



# SYNOPSSES OF SUBJECTS OFFERED AT 'A' LEVEL

## KNOWLEDGE SKILLS

### GENERAL PAPER

**Offered at:** H1 level (Compulsory for all students, except those taking Knowledge and Inquiry)

**General Paper** aims to enable students to develop language proficiency and skills such as critical reading, clear and effective communication, and the ability to evaluate arguments and opinions. Students will be encouraged to take a global perspective, while keeping in view shared historical and social experiences both within Singapore and in the region.

Examinations:

Students sit for two written papers.

- Essay (Paper 1): Students are required to write one 500 – 800 word essay.
- Comprehension (Paper 2): One or two passages of continuous prose will be set. Questions cover understanding (including literal comprehension and inference), vocabulary, summary and application.

### PROJECT WORK

**Offered at:** H1 level (Compulsory for all students)

**Project Work** gives students the opportunity to synthesise knowledge from various areas of learning, and critically and creatively apply it to real life situations. In the process, students acquire skills like collaboration, communication and independent learning. Students work in project groups of four to five members on a task. Students will be assessed on their performance both as a group member and individually.

Examinations:

Students offer three papers.

- Written Report (Paper 1): Each group submits a written report of 2500-3000 words based on the task that they have completed.
- Oral Presentation (Paper 2): Each group member is given an opportunity to present a part of the project and answer questions.
- Group Project File (Paper 3): Each group submits a Group Project File showing the thinking processes that the individual member and the group went through in completing the project as evidenced in: *Preliminary Ideas, Group Project Proposal (not assessed), Evaluation of relevant print/non-print Material, and Insights and Reflections.*

## KNOWLEDGE AND INQUIRY

**Offered at:** H2 level (In lieu of General Paper)

**Knowledge and Inquiry (KI)** may only be offered as a 4<sup>th</sup> H2 subject. The subject gives students the opportunity to understand the nature and construction of knowledge by exploring different methods of inquiry in the sciences, the social sciences, mathematics and aesthetics. KI aims to provide opportunities for pupils to critically evaluate what is regarded as knowledge.

In the course of studying KI, students will develop:

- An understanding of the nature of knowledge
- An understanding of the different modes of inquiry in a variety of fields
- An awareness of the ethical dimensions of knowledge construction
- Critical thinking skills
- A capacity for independent learning
- An ability to communicate clearly and convincingly

Examinations:

Students offer three papers.

- Essay (Paper 1): Students are required to write two essays on the areas of learning identified in the content coverage.
- Critical Thinking (Paper 2): Students apply their knowledge and understanding of what they have learnt to unseen stimulus material.
- Independent Study (Paper 3): Students are required to carry out independent research and write a 2500 – 3000 word research paper on a topic of their choice on the nature and construction of knowledge. The selected topic must be focused and suitable for an in-depth study of six months' duration.



## LANGUAGES

### CHINESE LANGUAGE

**Offered at:** H1 Level

**H1 Chinese Language** places greater emphasis on listening and speaking skills. Less emphasis will be given to writing while the emphasis on reading remains unchanged. There are ten prescribed texts and a list of two hundred idiomatic phrases. The inclusion of prescribed texts emphasises the understanding of the contextual meaning of words and phrases rather than rote learning of the characters and words. The list of idiomatic phrases is accumulated from secondary school and provides a clear scope for learning.

Examinations:

Students undertake two components.

- One written paper, comprising Multiple-Choice, structured, free response and essay questions
- One aural and oral examination paper

### MALAY LANGUAGE

**Offered at:** H1 Level

**H1 Malay Language** is an enhancement of the Malay Language syllabus learnt at secondary level, with greater emphasis on listening and speaking skills. Students are required to write an essay, summary, comprehension and grammar items.

Examinations:

Students undertake two components.

- A written paper, comprising essay writing and tests on items such as comprehension, summary writing, proverbs and grammar
- One oral and listening comprehension examination

### TAMIL LANGUAGE

**Offered at:** H1 Level

**H1 Tamil Language** has been designed to reinforce the basic language skills students have acquired in secondary schools. It is skills-based and thematic and communicative in approach. There is greater emphasis on oral and aural skills, as well as reading skills.

Examinations:

Students undertake two components.

- A written paper, comprising essay writing and tests on items such as comprehension and summary writing, meaning of vocabulary, cloze passage, idioms, joining and separation of words
- An oral/aural paper, comprising conversation and listening comprehension items

### FRENCH/GERMAN/JAPANESE

**Offered at:** H1 & H2 Levels

**H1 Foreign Languages** build on the foundation of listening, speaking, reading and writing skills, including all the essential grammar taught at the secondary level. Students' competency in the language is developed to a more mature level, primarily through content-based learning. Students will explore topic areas that will relate to the countries/communities where the language is spoken. The aim is to develop broad insights into the culture and civilisation of the country.

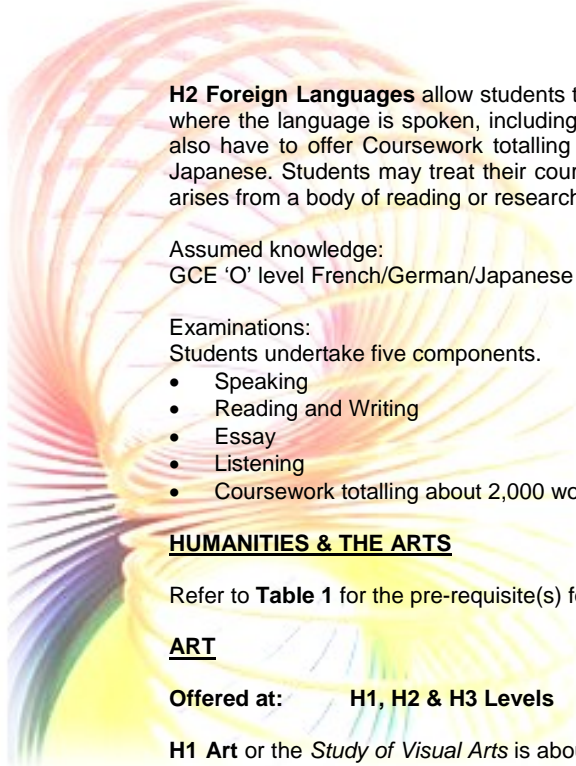
Assumed knowledge:

GCE 'O' level French/German/Japanese

Examinations:

Students undertake three components.

- Speaking
- Reading and Writing
- Listening



**H2 Foreign Languages** allow students to develop deeper insights into the culture and civilisation of the countries where the language is spoken, including, for example, the study of literary texts where appropriate. Students will also have to offer Coursework totalling approximately 2,000 words in French/German and 4,000 characters in Japanese. Students may treat their coursework in any way they wish – imaginative and/or creative – provided it arises from a body of reading or research and can be appropriately assessed.

Assumed knowledge:  
GCE 'O' level French/German/Japanese

Examinations:  
Students undertake five components.

- Speaking
- Reading and Writing
- Essay
- Listening
- Coursework totalling about 2,000 words in French/German and 4,000 characters in Japanese.

## **HUMANITIES & THE ARTS**

Refer to **Table 1** for the pre-requisite(s) for the H3 programmes offered by MOE.

### **ART**

**Offered at:** H1, H2 & H3 Levels

**H1 Art** or the *Study of Visual Arts* is about why and how artworks are created, and how the ideas behind artworks reflect developments and concerns in society. Students learn about art concepts, use of art media and styles through the study of artworks and artists. They will also learn to interpret images using certain frameworks for the understanding and discussion of art through two broad themes: Visual Arts & Representations and Visual Arts & Society. The study develops students' visual literacy and appreciation of art and culture by honing their visual perception, critical analysis and aesthetic judgement.

Examinations:  
Students sit for one written paper comprising structured questions and an essay.

**H2 Art** encompasses students' own practice in fine and applied arts (*Studio Practice*) and the study of artworks and artists (*Study of Visual Arts*). *Studio Practice* exposes students to a variety of research and investigative processes, media and technologies for artmaking. Through art practice, students are empowered to give meaning to their experiences by expressing their ideas in visual form thus cultivating creative and critical expression, interpretation and imagination. In the *Study of Visual Arts*, students study artworks to learn about art approaches and concepts which they may apply to their own artmaking. This nurtures students' visual literacy and heightens their critical and aesthetic judgement.

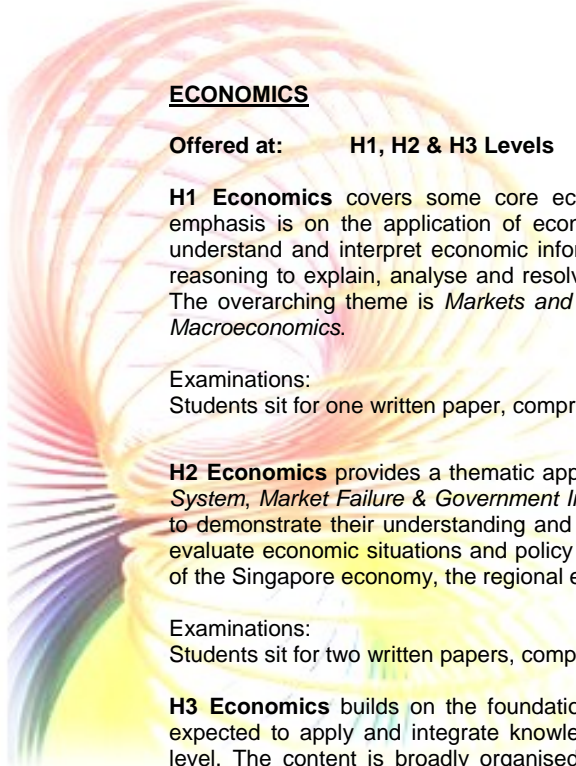
Examinations:  
Students undertake two components.

- One piece of coursework, comprising one finished artwork with not more than eight A2 sheets of preparatory studies.
- One written paper comprising structured questions and an essay.

**H3 Art** complements H2 Art by providing students who display exceptional interest and ability in the subject with opportunities to study the *Theory of Art*. H3 Art enhances the competencies acquired in H2 Art and further challenges students to think beyond the making and appreciation of Art. The *Theory of Art* introduces students to theoretical frameworks that govern the perception and practice of Art, cultivating intellectual discipline and critical thinking. The syllabus content is organised under two broad topics – *What is Art?* and *How is Art Relevant to Contemporary Society?* These topics facilitate an in-depth investigation of art by exploring its significance and function in our lives.

Pre-requisite: H2 Art

Examinations:  
Students sit for one written paper comprising essay questions.



## ECONOMICS

**Offered at:** H1, H2 & H3 Levels

**H1 Economics** covers some core economic concepts and principles of the H2 Economics syllabus. The emphasis is on the application of economics concepts and principles. It develops students in their ability to understand and interpret economic information in daily life. Students will also use the basic tools of economic reasoning to explain, analyse and resolve economic issues, and evaluate policy decisions in real world context. The overarching theme is *Markets and Government* and there are two sections, namely, *Microeconomics* and *Macroeconomics*.

**Examinations:**

Students sit for one written paper, comprising case study and essay questions.

**H2 Economics** provides a thematic approach to the understanding of economics. The themes comprise *Market System, Market Failure & Government Intervention* and *National & International Economy*. Students are required to demonstrate their understanding and ability to apply the tools of economic reasoning to explain, analyse and evaluate economic situations and policy decisions. The concepts, principles and issues are taught in the context of the Singapore economy, the regional economy and international economy.

**Examinations:**

Students sit for two written papers, comprising case study and essay questions.

**H3 Economics** builds on the foundational knowledge and skills in the H2 Economics syllabus. Students are expected to apply and integrate knowledge and understanding of topics, issues and concepts acquired at H2 level. The content is broadly organised into three themes: *Study of Economics, Firms & Market Failure* and *Regional and International Economics*. Students are required to critically analyse and evaluate economic concepts, theories and methods of inquiry through an in-depth understanding of economic issues and problems.

**Pre-requisite:** H2 Economics

**Examinations:**

Students sit for one written paper, comprising resource-based questions and broad essay questions.

## GEOGRAPHY

**Offered at:** H1, H2 & H3 Levels

**H1 Geography** aims to provide students with fundamental knowledge of physical geography, human geography and geographical techniques. Compulsory topics are *Lithospheric Processes, Hazards & Management* and *The Globalisation of Economic Activity*. A third topic is a choice of either: *Hydrologic Processes, Hazards & Management* or *Urban Issues & Challenges*. With H1 Geography, students will develop an appreciation of the key physical processes affecting the surface of the earth and the challenges and issues in today's global economy.

**Examinations:**

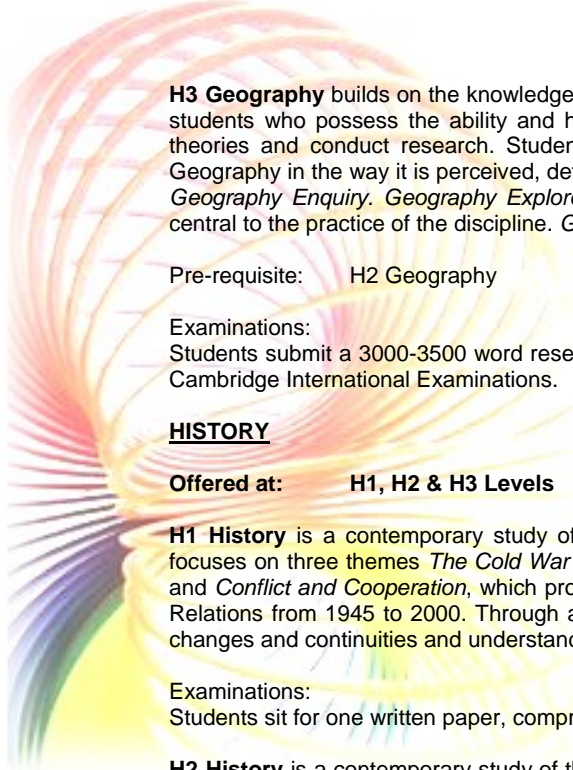
Students sit for one written paper, comprising data response and structured essay questions.

**H2 Geography** prepares students adequately for studying geography and geography-related courses at the university level. It provides students with a good foundation in physical geography, human geography and geographical techniques. The physical geography topics cover the processes and management of the lithosphere, atmosphere and hydrosphere. It also examines current issues such as the *Management of Transborder River Basins*, which will enable students to appreciate the complexities and politics of water management. The human geography topics cover the globalisation of economic activities, as well as population and urban issues and challenges. With H2 Geography, students will develop a deep understanding of the geographical tensions, challenges and issues in today's world.

**Examinations:**

Students sit for two written examination papers, comprising data response and structured essay questions.





**H3 Geography** builds on the knowledge, understanding and competencies acquired in H2 Geography. It provides students who possess the ability and have the interest in Geography with opportunities to study geographical theories and conduct research. Students are challenged to explore the theoretical and critical discourses of Geography in the way it is perceived, defined and practised. There are two components: *Geography Explored* and *Geography Enquiry*. *Geography Explored* is a taught component, which focuses on the concepts and themes central to the practice of the discipline. *Geography Enquiry* is based on an individual investigation.

Pre-requisite: H2 Geography

Examinations:

Students submit a 3000-3500 word research essay based on a topic of their choice which has to be approved by Cambridge International Examinations.

## **HISTORY**

**Offered at: H1, H2 & H3 Levels**

**H1 History** is a contemporary study of key international developments and issues in the twentieth century. It focuses on three themes *The Cold War and How it Shaped the World*, *The Development of the Global Economy* and *Conflict and Cooperation*, which provide students with valuable insights into the complexities of International Relations from 1945 to 2000. Through a thematic and issue-based approach, students will be able to recognise changes and continuities and understand the different interpretations of historical developments.

Examinations:

Students sit for one written paper, comprising source-based study and essay questions.

**H2 History** is a contemporary study of the regional and international events in the twentieth century. It comprises two papers, namely *International History (1945-2000)* and *History of Southeast Asia (c. 1900-1997)*. *International History* covers the three themes under H1 History namely *The Cold War and How it Shaped the World*, *The Development of the Global Economy* and *Conflict and Cooperation*. *History of Southeast Asia (c. 1900-1997)* covers the themes *How Independence was Achieved*, *Challenges to Independent Southeast Asian States* and *Regional Conflicts and Cooperation*. Through a thematic-comparative and issue-based approach, students will be able to recognise changes and continuity and understand the different interpretations of historical developments. H2 History is relevant to students who intend to pursue this subject at the tertiary level.

Examinations:

Students sit for two written examination papers, comprising source-based study and essay questions.

**H3 History** builds upon the knowledge and skills of H2 History. It provides students with opportunities to explore historical issues and events in greater depth, to think independently and develop the skills of critical inquiry through an individual investigation of a historical topic. H3 History comprises two components, *Investigating History* and *Historical Inquiry*.

*Investigating History* is a taught component that provides a theoretical understanding of the historian's craft and how the knowledge of the past is acquired.

*Historical Inquiry* is a research component that requires students to conduct an individual investigation of a historical question or an issue. Students will identify an area of historical interest, examine a variety of evidence, and interpret and evaluate the evidence to reach informed conclusions.

Pre-requisite: H2 History

Examinations:

Students submit a 3000-3500 word research essay based on a topic of their choice, which has to be approved by Cambridge International Examinations.



## LITERATURE IN ENGLISH

**Offered at:** H1, H2 & H3 Levels

**H1 Literature in English** is an introductory paper designed to provide students with a broad exposure to literary study. Literary texts of recognised importance and significance are chosen and span the main genres of poetry, prose and drama. Through the study of set texts and unseen poetry, students will develop skills of literary response and appreciation.

Examinations:

Students sit for one paper. The examination is open book.

- *Reading Literature* (Paper 1): Paper consists of essay and passage-based questions. Students will be examined on two set texts and unseen poetry.

**H2 Literature in English** consists of a compulsory paper, *Reading Literature* (Paper 1), which is offered by both H1 and H2 students, and an elective paper. The elective paper can be a period-based or topic-based paper. Students can choose an elective paper from two period-based and two topic-based elective papers set every year. Period-based papers focus on a distinct period of literary significance (e.g. *Modern Writing*) while topic-based papers focus on issues that span a range of periods and writers (e.g. *Literature and Identity*). For the elective paper, students will offer three texts from a range of writers and genres.

Examinations:

Students sit for two papers. Both are open book.

- *Reading Literature* (Paper 1)
- Elective Paper. It comprises essay and passage-based questions.

**H3 Literature in English** will provide students with the opportunity to display their exceptional ability and interest in Literature. It is meant for students who are interested in pursuing the subject in greater depth and with greater specialisation. Students will engage in independent and self-directed research. Students can study a group of texts in view of their literary context, explore how particular critical theories inform the process of interpretation, examine various styles and modes of writing in texts, or analyse how particular themes are approached in texts.

Pre-requisite: H2 Literature

Examinations:

Students undertake two writing tasks:

- A research essay (3000 – 3500 words)
- An evaluative commentary (800 – 1200 words)

## CHINA STUDIES (ENGLISH /CHINESE)

**Offered at:** H1 & H2 Levels in both English and Chinese

**H1 China Studies** is an interdisciplinary Humanities subject that aims to promote students' awareness of, and interest in, contemporary China. The syllabus focuses on the geopolitical, economic and socio-cultural forces related to China that are likely to shape events and trends in East Asia and beyond. The syllabus adopts a thematic approach based on four key themes, namely *Culture and Society*, *Authority and Governance*, *Development and Challenges*, and *China and the World*.

Examinations:

Students sit for one written examination paper, comprising case study and essay questions.

**H2 China Studies** is an interdisciplinary Humanities subject that aims to promote students' awareness of, and interest in, contemporary China. The syllabus focuses on the geopolitical, economic and socio-cultural aspects of China's development since 1978, and helps students understand both the historical context that brought about these changes and the ongoing challenges which these changes create. The syllabus adopts a thematic approach based on four key themes, namely *Culture and Society*, *Authority and Governance*, *Development and Challenges*, and *China and the World*.

Examinations:

Students sit for two written examination papers, comprising case study and essay questions. In addition, there is an Independent Study. For China Studies in English, students will submit a 2000-2500 word research essay based on an issue or topic of study related to China's contemporary development. Taking into the considerations the typological differences between Chinese and English Language, a 3000-4000 word research essay is required for China Studies in Chinese.



## INDIA STUDIES

**Offered at:** H1 & H2 Levels

**H1 India Studies** is a new interdisciplinary Humanities subject that is offered from 2009. The subject aims to promote students' interest in studying issues related to contemporary developments in India. The syllabus focuses on the geopolitical, economic and socio-cultural forces related to India's development, and their role in shaping events and trends in South Asia and beyond. The syllabus adopts a thematic approach based on four key themes, namely *Society and Culture*, *Politics and Governance*, *Economic Growth and Challenges*, and *India and the World*.

Examinations:

Students sit for one written examination paper, comprising case study and essay questions.

**H2 India Studies** is a new interdisciplinary Humanities subject that is offered from 2009. The subject aims to promote students' interest in studying issues related to contemporary developments in India. The syllabus focuses on the geopolitical, economic and socio-cultural aspects of India's development since 1947, and helps students understand both the historical context that brought about these changes and the ongoing challenges which these changes create. The syllabus adopts a thematic approach based on four key themes, namely *Society and Culture*, *Politics and Governance*, *Economic Growth and Challenges*, and *India and the World*.

Examinations:

Students sit for two written examination papers, comprising case study and essay questions. In addition, there is an Independent Study. Students will submit a 2000–2500 word research essay based on an issue or topic of study related to India's contemporary development.

## HISTORY (CHINESE)

**Offered at:** H1 & H2 Levels

**H1 History (Chinese)** covers four broad regions and their history, which include *History of East Asia*, *History of Southeast Asia*, *History of South Asia & West Asia* and *European History*. Students are only required to choose one area as their course of study.

Examinations:

Students sit for one written paper, comprising open-ended questions.

**H2 History (Chinese)** covers the four broad regions identified for study under H1 History (Chinese) and their history. They include *History of East Asia*, *History of Southeast Asia*, *History of South Asia & West Asia* and *European History*. Students are required to choose two areas as their course of study.

Examinations:

Students sit for two written papers, comprising open-ended questions.

## ENGLISH LANGUAGE AND LINGUISTICS

**Offered at:** H2 Level

**H2 English Language and Linguistics** is a new Humanities subject that will be offered from 2009. English Language and Linguistics aims to develop students' understanding and appreciation of the English language through an investigation of the nature of the language and some contemporary language issues. In *Analysing Language Use*, students examine language as a meaning-making system and how it varies according to use and user. *Investigating Language Use in Society* requires students to discuss language use in the larger contexts of society, geography and time, such as the impact of globalisation and new communications media on language change, culture and identity.

Examinations:

Students sit for two written papers, comprising text-based analysis, adaptive writing and essay questions.

English Language and Linguistics is distinct from existing subjects such as General Paper, Knowledge & Inquiry and English Literature. Students offering English Language and Linguistics will **not** be exempted from taking General Paper, and students in the Arts stream offering English Language and Linguistics will still need a contrasting subject. English Language and Linguistics can be taken together with English Literature.



## **GENERAL STUDIES IN CHINESE (GSC)**

**Offered at:** H1 Level

**General Studies in Chinese** covers current affairs in the Singapore, Asian and International contexts. It will enable students to identify patterns and links, recognise changes and continuity, and understand the interplay of forces that have shaped local as well as world events and developments.

**Pre-requisite:**  
GCE 'O' level Higher Chinese or H1 Chinese Language

**Examinations:**  
Students sit for one written paper, comprising structured and free response questions on a comprehension passage as well as an essay writing component.

## **CHINESE LANGUAGE AND LITERATURE**

**Offered at:** H2 & H3 Levels

**H2 Chinese Language and Literature** consists of language and literature components.

For the language component, students are required to study both classical and modern Chinese. Teachers will use prescribed classical prose for the teaching of classical Chinese. Students will be required to achieve a better understanding of the prescribed classical prose by placing emphasis on both translation as well as understanding the key notions of the classical prose. For the teaching of modern Chinese, teachers will choose texts that best suit the learning needs and abilities of their students.

For the literature component, new genres such as modern poetry and modern *Wuxia* novels (Swordsmen Fiction) will be included to inject more elements of interest into the syllabus. Teachers will also incorporate the history of Chinese literature in the teaching of prescribed texts. This will develop students' ability in critically appreciating the social influence on the writers, the stylistics and the works of literature.

**Examinations:**  
Students sit for two written papers.

- One paper (Paper 1) comprising Multiple-Choice and open-ended questions based on prescribed classical prose and modern prose.
- One paper (Paper 2) of structured and essay questions based on classical and modern poems, modern short stories, modern play and modern *Wuxia* novel. It is an open book examination.

**H3 Chinese Language and Literature** offers students with the interest and aptitude in the study of Chinese language and literature to pursue the subject in greater depth. It consists of two components, namely A) Free Writing, and B) Critical Analysis.

The Free Writing Component requires students to compose a piece of prose, short story or commentary. The Critical Analysis component is further divided into two sub-components, namely Contemporary Chinese Literature (Unseen text) and Classical Chinese Literature (Prescribed texts). The prescribed texts include *The Analects* (4 chapters), Tang Poetry (6 pieces) and Song Poetry (6 pieces), *Dream of the Red Mansions* (5 plots) and *The Water Margins* (5 plots). Students will choose one of the five sets of prescribed texts during their course of study.

**Pre-requisite:** H2 Chinese Language and Literature

**Examinations:**  
Students sit for one written paper, comprising open-ended questions for two components.  
*An open book format will be adopted in the Classical Chinese Literature (Prescribed texts) component.*





## **MALAY LANGUAGE AND LITERATURE**

**Offered at:** H2 & H3 Levels

**H2 Malay Language and Literature** caters for students who are keen to deepen their interest and passion in the language, literature and culture. It consists of language and literature components. For the language component, greater emphasis is placed on the appreciation or understanding of texts and writing skills. The literature component helps students better understand and appreciate Malay literary work by developing their skills in literary analytical skills and literary appreciation of various literary genres, namely novel, short stories, poetry and drama.

Examinations:

Students sit for two written papers.

- Paper 1, comprising essay questions and tests on items such as comprehension, vocabulary and summary writing.
- Paper 2, Literature Paper, comprising tests on a novel, short stories, poetry and drama. It is an open book examination.

**H3 Malay Language and Literature** allows students to pursue the subject in greater depth. There are two components, namely the expressive writing and the critical analysis. Both components are an extension of the H2 Malay Language and Literature syllabus, which allow students to critically analyse literary texts and to apply the literary knowledge in creative writing.

Pre-requisite: H2 Malay Language and Literature

Examinations:

Students sit for one paper, comprising two sections. Section A is on expressive writing, where students write a short story or a play, or a commentary on a given issue. Section B requires students to write a critical analysis based on prescribed texts as well as unseen texts. An open book examination format will be adopted.

## **TAMIL LANGUAGE AND LITERATURE**

**Offered at:** H2 & H3 Levels

**H2 Tamil Language and Literature** comprises language and literature components. In addition to skills development, students will be given wide exposure in various literary genres such as novels, short stories and plays.

Examinations:

Students sit for two papers.

- Paper 1, which comprises essay writing and tests on items such as summary writing, comprehension, cloze passage, and constructing of sentences using idioms.
- Paper 2 (Literature Paper) comprising tests on a novel, a selection of short stories, a play, poetry and prose. It is an open book examination.

**H3 Tamil Language and Literature** is an extension of the H2 syllabus. Students will undergo extensive language-based training and will be exposed to a wide spectrum of literary content.

Pre-requisite: H2 Tamil Language and Literature

Examinations:

Students sit for one paper, comprising two sections. Section A is on expressive writing, where students write a short story or a play, or a commentary on a given issue. Section B requires students to write a critical analysis based on prescribed texts as well as unseen texts.



## **MUSIC**

**Offered at:** H2 & H3 Levels

**H2 Music** is designed to engage students in music listening, performing and composing. Students are provided with opportunities to discuss music-related issues, transfer learning and to make music. The content includes a range of works from the Western Music tradition as well as prescribed topics from the Asian Music tradition. Students are also allowed to major in either performing or music writing, according to their interests and abilities.

Pre-requisites:

GCE 'O' Level Music,

OR

A pass in Grade 5 Practical and Grade 6 Theory or Practical Musicianship examinations of the Associated Board of the Royal Schools of Music (ABRSM), or the equivalent standard from other examination boards,

OR

In the absence of the qualifications above, a pass in the written selection test and practical audition on an instrument conducted by the JC.

Examinations:

Students undertake two components.

- A written examination
- A choice of either:
  - (a) 25 min Recital (Performing: Major) and a folio of two sets of music writing exercises and composition (Music Writing: Minor)
  - OR
  - (b) 15 min Recital (Performing: Minor) and a folio of four sets of music writing exercises and composition (Music Writing: Major)

**H3 Music** is intended for students who display an exceptional ability and interest in the academic study of Music. It provides students with an intellectually challenging course, which extends the study of Music at H2. Students will develop understanding of musical techniques, approaches, perspectives and related issues. The areas of study include analytical studies, performance studies and composition studies.

Pre-requisite: H2 Music

Examinations:

Students submit a 3000-3500 word research essay based on a topic of their choice, which has to be approved by Cambridge International Examinations.

## **THEATRE STUDIES & DRAMA**

**Offered at:** H2 Level

**Theatre Studies & Drama** gives students the opportunity to develop understanding and critical thought about theatre and drama from a variety of historical and cultural settings. It also fosters enjoyment of theatre and drama. Students are expected to formulate informed and independent opinions on a range of dramatic texts.

Examinations:

Students sit for three papers.

- World Theatre and Drama (Paper 1): An open-book written examination.
- Critical Commentary (Paper 2): A 2000 to 2500 word analysis and evaluation of the creative process leading to their Individual Skills Presentation, which is a component of the Practical Assessment.
- Practical Assessment (Paper 3): It comprises an Individual Skills Presentation and a Group Presentation.

## **MANAGEMENT OF BUSINESS**

**Offered at:** H2 Level (Offered at Millennia Institute only)

Management of Business is centred on themes of people in organisations (i.e. who they are), the functions they perform (i.e. what they do), and the procedures and tools that facilitate them in decision-making (i.e. how they do). It emphasises the need for businesses to remain responsive to changes in the external environment. Students study key topics on people in organisations, marketing, production, business finance and information for decision making. These topics encompass a wide range of management concepts to tools and techniques for effective functioning of businesses. Students will develop skills in analysing and solving business problems besides skills in interpretation of information and effective communication.



Examinations:

Students sit for two written papers.

- Paper 1 comprising short answer structured questions and a case study
- Paper 2 comprising data response and essay questions

## **MATHEMATICS & SCIENCE**

Refer to **Table 1** for the pre-requisite(s) for the H3 programmes offered by MOE.

## **BIOLOGY**

**Offered at:** H1, H2 & H3 Levels

**H1 Biology** provides a foundation in biology. It provides students with fundamental knowledge of how life works at the cellular and molecular level and covers more fundamental aspects of topics like *Cellular Physiology and Biochemistry, DNA Science and Genomics*, and the *Applications of Molecular and Cell Biology*. With H1 Biology, students would be able to understand news reports of research and industry developments in the biological sciences, and identify their social, ethical and some legal implications. Students would be able to form their own informed opinions in these areas and present their views coherently and convincingly.

Assumed knowledge:

GCE 'O' level Biology, as a single subject or as part of a science course e.g. Science (Biology/Chemistry)

Examinations:

Students sit for two written papers.

- One paper with Multiple-Choice Questions
- One paper of structured and free response questions

**H2 Biology** prepares students adequately, amongst others, for studying biology and biology-related subjects beyond 'A' level, in further higher education, and for professional courses. Students are provided with a good foundation in *Cell and Molecular Biology* and have the opportunity to study how life works at the cellular and molecular level. The topics covered include *Cellular Physiology & Biochemistry, DNA Science & Genomics, Genetics* including the *Genetics of Viruses & Bacteria, Diversity & Evolution*, and the *Applications of Molecular & Cell Biology*. With H2 Biology, students should be able to put forward hypotheses and design experiments to test them. Students would also develop an appreciation of the wide variety of career possibilities in the emerging biological sciences.

Assumed knowledge:

GCE 'O' level Biology, as a single subject or as part of a science course e.g. Science (Biology/Chemistry)

Examinations:

Students undertake four components.

- One paper with Multiple-Choice Questions
- One paper of structured and free-response questions based on core topics
- One paper of structured and free response questions based mainly on application topics
- Revised School-based Science Practical Assessment (SPA)

**H3 Proteomics** integrates knowledge in biology and chemistry in the study of the chemistry of proteins. It requires fundamental knowledge in both H2 Biology and H2 Chemistry. H3 Proteomics seeks to stimulate and challenge students who want to pursue an exciting area of development in molecular biology in greater depth. Topics included are *Protein Chemistry, Analytical Studies*, and *Protein Structure & Functions*.

Pre-requisite: H2 Biology and H2 Chemistry

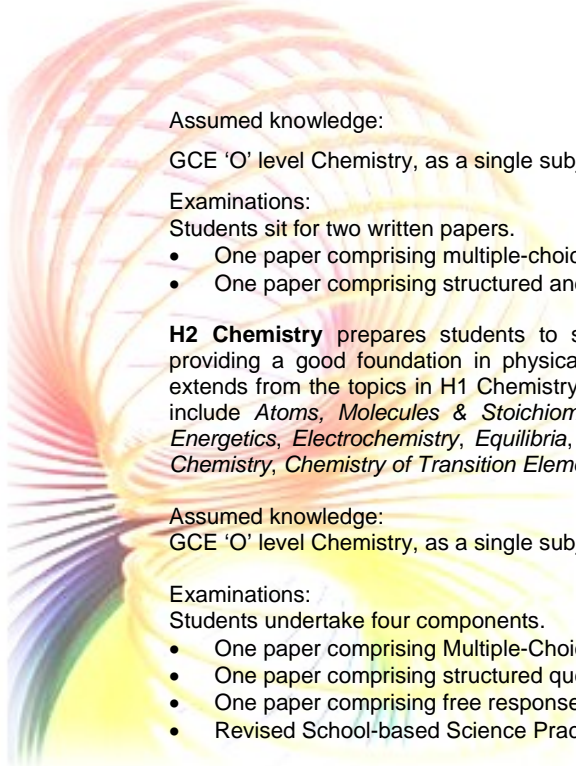
Examinations:

Students sit for one written paper comprising structured and free response questions.

## **CHEMISTRY**

**Offered at:** H1, H2 & H3 Levels

**H1 Chemistry** provides students with an understanding of basic chemistry principles and equips them to apply the principles to solving problems. Students will acquire fundamental knowledge in physical chemistry, inorganic chemistry, and organic chemistry. The topics covered include *Stoichiometry, Redox Reactions, Atomic Structure, Chemical Bonding, Chemical Energetics, Equilibria, Reaction Kinetics, Chemical Periodicity*, and *Organic Chemistry*.



Assumed knowledge:

GCE 'O' level Chemistry, as a single subject or as part of a science course e.g. Science (Physics/Chemistry)

Examinations:

Students sit for two written papers.

- One paper comprising multiple-choice questions
- One paper comprising structured and free response questions.

**H2 Chemistry** prepares students to study chemistry and chemistry-related subjects at university level by providing a good foundation in physical chemistry, inorganic chemistry, and organic chemistry. The content extends from the topics in H1 Chemistry and also includes a wider range of topics beyond H1 Chemistry. These include *Atoms, Molecules & Stoichiometry, Atomic Structure, Chemical Bonding, Gaseous State, Chemical Energetics, Electrochemistry, Equilibria, Reaction Kinetics, Chemical Periodicity, Group II Chemistry, Group VII Chemistry, Chemistry of Transition Elements, and Organic Chemistry.*

Assumed knowledge:

GCE 'O' level Chemistry, as a single subject or as part of a science course e.g. Science (Physics/Chemistry)

Examinations:

Students undertake four components.

- One paper comprising Multiple-Choice Questions
- One paper comprising structured questions
- One paper comprising free response questions
- Revised School-based Science Practical Assessment (SPA)

**H3 Pharmaceutical Chemistry** offers students who are passionate about organic chemistry an opportunity to delve into an exciting area of application in drug chemistry. Students will learn to apply chemical principles to understand drug action, drug design, molecular synthesis and characterisation. Some of the specific sections covered in the context of drug action and development include: *Properties of Functional Groups & Drug-Receptor Interactions, Molecular Stereochemistry, Reaction Mechanisms, Separation & Analytical Techniques, and Classes of Drugs.*

Pre-requisite: H2 Chemistry

Examinations: Students sit for one written paper.

*You may not offer this subject together with NTU Organic Synthesis & Mechanism*

## **PHYSICS**

**Offered at: H1, H2 and H3 Levels**

**H1 Physics** provides students with basic knowledge of physics and the application of physics in the real world. Topics covered include *Measurement, Kinematics, Dynamics, Forces, Work, Energy and Power, Wave Motion, Superposition, Current of Electricity, DC Circuits, Electromagnetism, and Quantum Physics.* Through this course, students will acquire an understanding of basic physics principles and use these principles to solve problems.

Assumed knowledge:

GCE 'O' level Physics, as a single subject or as part of a science course e.g. Science (Physics/Chemistry).

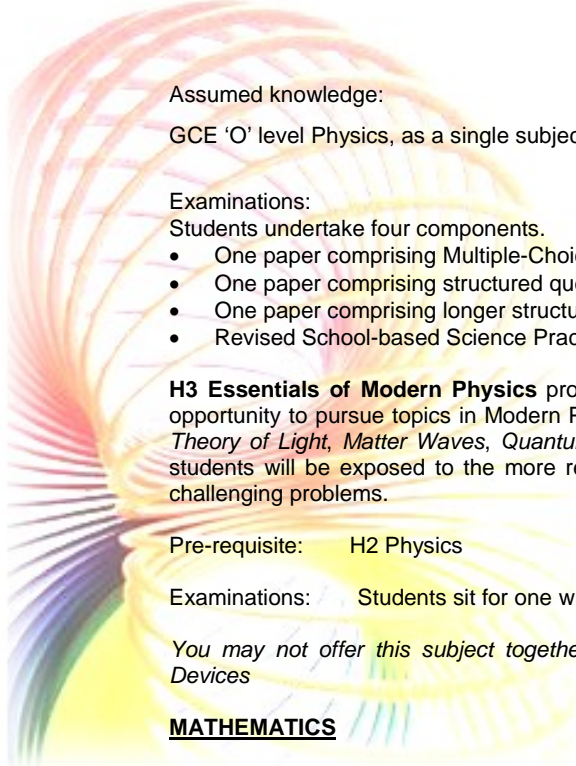
Examinations:

Students sit for two written papers.

- One Multiple-Choice Question paper
- One paper of structured questions

**H2 Physics** provides a sound basis for students planning to specialise in physics or engineering. It will develop their understanding of scientific concepts and their investigative scientific skills. The course covers more topics in the areas of *Mechanics, Waves, Electricity and Magnetism, and Modern Physics.* New areas of knowledge and basic fundamental concepts that form the basis for some of today's technological developments are also included, for example Quantum Physics. Additional topics include *Motion in a Circle, Gravitational Field, Oscillations, Thermal Physics, Electric Fields, Electromagnetic Induction, Alternating Currents, Laser and Semiconductors, and Nuclear Physics.* Students will develop a thorough understanding of important physics principles and practical skills and use them to solve a wide range of problems.





Assumed knowledge:

GCE 'O' level Physics, as a single subject or as part of a science course e.g. Science (Physics/Chemistry).

Examinations:

Students undertake four components.

- One paper comprising Multiple-Choice Questions
- One paper comprising structured questions
- One paper comprising longer structured questions
- Revised School-based Science Practical Assessment (SPA)

**H3 Essentials of Modern Physics** provides students who have exceptional ability and passion in physics the opportunity to pursue topics in Modern Physics in greater depth. The topics covered include *Relativity, Quantum Theory of Light, Matter Waves, Quantum Mechanics, Solid State Physics* and *Photonics*. Through this course, students will be exposed to the more recent developments in the subject and apply this knowledge in solving challenging problems.

Pre-requisite: H2 Physics

Examinations: Students sit for one written paper.

*You may not offer this subject together with NTU Contemporary Physics or NTU Semiconductor Physics & Devices*

## **MATHEMATICS**

**Offered at: H1, H2 & H3 Levels**

**H1 Mathematics** provides a foundation in mathematics for students who intend to enrol in university courses such as business, economics and social sciences. Students will develop mathematical thinking and problem solving skills. The course covers *Functions and Graphs, Calculus, Probability* and *Statistics*. A major focus of the syllabus will be the understanding and application of basic concepts and techniques of statistics. This will equip students with the skills to analyse and interpret data, and make informed decisions.

Assumed knowledge: GCE 'O' level Mathematics

Examinations: Students sit for one written paper.

**H2 Mathematics** prepares students adequately for university courses including mathematics, physics and engineering where more mathematics content is required. Topics covered include *Functions and Graphs, Sequences and Series, Vectors, Complex Numbers, Calculus, Permutations and Combinations, Probability* and *Statistics*. Students will learn to analyse, formulate and solve different types of problems. Students will also learn to work with data and perform statistical analyses.

Assumed knowledge:

GCE 'O' level Additional Mathematics

Examinations:

Students sit for two written papers.

**H3 Mathematics** offers students who have a strong aptitude for, and are passionate about mathematics, an opportunity to further develop their mathematical modelling and reasoning skills. The topics included are *Plane Geometry, Graph Theory, Combinatorics* and *Differential Equations*. Students are required to study *Differential Equations* and any two of the following topics: *Plane Geometry, Graph Theory, Combinatorics*. There are opportunities for students to visualise and explore theorems, and to read and write mathematical proofs. Students will also learn the process of mathematical modelling for real-world problems, which involves making informed assumptions, validation and prediction.

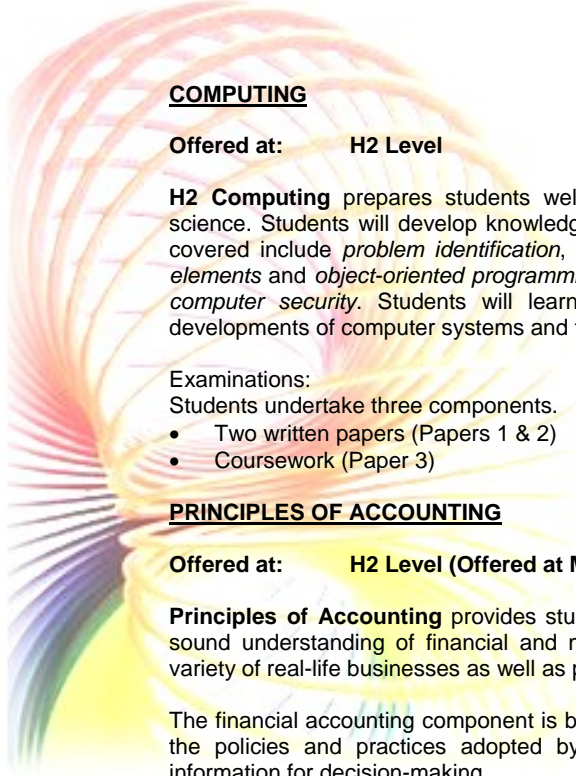
Pre-requisite: H2 Mathematics

Examinations:

Students sit for one written paper.

The topics described in the pdf is the current syllabus. The 2013 new syllabus consist of topics:

1. Functions and graphs, sequences and series, and calculus.
2. Combinatorics
3. Differential equations as mathematical models.



## **COMPUTING**

**Offered at:** H2 Level

**H2 Computing** prepares students well for university courses in engineering, computing and computational science. Students will develop knowledge and skills in computing with an emphasis on problem solving. Topics covered include *problem identification, problem analysis and formulation; fundamental programming language elements and object-oriented programming, data bases, file organisation and access, network fundamentals and computer security*. Students will learn a programming language and understand the use and impact of developments of computer systems and technology on people and society.

Examinations:

Students undertake three components.

- Two written papers (Papers 1 & 2)
- Coursework (Paper 3)

## **PRINCIPLES OF ACCOUNTING**

**Offered at:** H2 Level (Offered at Millennia Institute only)

**Principles of Accounting** provides students with a foundation in accounting. It is designed to give students a sound understanding of financial and managerial accounting concepts and practices and to apply them in a variety of real-life businesses as well as personal situations.

The financial accounting component is built on the following themes: the fundamentals of the accounting system, the policies and practices adopted by businesses, and the skills in analysing and evaluating accounting information for decision-making.

The managerial accounting component covers the core topics of cost behaviour, marginal costing concepts for decision-making and budgetary controls.

Examinations:

Students sit for two written papers.



## H3 Programmes offered by MOE Partners

### HUMANITIES & THE ARTS

Refer to **Table 2** for the pre-requisite(s) for the H3 programmes offered by MOE Partners.

### NUS GEOPOLITICS: WAR AND PEACE

**Geopolitics: War & Peace** introduces key ideas and contemporary themes of geopolitics. Students will learn about the geography of conflict, war and peace-making in the twentieth century. Students will be led to understand the current and future trends and debates, including issues such as the New (and old) World Order, terrorism, peacekeeping and conflicts in and over 'cyberspace' and natural resources. The course introduces students to a wide-range of sources and encourages critical use of media, academic material and internet resources. The objective of the course is to develop a deeper and life-long understanding of the geography of international affairs.

Mode: University-taught course

Pre-requisite: H2 Geography or History

Assessment:

Students undertake the following components:

- Continuous assessment (one group project, one individual project)
- Final examinations

### NUS ECONOMY AND SPACE

**Economy & Space** examines relationships between economy and space through a focus on 'development'. Through interrogating theories, strategies and trajectories of 'development', students will develop an understanding of the past and contemporary global political economy and its geographies. The course will emphasise the geopolitical and cultural backdrops to 'development' and attendant economic geographies amidst debates about 'globalisation', international trade and investment.

Mode: University-taught course

Pre-requisite: H2 Geography

Assessment:

Students undertake the following components:

- Continuous assessment (one group project and tutorial performance)
- Final examinations

### SMU GAME THEORY AND COMPETITION

Economic agents with divergent objectives and interests compete against one another in a variety of settings. Firms compete for sales and customers, countries compete for foreign investments and over trade quotas and workers compete for jobs. This programme will introduce students to the principles of game theory, with applications to market competition, business and other areas of economic life. Students will learn to use the concepts of prisoners' dilemma, game of chicken, Nash equilibrium in simultaneous-move games, roll-back equilibrium in sequential games and the use of mixed strategies and signalling to analyse economic problems in market competition and resource allocation.

Mode: University-taught course

Pre-requisites: H2 Economics

Assessment:

Students will be assessed through:

- Class participation
- Mid-Term test
- Final exam



## **NUS-MOE HUMANITIES AND SOC SCI RESEARCH**

The objectives of the programme are:

- To expand students' understanding of the individual and society through explorations of the different dimensions of the world;
- To equip students with some knowledge of research methods;
- To encourage students to think critically and creatively about complex issues in their research area; and
- To cultivate in students the passion for independent learning.

Students are involved in research and are mentored by practising researchers from the Faculty of Arts and Social Sciences, National University of Singapore.

Mode: Research

Pre-requisite: H2 Economics, or H2 Geography, or H2 History, or H2 Literature in English, or H2 Chinese Language and Literature, or H2 Malay Language and Literature

Assessment: Students are assessed via an extended essay.

## **MATHEMATICS & SCIENCE**

Refer to **Table 2** for the pre-requisite(s) for the H3 programmes offered by MOE Partners.

## **NTU NUMBERS & MATRICES**

**Numbers & Matrices** offers students who have a strong aptitude for, and are passionate about mathematics, an opportunity to further develop their mathematical reasoning skills and enhance their understanding and appreciation of fundamental mathematical tools like number theory and matrix algebra as well as their relevance in modern applications.

The topics covered include: basic number theory (divisibility and modular arithmetic), matrix algebra (solutions of systems of linear equations, properties of matrices, connection with geometry) and vector spaces (basic properties, basis, rank and nullity).

Several applications of these tools are also discussed, including: cryptography (symmetric-key cryptosystems, Hill cipher, RSA cryptosystem), optimization problems (linear programming), coding theory (check digits, error-detecting and error-correcting codes), Internet search engines, genetic and population growth, etc.

There are ample opportunities for students to learn to appreciate and understand the importance of mathematical definitions, to read and write mathematical proofs, to be familiar with useful algorithmic techniques, as well as to explore and appreciate the relevance of mathematical tools in modern technology and applications.

Mode: University-taught course

Pre-requisites: H2 Mathematics

Assessment:

Students undertake the following components:

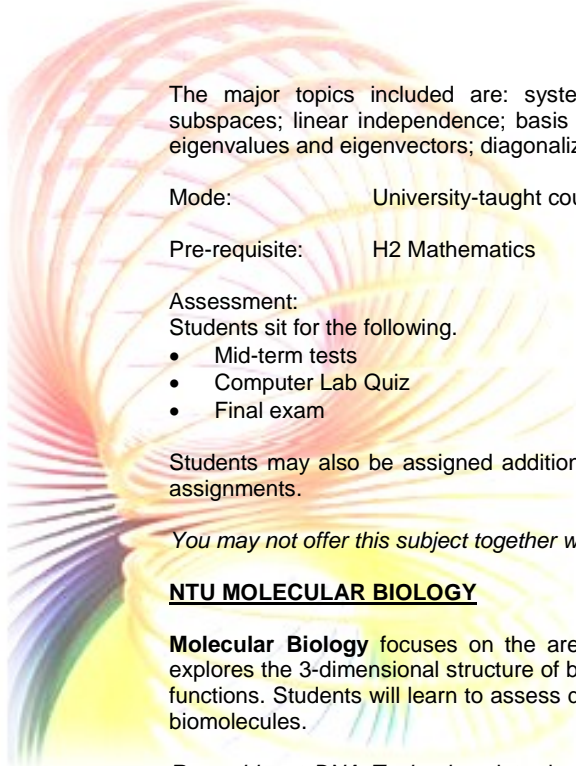
- Mid-Term tests
- Final Exam

*You may not offer this subject together with NUS Linear Algebra.*

## **NUS LINEAR ALGEBRA**

**Linear Algebra** serves as an introduction to the most basic concepts in linear algebra that are routinely applied in fields like science, engineering, statistics, economics and operations research. The vector spaces within which the general ideas are developed are all real vector spaces. The objective of the course is to inculcate a facility in both the algebraic and geometric viewpoints of linear algebra. Formal proofs will be presented only if they are necessary for a proper understanding of the fundamental concepts and techniques. The course will develop basic skills in computing with vectors and matrices (with or without any mathematical software). It will also highlight examples of the more important applications of linear algebra in other fields.





The major topics included are: systems of linear equations; matrices; determinants; Euclidean n-space; subspaces; linear independence; basis and dimension; rank of a matrix; orthogonality and orthonormal bases; eigenvalues and eigenvectors; diagonalization; linear transformations from  $R^n$  to  $R^m$ ; and, applications.

Mode: University-taught course

Pre-requisite: H2 Mathematics

Assessment:

Students sit for the following.

- Mid-term tests
- Computer Lab Quiz
- Final exam

Students may also be assigned additional continuous assessments in the form of lecture quizzes or homework assignments.

*You may not offer this subject together with NTU Numbers & Matrices.*

### **NTU MOLECULAR BIOLOGY**

**Molecular Biology** focuses on the areas of *Biomolecules* and *Recombinant DNA Technology*. *Biomolecules* explores the 3-dimensional structure of biomolecules and offers insights into forces that govern their structure and functions. Students will learn to assess databases and softwares to analyze and to visualize the 3-D structures of biomolecules.

*Recombinant DNA Technology* introduces modern biotechnology concepts and methodologies, which includes DNA/protein manipulation and analysis, mass spectroscopy and NMR. Students will also be introduced to biomedical technologies such as stem cell research, as well as the generation of knockout /transgenic animals. Teaching mode includes lectures, tutorials, computer and wet-lab experiments.

Mode : University-taught course

Pre-requisite : H2 Biology

Assessment :

Students undertake two components:

- Wet-Laboratory Practical Report
- Final Examination

### **NTU ORGANIC SYNTHESIS & MECHANISM**

Organic Synthesis plays a key role in the improvement of our quality of life. The principles of Organic Synthesis allow the realization of complex molecules that have a wide variety of applications: dyes, flavours, fragrances, polymers, materials and, most significantly, pharmaceuticals. Thus, Organic Synthesis is fundamental to a range of key industries. Synthesis can only be successful when combined with an understanding of the molecular mechanism of the transformation. This mechanistic understanding allows students to have a strong grasp of concepts for a better understanding of organic chemistry. In this programme, ideas of synthesis and reaction mechanisms are taught to provide the students with a strong foundation for further studies in Organic Chemistry. In addition to these two central themes, modern spectroscopic methods will also be introduced, mainly as a tool to evaluate the products of organic reactions. Stereochemistry, an important concept in biological molecules and biologically active compounds, will also be taught.

Mode: University-taught course

Pre-requisites: H2 Chemistry

Assessment:

Students undertake the following components:

- A Final Examination
- Mid-Term Tests
- Laboratory assignments

*You may not offer this programme together with H3 Pharmaceutical Chemistry.*



## **NTU CONTEMPORARY PHYSICS**

**Contemporary Physics** is a fresh look at some topics in contemporary physics research. The course will outline the physical principles that lead to a direct discussion of the prevailing ideas and thought. The course will be taught by NTU professors who themselves are actively engaged in the respective research areas.

The following topics will be covered:

1. **Nanoscale Physics** – Starting with basic quantum physics and progressing to ideas of quantum confinement, this topic will examine the physical structure and properties of low-dimensional systems and quantum dots. Methods of fabrication (molecular beam epitaxy, chemical vapour deposition) and analytical techniques (microscopy and diffraction) will be discussed in sufficient detail for a strong appreciation of the topic. Finally it takes a look at current research ideas in molecular electronics and photonics.
2. **Semiconductor physics** – While semiconductors have been known for almost a century, this topic looks at why modern technology is so reliant on this class of material, particularly in logic devices (CMOS transistors) and opto-electronic components (LEDs, photovoltaics). The topic closes with a look at an impending technology involving the property of electron spin in logic and storage devices – an area called spin electronics.
3. **Biophysics** – This topic begins with a look at the forces in the world of biomolecules (proteins, DNA) and the mechanisms of their motion. The course also introduces about the structure of biomolecules and different modern biophysical methods to study molecular structure and interaction. This is followed by a discussion on the transmission of electrical signals in nerves and ending with physical imaging techniques in medicine.

Mode: University-taught course

Pre-requisites: H2 Physics

Assessment:

Students undertake the following components:

- Final Examination
- Term Tests
- Laboratory Work

*You may not offer this subject together with H3 Essentials of Modern Physics or NTU Semiconductor Physics & Devices.*

## **NTU SEMICONDUCTOR PHYSICS & DEVICES**

**Semiconductor Physics & Devices** is designed to stimulate students' interest in science and engineering, and to help them broaden their education experience in a different environment. It is intended for students wishing to pursue deeper studies in physics and semiconductors. Students enrolled in the course will learn the key theorems of semiconductors and operating principles of semiconductor devices. Hands-on sessions on semiconductor materials and devices will be provided. Students will also acquire an understanding and appreciation of the driving force behind the convergence of semiconductor technologies, which is imperative to our daily life, and its evolution through this programme.

Mode: University-taught course

Pre-requisites: H2 Physics

Assessment:

Students undertake the following components:

- Final Examination
- Term Tests
- Laboratory assignment (report and viva).

*You may not offer this programme together with H3 Essentials of Modern Physics or NTU Contemporary Physics.*



### **NTU-A\*STAR-HCI SCIENCE RESEARCH**

(Offered only to HCI students)

Hwa Chong Institution (HCI), in collaboration with Nanyang Technological University and A\*STAR Graduate Academy, is offering the H3 Research Programme to talented students with a passion in Science. The programme aims to broaden students' research interests by providing a stimulating environment that will enrich their basic science training. Each student is matched with a mentor, and will engage in collaborative research with leading scientists and researchers working on real-world scientific problems. Besides exposure to major advances in the life sciences and new technologies, they will be trained to think critically and independently.

Mode : Research

Pre-requisites : At least one H2 Science / Mathematics relevant to the research area and have some relevant science research experience

Assessment :

The formal assessment will consist of three components:

- Research Project Process assessment
- Research Paper
- Oral Presentation

### **NUS-A\*STAR-NJC SCIENCE RESEARCH**

(Offered only to NJC students)

In collaboration with the Agency for Science, Technology and Research (A\*STAR) and the National University of Singapore (NUS), National Junior College (NJC) offers NUS-A\*STAR-NJC Science Research, a programme specially designed for students who have strong inclinations towards science research. This rigorous programme aims to develop scientific inquiry skills, advanced laboratory techniques and critical thought. The programme requires the students to extend their learning of H2 Science subjects in a 6-month scientific research study under the mentorship of qualified scientists from A\*STAR Research Institutes and NJC teachers. The students' work will be examined under the agency of the National University of Singapore and by whom they will eventually be accredited.

Mode: Research

Pre-requisites: Two H2 Science subjects

Assessment:

Students undertake the following components:

- Laboratory Work
- Research Plan and Research Paper
- Poster Presentation

### **NUS-A\*STAR-RJC SCIENCE RESEARCH**

(Offered only to RJC students)

Raffles Junior College (RJC) is offering research opportunities at the Higher 3 (H3) level through the NUS-A\*STAR-RJC Science Research programme. This programme is in partnership with the Agency for Science, Technology and Research (A\*STAR) and the National University of Singapore (NUS). The programme aims to provide an opportunity for students with exceptional ability and interest in science research to develop an in-depth understanding in a specialised area and to acquire skills in scientific inquiry, in the applications of advanced laboratory techniques and in developing critical and analytical thinking needed to evaluate scientific ideas. Students in this programme will undertake a research study under the mentorship of professional research scientists from A\*STAR research institutes with the guidance of teachers from RJC. The students' completed research project will be assessed and accredited by the National University of Singapore.

Mode: Research

Pre-requisites: Relevant H2 Subject(s) and has obtained at least a GPA of 3.2 (for Raffles Programme students) or 6A1s (for 'O' Level students), or its equivalent.

Assessment:

The completed research project comprises the following:

- Research Plan and Laboratory Work
- Research Paper
- Oral Defence of Project Presentation



### **NUS-A\*STAR-VJC SCIENCE RESEARCH**

(Offered only to VJC students)

Victoria Junior College has partnered with the National University of Singapore and the Agency for Science, Technology and Research (A\*STAR) to offer NUS-A\*STAR-VJC Science Research at Victoria Junior College. This programme is accredited and examined by the National University of Singapore. Students in this H3 science research programme will undertake an individual investigative study in Physics or Chemistry or Biology under the guidance of teachers and the mentorship of research practitioners from NUS or A\*STAR research institutes. Intellectually rigorous and mentally demanding, the investigative study will enable students to deepen their learning in a specific area of science, develop critical thought and engage in the intricacies of scientific research that goes on in universities and research institutes.

Mode: Research

Pre-requisites: H2 Biology / Chemistry / Physics / Mathematics (any two)

Assessment:

The research project will be assessed and graded by NUS. Students will submit one science research project with the following components:

- Laboratory Work
- Research Plan and Research Paper
- Poster Presentation

### **NUS-MOE SCIENCE RESEARCH**

The objectives of the Science Research are:

- To encourage students to undertake research projects in a scientific and technological community;
- To promote an early appreciation of the content, methods, culture and ethos of research through immersion in the process of scientific inquiry; and
- To enable students to engage actively in research by carrying out substantial parts of the research independently and responsibly.

Students will be involved in research and are mentored by practising mathematicians, scientists, medical researchers and engineers from the Faculties of Science, Medicine and Engineering of the National University of Singapore (NUS) and participating Research Centres/Institutes such as the Institute of Molecular and Cell Biology, the Tropical Marine Science Institute, the Defence Science & Technology Agency, and the Singapore Botanic Gardens.

Mode: Research

Pre-requisites: H2 Biology / H2 Chemistry / H2 Physics / H2 Mathematics

Assessment:

Students undertake the following components:

- Laboratory Work
- Research Plan and Research Paper
- Poster Presentation

### **NTU SCIENCE RESEARCH**

The NTU Science Research aims to develop the inquiry mind of students with strong research interest and passion in the field of Science under the mentorship of NTU academic staff. Students will have the opportunity to experience the main elements of a research project such as conceptualising and analysing a research problem, and in the process, sharpen their investigative, experimental and critical thinking skills in problem solving and innovation. This programme will be examined and accredited by the Nanyang Technological University.

Mode : Research

Pre-requisites : H2 Biology / H2 Chemistry / H2 Physics / H2 Mathematics (any two)

Assessment :

The formal assessment consists the following

- Researcher Assessment
- Research Paper
- Presentation with Oral Defence



**Table 1**  
**Pre-requisites for H3 Programmes (MOE)**

	<b>Programme Title</b>	<b>Pre-requisite(s)</b>
Humanities & the Arts	H3 Art	H2 Art
	H3 Economics	H2 Economics
	H3 Geography	H2 Geography
	H3 History	H2 History
	H3 Literature in English	H2 Literature
	H3 Chinese Language & Literature	H2 Chinese Language & Literature
	H3 Malay Language & Literature	H2 Malay Language & Literature
	H3 Tamil Language & Literature	H2 Tamil Language & Literature
	H3 Music	H2 Music
Mathematics & Science	H3 Proteomics	H2 Biology and H2 Chemistry
	H3 Pharmaceutical Chemistry <i>(May not be offered together with NTU Organic Synthesis &amp; Mechanism)</i>	H2 Chemistry
	H3 Essentials of Modern Physics <i>(May not be offered together with NTU Contemporary Physics or NTU Semiconductor Physics &amp; Devices)</i>	H2 Physics
	H3 Mathematics	H2 Mathematics

**Table 2**  
**Pre-requisites for H3 Programmes (MOE Partners)**

	<b>Programme Title</b>	<b>Pre-requisite(s)</b>
Humanities & the Arts	NUS Geopolitics: War & Peace	H2 Geography or History
	NUS Economy & Space	H2 Geography
	SMU Game Theory & Competition	H2 Economics
	NUS-MOE Humanities & Soc Sci Research	H2 Economics, or H2 Geography, or H2 History, or H2 Literature in English, or H2 Chinese Language and Literature, or H2 Malay Language and Literature
Mathematics & Science	NTU Numbers & Matrices <i>(May not be offered together with NUS Linear Algebra)</i>	H2 Mathematics
	NUS Linear Algebra <i>(May not be offered together with NTU Numbers &amp; Matrices)</i>	H2 Mathematics
	NTU Molecular Biology	H2 Biology
	NTU Organic Synthesis & Mechanism <i>(May not be offered together with H3 Pharmaceutical Chemistry)</i>	H2 Chemistry
	NTU Contemporary Physics <i>(May not be offered together with H3 Essentials of Modern Physics or NTU Semiconductor Physics &amp; Devices)</i>	H2 Physics
	NTU Semiconductor Physics & Devices <i>(May not be offered together with H3 Essentials of Modern Physics or NTU Contemporary Physics)</i>	H2 Physics
	NTU-A*STAR-HCI Science Research <i>(Offered only to HCI students)</i>	At least one H2 Science / Mathematics relevant to the research area and have some relevant science research experience.
	NUS-A*STAR-NJC Science Research <i>(Offered only to NJC students)</i>	Two H2 Science subjects
	NUS-A*STAR-RJC Science Research <i>(Offered only to RJC students)</i>	Relevant H2 subject(s) and has obtained at least a GPA of 3.2 (for Raffles Programme students) or 6A1 (for 'O' Level students), or its equivalent.
	NUS-A*STAR-VJC Science Research <i>(Offered only to VJC students)</i>	H2 Biology / H2 Chemistry / H2 Physics / H2 Mathematics (any two)
	NUS-MOE Science Research	H2 Biology / H2 Chemistry / H2 Physics / H2 Mathematics
	NTU Science Research	H2 Biology / H2 Chemistry / H2 Physics / H2 Mathematics (any two)