immerse EDUCATION Academic INSIGHTS

Medicine

SYLLABUS OVERVIEW

15-18 YEARS OLD

TOKYO

About the Programme

Immerse Education is an award-winning provider of summer experiences offering academic and career-focused programmes for high school students worldwide, in such locations as Boston, Cambridge, London, New York, Oxford, San Francisco, Singapore, Sydney, Tokyo, and Toronto. Our programmes aim to deliver engaging, academically challenging content within a university-style classroom environment.

The Academic Insights programmes give participants a valuable introduction to studying their chosen subject at an advanced university level, preparing them for future academic success and life at university. During the programme, students experience university-style teaching, explore complex topics, and develop the skills, confidence, and curiosity needed for successful applications and higher-level study.

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Academic Sessions

Sessions during the programme are organised into thematic areas that allow students to explore a broad range of topics in depth. The programme combines two types of sessions: theory-based sessions that introduce advanced concepts similar to university study, and practical-based sessions that encourage students to apply this knowledge to case studies, real-world projects, or research tasks. Topics highlighted in thie guide are indicative and may be adapted by tutors to reflect their academic expertise or participants' interests. This approach helps students develop both subject knowledge and the ability to think critically and independently.

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TOKYO | **15-18** | **ACADEMIC INSIGHTS**

Preparatory work

Some tutors may ask participants to complete preparatory work before the start of the programme, such as assigned reading, independent pre-research, or a series of short exercises. These tasks help ensure that all students begin the course with a shared foundation of understanding and are ready to engage in higher-level discussion and analysis. Preparatory materials are provided in advance and designed to make students feel more confident, better prepared, and able to get the most out of their academic experience once the programme begins.

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Academic Difficulty

Immerse Education's Academic Insights programmes are designed to introduce students to university-level study and build on necessary skills. The material can be challenging, but tutors provide structured guidance, personalised feedback, and encouragement throughout. Each participant is supported according to their own level and learning goals, ensuring that everyone is able to progress and achieve their potential. This academically stimulating experience is something to look forward to — an opportunity to build confidence, expand knowledge, and develop valuable study skills in a supportive and inspiring environment.

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Aim of the Medicine Programme

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Introduction to Medicine

Medicine is driven by curiosity, evidence, and discovery. This programme introduces students to the science behind human health, from cellular mechanisms to systemic function. Through guided study and discussion, participants explore how modern medicine integrates biological understanding with technological innovation. Set in Tokyo, a global leader in medical research and longevity, the course encourages students to think critically about how academic research informs clinical practice and global healthcare development.

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Academic INSIGHTS

Anatomy and Histology

Study how the body's organs and systems interact to sustain life. You will explore structure–function relationships across the musculoskeletal, cardiovascular, and nervous systems, analysing how their coordination maintains balance and health. Students investigate the physiological responses to injury and disease, developing a deep understanding of how anatomy underpins medical science. This topic strengthens analytical reasoning and prepares students for advanced biological study.

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Molecular Biology and Genetics

Discover how molecular mechanisms control life and influence health. You will study DNA replication, gene expression, and the effects of mutations on cellular function. Students also explore how genetic research contributes to precision medicine and diagnostics. This topic encourages scientific literacy and critical analysis of how molecular discoveries are translated into medical advancements that improve diagnosis and treatment outcomes.

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Neuroscience and Behavioural Medicine

Explore how the brain and nervous system regulate perception, cognition, and emotion. You will learn about neural communication, brain structure, and disorders such as Alzheimer's and epilepsy. Case-based examples highlight how neuroscience connects biological processes with behaviour and mental health. This topic develops scientific reasoning, data interpretation, and awareness of how brain research shapes medical innovation.

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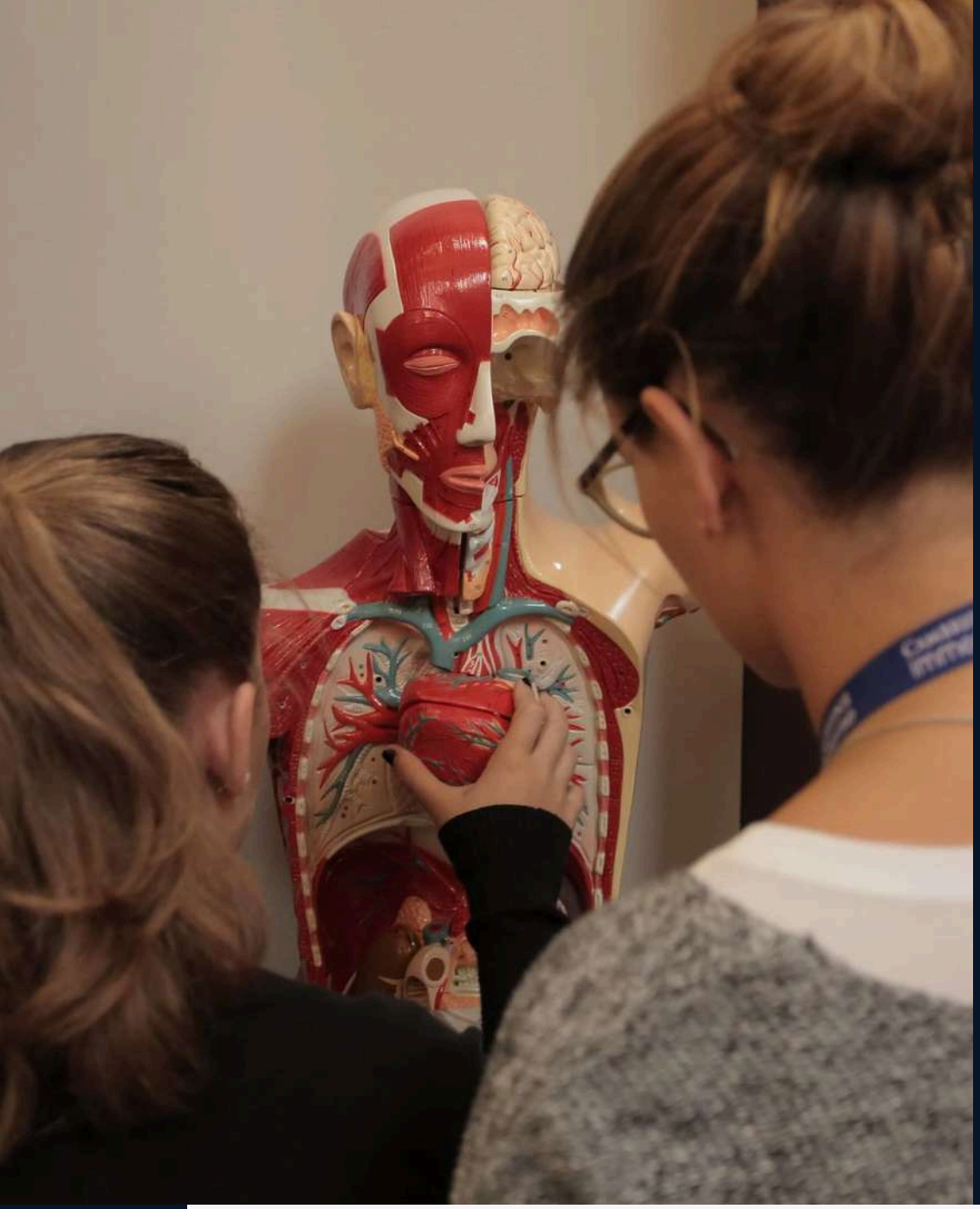

Immunology and Infectious Disease

Examine how the immune system protects the body from disease. You will study immune responses, vaccination principles, and the mechanisms of infection. Students analyse examples of global health challenges such as influenza and emerging viral outbreaks, considering how research and collaboration shape prevention strategies. This topic strengthens understanding of biological defence and the scientific basis for public health solutions.

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Pharmacology and Drug Development

Learn how medicines interact with the human body to prevent and treat disease. You will study how drugs act on cells and organs, how they are developed and tested, and how resistance or side effects occur. Students analyse case studies on targeted therapies and the ethics of drug development. This topic builds scientific precision and insight into how pharmacology bridges laboratory research and patient care.

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Biomedical Research and Emerging Technologies

Investigate how scientific research leads to innovation in medicine. You will study experimental design, clinical trials, and translational research that transforms discoveries into treatments. Drawing on Tokyo's strengths in biotechnology and medical engineering, students examine areas such as regenerative medicine, gene therapy, and robotics in surgery. This topic develops research literacy and critical awareness of how technology drives medical progress.

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Personal Project

Each Academic Insights programme includes an individual project focused on independent research and academic reflection. The Personal Project allows students to explore a specific topic or question in greater depth, applying theoretical knowledge and original thinking. With guidance from their tutor, participants develop their ideas throughout the programme and present their findings at the end. The Personal Project may take the form of essay, presentation, creative piece, or report.

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After Your Programme

By the end of the programme, students gain a solid understanding of their chosen subject and how it is studied at university. They leave with enhanced independent thinking, critical research and analysis, and communication skills, as well as confidence for advanced learning. Each participant receives an individual feedback report from their tutor, highlighting strengths, progress, and personalised recommendations for future study. Students can also use their Personal Project and tutor feedback as part of their university applications or portfolios, showcasing both academic ability and intellectual curiosity.

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