the diagnostic reports for the Year 1 Formative Test, Years, 2, 3 and 4 Formative OSCEs and all summative examinations on the same day as their results, which is normally two weeks after the final paper.

Re-sit Policy

Students will be required to re-sit any failed examinations. Students who fail this re-sit will normally be permitted to repeat the year, provided they have not repeated a year earlier in the programme. A student who fails an examination after repeating the year will be required to withdraw from the programme. The student required to withdraw has the right to appeal to the LKCMedicine against the withdrawal decision but not against the results of any examination or academic assessment on which the decision may be based.

A candidate who enters or re-sits for any part of an examination shall be examined in accordance with the Regulations in force at the time of his/her sitting for the examination.

At the discretion of the LKCMedicine, special arrangements may be made for a candidate who is ill or otherwise disabled to take his/her examination. Applications under this regulation should be made to the LKCMedicine as early as possible after registration and supported by independent verification and/or documentary evidence. A student who informs the respective Assistant Dean of Year in writing of the withdrawal of his/her entry before the date for the commencement of the examinations as prescribed by the School on the grounds of illness or other adequate cause for which evidence must be provided may at the discretion of the Board of Examiners not be regarded as having made an entry or re-entry.

Year 1 students that fail ICC courses will be required to repeat the same failed course(s) in Year 2.

Years 3, 4 and 5 students who do not meet the learning outcomes or satisfactorily complete a posting to the standard outlined in the relevant course guide, will be expected to undergo a remediation programme offered by the School such that the necessary learning can be fulfilled. Once satisfactorily completed, remediation has no influence on the student's full participation in summative assessments, nor the marks awarded therewithin.

Mitigating Circumstances Regulations

Candidates with mitigating circumstances will be considered according to the LKCMedicine Mitigating Circumstances Regulations. Students wishing to apply for consideration of mitigating circumstances must submit a formal request, with documentary evidence. Where mitigating circumstances are judged to be of sufficient severity to have substantially affected performance/attendance, the Board of Examiners may allow students who were absent from examination or attended but failed an examination to undertake a further examination attempt at the next opportunity as though it were a first uncapped attempt; provide students who did not complete the summative in-course assessment(s) or submitted but failed the summative in-course assessment(s) an extended assessment submission deadline; or allow them to re-submit the affected assessment(s).

Students may be barred from entry to the examinations if they have missed a substantial number of lessons, even with valid reasons for absence, as they are highly unlikely to be able to pass the examinations. Students who do not qualify for entry to the examinations may be requested to repeat or defer the year or withdraw from the programme.

Marking Scheme

The MBBS course is Pass/Fail.

Pass marks for each assessment are set using established standard setting methods appropriate to the assessment, including Borderline Regression, Ebel and Cohen's methods.

Candidates who have achieved a sufficient academic standard in all requirements of a particular year may be awarded a distinction or merit for that year. Distinction will normally be awarded to the top 5% of students. Merit will normally be awarded to the subsequent 10% of students.

All Distinction and Merit are awarded at the discretion of the Board of Examiners.

Year 1:

Starting in AY2024-25, Performance in Team-Based Learning (TBL) scores and selected ICA will be used together with Summative Written Examinations to identify distinction and merit candidates.

Rules of Progression

Year 1:

Year 1 students must pass the Year 1 Integrated Written Examination.

Year 2:

Year 2 students must pass the Year 2 Integrated Written Examination and Year 2 Objective Structured Clinical Examination

Year 3:

Year 3 students must pass the Year 3 Integrated Written Examination and Year 3 Objective Structured Clinical Examination.

Year 4:

Year 4 students must pass the Year 4 Integrated Written Examination, Year 4 Objective Structured Clinical Examination, and achieve satisfactory performance in the Scholarly Project.

Year 5:

Year 5 students must pass the Year 5 Written Examination, Year 5 Objective Structured Clinical Examination, and achieve satisfactory performance in the Student Assistantship Programme.

Additionally, students must complete 5 AUs of ICC courses as part of graduation requirement.

Supporting Information
Nanyang Technological University (NTU) was inaugurated on 1 July 1991, when its predecessor institution, the Nanyang Technological Institute (NTI) merged with the National Institute of Education (NIE). NTU has since grown to become a full-fledged, comprehensive and research-intensive global university, with over 32,500 undergraduate and postgraduate students in the various colleges of engineering, business, science, humanities, arts and social sciences. The Lee Kong Chian School of Medicine was established in 2010 to meet the expected rise in the healthcare demands of a growing and ageing Singapore population. It will augment Singapore's healthcare manpower by producing top-quality doctors and medical leaders who are attuned to the needs of patients and of the Singapore community. It will also introduce innovations to medical education here and provide more opportunities for Singaporeans to pursue a high-quality medical degree locally.

NTU MBBS Competence Standards

ACGME Competency	Learning Outcome	Competence Standard
Patient Care	Patient Care 1 (PC1) Deliver high quality patient-centred care through competency in history taking and physical examination	Ability to obtain and synthesise information, by asking questions and reading notes. Ability to obtain detailed or focused history relevant to patient's acuity and clinical status. Ability to obtain and synthesis information through a general and/or focused physical examination. Ability to identify abnormal clinical findings. Ability to observe, undertake the measurement of and accurately record data using appropriate equipment. Ability to apply risk assessment scales and "medical calculators" appropriately.
Patient Care	PC2 Deliver high quality patient-centred care through interpretation of clinical findings and diagnosis of common and serious clinical presentations	Ability to prepare, process, and interpret data using appropriate techniques. Ability to perceive, synthesise and apply information to perform clinical reasoning to diagnose issue(s) and prioritise working differential diagnoses. Ability to form logical, reasonable conclusions and make sound recommendations based on available data. Ability to recognise, prioritise urgent issues, and seek expert or more senior help early.
Patient Care	PC3 Deliver high quality patient-centred care through interpretation of investigations, and implementation of effective management plans, including emergency management, and safe drug prescribing	Ability to request appropriate diagnostic tests. Ability to interpret the results. Ability to document proposals, seek out alternatives, devise practical and effective solutions and to evaluate their use. Ability to formulate pharmacological and non-pharmacological treatment plan. Ability to initiate critical stabilization action/resuscitation. Ability to understand and verbalise patients' issues, and propose appropriate discharge plans and follow-up.
Patient Care	PC4 Deliver high quality patient-centred care through performance of procedural-diagnostic and therapeutic-skills	Ability to learn and perform the list of procedures in Annex A of the *Outcomes and Standards for Undergraduate Medical Education in Singapore, Recommendations of the National Medical Undergraduate Curriculum Committee 2018, or equivalent future document* and additional procedures deemed necessary by LKCMedicine. Ability to identify indication(s) for procedures. Ability to identify potential complications and contraindications of the procedures.

ACGME Competency	Learning Outcome	Competence Standard
		Ability to obtain appropriate consent, including verbal or written consent, prior to performing procedures. Ability to conduct pre-procedure check. Ability to safely perform procedures safely. Ability to know when to escalate and seek help. Ability to respond to complications and change in patient's status and escalate as needed.
Medical Knowledge (MK)	Demonstrate knowledge of the biomedical sciences, including the basic sciences, social, behavioural and population sciences, and apply this knowledge to medical practice	Ability to perceive and comprehend verbal and written communication. Ability to perceive, synthesise and apply information presented orally and in writing from a range of contexts including large- and small-group teaching. Ability to obtain necessary data from scientific and technical documents, reports, and other reference materials to document proposals or theories, seek out alternative procedures, devise practical and effective solutions and to evaluate their use. Ability to form logical, reasonable conclusions and make sound recommendations based on available data. Physical and psychological ability to cope with full-time study.
Practice Based Learning and Improvement (PBLI)	Demonstrate self-directed learning, the ability to apply findings from scientific literature to patient care, and the ability to educate others, both healthcare professionals and patients	Ability to study independently, in addition to attending lectures, seminars and workshops. Ability to obtain necessary data from scientific and technical documents, reports, and other reference materials to document proposals or theories, seek out alternative procedures, devise practical and effective solutions and to evaluate their use. Ability to undertake work with high level of initiative and commitment to the task in hand. Ability to recognise the limits of one's own competency and the confidence to ask for assistance when necessary. Ability to communicate, verbally and in writing, clearly, sensitively, empathically, and effectively. Ability to express ideas effectively, both orally and written, in a variety of settings including group work. Ability to present written technical reports to others, and to make oral presentations that are reasoned, logical and time-limited, to a variety of groups. Ability to write group or individual technical reports to a professional standard.

ACGME Competency	Learning Outcome	Competence Standard
Interpersonal and Communication Skills (ICS)	Communicate effectively with patients, families, medical staff and other health professionals by spoken, written and electronic means and appreciate the importance of teamwork and shared decision making	Ability to communicate, verbally and in writing, clearly, sensitively, empathically, and effectively. Ability to perceive and comprehend verbal and written communication. Ability to respond appropriately verbally and non-verbally in distressing clinical situations. Ability to document accurately, concisely and appropriately the following: a. Admission, clerking, ward round, pre- and post-procedure, progress and handover notes b. Inpatient discharge summary c. Clinical consultation request (blue letter referral) and communications with other healthcare personnel d. Memo for continuity of care e. Communications with patients and family Ability to present written technical reports to others, and to make oral presentations that are reasoned, logical and time-limited, to a variety of groups. Ability to write group or individual technical reports to a professional standard.
Professionalism (Prof)	Demonstrate appropriate professional behaviour, behave according to ethical and legal principles, and demonstrate sensitivity to the needs of a diverse patient population	Ability to understand and adhere to local and national ethical and legal guidelines and regulations. Respect for patient's privacy, confidentiality and data protection regulations. Ability to recognise the limits of one's own competency and the confidence to ask for assistance when necessary. Has emotional resilience and ability to respond appropriately in distressing clinical situations.
System Based Practice (SBP)	Demonstrate an awareness of the wider responsibilities of doctors as leaders, managers and educators in all healthcare settings	Ability to undertake work with high level of initiative and commitment to the task in hand. Ability to contribute fully in a range of roles both individually and as part of a team, recognise and respect the contributions of other team members to promote successful team work. Awareness and ability to respond to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

NTU MBBS Student Assistantship Programme Learning Outcomes

To transition the Year 5 student to practice, the SAP Learning Outcomes are based on the PGY1 (postgraduate year 1) Entrustable Professional Activities (EPAs).

No.	Entrustable Professional Activities	Supporting Competencies
1.	Identifying, diagnosing and managing patients' issues in an acute hospital setting	PC1, PC2, PC3, PC4 MK ICS Prof SBP PBLI
2.	Receiving and giving handover within and between care settings (including transition of care)	PC3 MK ICS Prof SBP PBLI
3.	Performing core procedures	PC4 MK ICS Prof SBP PBLI
4.	Recognising, escalating and providing initial care for unstable or critically ill patients	PC1, PC2, PC3, PC4 MK ICS Prof SBP PBLI
5.	Providing pre and post procedural/surgical assessment and care	PC1, PC2, PC4 MK ICS Prof SBP PBLI
6.	Updating and interacting with patients and their family members	MK ICS Prof SBP PBLI