NANYANG TECHNOLOGICAL UNIVERSITY

NATIONAL INSTITUTE OF EDUCATION

Module Descriptions

Bachelor of Arts/Science with Diploma in Education/ Bachelor of Arts/Science with Diploma in Education (Physical Education)

1992-93

AAP 3705

CONTENTS

Bachelor of Arts/Science with Diploma in Education Programme

Aims of Programme

The 4-year Bachelor of Arts with Diploma in Education (BA with Dip Ed)/Bachelor of Science with Diploma in Education (BSc with Dip Ed) Programme is designed to promote the professional and academic education of undergraduates to enable them to become effective teachers in the school system. Such teachers will have not only a clear understanding of the concepts and principles of teaching and learning and the competencies to teach effectively but also a strong foundation in at least two academic subjects.

Progression in professional competence and academic rigour is built into the structure of the programme by providing an increasing degree of specialization over the four years. In addition, the programme provides continuous contact with schools through school attachment as well as teaching practice in order to ensure that students will leave the programme with sufficient practical experience and the confidence to adjust smoothly and quickly to the demands of school teaching.

Duration of Programme

The programme extends over a period of four years and leads to the award of the degree of BA with Dip Ed/BSc with Dip Ed. The degree of BA honours with Dip Ed/BSc honours with Dip Ed may be awarded on the basis of performance.

Structure of Programmes

The BA/BSc with Dip Ed programme comprises four areas of study: (i) ACADEMIC SUBJECTS (ii) EDUCATION STUDIES (iii) CURRICULUM STUDIES (iv) PRACTICUM.

1. The courses are run on a **modular system** with each module lasting between 10 to 30 hours. Except for the Minor academic subjects, the course modules in the 100 series are offered in the first year, course modules in the 200 series are offered in the second year, course modules in the 300 series are offered in the third year and course modules in the 400 series are offered in the fourth year. Thus the first digit represents the year of study and the second and third digits represent each individual course module of study.

   e.g. AH101 (Academic subject History, 1st year module)
   AP307 (Academic subject Physics, 3rd year module)

2. To satisfy course requirements, Arts/Science candidates are to take the following modules in each area of study:

Academic Subjects

(a) In the first year of study, an **Arts** candidate may offer 2 Arts Academic Subjects from the subjects offered below:

English Language
Chinese Language & Applied Linguistics
English Literature
Geography
History
Music
Art
Mathematics

The same two Arts Academic Subjects will be studied in the second year.

or Subject to the approval of the Dean of Arts, an Arts candidate may offer a combination of subjects as follows:

English Language and any Science Subject
Music and Physics
Art and Biology *
Geography and Biology

* This combination is not available in the academic year 1992-93.

(b) In the first year of study, a **Science** candidate may offer 2 Science Academic Subjects from the subjects offered below:

Biology
Chemistry
Mathematics
Physics

Or Subject to the approval of the Dean of Science, a Science candidate may offer a combination of subjects as follows:

Mathematics and any Arts subject
Physics and Music
Biology and Art*
Biology and Geography

(c) All candidates who have not passed or are not exempted from the Qualifying English Test at the time of their admission to the School of Arts or the School of Science must offer the subject Language Communication Skills in the first year. They must continue to offer the subject in the second year if they are not exempted at the end of the first year.

(d) All BA with Dip Ed students, with the exception of those who have to offer Language Communication Skills, are required to take the compulsory module **Critical Reading and Writing I (AW101)** in the first year and **Critical Reading and Writing II (AW201)** in the second year.

(e) Those BA with Dip Ed students who have to offer Language Communication Skills must have successfully completed the course before proceeding with the subject Critical Reading and Writing.

(f) In the third year,

(i) an Arts candidate can

either continue with the same two major Academic Subjects taken in the second year of study

or retain one of the two as a major Arts Academic Subject and choose two Academic Subjects at the minor level, one of which must be the other Academic Subject he offered in the second year

* This combination is not available in the academic year 1992-93

(ii) a Science candidate can

either continue with the same two major Academic Subjects taken in the second year of study

or retain one of the two as a major Science Academic Subject and choose two Academic Subjects at the minor level, one of which must be the other Academic Subject he offered in the second year.

(g) In the final year, the candidate will continue to study the two Academic Subjects (as majors) or three Academic Subjects (i.e. one major and two minors) taken in the third year.

Education Studies

Education Studies comprises modules in:

Foundations in Education	ED101-ED104
Special Areas in Education	ED211, ED212, ED213 & ED221-ED240
Instructional Technology	EN101-EN102

Under the heading **Foundations in Education**, a candidate will take the four compulsory modules ED101-ED104. Under **Special Areas in Education**, he will take two modules (ED211 and either ED212 or ED213) and another two modules with one from ED221-ED230 and the other from ED231-ED240. Under **Instructional Technology**, he will take both EN101 and EN102.

Curriculum Studies

A candidate will take the compulsory modules in:

CE: The Teaching of English Language
CM: The Teaching of Mathematics
CU: Use of English in Teaching
CW: Perspectives on the Primary Curriculum

and select <u>one</u> of the following sets of modules:

CA: The Teaching of Art
CI: The Teaching of Music
CL: The Teaching of Social Studies
CS: The Teaching of Science
CC: The Teaching of Chinese Language

Practicum

This group of modules is compulsory and is to be taken by all students.

Candidates studying for the **BA with Dip Ed Programme** will follow the course selection shown in Table 1 below:

Table 1: Structure of the Bachelor of Arts with Diploma in Education Programme

First Year	Second Year	Third Year	Fourth Year
Academic Subjects Modules			
Aa 100 series	Aa 200 series	Aa 300 series (Major)	Aa 400 series (Major)
Ab 100 series	Ab 200 series	Ab 300 series (Major)	Ab 400 series (Major)
		OR	
		Aa/Ab 300 series (Art Major)	Aa/Ab 400 series (Art Major)
		Ab/Aa 300 series (Minor)	Ab/Aa 400 series (Minor)
		Ac 300 series (Minor)	Ac 400 series (Minor)
AW 101	AW 201		
OR	**OR**	AND (if applicable)	
LCS	AW 101	AW 201	
	OR	**OR**	AND (if applicable)
	LCS (repeated)	AW 101	AW 201
Education Studies Modules			
ED 101-104	ED 211 *ED 212/213 *ED 221-230 *ED 231-240	-	-
EN 101-102	-	-	-
Curriculum Studies Modules			
CE 101-102	CE 201-202	-	-
CM 101-102	CM 201 *CM 202/203/204	-	
Cc 100 Series	Cc 200 Series	-	-
CU 101	CU 201	-	-
-	CW 201	-	-
Practicum Modules			
PR 101 (7 weeks)	PR 201 (8 weeks)	PR 301 (5 weeks)	PR 401 (5 weeks)

Note

* = Select one of the elective modules
Aa/Ab/Ac = Academic Subjects
AW = Critical Reading and Writing
LCS = Language Communication Skills
ED = Education Studies
EN = Instructional Technology
CE = The Teaching of English Language
CM = The Teaching of Mathematics
Cc = The Teaching of Art/Music/Social Studies/Science/Chinese Language
CU = Use of English in Teaching
CW = Perspectives on the Primary Curriculum
PR = Practicum

Candidates studying for the **BSc with Dip Ed Programme** will follow the course selection shown in Table 2 below:

Table 2: Structure of the Bachelor of Science with Diploma in Education Programme

First Year	Second Year	Third Year	Fourth Year
Academic Subjects Modules			
Aa 100 series	Aa 200 series	Aa 300 series (Major)	Aa 400 series (Major)
Ab 100 series	Ab 200 series	Ab 300 series (Major)	Ab 400 series (Major)
		OR	**OR**
		Aa/Ab 300 series (Science Major)	Aa/Ab 400 series (Science Major)
		Ab/Aa 300 series (Minor)	Ab/Aa 400 series (Minor)
AND (if applicable)	**AND** (repeated)	Ac 300 series (Minor)	Ac 400 series (Minor)
LCS	LCS		
Education Studies Modules			
ED 101-104	ED 211 *ED 212/213	-	-
	*ED 221 to ED230 *ED 231 to ED240		
EN 101-102	-	-	-
Curriculum Studies Modules			
CE 101-102	CE 201-202	-	-
CM 101-102	CM 201 *CM 202/203/204	-	-
Cc 100 Series	Cc 200 Series	-	-
		-	-
CU 101	CU 201	-	-
-	CW 201		
Practicum Modules			
PR 101 (7 weeks)	PR 201 (8 weeks)	PR 301 (5 weeks)	PR 401 (5 weeks)

Note

* = Select one of the elective modules
Aa/Ab/Ac = Academic Subjects
LCS = Language Communication Skills
ED = Education Studies
EN = Instructional Technology
CE = The Teaching of English Language
CM = The Teaching of Mathematics
Cc = The Teaching of Art/Music/Social Studies/Science/Chinese Language
CU = Use of English in Teaching
CW = Perspectives on the Primary Curriculum
PR = Practicum

CODES

Academic Subjects

AA = Art

AB = Biology

AY = Chemistry

AC = Chinese Language and Applied Linguistics

AW = Critical Reading and Writing

AE = English Language

AR = English Literature

AG = Geography

AH = History

AM = Mathematics

AI = Music

AP = Physics

Education Studies

ED = Education Studies Modules

EN = Instructional Technology

Curriculum Studies

CA = The Teaching of Art

CC = The Teaching of Chinese Language

CE = The Teaching of English

CM = The Teaching of Mathematics

CI = The Teaching of Music

CS = The Teaching of Science

CL = The Teaching of Social Studies

CW = Perspectives on the Primary Curriculum

CU = Use of English in Teaching

Practicum

PR = Practicum

Academic Subject : Art

Year	Module	Title	No. of Hrs	
1	AA101	Introductory Studies in Art	30	
	AA102	Art Processes I	30	
2	AA201	Contextual and Critical Studies I	30	
	AA202	Art Processes II	30	
3	AA301	Research in Art Education I	20	
	AA302	Contextual and Critical Studies II	30	
	AA303	Painting and Drawing I	30	
	AA304	Design I	20	*
	AA305	Ceramics	20	*
	AA306	Sculpture	20	*
	AA307	Textiles	30	
	AA308	Art and Technology	30	
4	AA401	Research in Art Education II	30	
	AA402	Contextual and Critical Studies III	30	
	AA403	Painting and Drawing II	20	*
	AA404	Design II	20	*
	AA405	Three Dimensional Studies	20	*
	AA406	Applied Arts	30	
	AA407	In-depth Personal Study I	30	
	AA408	In-depth Personal Study II	30	

* (These modules require practical and studio work)

ART: Minor

Minor 1

(This is a programme for students who have taken Art as a subject in Years 1 and 2 and wish to take it as a Minor 1 subject in Years 3 and 4. All modules listed below are compulsory).

Year	Module	Title	No. of Hrs	
3	AA301	Research in Art Education I	20	
	AA302	Contextual and Critical Studies II	30	
	AA303	Painting and Drawing I	30	
	AA304	Design I	20	*
4	AA305	Ceramics	20	*
	AA307	Textiles	30	
	AA308	Art and Technology	30	
	AA420	Art Appreciation	20	

* These modules require practical and studio work

Minor 2

This is a programme for students who have not taken Art as an academic subject in years 1 and 2 and wish to take it as Minor 2 in years 3 and 4. Students will require a background in ART to join the course and an 'O' level in Art will be necessary. The programme has AS and CS components. All modules are compulsory.

Year	Module	Title	No. of Hrs
3	AA102	Art Processes I	30
	AA111	Introduction to Art Education	10
	AA112	Art Education	10
	AA113	The Syllabus for Art Education	20
	AA114	Basic Art Components	30
4	AA202	Art Processes II	30
	AA210	Art Syllabus Extension	30
	AA211	Art Syllabus and Individual Development	10
	AA302	Contextual and Critical Studies II	30

Description of Modules

AA101 Introductory Studies in Art (30 hrs)

This module is an introduction to art and it's function in society. It will also introduce students to the foundations of contemporary art education and to theories relating to the development of children's art and different learning styles.

AA102 Art Processes I (30 hrs)

This module deals with fundamentals of art practice incorporating a study of art elements and principles. Students will explore and experiment with a range of media and concepts.

AA111 Introduction to Art Education (10 hrs)

This module is an introduction to art and its functions in society. It will also introduce students to the foundations of contemporary art education from an international perspective and to theories relating to the development of children's visual imagery.

AA112 Art Education (10 hrs)

This module introduces students to historical and theoretical bases for art education. It covers major developments in art education research including DBAE and Project Zero. An introduction to Critical Studies and its theoretical framework will also be included.

AA113 The Syllabus for Art Education (20 hrs)

This module deals with the Singapore Syllabus for Art Education, its aims, objectives and content; and incorporates a critical survey of supporting CDIS and IML resources. It also covers the form and structure of art lessons, the organisation of units of work in sequence, and long-term planning considerations.

AA114 Basic Art Components (30 hrs)

This module introduces the main practical components in the syllabus through practice and experimentation. Students will deal with an aspect of 2D, 3D, Design and Appreciation as it relates to teaching in schools.

AA201 Contextual and Critical Studies I (30 hrs)

In this module students will study Singaporean art with an emphasis on artistic influences (Western and Eastern) and cultural context.

AA202 Art Processes II (30 hrs)

This module deals with art media and introduces students to a range of art-production processes. This will include new media and technology.

AA210 Art Syllabus Extension (30 hrs)

This module concentrates on developing understanding of a selection of syllabus-related 2D and 3D art processes and techniques. It also deals with the purposes and forms of evaluation including grade-related criteria and profiling. It concludes with consideration of the role and purpose of art and art education in Singapore schools.

AA211 **The Art Syllabus and Individual Development (10 hrs) (For Minor 2 students only)**

The work in this module is a development of the work covered in Module CA201 and students only will have the opportunity to pursue an area of personal interest in-depth. This module concentrates on promoting a deeper understanding of a selection of syllabus-related 2D and 3D art processes and techniques which will enable the student to select an area for individual study.

AA301 **Research in Art Education I (20 hrs)**

This is an introductory module to art education research within the context of education research generally. Students are introduced to a range of research strategies and gradually focus upon those most frequently employed in the area of art education which include interviews, accounts, the case study approach, observation techniques, action research and video recording. Students are also given an overview of major research in art education and made familiar with art education publications where current issues which are the focus of systematic enquiry are reported.

AA302 **Contextual and Critical Studies II (30 hrs)**

This module examines the various components of critical and contextual studies and gives students a range of structures to enable them to evaluate art works (their own and the work of artists). The role of critical studies in art programmes is discussed and students are given a range of strategies for teaching this essential component. Students are guided in the development of resource materials for teaching critical studies in schools. There will be a visit to an exhibition as part of this module with emphasis on how to organize and structure art-based field trips.

AA303 **Painting and Drawing I (30 hrs)**

This module enables students to develop skills, understanding and knowledge of painting and drawing using a variety of materials and techniques. The practical processes of this module include drawing techniques which focus on the elements of line, tone, texture and shape, the use of various materials such as poster colour, pastels, charcoal, oil crayons, water colour and collage.

AA304 Design I (20 hrs)

The module enables students to develop skills, understanding and knowledge of the design process and problem-solving techniques using a variety of materials and techniques. Students will focus upon elements of design such as lay-out, presentation, lettering and imagery, colour use, shape, balance and unity.

AA305 Ceramics (20 hrs)

This is an introductory module to the area of ceramics and teaching the subject in schools. Students will learn how to prepare and store clay and have the opportunity to experiment with the techniques of pinching, slabbing, coiling and modelling. Additionally, there will be aspects of the module which give students the experience of firing clay without the use of an electric or gas kiln and in decoration techniques. Emphasis will be placed on the element of form.

AA306 Sculpture (20 hrs)

This module enables students to develop skills, understanding and knowledge of three-dimensional studies using a variety of materials. The practical processes of this module include card sculpture and clay modelling, plaster work, wire design and modelling and casting in a variety of materials. Basic sculptural elements which are examined in this module include mass, space, plane, line, movement, scale, texture and colour.

AA307 Textiles (30 hrs)

This is an introductory module to creative textiles which focuses on printing, pattern and fabric design. Aspects covered include repeat pattern and half drop, vegetable printing, relief and incised printing (for example string and lino block) batik and tie and dye.

AA308 Art and Technology (30 hrs)

This module concentrates on transfer, repetition, construction and interpretation of imagery. Students will explore a variety of techniques which include computer-created art work, photography and photo montage, xylene transfer techniques and use of photocopiers. The emphasis is on using students' own images to create other art forms with the tool of modern technology and to demonstrate how these techniques can be used in schools.

AA401 Research in Art Education II (20 hrs)

This module in art education research extends the work begun in Module AA301 Research and Art Education I where students developed the background to the area. In this module, students focus on art education research in a multi-cultural context. From the theoretical basis, students will be required to develop a proposal for a small-scale research project in art education and, in discussion with the lecturing staff, carry out and present their research project.

AA402 Contextual and Critical Studies III (30 hrs)

Building on modules AA201 and AA302, this module guides students in a more advanced investigation into the interpretation and perception of visual imagery. Colour theory is examined in relation to perception. The module also includes an examination on how this aspect of art education is taught internationally and what teaching resources have been developed to support teachers with the work. This module also gives students an overview of art developments in the West, artists in Singapore and art from around the world.

AA403 Painting and Drawing II (20 hrs)

This module extends the work of module AA303 Painting and Drawing I and students will have the opportunity to develop their skills and understanding in greater depth. The module gives students strategies and insights into teaching drawing and painting at the primary level. There is also provision for students to pursue a particular area of interest over a sustained project.

AA404 Design II (20 hrs)

This module is an extension of Module AA304 Design I. Students are expected to apply their knowledge and skills learned to a range of design briefs. They will also be taught how to evaluate their work in relation to the briefs. The emphasis here is on the further development of skills, understanding and knowledge related to the design process, teaching strategies at the primary level and creating a problem-solving teaching environment which encompasses structure with flexibility.

AA405 Three Dimensional Studies (20 hrs)

This module is an extension of the modules on Ceramics (AA305) and Sculpture (AA306). Students will be able to develop further skills and understanding as throwing and glaze theory are central to this module. Applied arts which use clay and plaster as starting points can also be explored if students have an interest in this area. For example, the use of papier mache and other casting materials.

AA406 Applied Arts (30 hrs)

The module enables students to develop skills, understanding and knowledge of applied arts and crafts using a variety of materials and techniques suitable for use at the secondary Level. Areas included in the module are papier mache, casting, weaving, origami and kirigami and puppetry and mask making from around the world.

AA407 In-depth Personal Study I (30 hrs)
AA408 In-depth Personal Study II (30 hrs)

These final core modules have been designed as one unit. In these modules students will be able to select an area of work to study in-depth as a project of personal study. The selection of areas, practical and theoretical, will be discussed with the lecturing staff and a specialist tutor will be assigned with whom the student will be expected to meet on a regular basis. The work from this module will lead to a final degree exhibition, which will be a public event. Although the exhibition is a group one, students will be assessed individually on the mounting, selection, organization and planning of their work.

AA420 **Art Appreciation (20 hrs)**

An examination how this aspect of art education is taught internationally and what teaching resources have been developed to support teachers with the work. This module also gives students an overview of art development in the West, artists in Singapore and art from around the world.

Academic Subject : Biology

Year	Module	Title	No. of Hrs
1	AB101	Diversity of Organisms	30
	AB102	Introduction to Ecological System	30
	AB103	Cell Biology	30
2	AB201	General Organisation of Organisms	30
	AB202	Principles of Ecology	30
	AB203	General Physiology	30

Major

(Modules for students choosing Biology as a Major)

Year	Module	Title	No. of Hrs
3	AB301	Invertebrate Zoology I	30
	AB302	Invertebrate Zoology II	20
	AB303	Cryptogamic Botany I	30
	AB304	Cryptogamic Botany II	20
	AB305	Ecology and Biogeography	30
	AB306	Anatomy and Histology	20
	AB307	Plant Physiology	30
	AB308	General Genetics	30
	AB309	Biochemistry I	20
	AB310	Applied Microbiology	20
4	AB401	Vertebrate Zoology I	30
	AB402	Vertebrate Zoology II	20
	AB403	Gymnosperms and Angiosperms I	30
	AB404	Gymnosperms and Angiosperms II	20
	AB405	Animal Physiology	30
	AB406	Biochemistry II	30
	AB407	Plant Biotechnology	30
	AB408	Animal and Medical Biotechnolgoy	30
	AB409	Molecular Biology	30

1st Minor

(Modules for students choosing Biology as a Minor after <u>having taken Biology</u> as an Academic subject during their first two years of study)

Year	Module	Title	No. of Hrs
3	AB301	Invertebrate Zoology I	30
	AB303	Cryptogamic Botany I	30
	AB307	Plant Physiology	30
	AB308	General Genetics	30
	AB309	Biochemistry I	20
4	AB401	Vertebrate Zoology I	30
	AB403	Gymnosperms and Angiosperms I	30
	AB405	Animal Physiology	30
	AB407	Plant Biotechnology	30
	AB408	Animal and Medical Biotechnology	30

2nd Minor

(Modules for students choosing Biology as a Minor but <u>have not taken Biology</u> as an Academic subject during their first two years of study)

Year	Module	Title	No. of Hrs
3	AB101	Diversity of Organisms	30
	AB301	Invertebrate Zoology I	30
	AB102	Introduction to Ecological Systems	30
	AB103	Cell Biology	30
	AB303	Cryptogamic Botany I	30
4	AB401	Vertebrate Zoology I	30
	AB403	Gymnosperms and Angiosperms I	30
	AB308	General Genetics	30
	AB203	General Physiology	30
	AB309	Biochemistry I	20

Description of Modules

AB101 Diversity of Organisms (30 hrs)

This module deals with the structural organisation of living organisms as they increase in complexity from simple to higher forms. Their biological adaptations and the phylogenetic relationships among major groups of organisms namely Monera, Protista, Protoctista, Fungi, Plantae and Animalia will be studied. An appreciation of the purpose and difficulties of biological classification, and the construction and use of dichotomous keys are also included.

AB102 Introduction to Ecological Systems (30 hrs)

The module will expose the students to basic principles and concepts of ecology. It will cover trophic levels of organisms, interspecific associations and succession and climax community. Specific characteristics and features of some ecosystem such as a tropical rain forest, a mangrove habitat, a rocky seashore and a reclaimed land habitat will be included. Adaptive features of organisms in each of these habitats will be covered.

AB103 Cell Biology (30 hrs)

This module details the structure and function of the basic components of plant and animal cells. The topics discussed include the chemical constituent of cells and their biological significance, an introduction of cytological techniques, the organization of living systems, membrane structure and function, cytoplasmic membrane systems, the cytoskeleton, the cell surface, cell growth and division. A brief discussion on cancer and aging of cells will be included.

AB201 General Organisation of Organisms (30 hrs)

This module introduces the different cell types and organ systems in both plants and animals. Topics include: Growth and division of cells, mitosis and meiosis; Animal cell types and the histology of different tissues including epithelial, connective, muscular and nervous tissues; Plant cell types and tissue systems including the ground tissues, vascular tissues, dermal tissues, meristems, primary shoot system, primary root system and the secondary growth.

AB202 Principles of Ecology (30 hrs)

This module covers the quantitative and qualitative aspects of ecological sampling and investigations, the methods of measurement of abiotic factors, climatic factors, biological abundance, species diversity, and distribution patterns. Topics discussed include properties of populations, niche theory, population interactions, optimal foraging theory, life history strategies. Some aspects of population dynamics, including the use of mathematical modelling techniques will be covered. Lectures integrate theoretical models with laboratory practicals and field work in grassland, tropical forest and reclaimed land habitat.

AB203 General Physiology (30 hrs)

This module introduces the basic concepts of general physiology. Topics discussed include energy transformation, enzymes, cellular respiration, gaseous exchange in animals, heterotrophic nutrition, autotrophic nutrition including photosynthesis, physiology of cellular transport in animals, uptake and transport in plants, homeostasis, excretion and osmoregulation in animals,osmoregulation in plants, temperature regulation in animals, temperature control in plants, nervous and hormonal communication in plants and animals, muscular physiology.

AB301 Invertebrate Zoology I (30 hrs)

This module outlines the evolutionary characteristics and diversity of the animal kingdom. Taxonomy and phylum synopsis will be introduced. A brief introduction of all the representative invertebrate phyla will be covered.

AB302 Invertebrate Zoology II (20 hrs)

This module is the continuation of module SB301 designed for students taking Biology as major option. Representative invertebrates from different phyla will be discussed in more detail. Emphasis is given to the adaptations and differentiations from acellular to multicellula structures, key developments from aquatic to terrestrial life forms.

AB303 Cryptogamic Botany I (30 hrs)

This module describes the diversity and evolutionary relationships of plant kingdom. Topics include the general introduction of viruses, Monerans (bacteria) and Protistans (slime molds, euglenids, chrysophytes, dinoflagellates, protozoans) leading to the complexity of multicellularity. Evolutionary trends among plants will be discussed from the different types of fungi, algae and the primitive forms of land plants.

AB304 Cryptogamic Botany II (20 hrs)

This module is the continuation of module AB303 designed for students taking Biology as major option. Emphasis will be given to the evolutionary trends among the primitive forms of land plants. Selected representatives from each group will be discussed in more detail.

AB305 Ecology and Biogeography (30 hrs)

This course deals with an advanced study of the theoretical and applied aspects of ecology. The topics include: structure and organisation of communities; energy flux and materials cycling; niche theory and applications; diversity, stability and succession; plant and animal interactions; life history strategies and evolution; regulation of community structure; rainforest, marine and fresh water communities; management of natural and man-made ecosystems. The major topics covered in biogeography are: historical development of biotas; global climate and vegetation; theories of species ranges; island biogeography theory; biogeography of the Malesian region.

AB306 Anatomy and Histology (20 hrs; Prerequisite : AB201)

This module is the continuation of module 201. The topics include the histology and anatomy of different animal organ systems including the digestive, circulatory, lymphatic, urogenital, respiratory, neurosensory, endocrine systems and the skin structure. The anatomy, primary and secondary growth of tissue systems and their organisation, comparative study of cellular differentiation and organisation in plant and animal kingdoms will also be discussed.

AB307 Plant Physiology (30 hrs)

This module aims at an understanding of the integration of different physiological processes in the functioning of the plant. Topics include plant water relations, mineral nutrition, nitrogen metabolism, photosynthesis, plant respiration, nutrient transport, nutrient storage and chemical control in plants.

AB308 General Genetics (30 hrs)

This module covers the overview of cell division mechanisms; Mendelian genetics; chromosomal theory of inheritance; sex determination mechanisms; sex linked inheritance; genetic interactions; linkage and chromosome mapping; cytogenetics; genetic and chromosome mutations; cytoplasmic factors; population genetics; quantitative genetics; principles of evolution, natural selection and random drift.

AB309 Biochemistry I (20 hrs)

This module introduces some of the basic aspects and analytical techniques in Biochemistry. Topics include chemistry of carbohydrates, amino acids and proteins, carbohydrate and amino acid metabolism in plant and animal systems, and enzyme kinetics. Techniques taught in practicals will cover centrifugation, spectroscopic methods, paper chromatography, and liquid chromatography such as gel filtration and ion exchange. Discussion of the various metabolic pathways with correlation to the clinical aspects are also included.

AB310 Applied Microbiology (20 hrs)

This module covers the fundamentals of microbiology needed to understand the biology of infectious diseases and the agents that cause them. Emphasis is given to the host-parasite relationships, normal human microbial flora, virulence and hot resistance, immunology and epidemiology, environmental microbiology and Biotechnology.

AB401 Vertebrate Zoology I (30 hrs)

This module describes the concept of the evolutionary characteristics and diversity of animal kingdom. Emphasis will be given to the animals in the higher phylogeny of animal kingdom. Representative subphyla of phylum Chordata including Urochordata, Cephalochordata and Vertebrata, and the classes of Placodermi, Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves and mammalia will be discussed.

AB402 Vertebrate Zoology II (20 hrs)

This module is the continuation of module AB401, designed for students taking Biology as Major option. An in-depth study of the representative vertebrates will be studied. Discussion based on the structural adaptations of organ systems in relation to habit and habitat. Knowledge obtained from the evolutionary concept of animal kingdom in this module and the principles of classical and molecular genetics (modules AB308 and AB409) will be used to discuss human origins and evolution.

AB403 Gymnosperms and Angiosperms I (30 hrs)

This module discusses the concept of the evolutionary characteristics and diversity of plant kingdom with special emphasis on the higher plants. Basic classification and the principles of taxonomy will be introduced.

AB404 Gymnosperms and Angiosperms II (20 hrs)

This module is the continuation of module AB403, designed for students taking Biology as Major option. Selected plants with special interest will be discussed in more detail.

AB405 Animal Physiology (30 hrs)

This module covers the structural and functional organization of the various organ systems in vertebrates. Topics also include immunology, endocrinology, osmoregulation, and reproduction.

AB406 Biochemistry II (30 hrs)

This module deals with lipid biochemistry, nuclei acid metabolism, biochemistry of hormone actions in animals, and vitamins as cofactors. Advanced techniques of biochemistry research like electrophoresis, affinity chromatography, immunological methods, and radioactive labelling/ counting will be taught in practicals. Biochemistry of the defense mechanisms including coagulation, detoxification and immune system in human will also be covered.

AB407 Plant Biotechnology (30 hrs)

This module introduces the students to the application of biological science in industries for the benefits of mankind. It will cover topics such as high tech farming adopting the hydroponic and aeroponic methods of cultivation, controlled environment agriculture, post harvest technology, plant tissue culture and the development of transgenic plants to obtain better quality plants.

AB408 Animal and Medical Biotechnology (30 hrs)

This module covers the application of biological knowledge obtained from the recent advances in biotechnology to the field of animal sciences and medical diagnosis. Monoclonal antibodies and hybridoma technology will be discussed.

AB409 Molecular Biology (30 hrs)

This module introduces the rise of molecular genetics, DNA structure, control of gene expression in prokaryotes and eukaryotes, recombinant DNA technology and genetic engineering.

Academic Subject : Chemistry

Year	Module	Title	No. of Hrs
1	AY101	General and Inorganic Chemistry	30
	AY102	Physical Chemistry	30
	AY103	Organic Chemistry	30
2	AY201	General and Inorganic Chemistry	30
	AY202	Physical Chemistry	30
	AY203	Organic Chemistry	30

Major

(Modules for students offering Chemistry as a Major)

Year	Module	Title	No. of Hrs
3	AY301	Inorganic Chemistry I	20
	AY302	Inorganic Chemistry II	30
	AY303	Physical Chemistry I	30
	AY304	Physical Chemistry II	30
	AY305	Organic Chemistry I	30
	AY306	Organic Chemistry II	30
	AY307	Analytical Chemistry-Electroanalytical Methods	20
	AY308	Analytical Chemistry-Chromatographic Methods	20
	AY309	Applied Chemistry-Polymer Chemistry	20
	AY310	Applied Chemistry-Industrial Materials	20

Year	Module	Title	No. of Hrs
4	AY401	Inorganic Chemistry I	20
	AY402	Inorganic Chemistry II	30
	AY403	Physical Chemistry I	30
	AY404	Physical Chemistry II	30
	AY405	Organic Chemistry I	30
	AY406	Organic Chemistry II	30
	AY407	Analytical Chemistry-Spectroscopic Methods	20
	AY408	Experimental Project in Analytical Chemistry	20
	AY409	Applied Chemistry-Environmental Chemistry	20
	AY410)*	Applied Chemistry-Natural Products Chemistry	20
	AY411)*	Applied Chemistry-Computing in Chemistry	20

* Select <u>one</u> of the two elective courses.
Please note that in any given year, not all the elective modules will be offered.

1st Minor

(Modules for students offering Chemistry as a Minor after <u>having taken Chemistry</u> as an Academic subject during their first two years of study)

Year	Module	Title	No. of Hrs
3	AY301	Inorganic Chemistry I	20
	AY303	Physical Chemistry I	30
	AY305	Organic Chemistry I	30
	AY308	Analytical Chemistry-Chromatographic Methods	20
	AY310	Applied Chemistry-Industrial Materials	20
4	AY302	Inorganic Chemistry II	30
	AY304	Physical Chemistry II	30
	AY306	Organic Chemistry II	30
	AY407	Analytical Chemistry-Spectroscopic Methods	20
	AY409	Applied Chemistry-Environmental Chemistry	20

2nd Minor

(Modules for students offering Chemistry as a Minor but who <u>have not taken Chemistry</u> as an Academic subject during their first two years of study)

Year	Module	Title	No. of Hrs
3	AY101	General and Inorganic Chemistry	30
	AY102	Physical Chemistry	30
	AY103	Organic Chemistry	30
	AY201	General and Inorganic Chemistry	30
4	AY202	Physical Chemistry	30
	AY203	Organic Chemistry	30
	AY421	Introduction to Analytical Chemistry	30
	AY422	Applied Chemistry	30

Description of Modules

AY101 General and Inorganic Chemistry (30 hrs)

This module will first expose students to the topics of atomic structure and properties, quantum numbers, the exclusion principle leading to the electronic configurations of elements. Periodic properties, group trends,effective nuclear charge, simple chemical bondings and simple Born-Haber cycle calculations will also be introduced. The module also includes redox reactions, balancing of equations, Nernst equation, disproportionation reactions, the use of Latimer diagrams and basic principles of metal extractions.

AY102 Physical Chemistry (30 hrs)

In this module, the focus is on the learning of some general laws and principles in physical chemistry. The topics covered are the gas laws, kinetic theory of gases, equations of state, first law of thermodynamics and its applications, and chemical equilibria.

AY103 Organic Chemistry (30 hrs)

This module provides a foundation in basic principles and concepts in Organic Chemistry and introduces the chemistry of hydrocarbons. The following topics will be covered, namely, the chemistry of alkanes, alkenes, alkynes, benzene and arenes and a brief introduction to stereochemistry. In this module, the characteristic properties and reactions of the above classes of hydrocarbons will be discussed. Emphasis will be placed on reaction mechanisms and the relationship between properties of organic molecules and their molecular structures.

AY201 General and Inorganic Chemistry (30 hrs)

This module is built upon the AY101 module offered in Year 1. In this module, the students will be introduced to some simple qualitative treatment of atomic and molecular orbitals (homoatomic and heteronuclear diatomic molecules). The application of VSEPR theory for predicting molecular shapes will be discussed. The second part of the module includes the chemistry of non-metals (Group III-A to VII-A) covering general properties, oxo-anions, halides and hydrides of the elements.

AY202 Physical Chemistry (30 hrs)

This module is a continuation of the module AY102. The module deals with (i) the second and third law of thermodynamics and their applications and (ii) chemical kinetics and mechanisms. For chemical kinetics, the topics covered include the rate laws, mechanisms of reaction, steady state approximation, unimolecular and enzyme-catalysed reactions.

AY203 Organic Chemistry (30 hrs)

This module is built upon the AY103 module offered in Year 1. It will include the following topics: the chemistry of alkyl halides, alcohols, ethers and epoxides, aldehydes and ketones. In this module, the characteristic properties and reactions of some compounds of carbon containing halides and oxygen atoms will be discussed. The mechanisms of selected reactions will be highlighted.

AY301 Inorganic Chemistry I (20 hrs)

This module introduces the students to transition metal chemistry. The topics covered include nomenclature and geometrical structure of co-ordination compounds, crystal field and ligand field theories as applied to various geometrical structures. Electronic spectra of transition metal complexes including Russel-Saunders couplings, Tanabe and Sugano diagrams and Jahn-Teller effects will be introduced.

AY302 Inorganic Chemistry II (30 hrs)

This module is a continuation of the module AY301. It covers various aspects of organometallic chemistry: bondings (σ and π), 18-electron rule, synergic effects, stability, preparation, structure and characteristicss, spectral interpretations (ultraviolet, infrared, nuclear magnetic resonance and mass spectrophotometry). The second part of the module covers optical activity of octahedral inorganic complexes: chirality, optical rotatory dispersion, circular dichroism and Cotton effects.

AY303 Physical Chemistry I (30 hrs)

This module focuses on the treatments of some physical and chemical processes by classical thermodynamics. It includes the topics of phase equilibria, phase diagrams and the thermodynamic treatment of solutions such as the thermodynamics of mixing, partial molar properties, colligative properties and mixture of volatile liquids .

AY304 Physical Chemistry II (30 hrs)

Electrochemistry, surface and colloidal chemistry are offered in this module. Electrochemistry consists of (i) electrolytes in solution and (ii) electrochemical cells. The topics covered under (i) include conductance, ionic mobilities, ionic activities, Debye-Huckel theory. Under topic (ii), electrodes, electrochemical cells, electrode potentials will be dealt with. Surface and colloid chemistry will deal with the thermodynamics of surfaces, adsorption isotherms and some colloidal systems.

AY305 Organic Chemistry I (30 hrs)

This module focuses on the study of the spectroscopic and stereochemical aspects of organic compounds. The topics covered include alkenes, arenes, aryl and alkyl halides, epoxides, ketones, aldehydes, carboxylic acids and their derivatives.

AY306 Organic Chemistry II (30 hrs)

This module is a continuation of the module AY305 and consists of the chemistry of the remaining major functional groups in Organic Chemistry. The topics covered include the chemistry of carbanions, nitro compounds, amines, diazonium salts, aryl halides, phenols and difunctional compounds.

AY307 Analytical Chemistry - Electroanalytical Methods (20 hrs)

This module will cover some of the electroanalytical methods, such as polarography, potentiometry, ion-selective electrodes, conductometry, voltammetry and related methods, and bulk electrolysis.

AY308 Analytical Chemistry - Chromatographic Methods (20 hrs)

This module deals with theory involved in some of the separatory analytical methods, such as partition theory and solvent extraction. The principles of the paper, thin-layer and ion-exchange chromatography as well as gas and liquid chromatography will also be covered.

AY309 Applied Chemistry - Polymer Chemistry (20 hrs)

This module is designed to provide a general knowledge in a selected area of Applied Chemistry. It will comprise several topics related to Polymer Chemistry. These topics include polymerisation techniques, structure, properties, testing and industrial applications of common thermoplastics, thermosetting materials, rubber and fibres.

AY310 Applied Chemistry - Industrial Materials (20 hrs)

This module focuses on one area of Applied Chemistry, namely, industrial materials. The topics covered include building materials, paints and surface coating materials, soap and detergents, petroleum and petrochemicals.

AY401 Inorganic Chemistry I (20 hrs)

This module covers a description chemistry of the d-block elements: natural occurrence, stability of oxidation states, preparation and properties of complexes of transition metals. Reaction mechanisms and reaction rates including stability of complex ions will also be dealt with.

AY402 Inorganic Chemistry II (30 hrs)

This module is an advanced course in organometallic chemistry. It includes mechanistic study of organometallic reactions and applications of both main group and transition metal organometallics: hydroformylation reactions, hydrogenation of olefins, oligomerisation and polymerisation of olefins and reaction intermediates in organic synthesis. Group theory, symmetry elements and operations, use of character table leading to determination of number of infrared and Raman active modes will also be covered.

AY403 Physical Chemistry I (30 hrs)

This module offers theories of reaction rates and photochemistry. Kinetic theory of gases, collision theory, activated complex theory, diffusion-controlled reactions and relaxation kinetics with be dealt with. The topics covered under photochemistry include rates of intramolecular processes, quenching, intermolecular processes, chemical reactions and quantum yields.

AY404 Physical Chemistry II (30 hrs)

The first part of this module deals with dynamic electrochemistry, covering the topics of processes at electrodes, electrochemical processes and their applications such as in fuel cells, storage batteries and corrosion. The second part of the module deals with the structure and physical properties of macromolecules.

AY405 Organic Chemistry I (30 hrs)

This module aims at highlighting the effect of certain spatial groups within a molecule on its reactivity as well as the chemistry of more complex organic molecules. The topics covered include the study of molecular rearrangements and neighbouring group effects, the chemistry of organo-sulphur, phosphorus and silicon compounds, polynuclear aromatic compounds and non-bezenoid aromatic compounds.

AY406 Organic Chemistry II (30 hrs)

This module is designed to extend a general knowledge of the chemistry of heterocyclic compounds and some complex organic compounds which are of biological importance. The use of spectroscopic techniques in structural determination will also be briefly discussed. The topics covered include the chemistry of heterocyclic compounds, carbohydrates, lipids amino acids and proteins as well as the applications of spectroscopy in organic Chemistry.

AY407 Analytical Chemistry - Spectroscopic Methods (20 hrs)

This module will cover some of the spectroscopic methods, which include ultraviolet, visible and fluorescence spectroscopy, atomic absorption and emission spectroscopy, infrared and nuclear magnetic resonance spectroscopy. Chemical applications of spectroscopy will also be discussed.

AY408 Experimental Project in Analytical Chemistry (20 hrs)

This module is designed to give in-depth knowledge and advanced practical skills in a selected area of Analytical Chemistry. The project work assigned will require the selection and application of analytical techniques taught to a given problem.

AY409 Applied Chemistry - Environmental Chemistry (20 hrs)

This module focuses on topics related to environmental chemistry. These topics include environmental, energy and economic aspects of industrial processes, waste treatment and disposal, environmental pollution and control and central legislation.

AY410)* Applied Chemistry-Natural Products Chemistry (20 hrs)

This module consists of topics on pharmaceutical chemistry. The topics covered include advanced stereochemistry, stereoselective and stereospecific reactions, design of chemical synthesis, structure-reactivity relationship.

AY411)* Applied Chemistry - Computing in Chemistry (20 hrs)

This module comprises topics under computing in chemistry. The topics covered include applications of computers, for example, in organic synthesis, molecular modelling and structural determination, commputer interfacing, data acquisition and processing, automation in instrumentation and chemical process control.

AY421 Introduction to Analytical Chemistry (30 hrs)

This module will provide exposure to selected Analytical techniques. It focuses on topics related to spectroscopy and chromatography. These topics may include infrared, ultraviolet, visible and atomic absorption spectroscopy and gas and liquid chromatography.

AY422 Applied Chemistry (30 hrs)

This module introduces some aspects of the chemistry of industrial materials and environmental chemistry. The topics covered include industrial materials such as building materials, surface coating materials and petrochemicals as well as environment pollution and its control.

Academic Subject : Chinese Language and Applied Linguistics

Chinese Language and Applied Linguistics as Major Subject

For Year 1 and Year 2, all modules are compulsory.

In Year 3, modules 301, 302 and 303 are compulsory. In addition, students have to offer 2 other modules from Group A and either 3 modules, if these include AC320 or module if they don't from Group B.

In Year 4, modules 401 and 402 are compulsory. Students have to complete 2 other modules from Group A and 4 modules from Group B.

Chinese Language and Applied Linguistics as a Minor Subject

Students who wish to offer Chinese Language and Applied Linguistics as a minor subject must satisfy the following conditions:

Minor Subject 1

Students who have offered the subject in Year 1 and Year 2 must offer AC302 and AC320 in Year 3.In addition, they must offer a module from AC304 to AC308 and one from AC321 to AC324.

In Year 4, students must select any two modules from AC401 to AC409 and two modules from AC420 to AC424.

Minor Subject 2

Students who have not offered Chinese Language and Applied Linguistics in Years 1 and 2 must offer AC101 and AC102 in Year 3, plus one module selected from AC321 to Ac324.

In Year 4, students must offer AC201, Ac320 and two other modules from either Group A or Group B at Year 3 or Year 4 level.

Year	Module	Title	No of hrs
1	AC101	Critical Reading and Writing in Chinese I	30
	AC102	Introduction to Chinese Language	30
2	AC201	Critical Reading and Writing in Chinese II	30
	AC202	Introduction to Chinese Linguistics	30

Year	Module	Title	No of hrs
3	Group A		
	AC301	Critical Reading and Writing in Chinese III	30
	AC302	Modern Chinese Grammar	30
	AC303	Chinese Etymology	30
	AC304	Translation I	20
	AC305	Language Testing	20
	AC306	Phonetics and Phonology of Chinese	20
	AC307	Chinese Language Education	20
	AC308	Chinese Language Reform	20
	Group B		
	AC320	History of Chinese Literature	30
	AC321	Selected Readings in Tang Poetry	20
	AC322	Selected Readings in Pre-Tang Poetry	20
	AC323	Selected Readings in Classical Chinese Prose	20
	AC324	Selected Readings in Modern Chinese Short Stories	20
4	Group A		
	AC401	Introduction to Sociolinguistics	30
	AC402	Chinese Lexicology	30
	AC403	Classical Chinese Grammar	30
	AC404	Contrastive Linguistics	30
	AC405	Chinese Semantics	30
	AC406	Language Acquisition and Language Learning	30
	AC407	Translation II	30
	AC408	Chinese rhetoric	30
	AC409	Chinese Language and Culture	30
	Group B		
	AC420	Selected Readings in Song T'ze	20
	AC421	Selected Readings in Chinese Classical Short Stories	20
	AC422	Selected Readings in Chinese Classical Novels	20
	AC423	Selected Readings in Yuan drama	20
	AC424	Literary Criticism	20

Description of Modules

AC101 Critical Reading and Writing in Chinese I (30 hrs)

This module includes critical readings in modern Chinese prose in the areas of literature, culture, language, language education and society. Students will be exposed to the various genres in modern Chinese. They will be trained to understand and appreciate good literary writing and to write critically.

AC102 Introduction to Chinese Language (30 hrs)

This module will include a study of the development of modern Chinese, with particular reference to modern Chinese phonetics, grammar, and the writing system of Chinese characters. Modern Chinese phonetics will cover the traditional system of Chinese phonetics, and the use of Hanyu Pinyin. The component on Chinese characters will include a study of the writing system and the simplification of Chinese characters developed in recent years.

AC201 Critical Reading and Writing in Chinese II (30 hrs)

This module includes critical readings in modern and classical Chinese prose in the areas of literature, linguistics, philosophy and history. Prose from both classical and modern Chinese will be selected for study. Modern Chinese prose will be selected from prominent writers such as Lu Xun, Hu Shi, Guo Muruo, Feng Yuolang, Wang Li and Lu Shuxiang. Classical Chinese prose will be selected from the period ranging from the Tang Dynasty to the Qing Dynasty (AD 618 - AD 1911). Students will be trained to analyze selected passages from the linguistic point of view. They will be trained to write using appropriate registers and styles.

AC202 Introduction to Chines Linguistics (30 hrs)

This module will include a study of the development of Chinese Linguistics in two stages:

a) The history of traditional Chinese linguistics till the Qing Dynasty (AD 1911). This will include a study of Shuo Wen Jie Zi, Er Ya and Guan Yun and a study of traditional linguistics theory.

b) Modern Chinese linguistics. This components will include a critical review of the main schools of modern Chinese linguistics and the influence of Western linguistics on the study of Chinese linguistics.

Group A

AC301 Critical Reading and Writing in Chinese III (30 hrs)

This module includes critical readings in classical Chinese prose selected from the areas of literature and philosophy of the Pre-Qin periods. The special features and style of Pre-Qin (BC 206) prose will be discussed. Students will be trained to understand and analyze it critically.

AC302 Modern Chinese Grammar (30 hrs)

This module provides a description of modern Chinese in functional terms. It will discuss the structural properties of sentences in the language in terms of the pragmatic situations in which they are used. It will provide students with knowledge of word structure, perfective and durative aspects, serial verb construction and sentence linking.

AC303 Chinese Etymology (30 hrs)

This module consists of three components:

a) A study of the six categories of Chinese characters (Liu Shu) and the six basic theories in the formation of Chinese characters.

b) The analysis of the radicals of the Chinese characters and an examination of the origin and meaning of each radical, and

c) A study of the development of Chinese characters from the oracle-bone inscriptions to modern Chinese characters.

AC304 Translation I (20 hrs)

This module deals will discussed some basic theories in translation with regard to the criteria, the principle of equivalence, modes of expression and adjustment of syntax. The practical component will provide students with examples and practice in translating short passages from English to Chinese or vice versa.

AC305 Language Testing (20 hrs)

This module deals with the objectives and the validity and reliability of Chinese Language tests. Through item analysis, students will be introduced to the statistical and analytic interpretation of test data. The structure of language proficiency and communicative language tests and achievement tests in the 4 language skills will be discussed.

AC306 Phonetics and Phonology of Chinese (20 hrs)

This module will include a study of the development of classical and modern Chinese phonetics, the special features of Chinese sound change, tonal variation and various phonetic systems. Students will be exposed to a description of phonetics and phonology.

AC307 Chinese Language Education (20 hrs)

This module will include a review of traditional practices, special features of Chinese language education, experimental language education in China and Taiwan and Chinese Language education in Singapore. The component on Chinese education in Singapore will cover some of the topics on the teaching of Chinese in the bilingual situation, language status, code-switching and code-mixing, and the problems of bilingualism and biculturalism.

AC308 Chinese Language Reform (20 hrs)

This module will discuss the Chinese Language Movement since the May-Fourth period during which language reforms took place. Character simplification and deduction, the introduction and the application of the new system of phonetic script, and modern Chinese Language standardisation will be discussed.

Group B

AC320 History of Chinese Literature (30 hrs)

This module will include a brief discussion of the development of Chinese Literature from the early Qin Dynasty to the Qing Dynasty. The characteristics and special features of literature and the prominent writers and their work in each dynasty will be discussed. In addition, an overview of modern Chinese Literature will be included.

AC321 Selected Readings in Tang Poetry (20 hrs)

Poems from prominent poets of the early tang (619 AD) to the late Tang (960 AD) Dynasty will be selected. The development, characteristics and style of Tang poetry will be discussed. Students will be required to practice writing poems in form of "jueju".

AC322 Selected Readings in Pre-Tang Poetry (20 hrs)

This module will include a study of poems from the Book of Songs, "Chuci", Folk songs and Ballads from the Han Dynasty (BC @)^-AD 220) and the work of other prominent poets of the pre-Tang dynasty (AD 618). The development, characteristics and style of poems of this period will be discussed.

AC323 Selected Readings in Classical Chinese Prose (20 hrs)

Selected prose from the Han (BC 206 - AD 220). Tang (618 - 909 AD) dynasties will be included. The development and the characteristics of Chinese classical prose, and its linguistics features for each periods will be discussed.

AC324 Selected Readings in Modern Chinese Short Stories (20 hrs)

The development of the short story from the May-Fourth Movement till the present day will be reviewed. Short stories will be selected from writers from China, Taiwan and Hong Kong for critical analysis.

Group A

AC401 Introduction to Sociolinguistics (30 hrs)

This module will include an introduction to sociolinguistics. Topics such as language change and society in relation to culture, race, religion, class stratification, sex and age, language planning will be discussed. The research findings from China, Taiwan and Singapore will be reviewed.

AC402 Chinese Lexicology (30 hrs)

This module will include a general survey of Chinese vocabulary, word formation, sense relations between words, changes in word meaning and the structure of Chinese idioms and proverbs. This module will also focus on the problems and issues in the standardization of modern Chinese vocabulary. Students will be exposed to the study of Chinese lexicography.

AC403 Classical Chinese Grammar (30 hrs)

This module includes an introduction to the development of Chinese classical grammar, and a comparative study of classical and modern Chinese grammar with special focus on morphology and syntax. The emphasis will be on the use of classical Chinese function words and the special features of sentence patterns.

AC404 Contractive Linguistics (30 hrs)

This module will deal with a contrastive analysis of Chinese and English in phonology, morphology, syntax and vocabulary. The component on phonology covers the topics on segmental phonemes, syllables and prosodic features. On morphology, topics such as the number inflection, the possessive suffix, the problems with word classes and the deviations of word classes will be discussed. The component on syntax will deal with topics such as adverbs of time and place, compound and complex sentences and passive sentences. The vocabulary component deals with topics on equivalents, syntactic restriction and idioms.

AC405 Chinese Semantics (30 hrs)

This module will include a study of the history of Chinese semantics, the origin of Chinese characters, and semantics and grammar. The classical methods of Chinese semantics, lexicography and the semantic structure of sentences will also be introduced.

AC406 Language Acquisition and Language Learning (30 hrs)

This module will include a study of first and second language acquisition, and language acquisition hypotheses. The acquisition order of the mother tongue as second a language in the Singapore context, language acquisition and the language environment, and the effects of personality and age on second language acquisition will be covered.

AC407 Translation II (30 hrs)

This module will discuss some important principles of literature translation together with practice in Chinese/English literature translation. Topics on rhythm and style in translation, verse rendition, and problems in translating different genres of literature will be discussed.

AC408 Chinese Rhetoric (30 hrs)

This module will include the study of modern and classical Chinese rhetoric. Topics covered will include the basic principles in Chinese rhetoric, selection of words and rhetoric in relation to phonetics and grammar. Students will be provided with a knowledge of rhetoric in the different genres of Chinese writing, and its functional application.

AC409 Chinese Language and Culture (30 hrs)

This module will include a study of the relationship between language and culture, the psychological characteristics of Chinese as reflected in the Chinese language and the structure of Chinese characters, proverbs and idioms in relation to Chinese beliefs and cultural contacts and changes in language.

Group B

AC420 Selected Readings in Song T'ze (20 hrs)

Selected T'ze from prominent writers of the Song Dynasty will be included. The development, characteristics and style of Song T'ze will be discussed, in particular the two schools of T'ze, and representative writers such as Su Dongpo and Liu Yong. Students will be required to practise writing T'ze.

AC421 Selected Readings in Chinese Classical Short Stories (20 hrs)

This module will include a study of tales from the Six Dynasties, prose romances of the Tang Dynasty and hua-pen of the Song Yuan Dynasties. The special features of short stories in each period will be reviewed.

AC422 Selected Readings in Chinese Classical Novels (20 hrs)

In this module students will study excerpts from the four Chinese classical novels, namely, The Romance of Three Kingdoms, The Water Margin, The Journey to the West and Dream of the Red Chamber. The development and characteristics of Chinese classical novels will be discussed.

AC423 Selected Reading from Yuan Drama (20 hrs)

This module will include the study of works by prominent playwrights of the Yuan Dynasty such as Guan Han-Qing's The Wrongs of Maid Tou and Wang Shi-fu's Western Chamber. The development of drama in the Yuan Dynasty will be reviewed.

AC424 Literary Criticism (20 hrs)

This module will examine the development of traditional literary criticism in Chinese Literature. The following aspects of Chinese literary criticism will be dealt with: (a) Literary criticism on poetry, (b) literary criticism on t'ze and (c) literary criticism on classical Chinese prose.

Academic Subject : Critical Reading and Writing

Year	Module	Title	No. of Hrs
1	AW101	Critical Reading and Writing I	30
2	AW201	Critical Reading and Writing II	30

Description of Modules

AW101 Critical Reading and Writing I (30 hrs)

The main focus of this module is to teach writing as a way of learning: to discover, develop and clarify ideas. Critical reading is used as a complement to the teaching of writing to develop critical response to one's own and others' texts. Besides teaching thinking through critical reading and writing, it also aims at developing writing skills at the sentence and discourse level: to train clarity, precision, economy and vigour of style and logic and coherence in exposition.

AW201 Critical Reading and Writing II (30 hrs)

Besides continuing and building on the work done in the first year, this module introduces students to major rhetorical concepts and trains students in the application of these concepts to writing in different situations. It also aims to familiarize students with the special features in different types of non-fiction prose and provides training in the production of these prose styles, with special reference to writing across the curriculum and in the academic context. The teaching of library research techniques and close supervision in the writing of an academic research paper add further to the academic bias in the module.

Academic Subject : English Language

For Year 1 and Year 2 all modules are compulsory.

For Year 3 and Year 4 all modules should be offered according to the following instructions:

1. Students must offer modules amounting to a minimum of 200 hours in each year.

2. Modules 302 and 304 are compulsory for Year 3.
Modules 406 and 408 are compulsory for Year 4.

3. For year 3 and year 4, 6 core modules are listed. Students must offer the 4 modules prescribed for their year of study as follows:

1993	Yr 3	:	302, 304, 306, 308
1994	Yr 3	:	302, 304, 310, 312
	Yr 4	:	410, 412, 414, 416
1995	Yr 3	:	302, 304, 306, 308
	Yr 4	:	406, 408, 414, 416
1996	Yr 3	:	302, 304, 310, 312
	Yr 4	:	410, 412, 414, 416

4. The four elective modules may be chosen freely from one or more of the remaining groups of modules (B, C, D, E). Students intending to specialize in a certain field may even choose all their non-core modules from one group only.

5. Students are advised to offer 324/424 Introduction to Psycholinguistics before they offer the 2 core modules 414 and 416.

6. Modules with double codes can be offered in either Yr 3 or Yr 4. Modules with only the 300 series code can be offered only in Yr 3. Modules with only the 400 series code can be offered only in Yr 4.

7. Modules are grouped to help students plan an intelligent and rational programme of study that fits their needs. Students are advised to consult the division.

8. Only half of the Year 3/Year 4 modules will be offered in alternate years.

Minor subject

For students taking this subject as a Minor, the following instructions should be followed.

a) Students who did the subject in Years 1 & 2 will offer the following 4 modules:-

Year 3: 306, 308, 310 and one other module to be chosen freely from B, C, D, E.

Year 4: 412, 414, 416 and one other module from B, C, D, E.

b) Students who did not do the subject in Years 1 & 2, will offer the following 4 modules:-

Year 3: 101, 102, 201, 202.

Year 4: 410, 412 and 2 other modules from B.

Year	Module	Title	No. of Hrs
1	AE101	Introduction to the Study of Language I	30
	AE102	Introduction to the Study of Language II	30
2	AE201	Description of Modern English I	30
	AE202	Description of Modern English II	30
3/4	**Group A: Core Modules**		
	AE302	Grammar and Meaning I	20
	AE304	Grammar and Meaning II	30
	AE306/406	Language and Social Life I	20
	AE308/408	Language and Social Life II	30
	AE310/410	Introduction to Language Education and Language Teaching Methodology	30
	AE312/412	Issues in Language Education	20
	AE414	Developmental Psycholinguistics I (Pre-school Years)	30
	AE416	Developmental Pscyholinguistics II (School Years)	20
	Group B: Applied Language Studies		
	AE318/418	English Language in the Contexts of Use	30
	AE320/420	Reading Research	20
	AE322/422	Teaching of Reading	20
	AE324/424	Introduction to Psycholinguistics	20
	AE326/426	Composition Research	20
	AE328/428	Teaching of Writing	20
	AE430	Bilingual Acquisition	20
	AE432	Materials Development	30
	AE433	Language Testing	30
	AE434	Computer Applications in Language Studies	30
	Group C: Sociolinguistics Studies: Language in the context of social dynamics		
	AE336/436	Bilingualism - Social and Individual	30
	AE338/438	Language in Contact	30
	AE340/440	Spoken Discourse Analysis	20
	AE342/442	Written Discourse Analysis	20
	AE344/444	Features of Singapore English	20

Year	Module	Title	No. of Hrs
	Group D: Descriptive Studies		
	AE348/448	English Semantics	20
	AE350/450	English Lexicology	20
	AE352/452	Experimental Phonetics	30
	AE354/454	Comparative Linguistics and Theory of Translation	30
	AE356/456	Pragmatics	20
	AE458	History of Linguistics and Current Theories	30
	AE460	Advanced Phonetics and Phonology	30
	AE462	Advanced Syntax	30
	Group E: Interdisciplinary Studies		
	AE364/464	Literature Module	20/30
	AE366/466	Literature Module	20/30
	AE468	Stylistics and Literary Criticism	30

Description of Modules

AE101 Introduction to the Study of Language I (30 hrs)

This module provides a broad introduction to the study of language. In particular, it deals with the nature of language, its history and change, its various features, functions and varieties, its use in society, its relation to culture and its acquisition. It covers, among other topics, the definitions of language and basic terms and concepts in linguistics, the distinction between spoken and written language, the sounds of language, the writing systems, and the kinds of differences these impose.

AE102 Introduction to the Study of Language II (30 hrs)

This module offers a substantial coverage of general phonetics and phonology. It embraces the basic terms and concepts at the segmental and suprasegmental levels, the concept of the phoneme and the "-emic/-etic" distinction, general principles of phonological analysis, abstract (underlying) representations, principles of phonetic/phonological notation, and the grapheme. It places strong emphasis on the links between phonology and grammar.

AE201 Description of Modern English I (30 hrs)

This module will be concerned substantially with the grammar of contemporary English, viewed from syntagmatic and paradigmatic perspectives. The description will include among the topics the problem of language variation, lects, standard, usage and register; the syntax of English; focus, theme and rheme, emphasis and illocutionary force. Students will be trained to analyse authentic texts morphologically and syntactically.

AE202 Description of Modern English II (30 hrs)

This module provides a full phonetic/phonological description of English, and, based on the general phonetic principles expounded in Year I, it should lead to full understanding and sound knowledge of the English sound system and enable students to be more aware of their pronunciation.

The course will cover the system, structure, phonetic quality and incidence of English vowels and consonants, allophonic and morphophonological rules; word and sentence stress; words in connected speech; rhythm and intonation and their role in English grammar. Special attention will be given to a comparison of chosen English accents and to Singapore English Pronunciation.

Group A: Core Modules

AE302 Grammar and Meaning I (20 hrs)

This module will examine English grammar from the categories and scales perspective, viz. unit, rank, structure, class, system, exponence, levels of delicacy, depth, recursion, rankshift, discontinuity and phase. It will review the lexico-grammatical stratum - clause complex, group complex, word complex and morpheme complex.

AE304 Grammar and Meaning II (30 hrs)

This module will focus on systemic grammar and will involve a detailed study of the following components of language:

- the Ideational Component (experiential and logical)

- the Interpersonal Component (interactional, personal)

- the Textual Component (theme and thematisation, information and cohesion)

The models developed by Halliday, Fawcett and Hudson will be reviewed.

Other topics covered will include transitivity, mood and modalities, theme and information, structure and cohesion.

AE306/ 406 **Language and Social Life I (20 hrs)**

Part I will constitute an introduction to Sociolinguistics. The module will cover theories concerning the social nature of language and the interrelationship between language and society. It will also consider issues related to standard and non-standard varieties, the co-variation of linguistic and social phenomena in speech communities and studies on new varieties.

AE308/ 408 **Language and Social Life II (30 hrs)**

This module will concentrate on sociolinguistic issues in bi- and multilingual communities, with special reference to Singapore. It will deal with languages in contact, with problems of language choice and language policy, code-switching, language convergence, language shift and language loss. In particular the course will cover the problems of crosscultural communication in a wider speech community, attitudes to language varieties and the role of language in socialization.

AE310/ 410 **Introduction to Language Education and Language Teaching Methodology (30 hrs)**

This module will provide an introductory survey of the relationship between linguistic theory and language education: it will review the influence of different models of grammar, text linguistics, discourse analysis, psycholinguistics, socio-linguistics and other aspects of linguistic theory on language planning, curriculum design and development, teaching methodology, assessment and language supervision. The influence of linguistic theory and TESL methods on the Singaporean education system will be reviewed: in particular, the module will examine the different phases in language teaching methodology in Singapore.

- the Interpersonal Component (interactional, personal)

- the Textual Component (theme and thematisation, information and cohesion)

The models developed by Halliday, Fawcett and Hudson will be reviewed.

Other topics covered will include transitivity, mood and modalities, theme and information, structure and cohesion.

AE306/ 406 **Language and Social Life I (20 hrs)**

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AE308/ 408 **Language and Social Life II (30 hrs)**

This module will concentrate on sociolinguistic issues in bi- and multilingual communities, with special reference to Singapore. It will deal with languages in contact, with problems of language choice and language policy, code-switching, language convergence, language shift and language loss. In particular the course will cover the problems of crosscultural communication in a wider speech community, attitudes to language varieties and the role of language in socialization.

AE310/ 410 **Introduction to Language Education and Language Teaching Methodology (30 hrs)**

This module will provide an introductory survey of the relationship between linguistic theory and language education: it will review the influence of different models of grammar, text linguistics, discourse analysis, psycholinguistics, socio-linguistics and other aspects of linguistic theory on language planning, curriculum design and development, teaching methodology, assessment and language supervision. The influence of linguistic theory and TESL methods on the Singaporean education system will be reviewed: in particular, the module will examine the different phases in language teaching methodology in Singapore.

viz. the Grammar-translation Approach, the Audiolingual Approach and the Communicative Approach. Specific approaches, methods and packages for primary schools such as REAP, ACT and LEAP will be looked at.

AE312/ 412 **Issues in Language Education (20 hrs)**

This module will examine some of the underlying issues in language education particularly in the Singaporean context. Some of the topics covered will include the bilingual policy, language aptitude and intelligence, the inter-relationship of languages in contact, language status, learning two or more languages in school and the attendant problems, code switching and code mixing, language registers, language variation and change, the mass media and the problem of identifying a standard, bilingualism and biculturalism, and language cultural identity.

AE414 **Developmental Psycholinguistics I (30 hrs) (Pre-school)**

This module examines the pre-school child's acquisition of his first language and compares the acquisition of the first language with simultaneous and second language acquisition. It begins with a review of theories on the relations between language and thought, moves on to a study of language development in terms of phonology, vocabulary and syntax. Attention is drawn to language learning processes and strategies, and factors affecting acquisition of these are in turn viewed against current theories of language development. Variation in language development resulting from differences in the social, cultural and linguistic environment is another aspect of study covered in this module. Thus the module places much emphasis on studying how children in Singapore acquire their first and second languages and how their development is affected by features characterising the local situation.

AE416 **Developmental Psycholinguistics II (20 hrs) (School Years)**

This module covers the development of literacy at school, with attention focused on the cognitive and social aspects of language use. It begins with a study of children's transition from spoken to written language, and moves on to an examination of the development children make in reading and writing in terms of the control of vocabulary, sentence structure, discourse features and genres. The study of children's development in literacy includes a

consideration of the close link between language and thinking, the development of children's cognitive processes at different phases of maturity and how children move from earlier forms of language and cognition to adult forms.

Group B: Applied Language Studies

AE318/ 418 **English Language in the Contexts of Use (30 hrs)**

The module describes functional variations in the English Language with special emphasis on spoken and written varieties. Areas covered include register variation; text, context and learning; as well as the structure, texture and identity of a text. This module aims in particular to enable students to analyse chosen English texts from the point of view of the context of use.

AE320/ 420 **Reading Research (20 hrs)**

This module aims to acquaint students with the subject of reading from both the theoretical and the empirical perspectives. Students will be introduced first to a history of theories of reading before being exposed to empirical work done on this subject showing, for example, how the different ways in which a reader conceptualizes the reading process relate to his reading behaviour, how a reader's background knowledge and linguistic ability interact to affect reading performance, and how specific types of text influence the reading of a text. This module leads to the module on the teaching of reading.

AE322/ 422 **The Teaching of Reading (20 hrs)**

This module is a continuation of the module on Research on Reading. The theories of reading and the empirical findings on different aspects of reading reviewed in the earlier course are studied in terms of their implications on the teaching of reading and their possible applications in the classroom. Emphasis is placed on the training of critical readings and on the close relation between reading well and writing well.

AE324/ 424 **Introduction to Psycholinguistics (20 hrs)**

This module is available only to students who have not taken or who do not plan to take AE320/420 or AE326/ 426.

It introduces students to the study of first as well as second language acquisition and development, both in naturalistic and pedagogical environments. It will relate the formal and functional aspects of language development to cognitive, affective and contextual variables. It will also deal with the psycholinguistic processes involved in the comprehension and production of language, in listening/speaking and reading/writing.

AE326/ 426 **Composition Research (20 hrs)**

This module covers theories and principles of writing, taking into account the cognitive, linguistic, psychological and sociological aspects of writing. It reviews recent advances in composition research, examining the light these shed on the act of writing. Protocol analysis is introduced and comparison is made of the composing processes of children and adults.

AE328/ 428 **Teaching of Writing (20 hrs)**

This module takes up from the module on Composition Research and moves from theory to practice. It reviews approaches to the teaching of writing as well as methodologies in the teaching of various features and registers of writing. The analysis and evaluation of writing, the use of the computer in writing, and the design of writing courses will also be covered in this module.

AE430 **Bilingual Acquisition (20 hrs)**

The module deals with the linguistic, cognitive and psychological aspects of bilingual acquisition. It dicusses natural and instructed bilingualism, strategies, hazards and benefits of bilingual acquisition and development, sequential and simultaneous acquisition, language forgetting, and code-switching and code-mixing. Methods of instructed second language acquisition, late bilingualism, assessment of optimal conditions for natural and instructed bilingual acquisition and maintenance are all covered in this module.

AE432 Materials Development (30 hrs)

The module deals mainly with the linguistic, methodological and pedagogical principles of preparing, developing, testing and assessing language teaching materials for the classroom, such as printed materials (textbooks, exercises, drills, courses) and recorded materials (audio-visual tapes of all kinds).

AE433 Language Testing (30 hrs)

The module will include the following topics: the structure of language proficiency (trait factors such as organizational, pragmatic and strategic competence, as well as skill and method factors), the development of communicative language tests and achievement tests in the 4 language skills, types of marking, testing objectives and statistical and analytic interpretation of test data.

AE434 Computer Applications in Language Studies (30 hrs)

This module deals with basic applications of the computer in language studies, such as the storing of all kinds of data for lexicographical and structural studies, linguistic statistics, machine translation, information retrieval, organizing "standard" corpora for language study; it also deals with computerized methods of instrumental-acoustic analysis in phonetics (computerized sound spectrography), and with the computer as an aid in devising and improving writing systems. In particular, the module will look at the application of computers in testing linguistic theories and models of language description, as well as in linguistic stylistics, and for language teaching methodology, for enhancing decision-making in the field of language typology, language norm, language change and developmental tendencies.

Group C: Sociolinguistic Studies: Language in The Context of Social Dynamics

AE336/436 Bilingualism - Social and Individual (30 hrs)

The module deals with bilingualism from the linguistic and social (but not psycholinguistic) points of view, with special reference to the linguistic situation in Singapore. It discusses definitions of bilingualism, the statistics of world bilingualism, and the social, cultural, cognitive and educational uses of bilingualism, together with its problems.

AE338/ 438 **Languages in Contact (30 hrs)**

The module discusses linguistic and cultural effects of languages and societies in contact, both internationally and in the Singapore context. It reviews unidirectional and reciprocal influences on language structure, language-mixing, and code-switching; cultural influence; and language planning problems. It discusses examples of languages in contact and the ensuing resultant forms. Much attention is devoted to pidgins and creoles.

AE340/ 440 **Spoken Discourse Analysis (20 hrs)**

The module discusses the distinction between spoken and written discourse as well as the principles of discourse analysis in relation to pragmatic and conversation analysis. It covers various aspects of discourse: forms and functions of language, manner of production, the role of context in interpretation, discourse content and structure, topic and representation of discourse content; "staging" and the representation of discourse structure. It also discusses features like information structure, "given and new", information units, tone groups and tonality, tone group and clause, tonicity and tone, reference in text, anaphora, connectives, coherence and cohesions in discourse.

AE342/ 442 **Written Discourse Analysis (20 hrs)**

The module deals with discourse analysis of written texts of different types with reference to semantic, situational, contextual and stylistic aspects of discourse. It reviews the general principles of discourse analysis that underlie the organization of the written text (thematization and staging). In the introduction, special emphasis is laid on the relation between speech and writing, as well as on the formal differences between written and spoken language.

AE344/ 444 **Features of Singapore English (20 hrs)**

The module provides a phonetic and linguistic description (on the basis of available data) of the phonology, grammar, vocabulary and semantics of Singapore English. It covers the problem of diglossia (Singapore Colloquial English and Standard English) together with aspects of historical and present-day interference from Singaporean languages.

The structural shape of this form of English is presented against the background of other types of English, and various other aspects are discussed, such as the role of English (social, cultural, educational, etc.) in the life of Singapore society.

Group D: Descriptive Studies

AE348/ 448 **English Semantics (20 hrs)**

The module deals with the description of English semantics (lexical, grammatical and stylistic meaning); its aim is to enable the students to make a semantic analysis of English words and sentences which should result in a better understanding and knowledge of the descriptive grammar of English.

The module includes illustrations and examples of semantic field of English lexemes; polysemy and synonymy of English words; grammatical meaning and lexical meaning; prosodic meaning; tonality, tonicity and tone; the tone-group melody and its attitudinal meaning, the "key". It also discusses pragmatic and social meaning in everyday social and formal situations and in writing.

AE350/ 450 **English Lexicology (20 hrs)**

The module deals with the lexicology, lexicography and lexical semantics of English. It discusses the origins and the present and past meaning of English words, lexemes, their semantic fields, word-formation, etymology and developmental tendencies of English vocabulary, phraseology and idioms, as well as dialectal differences in English lexical meaning. The module reviews the problems of English lexicography, with special reference to Singapore English vocabulary.

AE352/ 452 **Experimental Phonetics (30 hrs)**

The module deals with the principles and methods of experimental phonetics, and the uses of a phonetics laboratory for research and language teaching. The module includes elements of acoustic phonetics and of sound spectrography and the analysis of spectrographic materials, as well as other experimental/instrumental methods and techniques used in the study of pronunciation, rhythm and intonation.

AE354/ 454 **Comparative Linguistics and Theory of Translation (30 hrs)**

The module discusses the theory and techniques of translation on linguistic and comparative principles and reviews new developments in the theory. It treats the comparative and constrastive studies as a source of data for the theory. Factors taken into account include similarities and differences, transfer, interference, semantic field, under-differentiation, overdifferentiation, avoidance of the original or target language flavour, citations from the original, creativeness of the translator, deep and surface structure as well as structural or cultural problems of translation and the literary, aesthetic, artistic and stylistic aspects of translation. The course will also include critical analysis of chosen translations of literary and other texts.

AE356/ 456 **Pragmatics (20 hrs)**

The module deals with the main aspects of the study of pragmatics, the function of language and the choice of language in social interaction. It reviews speech acts and felicity conditions; deixis, presupposition, conversational implicature and conversational structure. It also covers definitions of pragmatics and its relationship to other fields such as discourse analysis, semantics, stylistics, psycholinguistics and sociolinguistics.

AE458 **History of Linguistics and Current Theories (30 hrs)**

This course presents the achievements and present-day results of the development of linguistic thought through the centuries. It emphasises the natural tendency towards co-existent autonomy and heteronomy of language systems as well as of linguistics, and it highlights the correlation between the stages of development of linguistics and the trends in the history of the sciences, arts, culture and literature. The module embraces two distinct parts:

1. the history of linguistics until the last quarter of the 20th century,

2. a critical review of the main schools of linguistics today, including generative linguistics, text linguistics, and systemic-functional linguistics.

AE460 Advanced Phonetics and Phonology (30 hrs)

This module deals with problems of phonetics and phonology on an advanced level, reviewing some of the fundamantal problems and trends in the field of the study of sounds, and relating them to the phonology of English and other languages. Both segmental and suprasegmental phonology will be discussed on the basis of current research in those fields.

AE462 Advanced Syntax (30 hrs)

This module discusses problems in description of the syntax of English as well as approaches and trends in the study of syntactic structures. It provides a brief survey of alternative solutions, and reviews as well as discusses current research in the field. Strong emphasis is placed on the semantic aspect of syntax.

Group E: Interdisciplinary Studies

AE364/ 464 Literature Module (20/30 hrs)

Students may offer a module from the Literature Programme with approval from the Head of Division.

AE366/ 466 Literature Module (20/30 hrs)

Students may offer a module from the Literature Programme with approval from the Head of Division.

AE468 Stylistics and Literary Criticism (30 hrs)

This course will discuss the basic notions and terminology of style and stylistics distinguishing between style as a distinctive local manner of language behaviour, the style and register of address chosen by users of language according to different needs of social contexts and styles of literary works denoted by particular periods in time. The course will also look at aspects of dialectal variation of individuality, of rhetorical transference through metaphor and metonymy in spoken and written language (Halliday), of speech act theory and will discuss stylometrics as a tool in literary research, and phonostylistics in poetry and threatre.

Academic Subject: English Literature

First Year : Both modules are compulsory.

Second Year : AR200 (Terms 1 & 2) is a core module; in Term 3, students may choose to offer **either** AR210 **or** AR220.

Third & Fourth Year : Students are required to offer 200 hours in each year.

In the Third and Fourth Years all modules are either of 30 or 20 hour duration and are arranged in **SIX** categories. Students may choose combinations of modules to total **at least** 200 hours in **EACH** year:-

- Students are required to take at least **SIX** modules from Section A:
  Historical/Philosophical/Ideological Studies

- Students are required to take at least **FOUR** modules from Section B:
  New Literature in English

- and **FOUR** from Section C:
  Genres & Sub-Genres

- Students are required to take at least **TWO** modules from Section D:
  Critical Approaches to Literature

- The remaining **FOUR** modules may be chosen **either** from Section E:
  Cross-Cultural/Inter-Disciplinary Studies

- **and/or** from Section F:
  Writing

- **and/or** from any other section, provided no more than **SIX** modules are chosen from any **ONE** category.

Students wishing to take **Writing** modules from Section F may do so after consultation and upon approval from the Division. Students who wish to take courses in other academic subjects in the School may do so upon approval from the Division, though this provision will normally be limited to **TWO** modules.

Year	Module	Title	No. of Hrs
1	AR100	Literature & Literary Expression	30
	AR101	Literature & Composition	30
2	AR200	Methods & Contexts of Literary Analysis: Introduction to Poetry	30
	AR210	The Range of Drama: Form & Practice	30
	AR220	The Range of Fiction	30

SECTION A:
Historical/Philosophical/Ideological Studies

Students are required to take **SIX** modules from this section. They must take at least **TWO**, and no more than **FOUR**, modules in each year; they must take at least **ONE** module in each of the following categories:

Year	Module	Title	No. of Hrs
3&4	AR302/ 402	The Age of Romance & the Courtly Love Tradition	20
	AR304/ 404	Shakespeare's Plays	30
	AR306/ 406	Tudor & Stuart Literature	30
	AR308/ 408	Milton & the Literature of the English Revolution	20
	AR310/ 410	The Early Novel: Defoe, Richardson & Fielding	30
	AR312/ 412	Studies in the Eighteenth Century Idea of Order	30
	AR314/ 414	Romanticism: Revolution & Reaction	30
	AR316/ 416	The Nineteenth Century Novel	30
	AR318/ 418	Eminent Victorians: Non-fiction Prose & Poetry	20
	AR320/ 420	Modern Fiction	30
	AR322/ 422	Modern Poetry	30
	AR324/ 424	Modern Drama	30

SECTION B:
New Literatures in English

Students are required to take at least **FOUR**, and no more than **SIX**, modules from this section: they must take at least **ONE** module from **EACH** of the following categories:

Year	Module	Title	No. of Hrs
	AR330/ 430	Major Nineteenth Century American Authors	20
	AR333/ 433	Readings in Modern American Literature	30
	AR338/ 438	Contemporary Writing from Australasia	20
	AR339/ 439	South East Asian Authors	30
	AR340/ 440	African Literature	20
	AR341/ 441	Drama & Theatre in Post-Colonial Situations	20
	AR342/ 442	Modern Indian Writing	20
	AR343/ 443	Contemporary Canadian Fiction & Poetry	20
	AR344/ 444	Caribbean Literature	20

SECTION C:
Genres & Sub-Genres

Students are required to take at least **FOUR**, and no more than **SIX**, modules from this section. They must take at least **ONE** module from **THREE** of the following four categories:

Year	Module	Title	No. of Hrs
	AR346/ 446	Drama: Literature, Performance & Social Context	20
	AR347/ 447	Modernism & Modern Drama from Ibsen to Beckett	20
	AR348/ 448	American Drama	20
	AR350/ 450	Realisms in the Novel	20
	AR351/ 451	Mystery & Detection Writing	20

Year	Module	Title	No. of Hrs
	AR354/ 454	Confessional Poetry	20
	AR355/ 455	Form in Poetry	20
	AR358/ 458	The Folk Tale: Universal Motifs	20
	AR359/ 459	Children's Literature	20
	AR360/ 460	Adolescent Literature	20

SECTION D:
Critical Approaches to Literature

Students are required to take at least **TWO**, and no more than **SIX**, modules from this section.

Year	Module	Title	No. of Hrs
	AR361/ 461	Critical Approaches from Aristotle to Shelley	20
	AR362/ 462	Issues & Approaches in Contemporary Critical Theory	20
	AR363/ 463	Post-Colonial Literary & Cultural Theory	20
	AR464	Marxist Literary Criticism	20
	AR465	Theories of Reading: Narrative & Reader Responses	30
	AR466	Psychoanalytical Readings of Literature	20
	AR467	Structuralism, Semiotics & Post-Structuralism	30
	AR470	Feminist Readings of Literature	30

SECTION E:
Cross-Cultural/Multi-Disciplinary Studies

Students may take up to **FOUR** modules in this section. Some modules may specify pre-requisies.

Year	Module	Title	No. of Hrs
	AR371/ 471	Romanticism & the Visual Arts	20
	AR372/ 472	Images of the City: Art & Literature	20
	AR373/ 473	Origins of Modernism: Literature, Art & Music	30
	AR374/ 474	Orality of Literature	20

Year	Module	Title	No. of Hrs
	AR375/ 475	Literature, Film & the Media	30
	AR378/ 478	Literatures across Cultures: Perceptions of the Other	30
	AR379/ 479	Women & Culture in the Novel	30
	AR380/ 480	Literature & Technology	20
	AR381/ 481	Literature & Ecology	20
	AR385/ 485	The Nineteenth Century European Novel	30
	AR386/ 486	Twentieth Century European Literature	20
	AR387/ 487	Asian Literature in Translation	20
	AR388/ 488	Contemporary South American Literature in Translation	20

SECTION F:
Writing

Students may, upon approval, elect to take modules in creative writing.

	AR391/ 491	Poetry Workshop	20
	AR393/ 493	Playwriting	20
	AR395/ 495	Writing the Short Story	20

English Literature Minor

Students taking English Literature as Minor 1 **who have already completed the First and Second Year syllabus** may choose combinations of modules to total **at least** 100 hours in **EACH** of their Third and Fourth Years:-

- Students are required to take at least **THREE** modules from Section A:
  Historical/Philosophical/Ideological Studies
  (each module to be chosen from different categories)

- Students are required to take at least **TWO** modules from Section B:
  New Literatures in English
  (one from each category)

- Students are required to take **ONE** of the following modules from Section D:
  Critical Approaches to Literature
  AR361/461; AR362/462; AR363/463

- The remaining **FOUR** modules may be chosen from any Section.

Students taking English Literature as Minor 2 **who are new to the subject** are required to complete the Second Year syllabus in their Third Year - i.e. they must take AR200 and **either** AR210 **or** AR220 - **as part of** their fulfilment of the above requirements.

Description of Modules

AR100 Literature & Literary Expression (30 hrs)

The aim of this course module is to introduce students to the wide range of literary expression and types of writing. **Texts** will be chosen for their illustrative merit, rather than as any part of a required canon, and from a wide range of literature, traditional and modern, in English and the new Englishes, selected from poetry, short fiction and drama.

AR101 Literature & Composition (30 hrs)

Students will be instructed in the close reading of literature: they will examine finished and draft texts to see how literature is written, and will be asked to consider and practice alternative ways of writing about it.

AR200 Methods & Contexts of Literary Analysis: Introduction to Poetry (30 hrs)

This module will provide the framework for literary analysis. It will present a history of criticism, from an examination of traditional biographical methods to recent developments in critical approaches. The aim is to explore the varieties of ways available to approach literature. **Texts** will be linked to the teaching of poetry, and to showing students the range of poetic expression - from its historical origins in folk memory with narrative forms of ballad, tale and saga; its commemorative role in odes and elegies; its dramatic mode in plays and epics. They will study the function of rhythm in rituals of song and dance, in syncopated and syllabic accentuation; concerns with formal economy from haiku to sonnet to imagism; the significance of discipline and precision in metrical order and free verse; ending with contemporary open field verse and tentative paradox. One of the main aims of the course will be to give students an informed foundation to select later modules according to their interests.

AR210 The Range of Drama: #Form & Practice (30 hrs)

This course will introduce students to the development of the theatre, studying dramatic performances in relation to their social, historical and cultural contexts. The classical heritage of Greco-Roman theatre will be studied, examining the comic and tragic modes of Sophocles, Euripides and Aristophanes together with the Romans - Seneca, Plautus and Terence. The Middle Ages saw drama as an enactment of largely religious values: nativity, miracle and morality plays, like Everyman, will be discussed, with particular reference to the performances available at the time. Examples of different forms of world drama will be studied to show the evolution of dramatic and theatrical forms in a comparative and cross-cultural context. Classical Sanskrit Theatre from the 1st to 8th centuries will be explored in the works of Kalidasa, Sudraka and Bhasa. Study of Classical Chinese Theatre will concentrate on the major works of the Yuan (1280-1368) and Ming dynasties (1368-1644). Study of traditional Japanese theatre will consider Noh (Classical Lyric Drama), Kabuki (popular theatre) and Bunraku (puppet theatre). Students will also be introduced to South East Asian performance systems through folk and popular modes: Wayang Kulit (Indonesian and Malay shadow puppets), Ma'Yong (Malay dance drama) and Bangsawan (popular theatre). Later modules will give students a chance to specialize in the drama of particular periods and from a variety of different cultures.

AR220 The Range of Fiction (30 hrs)

This module will chart the development of prose fiction from its origins in parable, fable and folk tale to contemporary experimental forms. Texts chosen will offer students a chance to study examples of the autobiographical novel, the gothic tale, the social realist novel, the bildungsroman, the utopian romance, the social satire, and modern experiments in metafiction. The emphasis of the course will be on the range of narrative devices at a writer's disposal. Texts will be chosen to give students a foretaste of literature from many periods, in many styles, and from many places, in order to aid an intelligent choice of module options in higher years.

Section A : Historical/Philosophical/Ideological Studies

AR302/ 402 The Age of Romance & the Courtly Love Tradition (20 hrs)

This course will look at the emergence of vernacular literature in English from its Anglo-Saxon, Latin and French origins. The dominant influence of European Medieval culture and the church of Rome will place the new literature in its context as a popular, but not establishment-accepted, art form. Topics covered will include the strict behavioural and class codes, the stylized ritual of unrequited love, the influence of Provençal art, and concepts of gentility, courtesy, marriage and celibacy. Authors to be discussed are Chaucer, Langland, Malory and the Gawain poet. Cultural approval of a specifically English literature would not take place until well into the nineteenth century, and this course will consider the underlying importance of ideas about cultural independence and regional languages, aesthetically and politically, in the literature stemming from this period.

AR304/ 404 Shakespeare's Plays (30 hrs)

This module will offer students a detailed look at a cross-section of Shakespeare's dramatic works. Six texts will be examined from his comedies, tragedies, histories and 'problem' plays. Emphasis will be placed on the close reading of the texts, on the nature of the Elizabethan stage and public, and upon difficulties of interpretation over centuries of editing and production. Time will also be given to intertextual criticism, the legacy of Shakespeare's influence on other playwrights.

AR306/ 406 **Tudor & Stuart Literature (30 hrs)**

This module offers students a chance to study the perfection of the sonnet form, contrasting the Petrarchian model with innovations by Spenser, Sidney, Raleigh and Shakespeare. Attention will be given to the relationship between poetic formalism and the conventional social structures prevailing, Elizabethan ideas of unity, symmetry and natural order, and the intensity of a new nationalism. Study of metaphysical poetry will consider the tension caused by Renaissance doubt and inquisitiveness about traditional beliefs, and the conflicts between personal desires and religious orthodoxy, spiritual and secular rivalry. Texts will be chosen from works by Donne, Carew, Herbert, Herrick and Marvell. The major themes of the drama of this period - corruption, mortality and money - will be examined through the plays of Marlowe and Ben Jonson, although a selection will also be made from works by Beaumont & Fletcher, Ford, Kyd, Middleton and Webster. The theatre's function as the centre of popular entertainment, its social impact and influence, and the role of satire in the community will be addressed.

AR308/ 408 **Milton & the Literature of the English Revolution (20 hrs)**

Mid-seventeenth century England saw the first full-scale civil war in Europe since the Middle Ages. This course will look at the fervour of Puritanism, the conflict between the traditional establishment and a new fanaticism of belief, the relationship between religious orthodoxy and the growing power of a mercantile middle class. Liberty, radical individualism and moral righteousness will be studied in Milton's major poems and prose writings, and in Bunyan's zealous and widely-popular fiction writing. Analysis will be made of the polemics of propaganda and sermonizing, the tension between reason and belief, indebtedness to, and adaptation of, The Bible and Dante's Divine Comedy, and the seminal influence of Milton on later writers.

AR310/ 410 **The Early Novel: Defoe, Richardson & Fielding (30 hrs)**

This extended module will look in detail at two works by each of the first major popular novelists in English. The rise of the middle class and of the novel form are intimately linked, and the expansion of trade and empire led to the widening treatment of literary subjects. The course will explore the

novel's displacement of the theatre as the social guardian of morality, as well as observing its growth through advances in printing into the dominant mode of popular entertainment. Aspects of social realism, didacticism, sensationalism, the influence of Rabelais and Cervantes, and varieties of ideas about truth in fiction will be compared through the writers.

AR312/ 412 Studies in the Eighteenth Century Idea of Order (30 hrs)

This module will begin with Dryden's political invective and an examination of the satiric mode as mask for increased social criticism. Major works by Swift, Pope and Johnson will be studied, as well as examples of satiric writings by Arbuthnot, Gay, Congreve and Sheridan, in the light of the age's love of reason, stability, order and caution. The course will chart the influence on the arts of the growth of scientific exploration, applied technology, industrial development, the expansion of the city, and the 'invasion' of the country. The seemingly paradoxical Pre-Romantic nature enthusiasm of writers like Thomson, Gray and Collins will be examined alongside the prevailing taste for symmetrical refinement in art, architecture and society. The contrary fascination with the macabre or nocturnal or gloomier aspects of experience, the cultivation of sentiment, the appeal of the gothic, and pre-occupations with morbidity will be studied in works by Goldsmith, Ann Radcliffe and Walpole. Travel literature of the period will offer further opportunity to observe the cultural schism between exploration and exploitation, open and closed systems of perception.

AR314/ 414 Romanticism: Revolution & Reaction (30 hrs)

This module will study the major Romantic writers within the context of the political upheavals of the American and French Revolutions. The current political debate about independence and authority will be explored directly in the prose of Burke and Paine, Godwin and Mary Wolstonecroft, to introduce students to the major social concerns occupying the minds of Blake, Wordsworth and Coleridge: liberty, equality, love of man, love of nature. The effects of post-revolutionary tyranny on their writing will be examined. Desire for social harmony is evident in much of the literature of this period, yet the differences in attitudes to class and equality are striking; comparisons will be made between the later Wordsworth and Scott, Austen and others. The course will go on to study the ultimate flowering of the

Romantic spirit, aesthetically and radically, in the works of Clare, Keats, Shelley and Byron.

AR316/ 416 The Nineteenth Century Novel (30 hrs)

This course will survey the wide range of fiction written in this period, and will include elements as diverse as the Gothic, the colonial adventure tale, the social realist novel, and early exponents of the psychological novel. The course will give students a chance to compare major writers like Austen and Dickens, but also an opportunity to study writers of popular fiction not offered in other modules, e.g. Maria Edgeworth, Charles Maturin, Edmund Gosse, Rider Haggard, Kipling, Stevenson, Thackeray and Trollope. Students will be asked to consider to what degree the novel acts as a vehicle for social reform, as well as its corollary, the demands of popularity and commercial realism on the author's craft and message. Issues to be raised will be the popularity of the three-decker format, the influence and social effect of lending library circulation on literacy, on the moral education of the public, on artistic freedom, and the theme of the education of the hero/ine.

AR318/ 418 Eminent Victorians: Non-fiction Prose & Poetry (20 hrs)

Victorian sobriety, earnestness and respectability coupled with huge wealth and world power are offset in this period by doubts and anxieties about decaying morality, the certainty of God, inequalities of wealth and opportunity, master and servant. This "high seriousness" about life and society finds form in the prose works of Arnold, Carlyle, Gibbon, Strachey, Ruskin, Pater, Macaulay and Morris. The poetry will be selected from Tennyson, Hopkins, Browning, Swinburne and the Rossettis.

AR320/ 420 Modern Fiction (30 hrs)

This module will study the main novelists and fiction writers of the Modernist movement through the work of James, Conrad, Ford, Lawrence, Joyce, Mansfield, Forster and Woolf. The importance of concurrent exploration of theories of the mind will be discussed as it reveals how artists responded to the broadening scope of fiction. The increasing narrative complexity of modern writing will be examined in some detail. The collapse of confidence with the turn of the century, the demoralization following the First World

War, and the economic depression and confusion that followed, will be charted through prevailing theories of literature and politics.

AR322/ 422 **Modern Poetry (30 hrs)**

This module will trace the origins of the Modernist movement in poetry, commencing with a rejection of the profuseness of nineteenth century expression in language and sentiment, following the Imagist movement, the impact of experimental form in post-Impressionist and Cubist art, and the radical honing down of literary language. The work of Hardy, Yeats, Pound, Eliot and the War Poets will be followed by close reading of a select number of poets: William Carlos Williams, Wallace Stevens, W H Auden, Dylan Thomas and Basil Bunting.

AR324/ 424 **Modern Drama (30 hrs)**

This module provides an introductory survey of the seminal figures of the modern dramatic movement in Europe and America. The central authors to be examined will be Ibsen, Strindberg, Chekhov, Shaw, Pirandello and O'Neill. The course will study the ways in which these writers rejected conventional theatrical form in response to major shifts in the intellectual life of the new century.

Section B : New Literatures in English

AR330/ 430 **Major Nineteenth Century American Authors (20 hrs)**

This module will introduce students to the twin inspirations of American literature, the quest for adventure and philosophical idealism. Works by Hawthorne, Poe and Melville will examine historical portrayals of Puritanism and guilt, the struggle for dominance over land and sea, and the attraction of horror and mystery. Ideals of independence and individualism will be discussed through non-fiction works by Emerson and Thoreau and the poetry of Emily Dickinson.

AR333/ 433 **Readings in Modern American Literature (30 hrs)**

This module will allow students a chance to study modern American writing through a cross-section of genres. Examples of areas of interest in the poetry will be the radical fresh start offered by Eliot, Pound and Amy Lowell; the emphasis on the "local"

through the work of Williams, Stevens and Roethke; the fragmented word-consciousness and anthropological theories of Olson and the Black Mountain poets; the performance poetry of Ginsberg and Ferlinghetti; the alternative visions of Snyder, Bly and Bukowski; the feminist writings of Sexton, Levertov and Plath. Attention will be paid both to recordings and to statements on poetics from contemporary writers now available to the reader. The course will explore the particularities and the wide range of American fiction, examine the popular appeal and success of literary texts from authors like Hemingway, Fitzgerald and Faulkner to the present. Texts will be selected from a wide spectrum of post-war writers - #Nabokov and Roth, Ellison and Baldwin, Barth and Coover, Heller, Kesey and Vonnegut, Doctorow and Pynchon.

AR338/ 438 **Contemporary Writing from Australasia (20 hrs)**

This module will bring into focus the more significant contemporary writers from countries such as Papua New Guinea (Vincent Eri, Nora Vagi Brash) and Fiji (Subramani, Satendra Nandan) alongside works by Australian and New Zealand writers. Where possible, texts will be studied which depict cross-cultural engagements, for example those by Albert Wendt and Christopher Koch, so as to widen the scope of discussion.

AR339/ 439 **South East Asian Authors (30 hrs)**

In South East Asia writers have occupied a curious position: this being determined by, not the least, political and apolitical considerations. F S José, Nick Joaquin, Ee Tiang Hong, LLoyd Fernando, Catherine Lim, Lee Kok Liang, Lee Tzu Pheng, Arthur Yap, K S Maniam and Edwin Thumboo have all written literary texts which reflect their response(s) to a fast-changing ethos and it will be the purpose of this course to explore and examine the manner in which their works help deepen our knowledge of the region and of the individual's position within complex societies. Poems, short stories, novels and plays will be chosen for this course to foreground such themes as multi-cultural living, personal and political identity, modernization and the position of women.

AR340/ 440 **African Literature (20 hrs)**

This module will consider images of Africa through literature written from a wide range of perspectives. Beginning with selections from works by Defoe, Blake, Southey, Livingstone, Stanley, Burton, Darwin, Ballantyne, Rider Haggard, Buchan, Conrad, Burroughs, Schreiner and Maugham, students will discuss such topics as the emancipation of slavery, missionary zeal, theories of evolution and racism, cutural representation, the Victorian creation of the myth of the Dark Continent, and the cult of the white hero. Reference will also be made to comparative American writing about African origins by Haley, Bellow and others. This approach will lay the groundwork for more intensive study of contemporary works by African writers ranging from Lessing and Spark to Achebe and Soyinka.

AR341/ 441 **Drama & Theatre in Post-Colonial Situations (20 hrs)**

This module introduces students to more recent developments in the international theatre scene, focussing on the challenges and achievements of dramatists and theatre groups in post-colonial societies. Among the issues examined will be the interaction between traditional sources and practices and the impact of modernization, as well as specific problems involved in the construction of new post-colonial identities. The course will cover developments in theatre from Canada, Australia, Africa, the Caribbean, India and South East Asia.

AR342/ 442 **Modern Indian Writing (20 hrs)**

The course seeks to introduce students to the literature in English by writers of Indian origin either living in India or abroad. The course will cover poetry, short fiction and the novel, with the emphasis being placed on a firm understanding of the way(s) in which the English language is used to construct/reconstruct history, myth, identity. Texts by Raja Rao, R K Narayan, Salman Rushdie, P Lal, Kamala Das, Nissim Ezekiel, Anita Desai will be considered.

AR343/ 443 **Contemporary Canadian Fiction & Poetry (20 hrs)**

This course will commence with a look at landscape and its effect on the writings of a people. Immigration, isolation, disease, climactic and financial hardship all contribute to the strongly regional literature of Canada. Ethnic concerns between immigrant and native

also constitute a vital part of much of this consciousness. Texts will also explore post-colonial concerns of national identity in a small population spread over a large forbidding terrain, doubly threatened as it is by the power of its nearest neighbour. More recent literature has concentrated on urban and international concerns. Fiction writers to be studied will include Sinclair Ross, Mordecai Richler, Margaret Laurence, Margaret Atwood, Robert Kroetsch and Joy Kogawa. The poets selected for study will be Birney, Purdy, Cohen, Atwood, Newlove and Ondaatje.

AR344/ 444 **Caribbean Literature (20 hrs)**

This course will introduce students to one of the most vibrant of the new literatures in English. The plurality of views for which the Caribbean is well-known will be examined through the literature of its writers. Poetry, prose and drama will be looked at and students will be given a chance to compare their understanding across genres and cultures. Authors likely to be studied include Jean Rhys, Derek Walcott, Wilson Harris, Edward Braithwaite, V S Naipaul, Caryl Phillips, Sam Selvon and George Lamming.

Section C : Genres & Sub-Genres

AR346/ 446 **Drama: Literature, Performance & Social Context (20 hrs)**

Drama is not simply a literary medium, but also a mimetic performative mode of expression. This module allows students to focus on selected dramatic texts and to study their development from written texts to their realization in performance. It will stress the dynamic interrelationships between dramatic performances and the social contexts in which these performances are rooted. Audio-visual materials, videos of dramatic performances and play production workshops will also feature in the course.

AR347/ 447 **Modernism & Modern Drama from Ibsen to Beckett (20 hrs)**

This module offers detailed study of modern drama in relation to modernism. The work of Henrik Ibsen will provide a starting point for consideration of the crucial movements and formal developments - e.g. naturalism, realism, symbolism, expressionism, the theatre of the absurd - which are constituative features of modernist experiments in the theatre. In addition to Ibsen, the course will explore the works

of Strindberg, Jarry, Chekhov, Hauptmann, Gorky, O'Neill, Brecht, Ionesco, Pirandello and Beckett.

AR348/ 448 **American Drama (20 hrs)**

This module offers a detailed introduction into the major achievements of the modern American theatre from the time of O'Neill and Susan Glaspell to contemporary developments in writers such as Sam Shepherd, August Wilson and David Hwang. It will focus upon the struggle to adapt European forms to American experience, upon the quest for an authentic local dramatic language, and upon the establishment of identity in American terms.

AR350/ 450 **Realisms in the Novel (20 hrs)**

This module will study the variety of concepts of realism in fiction writing. Beginning with the Brönte and the legacy of the popularity of the stylized Gothic novel, students will examine the growing social realism of the novel and the increased social responsibility of the genre. Emphasis will be placed upon the role of the artist in the community, as authentic recorder and social conscience. Works will be chosen from those by Charlotte and Emily Brönte, Gaskell, George Eliot, Dickens, George Moore, Gissing and Hardy. Study of psychological realism in texts by Henry James, Kafka and others, will be followed by a look at more recent practitioners of the genre using what is currently termed 'magic realism'.

AR351/ 451 **Mystery & Detection Writing (20 hrs)**

This sub-genre of fiction is fabricated to create a particular type of excitement: suspense, intrigue, fascination, curiosity. Many variations of the sensational and frightening exist within this category, from writing about crimes of murder, violence and corruption to studies of complex psychological motivation to ideological criticism of legal systems and political expediency. This course will begin with a look at the nineteenth century fascination with the macabre and the gruesome, particular in Poe, Dickens, Conan Doyle and London, then explore the twentieth century popularity of the suspense thriller in the works of Christie, Chandler and Simenon, the appeal of the rugged crime fighter in texts by Hammett, Greene and Spillane, and finally the enormous success of works depicting sinister political machinations by Fleming, Le Carré, Forsyth and others. Students will be asked to assess the literary merit of texts which some critics argue suffer from predictable

characterization and formulaic plots, while others defend in terms of crafted intricacy, psychological depth and dramatic intensity.

AR354/ 454 **Confessional Poetry (20 hrs)**

At its best, as in Plath's "Lady Lazarus", confessional poetry is intensely frank, even brutal in its exposure of the poet's self. However, the risk of subjective self-indulgence is great. This module will look in detail at the work of a few contemporary exponents of autobiographical poetry - Lowell, Plath and Sexton, Ginsberg and the Beat Generation, examining the ambiguity and tension that exists between frankness and lurid sensationalism in this type of poetry's very public display of personal emotion, the intensity of depression and despair. At the same time, questions can be raised about the subject and mood of the poetry to draw in parallels with other intensely personal writers as varied as Donne, Coleridge, Dickinson, Hopkins, Dylan Thomas.

AR355/ 455 **Form in Poetry (20 hrs)**

This course is essentially a study of the value and limitations of formal discipline in any aesthetic. Students will look at classical models of strict form, from iambic pentameter to rhyming couplets; from the avowed purposes to the actual function of long narrative or epic form; from the sonnets of Shakespeare, to the odes of Keats, to the cantos of Byron and Pound; from the metrical ballad of Coleridge to the incremental repetition of performance poetry in Ginsberg's Howl or Dylan's Desolation Row. The power of repetition, the function of pattern, the value of rhythm, the mimetic nature of rhyme, the tension between metre and rhythm, the variability of the line, will all be encountered in order to evaluate such debates as those between rhyming and free verse, metronomic rhythm and bardic chant, lyrical and discordant voices. The relationship between formal exactness and socio-political constructs will be explored to ask how far aesthetics are historically and culturally determined, or how far they might influence social change.

AR358/ 458 **The Folk Tale: Universal Motifs (20 hrs)**

Following a close reading of suggested texts, discussion will address the narrative structure, purposes and modes of narration of fairy tales. Different types of interpretation and analysis - archetypal, cultural, psychological and ideological -

will be looked into through the work of Bettleheim, Fraser, Frye, Propp and Zipes. Are these insights transferable to non-Western tales, myths, legends and folklores? Recurrences and transformations of mythic motifs in contemporary works will be discussed.

AR359/ 459 Children's Literature (20 hrs)

Commencing with a historical overview of literature written for children, this course looks at fairy tales, didactic writing, children's classics and contemporary texts. Cognitive and aesthetic aspects will be discussed. Does the visual artwork found in most children's literature complement, supplement or supplant the verbal art of children's literature? Topics include the idea of childhood and the nursery, children's classics, language arts and reading education in the pre-primary and primary schools, literary aspects of such texts and the influence of commercialism on children's literature.

AR360/ 460 Adolescent Literature (20 hrs)

How do authors create the world that exists between childhood and adulthood? Lifestyles, authority relations, social identities, symbolic rituals, ideologies and conventional myths found in Western and Third-World literatures for adolescents are examined. Texts reveal as much about the authors (usually adults) as their readers (teenagers) and create other perceptions of societies and their elders' expectations and understanding of their youths. Topics include common themes in adolescent literature, subject and author in adolescent texts and contexts, and literature reading in the secondary school.

Section D : Critical Approaches to Literature

AR361/ 461 Critical Approaches from Aristotle to Shelley (20 hrs)

Aristotle's Poetics, Aquinas' separation of human and divine, Sidney's Apology for Poetry, Milton's Areopagitica, Shelley's Defence of Poetry chart the history of the creative writer's function and regard in the community. They will be presented, not so much as a blueprint of the development of good taste or of changing aesthetic practices, but more as a series of prose keys to the reading of literature in context, the current role of the artist, the need for intelligent critical comment outside of state and church institutions, as defences offered for freedom of speech, as defining the processes of social and cultural manipulation, and the province of language

and thought we now accept as specially and spacially creative and literary.

AR362/ 462 **Issues & Approaches in Contemporary Critical Theory (20 hrs)**

While much contemporary critical theory may be inaccessible to students because of its abstract and/or theoretical obscurity, the growing influence of new schools of thought in literary interpretation makes it essential for students to come to terms with the study of literary theory. This course will use Hawthorn's 1987 Unlocking the Text to clarify for students the scope of literary theory in an unintimidating yet well-informed and up-to-date way. The emphasis will be upon universal problems encountered by readers of literature: what is a text? how does form predetermine response? what is authorial intention? is the author just the product of the age? how far do linguistic structures determine literary meaning? how do we distinguish literary truth from fiction? what is meant by "the intended reader"? what is the social value or effect of literature?

AR363/ 463 **Post-Colonial Literary & Cultural Theory (20 hrs)**

This module offers an introduction to the growing body of literary and cultural theory produced by writers and scholars of post-colonial literature, culture and society. Amongst the writers featured will be Franz Fanon, O Mannoni, George Lamming, Amilcar Cabral and Edward Said. The module will also concern itself with the applications of and relevance to post-colonial societies of contemporary Euro-American literary theory.

AR464 **Marxist Literary Criticism (20 hrs)**

The course will be arranged according to a classification suggested in Ann Jefferson and David Robey's Modern Critical Theory (pp. 166-220). That is to say, the Marxian idea of literature will be read through reflectionist, production, genetic, and negative knowledge models of criticism, as developed by the theorists George Lukacs, Pierre Macheray, Louis Althusser, Lucien Goldmann, Walter Benjamin, and Theodor Adorno. The relationship between Marxism and Feminism will be discussed through Julia Kristeva's criticism. Some applications of these social theories of literature have been the reassessment of Balzac's "realism", Joyce's "modernism" and Beckett's "nihilism".

AR465 Theories of Reading: Narrative and Reader Responses (30 hrs)

This module will address two distinct but related aspects of reader theory: Narratology and Reader Response. Following Bal's 1985 Narratology, students will be introduced to the theory of narrative, which attempts to separate text (as words from speakers) from story (as representation of characters, ordering of events and point of view) from fabula (as plot, actors and events). This module will address crucial aspects involved in the sequential construction of written discourse: the nature of the "fictional" and the "real", the credibility of the illusion of art, the reader's demands of a "logic of events", the reliability of the storyteller, the clarification of "tone", the focus of the meaning, and the limits as well as the power of language. Quite different answers have been found by critics over the last century or so to the question of where the meaning of any given text can be located and how an interpretation may be justified. Increasingly in recent decades attempts have been made to describe the production of meaning in terms of the interaction of the reader with her or his text rather than what the writer is supposed to have intended or what might be inherent in the text itself. This course will consider a range of reader response critics - among them E D Hirsch, David Bleich, Stanley Fish and Norman Holland, and will apply their theories of reading to selected short pieces of fiction and poetry.

AR466 Psychoanalytical Readings of Literature (20 hrs)

The course will survey some applications of "classical" (Freudian and Jungian) psychoanalysis to the interpretation of poetry and prose, and then apply in practical reading exercises and to a wide range of texts some of the revisionary theories developed by Jacques Lacan. Among the theorists considered will be Frederick Crews, Simon Lesser, Norman Holland and Siegmund Freud himself.

AR467 Structuralism, Semiotics & Post-Structuralism (30 hrs)

The module will consider the history, theory and some practical applications of those systems of signs which are crucial in giving societies coherence. Its scope will be broad - everything from dress codes to "body language" (proxemics and kinesics) - and its working premise will be (following Roland Barthes' suggestion) that such codes or semiotic systems can be treated as analogous to language; but they are based upon

"grammars" which like linguistic grammars can be revised or qualified to generate new meanings without destroying the underlying integrity of the system. The theories of Kristeva, Eco and Jacobsen will be examined. Students will also read a number of post-structuralist writers from several points of view: as thinkers who try to depart from, yet nonetheless in some ways remain indebted to, those "systems builders" who preceded them; and as writers whose methods and aspirations distinguish them from the modernist and post-modernist movements in literature and in art. The main theorists will be Barthes, Derrida and de Man.

AR470 Feminist Readings of Literature (30 hrs)

Using Elaine Showalter's The New Feminist Criticism and Toril Moi's Sexual/Textual Politics as core reading, this course will survey the development of feminist readings of literature from the pioneering work done by Millett and de Beauvoir to contemporary Anglo-American feminist critical theory practiced by Kolodny and Showalter, and the French critical theorists Hélène Cixous and Julia Kristeva. The course will discuss the representation of women in literature, and the role of women as readers and as writers. Some issues to be raised will be the exclusion of women's writing from the canon, the politics of gender, ethnicity, patriarchy, alienation and marginalization. Literary texts to be looked at will range from the Wife of Bath's Tale to the poetry of Plath and the Transformations of Anne Sexton, fiction from the Brönte to that of Jean Rhys and Toni Morrison.

Section E : Cross-Cultural/Multi-Displinary Studies

AR371/ 471 Romanticism & the Visual Arts (20 hrs)

This module, taught in collaboration with members of the Art Department, will consider various aspects of visual representation of importance to literature students. Direct artistic production, such as Blake's illustrations to his own poetry, as well as engravings to other works, will be discussed to discover how far these complement or alter verbal content. The special value attached at the time to the Imagination and the unconscious, to the power of imagery, the heightened appreciation of nature, and the importance of landscape will be related to new ideas on light and shadow being advanced by Turner and others, and to visual representation of atmospheric and symbolic landscapes, of the imaginary, the pastoral and the sublime.

AR372/ 472 **Images of the City: Art & Literature (20 hrs)**

This module will seek to show the many ways in which the city has been represented in literature and art. From Blake's condemnation of the exploitation of chimney sweepers in London to visions of architectural splendour and futuristic constructs of civilized harmony, cities have preoccupied many writers and inspired complex love/hate relationships. The processes of urbanization, industrialization, alienation and depersonalization which produced The City of Dreadful Night are depicted by Dickens, Gissing, Lawrence, Dos Passos, Céline, Joyce and others. Yet the city also offers opportunities for educational advancement, centralized efficiency, commercial growth, independence of thought and social harmony, though few writers have extolled the city's virtues. Is there a common bias against an accurate representation of the city? How frequently are we presented with praise of architectural beauty rather than sentiment about industrial blight? Sociological approaches like that of Raymond Williams' 1973 The Country and the City will be used to re-examine perspectives of man-made environments. Photographic records of the city from Alfred Stieglitz to contemporary graphics will be used to illustrate such diverse and mixed reactions.

AR373/ 473 **Origins of Modernism: Literature, Art & Music (30 hrs)**

Modernism stems from a neo-Classical revolt against the excesses of an overblown Romanticism. In literature, art and music, this reaction took the form of a return to simplicity, directness, precision and innovation. Demands for a new economy of language championed by Pound and his allies were mirrored by neo-Classical musical innovators like Poulenc and Stravinsky, and by Cubists and Abstract Impressionists from Picasso to Juan Gris. Simultaneously, musicians, writers and painters turned away from over-stylized sophistication and towards folk traditions for fresh inspiration: Bartok, Janacek, Orff, Lawrence, Yeats, Henry Moore and Mark Rothko all found an appeal in the earthy and natural, and desired to express a sharper clarity in simplicity of form. Parallels between the arts of the modern period may be drawn in several ways, as, for example, in the way art reflects the contemporary fragmentation of a stable culture through literary forms of jarring images and jagged juxtaposition, in the breakdown of tonality in music like that of Schoenberg, in the surrealism of Klee or Kandinsky's paintings. In a time of continuous change, aesthetic movements tend to be volatile: experimental forms proliferate, yet in literature,

music and art, minimalist and radical challenges to traditional views of art and the artist tend, paradoxically, to be the one consistent feature of a continuing modernism. This extended course will offer students a broad base from which to examine the art of the twentieth century. By examining the search for new forms of relevant expression from a number of mediums, it is hoped that students will be able to understand more fully the common objectives of modern artists.

AR374/ 474 **Orality of Literature (20 hrs)**

This module will study the "sound" value of verse, from song as accompaniment to words in early poetries, to the social function of rhythm, rhyme and repetition in chants, psalms, ballads, and oral forms in the call and response African American expressive tradition, as well as communal singing as varied as opera, spirituals, folk, blues and protest songs. The role of song as oral history, as substitute for literacy, as an expression of social power will be examined. Lyrics and their sung performance will be studied in medieval and Elizabethan love songs, in the jazz poems of Ferlinghetti, in the wide range of oral narratives employed by Ralph Ellison, in the music of Leadbelly and Woody Guthrie, in the use of the African oral tradition in the fiction of Zora Neale Hurston, and in the songs of Cohen, Dylan and Vega.

AR375/ 475 **Literature, Film & the Media (30 hrs)**

This course will attempt to broaden students' appreciation of both literature and film through a comparative analysis of their different media - the verbal and the visual, the sequential and the synchronic, narrative and dramatic divergencies. Both film adaptations of book texts, and intertextual borrowings from film techniques of representation into fiction will be presented. Unlike dramatic literary experience, the all-engrossing power of film will be considered - its immediacy, the control of the director over interpretation and audience passivity, the impact of soundtracks and special effects: all contribute to an art form of unprecedented potential and influence. The social value and effect of the medium will be related to the influence of mass communication in newspapers, advertisements, videos and media uses of imagistic, symbolic and subliminal forms of indoctrination and propaganda for commercial and political motives. Examples of a wide variety of film will be offered by directors ranging from Eisenstein to Fellini and Bergman; Chaplin to Disney and Spielberg; Kurasawa to Godard and Scorcese.

AR378/ 478 **Literatures across Cultures: Perceptions of the Other (30 hrs)**

This course seeks to acquaint the student with the way(s) in which images of the Orient and, in consequence, the Oriental (i.e. Asia and Asians) have been created and built up by writers, chiefly from the British mainland. Authors to be studied include Stevenson, Kipling, Conrad, Forster, Farrell, Paul Scott, Maugham and Burgess. The course will consider cultural perceptions of the Other, addressing such issues as the cult of the exotic as promulgated through Western eyes, imaginative and literal journeys, interactions between settings and characterization. The aim is to increase awareness of the complexities and implications of literary creations across cultural and other boundaries. In addition, the module will chart the process of cultural assimilation by the Anglo-American cultural "centre", that is, it is arguable that writers from "outside" this vortex become absorbed rather than are allowed to infuse new variations. As early as Henry James' anglicization, a succession of artists from countries colonized by the English language have themselves become a part of what might be called an imperial establishment. This course will ask students searching questions about the risks to regional literary expression of cultural and aesthetic identity as a result of the "central" pull of the literary élite and publishing empire. Some of the writers to be discussed will be Nirad C Chaudhuri, Naipaul, T S Eliot, Nabokov, Ishaguro, Timothy Mo, Paul Théroux and Noel Barber.

AR379/ 479 **Women & Culture in the Novel (30 hrs)**

This module offers a gender-based and thematic approach to literary representation of women and to literature written by women and/or for and about women. It will examine the role of women in influencing or being marginalized by systems of patriarchal power, taking its cue from criticism like Gilbert and Gubar's 1979 The Madwoman in the Attic. Writers and critics to be considered will include Charlotte Brönte, Harriet Martineau, George Eliot, Kate Chopin, Virginia Woolf, Gertrude Stein, Simone de Beauvoir, Doris Lessing, Kate Millett, Margaret Atwood, Angela Carter, Erica Jong, Alice Walker and Julia Kristeva.

AR380/ 480 **Literature & Technology (20 hrs)**

More and more people are realizing that technology is fast becoming, in the words of the French philosopher Raymond Arón, the greatest determinant of human destiny today. As such it is increasingly important to look at the various ways in which writers have incorporated technology into their works and responded to its many challenges and consequences - such as advertisements, genetics, globalization and depersonalization. This course will examine narrative fictions of utopian and dystopian societies, ranging from utopias posited by Bacon, Morris and Butler, through satirical doom-laden prophecies imagined by Wells, Huxley, Orwell, Clarke, Aldiss and Vonnegut, to contemporary women's science fiction by Piercy, Le Guin, Lessing and Atwood, which has invaded the once exclusive male territory of the genre and offers future worlds of either a feminist or a genderless variety. Thè common feature of these texts is their function as vehicles for ideological criticism of the present at the same time as they leap towards imagined worlds of disaster or deliverance. The course will offer students a chance to study the complexity of satire.

AR381/ 481 **Literature & Ecology (20 hrs)**

Whitman's ethos - "In Wildness is the preservation of the World" - will be the starting point for this module exploring the range of literature from different periods and centuries to reveal man's imaginative response to the physical environment. The scope of the course will range broadly over issues of nature worship from primitivism to aboriginal rites; of religious inspiration and despair in the wilderness through alienation, hostility and survival; of literary settings and motifs, geographical or continental prejudices and privileges, conquests and destruction; of ecological insensitivity through war, pollution and abuse; of ideological links between man, animal and land; of love, beauty, responsibility and harmony. Literary responses will encompass the pastoral, pantheist, lyrical, and explore adventure and travel writing. Writers for consideration will be selected from Thomson, Wordsworth, Blake, Thoreau, Dickens, Melville, Hardy, Lawrence, Edward Thomas, Snyder, Chatwin, Hoban, John Irving, Freya Stark and Jonathan Raban.

AR385/ 485 **The Nineteenth Century European Novel (30 hrs)**

This module will bring together three French and three Russian writers from the most dominant period of the novel form. One major representative work will be chosen from the work of Balzac, Flaubert, Tolstoy and Dostoevsky, with students being given the chance to read further texts by two authors of their choice. The course is designed to facilitate a comparative understanding of the panoramic nature of the genre, while at the same time helping students to appreciate the precision of description mastered by these practitioners. Some time will also be spent on the shorter works by Proust, Stendhal, Lermontov and Gogol.

AR386/ 486 **Twentieth Century European Literature (20 hrs)**

This title is a misnoma, the material being drawn from Russian as well as European writers, and ranging from Hesse and Mann, Koestler and Kafka, Sartre and Camus, Solzhenitsyn and Ahkmathova, Holub and Hasek and Kundera, Herbert and Brodsky. The texts will be in fiction and poetry, offering an insight into those writers caught in a landscape very frequently at war, or threatened by cold war, or oppressed through occupation. Institutional repression, poverty, isolation, existentialism, faith and the endurance of the human spirit will be discussed, and an assessment will be made of their seminal influence on writers of English literature.

AR387/ 487 **Asian Literature in Translation (20 hrs)**

This module studies representative poetic and fictional works from the classical and modern literatures of China, Japan and India, emphasising comparative perspectives both within the non-Western tradition and in juxtaposition to Western thinking.

AR388/ 488 **Contemporary South American Literature in Translation (20 hrs)**

This course will concentrate on the work of four major influential contemporary writers from the non-English speaking American countries. Each will be studied in his particular national and linguistic context, but also an attempt will be made to assess the impact of their work, formally and philosophically, on other writers. Students will look at Borges' philosophical fictions about institutional ambiguity, Paz's dynamic awareness of Romantic conscience and consciousness, Neruda's poetry of political commitment and assertions

of popular communism, and Marquez's myth-making role as a leading exponent of "magic realism".

Section F : Writing

AR391/ 491 **Poetry Workshop (20 hrs)**

This course will be an intensive examination of the variety of forms of poetic creativity possible, encouraging student awareness and imitation of many styles, in order to understand the characteristics of the genre, the function of intensity of expression and the role of originality. Students will then be encouraged to experiment in original and individualistic ways, stretching their range of use of language, rhythm, voice and control.

AR393/ 493 **Playwriting (20 hrs)**

This module introduces students to the fundamentals of writing a play, covering topics such as conceptualizing and action for the stage, plot construction, and how to build a character.

AR395/ 495 **Writing the Short Story (20 hrs)**

This course aims to help students arrive at a better understanding of the demands of the short story form in order for them to write short fiction themselves. Questions such as: What is a short story? What makes a good short story? How do you work on characters in a short story? How do you keep readers engaged in a short story? are just some of the areas that will be discussed. Students will be urged to write their own stories as a way of responding to these questions. Classic examples from this genre will, naturally, be used for purposes of illustration and discussion.

Academic Subject : Geography

Geography : Major

Year	Module	Title	No. of Hrs
1	AG101	The Physical Environment	30
	AG102	Human Impact on the Natural Environment	20
	AG103	Introduction to Maps and Diagrams	10

Year	Module	Title	No. of Hrs
2	AG201	Spatial Organization	20
	AG202	Spatial Patterns & Processes	30
	AG203	Elements of Cartography	10
3	AG301	Geography of Landforms	30
	AG302	Biogeography & Soils	30
	AG303	Urban Geography	30
	AG304	Economic Geography	30
	AG305	Geography of Southeast Asia	20
	AG306	Geography of the Pacific Rim	20
	AG307	Air Photo Interpretation	20
	AG308	Basic Quantitative Techniques	20
4	AG401	Resource and Environmental Management	30
	AG402	Geography of World Affairs	30
	AG403	Population Geography	30
	AG404	Regional Geography of North America	20
	AG405	History of Geographic Thought	20
	AG406	Research Methods in Geography	20
	AG407	Geographic Information Systems	20
	AG408	Remote Sensing	20

Geography : Minor

(Modules for students choosing Geography as a Minor after taking Geography as an Academic Subject during their first two years of study. Students who have not taken geography during the first two years of the course may offer geography as a minor subject but they must have an A level geography)

Year	Module	Title	No. of Hrs
3	AG301	Geography of Landforms	30
	AG303	Urban Geography	30
	AG309	Geography of Singapore & Malaysia	20
	AG310	Field Techniques in Geography	20
4	AG305	Geography of Southeast Asia	20
	AG308	Basic Quantitative Techniques	20
	AG403	Population Geography	30
	AG409	Geography of Natural Resources	30

Description of Modules

Geography : Major

AG101 The Physical Environment (30 hrs)

This module examines the elements of the physical environment. Topics covered include the composition and structure of the earth's crust, processes that form and shape the earth's surface in different climatic regions, the distribution and characteristics of major terrestrial biomes.

AG102 Human Impact on the Natural Environment (20 hrs)

This module considers the distribution of man and the different ways in which human activities have altered the climate, vegetation, soils and landforms of the earth.

AG103 Introduction to Maps and Diagrams (10 hrs)

This is an introductory course to the use of maps and diagrams. The course will emphasize the role and use of maps as tools and resources in the study and analysis of cultural and physical landscapes.

AG201 Spatial Organization (20 hrs)

This module introduces the student to the way geographers think about the world, the ways people perceive and organize space. The course will examine concepts such as location, relationships and classification which form the basic ideas of human geography.

AG202 Spatial Patterns and Processes (30 hrs)

This course explores the interrelationships between processes and patterns in the context of spatial diffusion and spatial interaction. Spatial patterns are analyzed in terms of their geometric elements of points, lines and areas.

AG203 Elements of Cartography (10 hrs)

This course introduces students to the fundamentals of drafting, lettering and map layout, the representation of statistical data on graphs, diagrams and maps.

AG301 Geography of Landforms (30 hrs)

In this course, processes leading to the evolution and formation of landforms in a variety of climates, terrestrial and marine environments are examined. Lectures will be supplemented by laboratory work and field visits.

AG302 Biogeography & Soils (30 hrs)

This module will examine aspects of the contemporary distribution of plants and animals and factors controlling their dispersal. Topics covered include energy flow and productivity, nutrient cycles, population dynamics, plant - soil interactions and anthropogenic disturbance.

AG303 Urban Geography (30 hrs)

This course provides a systematic introduction to urban geography. It deals with such topics as the history of urban form, the spatial arrangements of landscape in the city and models of urban growth. These will be examined with particular reference to the cities of the developing and developed world.

AG304 Economic Geography (30 hrs)

The spatial characteristics of world and regional economic activities, location of industries and services, the principles of spatial interactions in trade and transportation networks form the contents of this module on economic geography.

AG305 Geography of Southeast Asia (20 hrs)

The course examines the physical, social and cultural diversity of the region. Discussion will centre on such issues as resource distribution and exploitation, development policies and demographic and environmental problems.

AG306 Geography of the Pacific Rim (20 hrs)

In this course, the causes of rapid regional growth are examined. Of particular concern are issues related to the long term prospects and patterns of development of the region.

AG307 Air Photo Interpretation (20 hrs)

This is a basic course on the use and application of aerial photographs to geographic analysis. The course will focus on the identification and interpretation of both physical and cultural landscape features.

AG308 Basic Quantitative Techniques (20 hrs)

This course serves as an introduction to quantitative analysis in geography and the application of elementary statistical techniques to geographic problems. Students will be introduced to some computer-based statistical packages.

AG401 Resource and Environmental Management (30 hrs)

This course introduces students to a range of current environmental issues through the study of selected environmental problems in both developed and developing countries. The course will also consider various means of data collection and impact assessment and environmental legislation.

AG402 Geography of World Affairs (30 hrs)

This course focuses on the geographic aspects of boundaries, frontier areas, regionalism and economic and political alliances. The mediating effects of political decisions on the geographic aspects of trade routes, population movements and patterns of economic activity will be discussed in a regional and global context.

AG403 Population Geography (30 hrs)

The concern of this module is to account for the spatial distribution of the human population. Particular attention is given to the causes of variations in the pattern of fertility and mortality, the processes of migration and to the formulation of population policy and the implementation of population programmes.

AG404 Regional Geography of North America (30 hrs)

This course deals with the regional geography of North America. It includes a study of the physical environment but the emphasis will be on the historical and cultural processes that have shaped the region's landscape.

AG405 History of Geographic Thought (20 hrs)

This course examines the evolution of geography as an academic discipline from a philosophical perspective. More specifically the course will examine the changing nature of geography, its methodological development and future trends.

AG406 Research Methods in Geography (20 hrs)

This module is designed to introduce students to the philosophical issues and approaches in geographical research. It will also familiarise students with the methods and techniques of analysis. The latter will include research design, geographical data sources and statistical inference. A 10-14 day field research within or outside Singapore forms a neccesary part of this module. Students are expected to hand in individual reports to be examined.

AG407 Geographic Information Systems (20 hrs)

This module introduces students to methods of collecting, storing, analyzing, integrating and mapping geographic data on a microcomputer. Appropriate software for geographical analysis of data will also be dealt with.

AG408 Remote Sensing (20 hrs)

In this module students will be introduced to the principles of digital processing of remotely sensed imagery. Students will learn to apply these principles to study vegetation, natural resources and other geographic phenomena.

Geography : Minor

AG301 Geography of Landforms (30 hrs)

In this course, processes leading to the evolution and formation of landforms in a variety of climates, terrestrial and marine environments are examined. Lectures will be supplemented by laboratory work and field visits.

AG303 Urban Geography (30 hrs)

This course provides a systematic introduction to urban geography. It deals with such topics as the history of urban form, the spatial arrangements of landscape in the city and models of urban growth. These will be examined with particular reference to the cities of the developing and developed world.

AG305 Geography of Southeast Asia (20 hrs)

The course examines the physical, social and cultural diversity of the region. Discussion will centre on such issues as resource distribution and exploitation, development policies and demographic and environmental problems.

AG308 Basic Quantitative Techniques (20 hrs)

This course serves as an introduction to quantitative analysis in geography and the application of elementary statistical techniques to geographic problems. Students will be introduced to some computer-based statistical packages.

AG 309 Geography of Singapore and Malaysia (20 hrs)

This course deals with the physical and human geography of Singapore and Malaysia. Discussion will focus mainly on contemporary issues relevant to the development of the region such as urban and new town development, industrial development, population issues, resource and environmental management, conservation and transport planning.

AG 310 Field Techniques in Geography (20 hrs)

This course introduces the students to geographic field methods and techniques in rural and urban areas. Field mapping, data collection and record keeping, spatial sampling, interviewing, coding and visual recording synthesis and reporting form the main course components. One week field work forms a necssary part of this module. Students are expected to hand in individual reports to be examined.

AG403 Population Geography (30 hrs)

The concern of this module is to account for the spatial distribution of the human population. Particular attention is given to the causes of variations in the patterns of fertility and mortality, the processes of migration and to the formulation of population policy and the implementation of population programmes.

AG 409 Geography of Natural Resources (30 hrs)

This course seeks to examine the diversity of natural resources, their distribution and exploitation as well as the implications of their use. Aspects that will be dealt with in greater detail include concepts of resources, 'common property' resources and sustainable development, trends in resource exploitation in developing countries, resource planning and management, environmental and policy dimensions of resource development.

Academic Subject: History

Year	Module	Title	No. of Hrs
1	AH101	The Ancient Far Eastern Civilization	30
	AH102	The Ancient Greek & Indian Civilization	30
2	AH201	Traditional Siam, Burma & Cambodia	30
	AH202	History of Srivijaya, Majapahit and Malacca	30
3	AH301	History of Nineteenth Century S'pore	30
	AH302	History of Twentieth Century S'pore	30
	AH303	The Renaissance & Scientific Revolution - Before and After	20
	AH304	Science & Technology as a Common Human Enterprise	30
	AH305	History of Ideologies and Social Thought	30
	AH306	Nationalism in 20th Century India	20
	AH307	Modern European History	20
	AH308*	Peasant Uprisings in Southeast Asia	20
	AH309*	Themes in Australian History	20
	AH310*	Art & Religion in Asia	20

* Select one of these three elective modules

AG403 Population Geography (30 hrs)

The concern of this module is to account for the spatial distribution of the human population. Particular attention is given to the causes of variations in the patterns of fertility and mortality, the processes of migration and to the formulation of population policy and the implementation of population programmes.

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Academic Subject: History

Year	Module	Title	No. of Hrs
1	AH101	The Ancient Far Eastern Civilization	30
	AH102	The Ancient Greek & Indian Civilization	30
2	AH201	Traditional Siam, Burma & Cambodia	30
	AH202	History of Srivijaya, Majapahit and Malacca	30
3	AH301	History of Nineteenth Century S'pore	30
	AH302	History of Twentieth Century S'pore	30
	AH303	The Renaissance & Scientific Revolution - Before and After	20
	AH304	Science & Technology as a Common Human Enterprise	30
	AH305	History of Ideologies and Social Thought	30
	AH306	Nationalism in 20th Century India	20
	AH307	Modern European History	20
	AH308*	Peasant Uprisings in Southeast Asia	20
	AH309*	Themes in Australian History	20
	AH310*	Art & Religion in Asia	20

* Select one of these three elective modules

Year	Module	Title	No. of Hrs
4	AH401	Problems in Historical Interpretation	30
	AH402	Practising History	30
	AH403#	US-Soviet Relations	30
	AH404#	US-Japan Relations	30
	AH405#	Wealth & Power in Western Europe	30
	AH406#	Wealth & Power in the Far East	30
	AH407#	Wealth & Power in Southeast Asia	30
	AH408#	British India	30
	AH409#	Imperialism & Its Economic Impact on Indonesia	30
	AH410#	Thailand's Response to European Imperialism - A Social History	30
	AH411#	The Pacific Community	30
	AH412#	The Role of Japan in the Pacific Basin	30
	AH413**	Imperialism Through the Eyes of the Novelist	20
	AH414**	A Cultural History of Singapore	20
	AH415**	Contemporary Chinese History and Its Literature	20
	AH416**	Contemporary US History and Its Historical Novels	20

\# Select four of the ten prescribed modules
** Select one of the four free modules

Minor 1

(Modules for students offering History as a Minor after having taken History as an Academic subject during their first two years of study).

Year	Module	Title	No. of Hrs
3	AH301	History of Nineteenth Century S'pore	30
	AH302	History of Twentieth Century S'pore	30
	* One Module		20
	* One Module		20
4	AH401	Problems in Historical Interpretation	30
	AH402	Practising History	30
	* One Module		20
	* One Module		20

* Students may select modules of 20 hours each for each of the years.

Minor 2

(Modules for students offering History as a Minor, but have not taken History as an Academic subject during their first two years of study).

Year	Module	Title	No. of Hrs
3	AH101	The Ancient Far Eastern Civilization	30
	AH201	Traditional Siam, Burma & Cambodia	30
	* One Module		20
	* One Module		20
4	AH302	History of Twentieth Century S'pore	30
	AH307	Modern European History	20
	AH401	Problems in Historical Interpretation	30
	* One Module		20

* Students may select modules of 20 hours each for each of the years.

Description of Modules

AH101 The Ancient Far Eastern Civilization (30 hrs)

This core module will cover the development of the Chinese and Japanese civilizations. The development and diffusion of the Chinese type of bureaucratic monarchy will be dealt with as well as the political philosophies which have been the bases of the state ideology of Far Eastern countries.

AH102 The Ancient Greek and Indian Civilizations (30 hrs)

This core module introduces students to the major cultural traditions of Greece and India. The topics covered include the evolution of religion and philosophy, political thought and institutions and social organization.

AH201 Traditional Siam, Burma and Cambodia (30 hrs)

In this core module, the history of traditional Siam, Burma and Cambodia will be surveyed not only in terms of the development of kingship but also in the wider context of Indianization, cultural borrowing, expansion and conflict. Similarities and divergence will be highlighted and accounted for.

AH202 History of Srivijaya, Majapahit and Malacca (30 hrs)

This core module examines the history of Srivijaya, Majapahit and Malacca. It will focus on their respective rise and expansion, maritime and political relations with other countries like China and India.

AH301 History of Nineteenth Century Singapore (30 hrs)

This is a core module. It examines the motives behind the establishment of the settlement. Developments and changes in Singapore during the nineteenth century, and the origins of a plural society in the colony will also be covered.

AH302 History of Twentieth Century Singapore (30 hrs)

In this core module the impact of the economic depression, World Wars, and the emergence of political parties after the war will be examined. A study of Singapore's regional and international relations during this period will also be incorporated.

AH303 The Renaissance and the Scientific Revolution - Before and After (20 hrs)

The topics covered in this core module include translations of Arabic texts which gave rise to the Renaissance in Europe, Science during the Renaissance and the Scientific Revolution, transmission of western science and technology to the East, and the impact of western learning in China and in Japan.

AH304 Science and Technology as a Common Human Enterprise (30 hrs)

This course deals with the development of science and technology in the ancient civilisations of Egypt, Mesopotamia, China, India and Greece giving emphasis to its relation to society.

AH305 History of Ideologies and Social Thought (30 hrs)

This core module examines the foundation and development of Western thought. It begins with the Classical and early Christian thought and the medieval synthesis. The second part of the course centres on the Reformation, the Enlightenment and French Revolutionary thought prevalent in the 17th and the 18th centuries. The final part covers the development of ideologies and social thought related to conservatism, romanticism, liberalism and Marxism.

AH306 Nationalism in 20th Century India (20 hrs)

The main focus of this module will be the responses of the Indian National Congress and the Muslim League to British rule in twentieth century India. The contrasting political styles of M K Gandhi and Muhammad Ali Jinnah via-a-vis the Raj culminating in the partition of India in August 1947 will be a related theme.

AH307 Modern European History (20 hrs)

This core module surveys political, economic and cultural events of Europe influence and control over the rest of the world grew to an unprecedented degree. These developments have been expected to bring greater prosperity and good fortune. Instead, they helped to foster competition and hostility among the great powers of Europe and to bring on two terrible wars that undermined Europe's strength and its influence in the world. Emphasis is on the impact of industrialization and democracy on Europe's political society and culture.

AH308 Peasant Uprisings in Southeast Asia (20 hrs)

This prescribed module focuses on peasants' everyday resistance against more powerful people and institutions trying to extract their labour, produce and money. Unlike rebellion and other forms of discontent, peasant resistance is generally non-confrontational, involves little planning, requires no or only modest co-ordination with others, and often conceals the actor's identity. The unwritten history of peasant resistance is a relatively new theme in history - there is considerably more to peasant politics than unrest and rebellion. As such this module should be of interest to students of peasant societies and other oppressed people.

AH309 Themes in Australian History (20 hrs)

This prescribed module examines significant themes in Australian History like crime and punishment, racism and nationalism, church and community, and Australian response to the World Wars.

AH310 Art and Religion in Asia (20 hrs)

This prescribed module examines the impact of religions in Asian society and political institutions. In particular, the module focusses on the influence of religions like Hinduism and Buddhism in South Asian and East Asian societies. As Hindu and Buddhist

beliefs have featured prominently in architecture and a number of different art forms, this module examines the influence of religion on art in Asia.

AH401 Problems in Historical Interpretation (30 hrs)

This is a core module. As a body of knowledge, history has a long tradition in many civilizations. In this module, western historical thinking from the ancient times to the modern age will be covered. Students will be given opportunities to explore the main issues and problems in historiography, philosophy of history, and historical method. Interpretation of non-print materials and quantitative methods in historical research will be incorporated into the module.

AH402 Practising History (30 hrs)

In this core module, students will be exposed to the techniques of writing history, and will explore the roles of an historian, including the role of the historian as an artist. Issues covered will include discussion of how historians think and of how historians can claim to describe that which no longer exists. Students will also be given opportunities to practise critical judgement on the materials of history drawn from diverse sources.

AH403 US-Soviet Relations (30 hrs)

Underpinning this prescribed module will be the geo-political and historical analysis of US-Soviet relations from the Cold War to the present. The main emphasis will be on super-state rivalry arising out of their common desire to extend their respective political influence and dominance in Asia, Africa and the Middle East. Detente and the current decline of Soviet influence will be a significant component of the course.

AH404 US-Japan Relations (30 hrs)

This prescribed module will examine the changes in US-Japan relations. It will focus on Japan's phoenix-like rise from the ashes of defeat in World War II to its position as a modern world power. In view of Japan's economic miracle, it is important to examine US-Japan relations.

AH405 Wealth and Power in Western Europe (30 hrs)

This prescribed module traces the economic and political development on Western Europe in modern times. Beginning with a brief survey of the impact of the Industrial Revolution in Britain, an emphasis is placed on the spread of industrialisation in Western Europe, the development of the European society and politics, the social foundations of power, expansion of politics and the public sector, the challenge of the labour movement and trends in thought and the arts during the period 1850 to the post-war years. The concept of "Capitalism" and "Imperialism" are also constantly stressed throughout the course.

AH406 Wealth and Power in the Far East (30 hrs)

This prescribed module will examine the involvement of industrialists and entrepreneurs in the political development of countries like Japan, Korea and Taiwan. It will also focus on government policies which facilitate economic progress in these countries.

AH407 Wealth and Power in Southeast Asia (30 hrs)

Wealth and power in Southeast Asia have become synonymous. Successful entrepreneurs and businessmen have often become political leaders, some reaching national stature. High ranking professional soldiers with the army as their power-base, have over the years shaped and influenced political development. Also vying for power is a new generation of college-educated technocrats, some of whom have already made their mark. This prescribed module will examine their contributions in society.

AH408 British India (30 hrs)

In this prescribed module, students will learn to analyze both what the British did to and what they did for India. The period covered will span from the eighteenth to the nineteenth century. The module will begin with an examination of the rise of British power in India in the eighteenth century to the conquests and administration of Governors and Viceroys such as Clive, Hastings, Cornwallis and Curzon. Issues covered will include the extent of social reform and material progress achieved under British administration, and structural changes in Indian society by the end of the nineteenth century.

AH409 Imperialism and Its Economic Impact on Indonesia (30 hrs)

This prescribed module covers the development of Dutch imperialism and its economic impact on Indonesia from the implementation of the Culture System to the outbreak of Second World War in 1941. The nature of Dutch colonial rule was revealed in the operation of the Culture System, the Liberal Policy and the Ethical Policy. The process of how these economic systems affected the plantation economy and produced situations of "economic dualism", "static expansion" and "agricultural involution" is fully explored in the course.

AH410 Thailand's Response to European Imperialism - A Social History (30 hrs)

In this prescribed module, Siam's relations with neighbouring states and the West will be examined. Emphasis will be on the methods by which Siam was able to retain her non-colonial status during the heyday of western imperialism in Southeast Asia. Students will get to explore the various imperatives for reform and the impact these had on Thai society and royal authority.

AH411 The Pacific Community (30 hrs)

This prescribed module will survey the international relations and the developing international political economy among the nations bordering on the Pacific Ocean. Topics include the "Pacific Basin" concept, the role of the US and "hegemonic stability" theory in the Pacific, the legacies of the Korean War, the Sino-Soviet dispute and Southeast Asian relations with the Pacific. Various pan-Pacific concepts such as APEC and EAEC will also be examined.

AH412 The Role of Japan in the Pacific Basin (30 hrs)

In recent years, spectacular growth in the Pacific Basin is transforming world politics and economics. The high rate of growth in production, international trade, and overall economic achievement in this region has brought about a shift in the world's political and economic centre of gravity, a shift away from the Atlantic to the Pacific. This prescribed module examines the role of the principal actor - Japan - in the new dynamism of the Pacific. Besides providing an historical perspective, an attempt is also made to speculate on the economic and political consequences of this Asian-Pacific dynamism for Japan and for the

region as a whole.

AH413 Imperialism Through the Eyes of the Novelist (20 hrs)

This free elective first defines and examines the motives for imperialism in the 19th and 20th century. It then stresses on the economic and social impact of imperial rule on the indigenous peoples as they seized upon such "Western" traits as nationalism, democracy, science, and technology and began first to question and then to challenge the overlordship of their colonial masters - all through the eyes of a few selected novelists and their works.

AH414 A Cultural History of Singapore (20 hrs)

Singapore's multi-cultural origins can be traced to the days of Temasek when Chinese traders and local inhabitants lived cheek by jowl. Colonial Singapore witnessed its extension with Chinese, Indians, Malays and others becoming a permanent feature of the demographic landscape. Despite modernization, the language and culture of each community have remained strong and intact. This free elective will examine the cultural developments of each community.

AH415 Contemporary Chinese History and Its Literature (20 hrs)

This free elective traces the development of China's "Literary Revolution" during the turbulent years of 1917 to 1949. It critically examines selected works of a few of China's literary giants such as Hu Shih, Chen Tu-hsiu, Lu Hsun and Kuo Mo-jo. Some events and issues in Chinese history, such as the May Fourth Movement and the cruelty and hypocrisy of China's feudal society can be better understood through a study of its literature.

AH416 Contemporary US History and Its Historical Novels (20 hrs)

The historical novel is an undervalued and hence underused resource. Indeed, the best historical novels can excite an interest in the past and bring periods vividly alive, evoking the feel of the time. This free elective module provides a brief survey of the development of the American novel from its beginning to the present. It then centres on a few selected 20th century historical novels to highlight the issues and events of contemporary America.

Academic Subject : Mathematics

MATHEMATICS - MAJOR

Year	Module	Title	No. of Hrs
1	AM101	Foundations of Mathematics	40
	AM102	Basic Algebra	30
	AM103	Probability & Statistics	20
2	AM201	Geometry	20
	AM202	Calculus I	30
	AM203	Numerical Methods & Programming	40

Major

(Modules for students choosing Mathematics as a Major)

Year	Module	Title	No. of Hrs
3	AM301	Sequences & Series	30
	AM302	Statistical Methods	30
	AM303	Calculus II	30
	AM304	Mathematical Modelling	20
	AM305	Linear Algebra	30
	AM306	Numerical Analysis	30
	AM307	Mathematical Problem Solving	20
	AM308	Calculus III	20
	AM309	Number Theory I	20
	AM310 *	Vectors	20
	AM311 *	Discrete Mathematics I	20
	AM312 *	History of Mathematics I	20
4	AM401 +	Groups, Rings & Fields	30
	AM402 +	Number Theory II	30
	AM403 +	Discrete Mathematics II	30
	AM404 +	Numerical Techniques	30
	AM405 +	Differential Equations	30
	AM406 +	Functions of a Complex Variable I	30
	AM407 #	Techniques of Operations Research I	30
	AM408 #	Applied Number Theory	30
	AM409 #	Approximation Theory	30
	AM410 #	Mathematical Statistics	30
	AM411 ++	Vector Spaces	20
	AM412 ++	Computer Algebra	20
	AM413 ++	Axiomatic Geometry	20
	AM414 ++	Calculus of Variations	20
	AM415 ++	Functions of a Complex Variable II	20
	AM416 ++	History of Mathematics II	20
	AM417 @	Techniques of Operations Research II	20
	AM418 @	Topology	20

Year	Module	Title	No. of Hrs
4	AM419 @	Applied Statistics	20
	AM420 @	Numerical Approximation & Quadrature	20
	AM421 @	Optimization	20
	AM312 @	History of Mathematics I	20

* Select one of the three elective modules
\+ Select three of the six elective modules
++ Select three of the six elective modules
\# Select two of the four elective modules
@ Select two of the six elective modules

1st Minor

(Modules for students choosing Mathematics as a Minor after having taken Mathematics as an Academic subject during their first two years of study)

Year	Module	Title	No. of Hrs
3	AM303	Calculus II	30
	AM304	Mathematical Modelling	20
	AM305	Linear Algebra	30
	AM307 *	Mathematical Problem Solving	20
	AM308 *	Calculus III	20
	AM312 *	History of Mathematics I	20
	AM309 ✲	Number Theory I	20
	AM310 ✲	Vectors	20
	AM311 ✲	Discrete Mathematics I	20
4	AM302	Statistical Methods	30
	AM301 §	Sequences & Series	30
	AM401 §	Groups, Rings & Fields	30
	AM402 §	Number Theory II	30
	AM403 §	Discrete Mathematics II	30
	AM406 §	Functions of a Complex Variable I	30
	AM306 **	Numerical Analysis	30
	AM407 **	Techniques of Operations Research I	30
	AM308 $	Calculus III	20
	AM411 $	Vector Spaces	20
	AM412 $	Computer Algebra	20
	AM413 $	Axiomatic Geometry	20
	AM415 $	Functions of a Complex Variable II	20
	AM309 ☺	Number Theory I	20
	AM310 ☺	Vectors	20
	AM311 ☺	Discrete Mathematics I	20
	AM417 ☺	Techniques of Operations Research II	20
	AM419 ☺	Applied Statistics	20
	AM312 ☺	History of Mathematics I	20

* Select one of the three elective modules
⁎ Select one of the three elective modules
§ Select one of the five elective modules
** Select one of the two elective modules
$ Select one of the five elective modules
☺ Select one of the six elective modules

2nd Minor

(Modules for students choosing Mathematics as a Minor but who have not taken Mathematics as an Academic subject during their first two years of study)

Year	Module		Title	No. of Hrs
3	AM101		Foundations of Mathematics	40
	AM201		Geometry	20
	AM202		Calculus I	30
	AM307		Mathematical Problem Solving	20
	AM103		Probability & Statistics	20
4	AM304		Mathematical Modelling	20
	AM302	**	Statistical Methods	30
	AM203	**	Numerical Methods & Programming	40
	AM102		Basic Algebra	30
	AM312	◘	History of Mathematics I	20
	AM407	◘	Techniques of Operations Research I	30
	AM303	○	Calculus II	30
	AM309	○	Number Theory I	20
	AM310	○	Vectors	20
	AM311	○	Discrete Mathematics I	20

** Select one of the two elective modules
◘ Select one of the two elective modules
○ Select one of the four elective modules

Description of Modules

AM101 Foundations of Mathematics (40 hrs)

Nature of proof, proof techniques. Set theory: concept of sets, algebra of sets, Venn diagrams, set logic. Relations and equivalence relations. Functions and their graphs (domain, codomain and range; mapping diagrams and cartesian diagrams). Cartesian products. Injections, surjections , bijections. Inverse functions and their graphs. Composition of functions,

laws of composition and binary operations. Number systems: binary operations and properties. Counting: cardinal and ordinal numbers. Natural numbers, integers (divisibility, primes and congruences), rationals and irrationals, real numbers, complex numbers. The set of real numbers and its properties. Simple informal introduction to limits and continuity.

AM102 Basic Algebra (30 hrs)

Algebraic structures: groups, rings and fields. Matrices: algebra of matrices. Vectors and matrices. $V_n \rightarrow R^n$. Euclidean spaces. Geometrical vectors as vector spaces. Linear combinations, linear independence, spanning set, basis. Linearity and linear transformations. Determinants by expansion along a row or column. Matrix representation of linear transformations and relevance to chosen bases. Composite functions and transformations. Matrix polynomials. Simple applications of matrices (e.g. networks and connectivity, accessibility, communications, computer graphics). Special matrices: scalar, diagonal, identity, null, triangular, symmetric, skew symmetric. Transpose. Adjoint. Inverse transformations and inverse matrices. Properties and simple applications of inverses (e.g. electric circuits, input-output models).

AM103 Probability and Statistics (20 hrs)

Exploratory data analysis. Measures of central tendency, location and spread. Use of software (e.g. *Minitab*). Interpretation. Probability. Basic concepts of probability: sample space, outcomes, events, axioms of probability. Classical, frequentist and subjective probability. Conditional probability and independence. Random variables. Introduction to discrete and continuous probability distributions. Expectation.

AM201 Geometry (20 hrs)

Coordinate geometry. Non-Cartesian coordinate systems: cylindrical and spherical polars. Equations and loci. Higher plane curves. Conic sections. Quadric surfaces.

AM202 Calculus I (30 hrs)

Differentiability. Techniques of differentiation. Higher order derivatives. Taylor and Maclaurin series. Applications of the derivative: maxima, minima, points of inflection. Curve sketching. The definite integral. Fundamental theorem of calculus. The indefinite integral and anti-differentiation. Techniques of integration: by parts, by substitution, by partial fractions. Applications of integration. Trigonometric, hyperbolic, exponential and logarithmic functions. Simple differential equations.

AM203 Numerical Methods and Programming (40 hrs)

Programming:
Introduction to a structured programming language (e.g. Pascal, C or a modern version of FORTRAN). Data representation and storage, input and output, looping, testing, functions, procedures.

Numerical methods:
Errors and accuracy: Error propagation, error analysis of basic operations. Iterative solution of non-linear equations: basic iteration, interval halving, linear iteration (false position and secant), Newton-Raphson. (Methods and convergence criteria to be discussed.) Numerical differentiation: formulae using up to four ordinates for first and second derivatives. Quadrature: Trapezium rule, Simpson's rule. Systems of linear equations.

AM301 Sequences and Series (30 hrs)

Sequences : convergence, limit theorems, monotone sequences and Cauchy sequences. Subsequences. Infinite series : convergence of infinite series. Convergence tests. Power series. Sequences and series of functions : pointwise and uniform convergence and applications.

AM302 Statistical Methods (30 hrs)

Further discrete and continuous probability distributions. Sampling and sampling distributions. Estimation and confidence intervals. Hypothesis testing. Simple linear regression, correlation and rank correlation. Introduction to non-parametric methods (e.g. Sign test, Mann-Whitney U test). Goodness of fit tests. Time Series : simple additive and multiplicative models. Construction and use of index numbers. Sources of statistical data (e.g. surveys and censuses, government abstracts of

statistics). Planning, executing, analysing and interpreting a simple survey.

AM303 Calculus II (30 hrs; Pre-requisite: AM202)

Limits : formal definition of limit, limit theorems, one-sided limits, continuity, limits at infinity, infinite limits, asymptotes. Rolle's theorem and the mean value theorem. Integration : indeterminate forms improper integrals. Simple differential equations : first and second order linear equations with constant coefficients. Isoclines. Simple applications to model real world situations. Interpretation of solutions.

AM304 Mathematical Modelling (20 hrs; Pre-requisite: AM202)

Introduction to mathematical modelling : the mathematical model concept and the "model view" of mathematics. The modelling process : modelling skills and the development of models. Modelling and simulation using computer software (e.g. spreadsheets). General modelling : use of models and simulations across a variety of fields (e.g. in the environmental, life, social, biological, medical, financial & engineering sciences).

AM305 Linear Algebra (30 hrs)

Transformations and systems of linear equations : types of solutions, rank, nullity, kernel and range. Gaussian elimination. Inverse by Gauss-Jordan process. Homogeneous linear equations. Simple applications of systems of linear equations. Equivalence transformations, normal form, elementary matrices. Properties and manipulation of determinants. Determinants by Gaussian elimination and pivotal condensation. Scalar product, norm, length, distance and angle. Orthogonal matrices and orthogonal transformations. Characteristic properties; eigenspaces, eigenvectors, eigenvalues. Algebraic and geometrical multiplicity. Applications of eigenvalues and eigenvectors (e.g. simple mass-string, mass-spring systems : natural frequencies, modes of vibration and harmonics, successive events). Cayley-Hamilton Theorem. Similar matrices and similarity transformations. Diagonalisation. Orthogonal diagonalisation : symmetric matrices. Quadratic forms.

AM306 Numerical Analysis (30 hrs; Pre-requisite: AM202)

Differences : forward and backward operators and tables. Interpolating polynomials : Lagrange form. Newton-Gregory interpolation formulae. Quadrature : Newton-Cotes and Gaussian methods. Systems of non-linear equations : solution by Newton's method. Numerical solution of ODE's including some error analysis and a simple introduction to stability analysis. Eigenvectors and eigenvalues : direct iteration, inverse iteration, simple deflation.

AM307 Mathematical Problem Solving (20 hrs)

The nature of mathematical problems. Discussion, analysis and evaluation of problem solving strategies and investigation procedures. Communication skills in problem solving. Thinking mathematically : specializing, conjecturing, generalizing, justifying, building confidence, judging validity. Mathematical problems (including classic oversights and invalid arguments and proofs) will be examined from a wide range of mathematical activity.

AM308 Calculus III (20 hrs; Pre-requisite: AM202)

Functions of several variables : geometric representation, surfaces. Partial differentiation, chain rule, change of variable, implicit functions, higher order partial derivatives. Applications of partial differentiation : maxima, minima, saddle points. Error estimates. Lagrange multipliers. Taylor's series in 2 variables. Multiple integrals. Applications of multiple integrals.

AM309 Number Theory I (20 hrs)

Linear Diophantine equations. The system of polynomials : structure of the system, divisibility, gcd and Euclid's algorithm, roots of polynomial equations. Multiplicative functions. Polynomial congruences : theorems of Lagrange and Chevalley. Quadratic residues. Sum of squares.

AM310 Vectors (20 hrs)

Geometrical vectors. Vector algebra. Scalar and vector products. Triple products. Vector approach to proving geometrical theorems. Relationship between vector and Cartesian forms of representing lines, planes and spheres. Application to mechanics. Curves in space and vector functions. Antiderivatives and

integrals of vector functions. Application to kinematics and fluid flow. Fields, gradients and directional derivatives.

AM311 Discrete Mathematics I (20 hrs)

Logic, inductive proofs, logical equivalence and tautologies, rules of inference and recursive definition. Propositional calculus and Boolean algebra. Combinatorics : the theory of counting. Equivalence relations. Order relations. Difference equations. Graph theory. Relations and digraphs. Trees. Markov chains.

AM312 History of Mathematics I (20 hrs)

History of the development of mathematical concepts in arithmetic, algebra, geometry, trigonometry, computation, number theory, analytical geometry and calculus from ancient times to the 17th century.

AM401 Groups, Rings and Fields (30 hrs; Pre-requisite: AM305)

Groups: alternative definitions of a group and their equivalence. Isomorphism. Subgroups. Cosets: Lagrange's theorem. Homomorphisms. Automorphisms. Quotient groups. Sylow theory. Rings: definition, ring-homomorphisms, quotient rings, ideals, the characteristic of a ring. Fields: definition, characteristics of fields.

AM402 Number Theory II (30 hrs; Pre-requisite: AM309)

Partitions and generating functions. Theorems on primes. Algebraic and transcendental numbers. Quadratic forms. Geometry of numbers: theorems of Minkowski and Legendre. Continued fractions and approximations. Introduction to non-linear Diophantine equations.

AM403 Discrete Mathematics II (30 hrs; Pre-requisite: AM311)

Advanced counting. Inclusion and exclusion. Recurrence relations. Generating functions. Algorithms. Shortest path problems. Decision algorithms. Theory of games. Discrete probability theory. Computing machines: modelling computation. Finite state machines and languages. Applied algebra: groups and coding: error detection and correction, semigroups, rings and modular. Finite difference

equations.

AM404 Numerical Techniques for Differential Equations (30 hrs; Pre-requisite: AM303, AM306 & AM308)

Numerical solutions of ODE's. Initial value problems, single and multiple step methods, convergence and stability, error estimation and control. Coupled ordinary differential equations, stiff equations, Gear's method. Boundary value problems, shooting and finite difference methods. Finite difference solution of partial differential equations. Parabolic and hyperbolic equations; explicit methods, implicit methods, convergence, stability and consistency. Elliptic equations; direct and iterative methods of solution, sparse matrix techniques, problems with curved boundaries, data representation problems.

AM405 Differential Equations (30 hrs; Pre-requisite: AM303 & AM308)

ODE's and PDE's: series solutions of ODE's. Fourier series. Solutions of PDE's by separation of variables, including the use of Fourier series and special functions and by transform methods.

AM406 Functions of a Complex Variable I (30 hrs; Pre-requisite: AM303)

Point set theory. Continuity and differentiability. Bilinear and Schwarz-Christoffel transformation. Zeros and singularities. Contour integration. Cauchy's theorems. Taylor and Laurent theorems. The residue theorem and its use in evaluating real integrals.

AM407 Techniques of Operations Research I (30 hrs; Pre-requisite: AM302 & AM303)

Stock control: deterministic and simple stochastic cases. Queues: steady state for M/M/C queues. Simulation: generation of pseudo-random numbers with various distributions. Simulation of the M/M/1 queue. Criteria for decisions under uncertainty: matrix games. Linear programming and applications. The simplex algorithm. Integer and piecewise linear programming, Hitchcock algorithm, N-W corner methods.

AM408 Applied Number Theory (30 hrs; Pre-requisite: AM402)

Continued fractions and approximations: computation of partial quotients. Best possible approximations. Farey sequences. Modular arithmetic: random numbers, cyphers. Construction of large primes. The public key code. Fast Fourier transform: bit complexity and operational complexity. Fast multiplication. The discrete Fourier transform.

AM409 Approximation Theory (30 hrs; Pre-requisite: AM306)

Least-squares polynomial approximation: principle of least-squares, least-squares approximation over discrete sets of points, error estimation, orthogonal polynomials, Legendre approximation, Laguerre approximation, Hermite approximation, Chebyshev approximation, polynomial orthogonal over discrete sets of points, Gram approximation, smoothing formula. Spline approximation: interpolation by spline, extrema properties of spline, uniform approximation by spline, least-squares approximation by spline.

AM410 Mathematical Statistics (30 hrs; Pre-requisite: AM302)

Expectation: moments, variance, covariance and correlation. Generating functions: probability and moment generating functions. Joint distributions, marginal and conditional distributions. Univariate and bivariate transformations. Estimation theory. Minimum variance unbiased estimators, Rao-Blackwell and Cramer-Rao theorems. Confidence regions. Aspects of hypothesis testing and power of a test. UMP tests. Likelihood ratio tests. The general linear model and multiple regression. Experimental design and analysis of variance. Further data analysis: orthogonal components of the treatment, sum of squares. Comparisons amongst treatment means. Simple sequential procedures.

AM411 Vector Spaces (20 hrs; Pre-requisite: AM305)

Vector space over a field. Subspaces. Inner product spaces: axioms of inner products and inner product spaces. Euclidean and unitary spaces. Hermitian, skew-Hermitian and unitary matrices. Orthonormal basis, orthogonal complement, adjoint of a linear operator, self-adjoint operators, unitary operators. Linear mappings of vector spaces. Stable subspaces: eigenspaces. Nilpotent linear mappings. Jordan canonical form. Dual spaces. Dual linear mapping.

AM412 Computer Algebra (20 hrs; Pre-requisite: AM306 & AM308)

Introduction of computer algebra as a high level computer language. Use of a simple package such as *Derive* and advanced packages such as *Maple, Mathematica* or *Reduce*.

1. Instruction in the basic operations and facilities, data types, control structures, syntax, special library functions (e.g. linear algebra package).
2. Simple applications e.g. numerical solution of ill-posed numerical problems, stability analysis of systems with parameters, calculation of Fourier coefficients, design of high-order Runge-Kutta methods, implementation of a Rayleigh-Ritz scheme.
3. A mini-project in automatic computing whose aim is to encourage the view of a general mathematical problem in terms of an algorithm. The implementation should make use of many different features of the package.

AM413 Axiomatic Geometry (20 hrs; Pre-requisite: AM305)

Axiomatic systems. Axiomatic approaches to geometry: Euclidean and non-Euclidean geometries, affine geometry and projective geometry.

AM414 Calculus of Variations (20 hrs; Pre-requisite: AM303 & AM308)

Calculus of variations: typical problems. Functionals, total and first variations. Competing functions, admissable variations, necessary condition for an extremum. The simplest problem, Euler-Lagrange equation and first integrals. Extension to free end-points, more unknown functions, more independent variables. The isoperimetric problem.

AM415 Functions of a Complex Variable II (20 hrs; Pre-requisite: AM406)

Power series. Behaviour on circle of convergence. Analytic continuation: Riemann surfaces. Maximum modulus theorem. Principle of the argument: Rouche's theorem. Ordinary differential equations. Series solutions. Solutions using complex integrals. Application of complex variable methods to problems of mathematical physics. The gamma function and other special functions.

AM416 History of Mathematics II (20 hrs)

Development of the calculus. French revolutionary school: the exploitation of the calculus. The Bernouillis. Euler and Gauss. The installation of rigour in analysis, abstract algebras and geometries. The foundations of mathematics. Probability and statistics. Numerical analysis. Twentieth century developments.

AM417 Techniques of Operations Research II (20 hrs) Pre-requisite: AM407)

Graph theory and networks: transportation and assignment algorithms. Advanced CPM and PERT methods. Dynamic programming with applications to closed and open systems. Deterministic and stochastic effects. Discrete-event-simulation. Activity and event based systems. Three phase method. Activity cycles. Application to industrial systems.

AM418 Topology (20 hrs; Pre-requisite: AM411)

Topology: nature and origin of topology. Metric spaces and non-metric spaces. Open and closed sets. Continuity. Connected sets. Cluster points. Compact sets. Topological spaces and topological equivalence. Limits and continuity. Points at infinity.

AM419 Applied Statistics (20 hrs; Pre-requisite: AM302)

Quality control and sampling inspection: design and use of Shewhart and Cusum procedures for variables and attributes. Single and double sampling schemes, including comparison of properties of alternative schemes. Statistical modelling: its application in setting up and optimising a process, or in locating the causes of unsatisfactory output. Principles of experimental design, including factorial, fractional factorial and composite designs. Model fitting using computing packages (e.g. *GLIM*). Assessing the adequacy of a fitted model - improving the fit by transformation of the response and/or control variables. Locating outlying/influential observations. Model interpretation, including the use of computer graphics. Introduction to generalised linear models. Quality improvement: application of statistical modelling in product design, including a critical review of the methods of Taguchi.

AM420 **Numerical Approximation and Quadrature (20 hrs; (Pre-requisite: AM303, AM306 & AM308)**

Approximation theory: Weierstrass' theorem. Oscillation theorem, Chebyshev series. Exchange algorithm. Numerical quadrature: general quadrature of Clenshaw-Curtis. General quadrature of Patterson. Special integrals, singular and oscillatory. Integral equations: classification, Volterra, Fredholm, linear, non-linear. Collocation methods for linear problems. Basic set functions. d-F method for non-linear problems.

AM421 **Optimization (20 hrs; Pre-requisite: AM303, AM306 & AM308)**

Revision of results from calculus. Gradient methods including steepest descent, Newton and modified Newton methods. Quasi-Newton methods including DFP, BFGS and the Broyden family. Conjugate gradient methods. Treatment of constrained problems.

Academic Subject : Music

Year	Module	Title	No. of Hrs
1	AI101	History of Music I	20
	AI102	Harmony and Counterpoint I	20
	AI103	Aural I	10
	AI104	Performance Studies I	10
2	AI201	History of Music II	10
	AI202	Harmony and Counterpoint II	10
	AI203	Aural II	20
	AI204	Performance Studies II	20
3	AI301	History and Analysis I	30
	AI302	Harmony and Composing I	30
	AI303	Conducting and Directing	30
	AI304	Performance Studies III	30
	AI305	Choral Singing/Band Performance I	20
	AI306*	Music for Children	20
	AI307*	Aesthetics	20
	AI308*	Music of Southeast Asia	20
	AI309*	Studies in Contemporary Music	20
	AI310*	Acoustics	20
	AI311*	Recording Techniques	20
	AI312*	Further Composing I	20

Year	Module	Title	No. of Hrs
	AI313*	Further Performance Studies	20

*** Select <u>three</u> of the eight elective modules**

Year	Module	Title	No. of Hrs
4	AI401	History and Analysis II	30
	AI402	Harmony and Composing II	30
	AI403	Orchestration & Arranging	30
	AI404	Performance Studies IV	30
	AI405	Choral Singing/Band Performance II	20
	AI406*	Studies in Music Education	20
	AI407*	Advanced Conducting Seminar	20
	AI408*	Music of China	20
	AI409*	Music of Malaysia and Indonesia	20
	AI410*	Music of India	20
	AI411*	Commercial Arranging	20
	AI412*	Further Composing II	20
	AI413*	Electronic Music and Sound Synthesis	20
	AI414*	Further Performance Studies	20
	AI415*	Project	20

*** Select <u>three</u> of the ten elective modules**

Music: Minor

Music is offered as a minor in years three and four. Students who have studied music as an academic subject in years one and two will be required to take the Minor 1 modules. Those who have not studied music as an academic subject in years one and two will be required to take Minor 2 modules. All students who wish to take music as a minor will study <u>five</u> 20 hour modules in each year.

Minor 1 students will take <u>two</u> prescribed and <u>three</u> elective (marked * above) modules each year.

Minor 2 students will take <u>three</u> prescribed and <u>two</u> elective modules each year.

Year	Module	Title	No. of hrs
3	Prescribed modules		
	AI321	Music Appreciation I	20
	AI305	Choral Singing/band Performance I	20
	AI322	Music Literacy I (for Minor 2 only)	20
	Any three elective modules (AI306 to AI313)		
4	Prescribed modules		
	AI405	Choral Singing/band Performance II	20
	AI421	Music Appreciation II	20
	AI422	Music Literacy II (for Minor 2 only)	20
	Any two elective modules (AI406 to AI415)		

Description of Modules

AI101 History of Music 1 (20 hrs)

This core module covers the study of Western music from the early Baroque era to the Classical era. Emphasis will be on the stylistic, aesthetic and social aspects of music.

AI102 Harmony and Counterpoint 1 (20 hrs)

This course covers a study of basic techniques of harmonisation and the composing techniques used by composers of the Baroque and Classical periods. It complements AI101 History of Music I.

AI103 Aural 1 (10 hrs)

In this course students will be taught to sight sing and notate melodies, pitch and rhythmic patterns as well as to identify modulations, cadences and the harmonic movement of a short excerpt.

AI104 Performance Studies 1 (10 hrs)

Students will be required to pursue practical studies on an instrument of their choice. Lessons will be on an individual basis, and over the four years of the course the students will be expected to attain a professional level of performance skill on their

chosen instrument. Although assessment will be by recital, students will be encouraged to work towards an internationally recognised diploma in performance as part of their course work e.g. a diploma of the Associated Board of the Royal Schools of Music, Trinity College of Music, London or other recognised institutions.

AI201 History of Music II (10 hrs)

This module covers the study of Western music from the Romantic era to the Twentieth Century. Emphasis will be on the stylistic, aesthetic and social aspects of music.

AI202 Harmony and Counterpoint II (10 hrs)

A study of basic techniques of harmonisation and the composing techniques used by composers of the Romantic era to the Twentieth Century, this course complements AI201, History of Music II.

AI203 Aural II (20 hrs)

Students will be taught to sight sing and notate melodies, pitch and rhythmic patterns as well as to identify modulations, cadences and the harmonic movement of a short excerpt.

AI204 Performance Studies II (20 hrs)

Students will be required to pursue practical studies on an instrument of their choice. Lessons will be on an individual basis, and over the four years of the course the students will be expected to attain a professional level of performance skill on their chosen instrument. Although assessment will be by recital, students will be encouraged to work towards an internationally recognised diploma in performance as part of their course work e.g. a diploma of the Associated Board of the Royal Schools of Music, Trinity College of Music London, or other recognised institutions.

AI301 History and Analysis I (30 hrs)

This module explores the literature of music chronologically from the Middle Ages to the Baroque era. Analysis and critical discussion will examine the early days of the church with its roots in plainsong, organum and polyphony to the development of two and

three part form of the Baroque.

AI302 Harmony and Composing I (30 hrs)

This course will concentrate on the practice of contrapuntal styles of the 16th century, especially the strict counterpoint of the late Renaissance and early sacred and secular vocal styles of the era. Opportunity will also be given to students who wish to develop an individual style of composing to pursue their interest. The emphasis will be on a practical and creative approach to developing musical skills, together with a deeper understanding of the historical period under study.

AI303 Conducting and Directing (30 hrs)

This module is designed to acquaint students with the fundamentals of choral/band conducting through classroom performance. Basic baton techniques such as beat patterns, size of beats and use of each hand are studied. Transposition, characteristics and range of voice/instruments will be discussed. Elementary problems in phrasing, diction, balance, intonation, tone colour etc. are introduced by using band/choral literature of all periods. Knowledge and skills in choral/band administration and rehearsal techniques will be developed at professional level. The course will also deal with the interpretation of choral/band literature. There will be continued application of basic skills in conducting choral/band literature , emphasis on interpretation of the standard large choral/band works, observations and discussion of rehearsal procedures and performance practices in schools.

AI304 Performance Studies III (30 hrs)

Students will be required to pursue practical studies on an instrument of their choice. Lessons will be on an individual basis, and over the four years of the course the students will be expected to attain a professional level of performance skill on their chosen instrument. Although assessment will be by recital, students will be encouraged to work towards an internationally recognised diploma in performance as part of their course work e.g. a diploma of the Associated Board of the Royal Schools of Music, Trinity College of Music London, or other recognised institutions.

AI305 Choral Singing/Band Performance I (20 hrs)

Students will be required to participate in one or more practical music activity to a minimum of thirty hours of rehearsal time. Students may elect to follow performance studies in choral and/or band playing.

AI306 Music for Children (20 hrs)

This module examines the various interrelated activities of children. Students will also examine the structure and style of children's music literature. Different aspects of children's responses to these activities will be studied. Various learning strategies that enable children to form concepts and generalisation important in understanding music will also be explored. Students will be directed to consider examples of significant research in this area.

AI307 Aesthetics (20 hrs)

This module seeks to examine the nature of music and its place within the aesthetic curriculum. Students will be invited to reflect upon issues within aesthetics which will inform their activities as music educators.

AI308 Music of Southeast Asia (20 hrs)

This module is designed to provide a general study of folk and traditional music of Southeast Asian countries. It is also intended as an introduction to the study of the musical instruments of the region.

AI309 Studies in Contemporary Music (20 hrs)

This module will concentrate on developments in the world of Art music over the years since the second world war. It will give aspiring composers, musicologists or those with a general interest in the world of contemporary music an opportunity to learn of the techniques, styles and work of composers writing today.

AI310 Acoustics (20 hrs)

This module deals with the physical and acoustical properties of sound as applied to musical instruments. How the ear perceives and translates sound waves into sound and the effects of the room and auditorium acoustics.

AI311 Recording Techniques (20 hrs)

This module will give the student an introduction to the world of sound recording. Traditional skills of tape recording and editing will be covered, together with contemporary digital recording techniques.

AI312 Further Composing I (20 hrs)

This module provides an opportunity for those students who wish to specialise as composers to follow their own particular interest.

AI313 Further Performance Studies (20 hrs)

The literature, techniques and pedagogy of the student's chosen instrument will be discussed. In addition there will be further exploration of performance practices on the instrument.

AI321 Music Appreciation I (20 hrs)

This module will focus on the representative styles of Western music for the 17th to the 20th century. Through listening to and discussing various compositions, students will learn to discern good music as well as develop their listening skills

AI322 Music Literacy I (20 hrs)

This module equips the student with basic musical skills stressing the basics of musicianship. The module will attempt to integrate theory of music with practical musical skills such as sight reading, playing by ear, harmonizing melodies, playing useful chord patterns, transposing and improvising music.

AI401 History and Analysis II (30 hrs)

This module covers the history of music from the mid eighteenth century to the present day. Emphasis will be placed on the study of the music of the periods through analysis and study of selected representative set works.

AI402 Harmony and Composing II (30 hrs)

This module complements AI401 History and Analysis II. It takes a practical approach to the study and pastiche of the harmony and counterpoint of the late Baroque, Classical and Romantic periods. Students will be expected to show detailed knowledge and understanding of the structures, forms and harmonies used by the composers of these periods.

AI403 Orchestration and Arranging (30 hrs)

This module introduces the students to the traditional skills of writing for orchestra or instrumental ensemble. Works of composers who are acknowledged to be excellent orchestrators will be examined in detail. Students will be required to prepare worked examples in the style of various composers.

AI404 Performance Studies IV (30 hrs)

Students will be required to pursue practical studies on an instrument of their choice. Lessons will be on an individual basis, and over the four years of the course the students will be expected to attain a professional level of performance skill on their chosen instrument. Although assessment will be by recital, students will be encouraged to work towards an internationally recognised diploma in performance as part of their course work e.g. a diploma of the Associated Board of the Royal Schools of Music, Trinity College of Music London, or other recognised institutions.

AI405 Choral Singing/Band Performance II (20 hrs)

Students will be required to participate in one or more practical music activity to a minimum of thirty hours of rehearsal time. Students may elect to follow performance studies in choral and/or band playing.

AI406 Studies in Music Education (20 hrs)

This elective module will explore different issues in music education. In addition to examining the historical, philosophical and psychological foundations of music education. The module will cover other aspects of the operation of music education program including program development, methods of teaching, administration, supervision and evaluation.

AI407 Advanced Conducting Seminar (20 hrs)

This elective module is designed to develop the knowledge and skills in the band/choir/orchestra conducting field at professional level. Considerable emphasis will be placed on score reading study and musical analysis. Rehearsal procedures and performance practice in schools will be discussed.

AI408 Music of China (20 hrs)

This elective module will explore different folk and classical Chinese music. The rich legacy of musical art forms and their contributions to Chinese culture and festivals will be explored. Basic Chinese orchestration will also be introduced.

AI409 Music of Malaysia and Indonesia (20 hrs)

This elective module examines the traditional music of Malaysia and Indonesia, both from a historical and contemporary perspective. Emphasis will be placed on the interaction of the arts within traditional music, theatre, dance and the visual arts. Students will be expected to involve themselves in practical activities related to the topic.

AI410 Music of India (20 hrs)

This elective module traces the origin of Indian music, its traditions past and present. It is an appreciation of the intricacies of the Raga and of Indian classical music and its application to Indian classical dance.

AI411 Commercial Arranging (20 hrs)

This elective module will introduce students to arranging music for commercial purposes, and may be taken in conjunction with AI312 Further Composing, AI413 Electronic Music and Sound Synthesis, AI311 Recording Techniques or AI310 Acoustics to suit those students who wish to enter the commercial world of music production. Ways of creating and arranging music for film and television will be examined, together with an exploration of arranging for contemporary instrumentation and popular music.

AI412 Further Composing II (20 hrs)

This elective module is a continuation of AI312 Further Composing I. Students will be given the opportunity to further their compositional skills. Each student will receive individual guidance and workshop sessions will be organized so that students will be able to have all or some of their work performed and discussed by other students.

AI413 Electronic Music and Sound Synthesis (20 hrs)

This elective module looks at the techniques of creating and editing sound electronically through sound synthesis from the point of view of the musician rather than the physicist. Different techniques of electronic sound generation will be explored, together with the study of the musical instruments that have been developed in recent years.

AI414 Further Performance Studies (20 hrs)

This elective module is a continuation of AI404 Performance Studies IV. The literature, techniques and pedagogy of the student's chosen instrument will be discussed. In addition there will be further exploration of performance practice on the instrument.

AI415 Project (20 hrs)

This module will require the student to research a particular area of music at an advanced level. The student will prepare and submit a project under the supervision of a member of the academic music staff.

AI421 Music Appreciation II (20 hrs)

This module is designed to introduce other traditions of music such as non-western music, jazz, folk and pop music. It will also focus on the contributions of women to music as well as the relationship of music to society, historical events and the other arts.

AI422 Music Literacy II (20 hrs)

This module provides further reinforcement and understanding of the topics studied in Music Literacy I. Additionally topics include the study of solo and ensemble repertoire, analyzing musical structures and notating projects dealing with harmony and composition.

Academic Subject : Physics

Year	Module	Title	No. of hrs
1	AP101	Mechanics	30
	AP102	Thermal Physics	30
	AP103	Oscillations and Waves	30
2	AP201	Optics	30
	AP202	Electricity and Magnetism	30
	AP203	Modern Physics	30

Major

(Modules for students choosing Physics as a Major)

Year	Module	Title	No. of hrs
3	AP301	Advanced Mechanics	30
	AP302	Electromagnetism I	20
	AP303	Electromagnetism II	30
	AP304	Fluid Mechanics	20
	AP305	Solids and Properties of Matter	30
	AP306	Electronics Experiments I	30
	AP307	Electronics Experiments II	20
	AP308	General Physics Experiments I	30
	AP309	General Physics Experiments II	20
	AP310	Special Relativity	20

Year	Module	Title	No. of hrs
4	AP401	Quantum Mechanics I	20
	AP402	Quantum Mechanics II	30
	AP403	Nuclear Physics I	20
	AP404	Nuclear Physics II	30
	AP405	Contemporary Physics Experiments	30
	AP407	Radiation and Nuclear Physics Experiments	30
	AP409	Pulse Technology Experiments	30
	AP406)	**Contemporary Physics Project	60
	AP408)	**Radiation and Nuclear Physics Project	60
	AP410)	**Pulse Technology Project	60

** Select any one of the three elective project modules

1st Minor

(Modules for students choosing Physics as a Minor after having taken Physics as an Academic subject during their first two years of study)

Year	Module	Title	No. of hrs
3	AP302	Electromagnetism I	20
	AP304	Fluid Mechanics	20
	AP305	Solids and Properties of Matter	30
	AP308	General Physics Experiments I	30
	AP310	Special Relativity	20
4	AP306	Electronics Experiments I	30
	AP309	General Physics Experiments II	20
	AP401	Quantum Mechanics I	20
	AP403	Nuclear Physics I	20
	AP407	Radiation and Nuclear Physics Experiments	30

2nd Minor

(Modules for students choosing Physics as a Minor but who have not taken Physics as an Academic subject during their first two years of study)

Year	Module	Title	No. of hrs
3	AP101	Mechanics	30
	AP102	Thermal Physics	30
	AP103	Oscillations and Waves	30
	AP201	Optics	30
	AP304	Fluid Mechanics	20

Year	Module	Title	No. of hrs
4	AP202	Electricity and Magnetism	30
	AP203	Modern Physics	30
	AP302	Electromagnetism I	20
	AP306	Electronics Experiments I	30
	AP308	General Physics Experiments I	30

Description of Modules

AP101 Mechanics (30 hrs)

This module will include the following topics: vectors in 2- or 3-D kinematics; Newton's laws of motion and aplications; vectors and laws of motion in projectile, circular and conical motion; rotating frame of reference; universal gravitation; Kepler's laws; motion of planets and satellites; inertial mass; centre of gravity of a system of particles; conservation of linear momentum; elastic and inelastic collisions in 1- and 2-D; conservative and nonconservative forces; potential energy and equilibrium; rocket motion; rotational kinematics and dynamics; moment of inertia and angular momentum; rotational plus translational motion. The experiments for this module include: mathematical modelling in physics investigations; laws of motion; rotational plus translational motion; and determination of gravitational Constant.

AP102 Thermal Physics (30 hrs)

This module will include the following topics: macroscopic and microscopic description of a system; thermal equilibrium and the Zeroth law; concept of temperature; empirical temperature and its measurement; equations of state for ideal and real gases; P-v-t surfaces for gases and thin films; differential change of state; expansivity and compressibility; critical constants; work in quasi-static processes; path-dependence; configuration and dissipative work; the first law of thermodynamics; heat flow; heat of transformation and enthalpy; thermal conduction, convection and radiation; experimental determination of heat capacities; quasi-static adiabatic process; the Carnot cycle; heat engine and the refrigerator; the second law of thermodynamics; entropy of ideal gas, the T-S diagram; entropy reversibility and increase; the kinetic theory and equation of state of ideal gas; distribution of molecular velocities; Maxwellian speeds and temperature. Experiments included are: measurement of the thermal conductivity of good conductor;

measurement of the ratio of specific heats of gases; Maxwellian velocity distribution; thermal efficiency experiment.

AP103 Oscillations and Waves (30 hrs)

This module includes the following topics: simple harmonic motion (SHM) of mechanical and electrical oscillators; vector representation; superposition of two SHMs: Lissajous' figures; critical damping; logarithmic decrement; energy decay, Q-value and impedance; transient and steady state behaviour of a forced oscillator; phase angle; power; particle and phase velocities; the wave equation; transverse waves on a string; reflection and transmission of transverse waves at a boundary; impedance matching; standing waves on a string; normal modes and eigenfrequencies; group velocity; dispersion; wave equation of longitudinal wave; sound waves in gases and solids; Young's modulus and Poisson ratio; Experiments include: investigation of the electrical oscillator; measurement of wavelength and speed of sound waves; microwave experiments; sonometer and resonance tube experiments.

AP201 Optics (30 hrs)

This module includes the following topics: Fermat's principle and laws of reflection and refraction; speed of light and measurement; refraction through a spherical surface; thin lenses and thick lenses; lens aberrations; the camera, microscope and telescope; Huygen's principle; Young's experiment; Michelson interferometer; circular fringes and localized fringes; reflection from a plane-parallel film; fringes of equal inclination and equal thickness; Newton's ring; nonreflecting films; Fabry-Perot interferometer; Fraunhofer diffraction by a single opening; single-slit diffraction pattern; rectangular aperture and resolving power with circular aperture; the diffraction grating and intensity distribution; principal and secondary maxima; resolving power; polarization by reflection; polarizing angle and Brewster's law; polarization by a pile of plates; and dichroic crystals; double refraction and optic axis; the Nicol prism. Experiments include: thin and thick lenses; use of optical spectrometer; interference of light; measurement of wavelength using a diffraction grating; optics experiments using He-Ne laser

AP202 Electricity and Magnetism (30 hrs)

This module includes the following topics: Concept of electric charge and Coulomb's law; electric field and motion of charged particles; electric flux; Gauss's law and applications; capacitors; determination of capacitance; Gauss's law in dielectric; polarization and electric displacement vectors; microscopic view of electric current; current density and drift velocity; Ohm's law; resistance and resistivity; Kirchoff's laws and its application to circuit analysis; the RC circuit; moving electric charge in a magnetic field; magnetic force acting on a current and definition of B; magnetic dipole moment; mass spectrometer and cyclotron; Hall effect; Ampere's law and Biot Savart's law; definition of ampere and coulomb; electromagnetic induction; Faraday's law and Lenz's law; emf induced in a moving conductor; back emf and torque; eddy currents; mutual inductance and self inductance. Experiments include: quantitative electrostatics; RC circuit and the measurement of time constant of the circuit; measurement of capacitance and ϵ_0 ; calibration of thermocouple and measurement of temperature by thermocouple; and the current balance.

AP203 Modern Physics (30 hrs)

This module includes the following topics: the special theory of relativity; Galilean transformation; Michelson-Morley experiment; Lorentz transformation and consequences; black-body radiation; the Rayleigh-Jean formula; the Planck radiation formula; particle properties of waves; the photoelectric effect and quantum theory; production of x-rays and spectra Rutherford's theory of alpha scattering and Rutherford's model of atom; Bohr's atomic model and atomic spectra; laser and holography; wave nature of particles; the de Broglie's hypothesis; diffraction of electrons by crystals, the Davisson and Germer experiment, Heisenberg uncertainty principle and an introduction to Schrodinger equation; the structure and properties of the nucleus; binding energy and nuclear forces, radioactivity; alpha, beta and gamma decay; half-life; decay series and radioactive dating; nuclear reactions and transmutation; nuclear fission and fusion; radiation damage; measurement of radiation; dosimetry; medical imaging and NMR imaging; brief survey of elementary particle physics, astrophysics and cosmology. Experiments included are: measurement of Planck's constant; the Frank-Hertz experiment; elementary nuclear physics experiments; e/m experiments.

AP301 Advanced Mechanics (30 hrs)

This module includes the following topics: vector notion and elements of vector analysis; inertial systems and the laws of motion; motion in two and three dimensions using different coordinate systems; central force problems; work and the stability of equilibrium; principle of virtual work; generalized coordinates; Lagrange's equations for a single particle; Lagrage's equations for a system of particles; generalized Momentum; the Hamiltonian Function; Hamilton's equations and applications; normal coordinates; expressing an arbitrary system in terms of normal coordinates and application.

AP302 Electromagnetism I (20 hrs)

This module includes the following topics: mutual and self-inductance; energy stored in a magnetic field; L-C ciruit, L-C-R AC circuit; resonance in circuits; scalar and vector product of vectors; gradient of a scalar; line integral, surface integral and volume integral; divergence theorem and Stoke's theorem; cylindrical coordinates and spherical polar coordinates; Poisson's equation; The Mean-Value Theorem; The Uniqueness Theorem; Methods of images; Laplaces's equation in rectangular coordinates, cylindrical coordinates and spherical polar coordinates; Boundary-value problem with dielectric; the multipole expansion; electric energy in electric field and in dielectric; energy of a charged body in an external field.

AP303 Electromagnetism II (30 hrs)

This module includes the following topics: Ampere's Law and magnetic induction; Integral form of Ampere's Law; the vector potential; Faraday's law of induction in stationary media and moving media; magnetic energy and magnetic multipoles; magnetism in the presence of matter; paramagnetism, diamagnetism and ferromagnetism, magnetic susceptibility, permeability and hysteresis; the displacement current; magnetic field produced by changing electric field; Gauss's law for magnetism; production of electromagnetic waves; the electromagnetic spectrum; speed of electromagnetic waves; energy in electromagnetic waves; Maxwell's equations for linear isotropic homogeneous media; Poynting's theorem; electromagnetic momentum; electromagnetic waves in matter; reflection and refraction of plane electromagnetic waves; transmission lines; differential form of Maxwell's equations.

AP304 Fluid Mechanics (20 hrs)

This module provides some basic concepts in fluid mechanics. The topics covered include hydrostatic principles and surface tension, capillarity, negative pressure and cohesion of water. The topics iclude hydrodynamics with equation of continuity, Bernoulli's equation and application to dynamic lift, viscosity; laminar flow, turbulent flow, Reynold's Number, objects moving in fluids, sedimentation and drag; general hydrodynamic equations, waves in fluids, large amplitude waves and nonlinearity and shock waves.

AP305 Solids and Properties of Matter (30 hrs)

This module is an introduction to solid state physics, material science and electronics. The topics covered include stress, strain, shear, fracture and material testing, bonding in molecules, weak (van der Waals) bonds, molecular spectra, crystal structure and bonding in solids, free electron theory of metals, band theory, semiconductors and doping, diodes, transistors and some applications.

AP306 Electronics Experiments I (30 hrs)

This module aims to provide the student through laboratory work sheets and experiments a self-contained course to learn the principles and applications of electronics including the following topics: diodes, rectification, clipping, sampling and power supplies, and voltage control with Zener diodes; transistors, amplifiers in CE, CC, CB configurations, FET amplifiers,and oscillators including Hartley and Colpitts types; SCR and application in power control circuits; OP-AMP and applications in voltage followers, inverting, summing and difference amplifiers, comparators, differentiators and integrators, oscillators and filters.

Students will write reports based on their work sheets and experiments which will be continuously assessed.

AP307 Electronics Experiments II (20 hrs)

This module aims to provide the students through laboratory work sheets and experiments a self-contained course in digital electronics including the following topics: digital compared to analogue circuits; binary systems, logic gates and Boolean Algebra; flip-flops, clock signals, counting and frequency division; digital arithmetic, adders, multipliers; integrated cicuit logic elements; A/D and

D/A circuits for interfacing applications.

Students will write reports based on their work sheets and experiments and these will be continuously assessed.

AP308 General Physics Experiments I (30 hrs)

This module of experiments is one of two intended to complement the lecture modules on Fluid Mechanics, Solids and Properties of Matter, Electromagnetism and others. The student will carry out experiments from among the following: quantitative electrostatics; electric field mapping; microwave experiments; laser optics experiments; interferometry; hysteresis experiments.

Students will write reports of their experiments which will be continuously assessed.

AP309 General Physics Experiments II (20 hrs)

This module is a continuation of AP308. Students will carry out experiments from among the following: Hall effect in semiconductors and metals; materials testing experiments; viscosity measurements; aerodynamics experiments; ultrasonics experiments.

Students will write reports based on their experiments and these will be continuously assessed.

AP310 Special Relativity (20 hrs)

This module includes the following topics: historical introduction; Galilean invariance; principle of relativity; light propagation; Lorentz transformation and properties; relativistic kinematic; length contraction and time dilation of moving clocks; examples in lifetime of mesons and longitudinal Doppler effect; relativistic dynamics : relativistic momentum and energy; transformation of momentum and energy; equivalence of mass and energy; simple problems in relativistic dynamics: charged particle in electric/magnetic field; relativistic rocket equation; principle of equivalence : inertial and gravitational mass; gravitational mass of photons; simple application to particles of Modern Physics.

AP401 Quantum Mechanics I (20 hrs)

This module includes the following topics: basic concepts and postulates of quantum mechanics; Schrodinger's equation; quantum particle in one dimension : Schrodinger equation for a free particle and particle in an external potential; the eigenvalue, eigenfunction problem and probability density; bound states and energy levels; application to physical problems : energy spectra; a particle moving on a circle; simple harmonic oscillator; potential step; potential well; Schrodinger's equation and wave function in three dimension for free particle and particle in an external potential; degeneracy.

AP402 Quantum Mechanics II (30 hrs)

This module includes the following topics: the Schrodinger equation in spherical polar coordinates form; separated solutions in partial-wave function; a quantum particle in spherically symmetric potential; the bound states of the hydrogen atom; the theory of angular momentum and applications; density operators; introduction of spin, Pauli spin matrices and spin wave function; Pauli's exclusion principle and symmetry; periodic table; eigenvalue perturbation theory; time independent perturbation theory; application to Zeeman splitting; scattering theory; scattering by spherically symmetric potential, Coulomb field and complex potential.

AP403 Nuclear Physics I (20 hrs)

This module includes the following topics: interaction of radiation with matter; gas-filled counters, scintillation detectors and semiconductor detectors; counting statistics; energy measurements, coincidence measurements and time resolution; measurement of nuclear lifetimes; basic nuclear properties; nuclear radius; mass and abundance of nuclides; binding energy; angular momentum and parity of nucleus; nuclear electromagnetic moments; excited states of nucleus; the force between nucleons; simple theory of the deuteron; normalization of the deuteron wave function; root-mean-square radius; nucleon-nucleon scattering; proton-proton and neutron-neutron interactions; properties of nuclear forces; the exchange nuclear force model; spin dependence of nuclear force; radioactive decay law; quantum theory of radioactive decays; production and decay of radioacitivity; growth of daughter nucleus; types of decays; natural radioactivity; deflection-type mass spectrographs and spectrometers; the doublet method of mass spectrometry; the mass synchrometer.

AP404 Nuclear Physics II (30 hrs)

This module includes the following topics: the semiempirical mass formula and the liquid drop model; the shell model; magic number and spin-orbit coupling; magnetic moment, symmetry and isospin; collective structure; measurement of alpha-particle energies; the Geiger-Nutall law; angular momentum and parity; alpha decay spectroscopy; beta decay; beta spectroscopy; simple theory of beta decay; Kurie plot; allowed and forbidden transition; electron capture; double beta decay; gamma decay; measurement of gamma-ray energies and lifetimes of excited states; predictions of decay constant; angular momentum and parity selection rule; angular distribution and polarization measurements; internal conversion; nuclear reaction; types of reactions and conseration laws; charged-particle reaction spectroscopy; partial wave analysis of reaction cross sections; compound nucleus reaction; direct reaction; resonance reactions; heavy-ion reactions; nuclear fission; characteristic of fission; energy in fission; controlled fission reaction; fission reactor; nuclear fusion; characteristic of fusion; solar fusion; controlled fusion reactor; particle interactions and families; physical properties of elementary particles; symmetries and conservation laws.

AP405 Contemporary Physics Experiments (30 hrs)

This module of experiments aims to complement and extend the concepts and applications dealt with in some of the lecture modules in particular the more current applications on Modern Physics and Optics. Students will carry out experiments from among the following: Michelson-Morley experiment; Zeeman effect; Stern-Gerlach experiment; ESR experiment; Holography experiments; Fibre-optics technology; opto-electronic technology; laser physics experiment; superconductivity experiments.

Students will write reports based on their experiments and these will be continuously assessed.

AP407 Radiation and Nuclear Physics Experiments (30 hrs)

This module of experiments aims to complement the concepts and applications taught mainly in the lecture modules on Nuclear Physics. Students will carry out experiments from among the following: X-ray experiments on characteristics of x-rays, single-crystal Bragg diffractometry, Moseley theory and x-ray crystallography; computer G-M system to study characteristics of G-M counting systems, radioactive

half-lifes, absorption coefficients, inverse square law of radiations; computer MCA systems to carry out experiments on nuclear radiation spectrometry; vacuum spectrometry system to study Alpha and Beta radiation using sensitive silicon surface barrier charged particle detector. Students will write reports based on their experiments and these will be continuously assessed.

AP409 Pulse Technology Experiments (30 hrs)

This module of experiments aims to introduce to the students concepts of pulse technology and applications to various areas of physics and technology. Students will carry out experiments from among the following: pulse generation using L-C-R circuits and switches including the UJT, the SCR, triacs, thyratrons, krytrons and spark gaps; pulse shaping using L-C-R circuits, L-C networks and transmission lines; students will carry out experiments as well as computer simulations in order to compare measured with computed results; applications of high power pulses to generate: ultrasonic pulses for echo ranging; stroboscopic & high intensity light pulses for high speed photography; diode laser pulses for fibre-optic transmission applications; nitrogen laser pulses for shadowgraphy imaging of electric sparks.

Students will write reports based on their laboratory work and these will be continuously assessed.

AP406*) Contemporary Physics Projects
) (60 hour elective project)
)
AP408*) Radiation and Nuclear Physics Projects
) (60 hour elective project)
)
AP410*) Pulse Technology Projects
) (60 hour elective project)

Each of these modules aims to be an open-ended extension of the experimental work carried out in the corresponding module of AP405, AP407 or AP409 respectively.

The course structure is as follows:

Each student will choose **ONE** module and carry out a supervised project with pre-determined objectives. A project dissertation will be written and assessment will be based on this dissertation.

Education Studies

Under the general heading of Education Studies there will be three subjects/areas offered in the first 2 years of the four-year programme.

1. Foundations in Education

This constitutes the core in Education Studies comprising 4 compulsory, interdisciplinary modules to be taken in the first year of study. These modules integrate philosophical, sociological and psychological aspects of education and are designed to introduce students to the basic principles and practice of Education that are essential for effective classroom instruction and reflective teaching in schools.

2. Special Areas in Education

The second subject builds on the first. Two types of modules are offered in the second year. The first type comprises **Prescribed** modules touching on specific aspects of classroom teaching, namely, Assessment, School Guidance and Classroom Management. This is to allow students to develop competence in classroom teaching.

The second type, described as **Free Modules**, has been developed to provide both depth and breadth in training. These modules build on the issues and themes discussed in the Core and Prescribed modules. Some of these also offer students the opportunity to develop practical skills in special areas such as instructional design, values education, computer-based instruction and career education. Others are designed to encourage reflective thinking and critical analysis on social and philosophical issues in education. The Free Modules cover six special areas in Education, namely,

1. History of Education
2. Philosophy of Education
3. Sociology of Education
4. Specialised Education
5. Psychology of Education
6. Instructional Science

To ensure breadth in training, the Free Modules are grouped into two clusters and students are to choose one elective from each cluster. They take altogether 2 Free Modules.

3. Instructional Technology

This compulsory subject in Education deals with the important aspect of instructional design, selection of media and use of technology in education. Students are to complete two modules in year one. The first is a 20-hour module on designing and developing media materials. The second is a 10-hour module on the use of computers in instruction.

In total students will take 10 modules in Education Studies spread over two years, totalling 210 hours. The following table shows how the 10 modules are to be scheduled.

Education Subjects	YEAR 1			YEAR 2		
	July	Sept	Jan	July	Sept	Jan
Foundations in Education	ED101 30 hrs ED102 20 hrs	ED103 30 hrs ED104 30 hrs		-	-	-
Special Areas in Education (Prescribed Electives)	-	-	-	ED211 20 hrs ED212/ 213* 10 hrs	-	-
Special Areas in Education (Free Electives)					ED221* to ED230 20 hrs	ED231* to ED240 20 hrs
Instruct-ional Technology		EN101 20 hrs	EN102 10 hrs			

* Select <u>one</u> of the elective modules.

Description of Modules

Foundations in Education

ED101 The Developing Child in the Primary School (30 hrs)

This module focuses on the pupil and provides an overview of child development from conception to the end of the primary school years. The aim is to alert student teachers to the normative aspects of development which influence educationalist and others concerned with the management and care of children. Key features of child development examined are : cognition, language, personality and the socialization process. The module also highlights contemporary issues in child development that are related to learning and teaching.

ED102 Individual Differences in Learning (20 hrs)

Beginning teachers are faced with classes comprising pupils with diverse backgrounds, abilities and learning styles. This module is designed to help student teachers deal with individual learning differences in the classroom. It examines what these differences are and how they come about; it also offers some general approaches that enhance learning for individuals.

ED103 Conditions for Classroom Learning and Teaching (30 hrs)

This module aims to develop in the student teacher an understanding of classical and contemporary psycho-social learning theories and approaches to effective teaching. It examines the relationship between metacognitive processes, instructional procedures, management strategies, assessment principles and achievement. Issues in motivation, perception, memory and environment for effective learning and teaching will also be discussed.

ED104 The Social Context of Teaching and Learning (30 hrs)

The module provides an overview of key aspects of the historical development of education in Singapore, selected policies and their rationales, and the structure of provision and its consequences. It also examines the ways in which social factors and processes impact on the experience of schooling. At

the end of the module a normative framework will be provided for students to assess the nature and significance of schooling in Singapore.

Special Areas in Education

Prescribed Modules

ED211 Assessment in Primary Teaching (20 hrs)

(This module is to be taken by all students)

This module aims to provide student teachers with the basic knowledge and practical skills to manage and monitor pupils' learning. It will discuss principles of educational measurement and essentials in classroom testing and evaluation of learning.

(Students are to choose one of the following two modules.)

ED212 School Guidance in Primary Schools (10 hrs)

This module introduces student teachers to the concept of school guidance and the teacher's guidance roles. It will examine the principles and practice of pastoral care in Singapore schools, the place of personal social education in the school curriculum, techniques of developmental guidance and helping strategies for pupils who have adjustment problems in schools.

ED213 Classroom Management in Primary Teaching (10 hrs)

This module takes a perspective on managing the classroom environment as an effective learning setting, advocating the use of proactive and preventive strategies in preference to more reactive disciplinary techniques in classroom management.

Free Modules

There are two clusters of Free Modular.
(Students are to take one module from each cluster.)

Cluster A:

Specialised Education

ED221 Language Development in the Primary School Years (20 hrs)

The aim of this module is to provide student teachers with an appropriate knowledge of primary school children's language development and of differing language considerations and usage both at home and at school. Relevant issues such as second language learning and bilingualism and the current English Language programme conducted in primary schools will be examined with reference to findings of recent research. In addition, this module will explore practical applications of young children's language development by examining (a) classroom conditions conducive to the development, (b) productive activities and appropriate forms of organization, (c) positive styles of interaction-teacher-pupil and pupil-pupil, and (d) models of observation, assessment and record-keeping.

ED222 Inquiries into Creative Thinking (20 hrs)

This module is for teachers who wish to increase the creative thinking skills of students at the upper primary level. A first step in this direction is to become more aware of the concept and the psychological aspects of creative thinking such as theories, approaches, the creative process and issues in current research. Part of this course will provide an examination of the development of creative thinking/creativity in the classroom as an educational objective.

ED223 Problem Solving Strategies of Primary School Children (20 hrs)

This module will examine ways in which strategies of investigation, imitation, imagination, language and manipulation can be developed in children through the provision of a material-rich environment. Also considered are some activities which guide the child to new discoveries, problems, knowledge and skills where he/she may consolidate and generalize competencies in a satisfying and productive way for further elaboration.

ED224 Understanding Underachievers (20 hrs)

It has been said that there is no neurological or biological explanation for poor school performance by capable children. Yet, a substantial number of these children underachieve in school. This module will examine the problems of underachievement. Student teachers will investigate the causes of underachievement and examine ways teachers can help children to become effective learners.

Psychology of Education

ED225 Thinking Strategies and Effective Learning (20 hrs)

This module aims to develop student teachers into reflective teachers so that they can help their pupils become independent learners and thinkers. Topics included are: metacognition and metacognitive skills; critical thinking, creative thinking and problem solving; learning how to learn; comprehension retention strategies, retrieval-utilization strategies and supportive skills as well as the teacher's role in facilitating pupils' cognitive development.

ED226 Motivation and Learning (20 hrs)

This module builds on module ED103. It aims to increase student teachers' awareness of the motivational function of the teacher through a thorough understanding of motivation theories. Factors of
motivation, methods of motivation, and the strategies of motivating learners will be the focus of the module.

ED227 Fundamentals of Group Guidance (20 hrs)

This module builds on module ED212 with a special focus on group guidance. It is designed to provide student teachers with both knowledge and skills in developmental group guidance to enhance learning and social interaction in the classroom. Students will gain an insight into the group process and children's behaviours in groups. Group theories and techniques in group guidance will be examined. Issues such as group decision-making, problem-solving, conflict resolution and fostering creativity will also be discussed.

ED228 Pupil Counselling in Primary Schools (20 hrs)

This module builds on module ED212 but has its special focus on individual counselling and casework. In this module student teachers will gain an insight into the emotional and behavioural problems of children, how these may come about and how they may affect children's learning. Basic helping strategies will be considered, covering cognitive, affective and behavioural approaches to pupil counselling. While examining psychosocial factors that may affect the development/learning of pupils, student teachers will also discuss the assessment of guidance needs as well as the teacher-parent partnership in helping pupils.

ED229 Career Education in Primary Schools (20 hrs)

Since the development of a career self-concept begins in childhood and spans over an individual's lifetime, career education should be an on-going, developmental education process that permeates a pupil's school career. This module examines theories of career development as expounded by Super, Holland, Ginzberg and others. The concepts of career maturity and life career development will be discussed in relation to theories of child development. The module will also provide knowledge of and training in the skills of planning, implementing and evaluating a systematic and comprehensive career education programme in the primary school.

ED230 Assessing for Learning Effectiveness in the Primary School (20 hrs)

This module builds on module ED211 and helps student teachers develop further knowledge and skills in classroom testing. It will examine in greater details the different aspects of classroom testing such as the (i) planning, (ii) construction, (iii) administration of classroom tests, (iv) marking, and (v) interpretation of test results. Non-test techniques to help the student teachers look into other factors affecting learning in the classroom will also be discussed.

Cluster B:

History/Philosophy of Education

ED231 The History of Education and Educational Thought (20 hrs)

This module traces the development of educational ideas through the key periods of Western history and explores questions fundamental to an understanding of the main currents of educational thought which have shaped man's conceptions of the aims and purposes of the educational process. It helps student teachers to question some of the underlying assumptions and perspectives of the major western educational traditions which have continued to influence the goals, institutions and practices of contemporary education systems.

ED232 Problems and Issues in Singapore Education (20 hrs)

This module aims to stimulate an intelligent interest in systematically examining educational development in Singapore, and analyzing its problems and issues. It will provide students with a socio-historical framework for understanding development and changes in Singapore education. Topics discussed will include a review of key education reports, moral and language education policies, ethnic and gender issues and vocational and technical education.

ED233 Aims of Education (20 hrs)

This module introduces to student teachers an analysis of the concept of education to bring out an understanding of the aims that are appropriate to it. This will be related to the transmission of knowledge and skills, involving cognitive, conative and affective aspects of the personality. References will be made to the Singapore curriculum and its objectives. Among topics covered will be intrinsic and extrinsic aims of education, pragmatism in education, education and values, and education, desirability and knowledge and understanding.

ED234 Values Education: Concepts, Principles and Strategies (20 hrs)

This module will provide student teachers with an understanding of the aims, content and methods of values teaching, with special reference to primary education. The nature of morality will be correlated with right moral motivation, and this will involve a

discussion of the psychology of moral development. Philosophical understanding with regard to moral values and their justification will form the basis for validating content in values teaching. Philosophical and psychological insights into cognitive development in pupils, and the maintenance of discipline and autonomy in schools will be drawn upon in discussing and establishing appropriate teaching methods for values transmission in the primary school.

Sociology of Education

ED235 Sociology of Schooling (20 hrs)

This module examines the formal and informal processes of schooling as seen from the viewpoints of pupils, teachers and school administrators. Adopting a problem-oriented approach and marrying both the structural functionalist and interpretive theoretical perspectives, the course seeks to stimulate thinking about the possible socio-psychological effects of organisational arrangements of human and non-human resources on school-based teaching and learning in an industrial economy like Singapore. Issues discussed will include the meaning of schooling for key participants in the school, classroom control as a dominant teacher ideology, pupil coping strategies, the formation of pupil subcultures, and the moral socialisation of pupils.

ED236 Teachers and Teaching (20 hrs)

This module provides students with a range of information and ideas that will enable them to locate, better understand, and prepare themselves for the realities of teaching. Basic demographic data and research into teacher careers is provided as a basis for describing the structure of the teaching profession and to sensitize students to the diversity of experiences encountered within it. Broadly, the topics can be divided, on the one hand, into those concerned with the structural location of teaching in modern and developing societies; and on the other with analyses of teaching and learning as a social accomplishment.

ED237 The Home and the School (20 hrs)

This module takes as its focus the relationship between the home and the school. Building on the core module, the Social Context of Teaching and Learning, this module firstly examines the role of the home as an agent of primary socialization and its importance

in preparing children for school, and supporting and guiding them whilst in school. A second focus is the relationship of the home and the school and, in particular, the various forms that it has taken both in Singapore and overseas. Finally, the module turns to the role of the classroom teacher, both in understanding pupil backgrounds as a vital factor in classroom and school processes and in relating to parents.

Instructional Science

ED238 Principles and Practice of Instructional Design, Development and Evaluation (20 hrs)

This module provides an overview of key theories and principles of instructional design put forward by Gagne, Briggs, Landa, Merrill and Releigeluth. It also presents some case studies of successful practices as a consequence of good design, development and implementation in the United States, Britain, Australia, Japan and Singapore.

ED239 Computer-based Instruction and Learning (20 hrs)

This module deals with the use of the computer for a variety of educational purposes including using it as a tutor across the curriculum for the pupils to work independently for enrichment or remedial purposes or in conjunction with classroom teachers as part of an instructional unit. Based on research studies on learner control, motivation, computer-human interface, and individual differences, student teachers will be taught how to effectively use, adapt, and integrate computer-based instruction (CBI) for effective learning and teaching.

ED240 Classroom Management and Effective Instruction (20 hrs)

This module builds on ED213. It provides an in-depth study of the dynamics of classroom management in the teaching-learning process. It will include a survey of recent research and developments in classroom management and the implications for teaching. Some of the more distinctive approaches to classroom management will also be presented. Student teachers will acquire an awareness of the pedagogical principles, skills, and strategies for encouraging productive pupil behaviour.

Instructional Technology

(These are two **compulsory** modules to be taken by **all** students in the first year.)

EN101 Designing and Developing Media Materials (20 hrs)

This module provides student teachers with a better understanding of the need to integrate media materials into classroom instruction. It will discuss instructional design elements and principles that are related to the development, use, selection and evaluation of media materials for classroom teaching and learning. Student teachers will then apply instructional design principles to develop media materials to achieve some pre-determined learning objectives.

EN102 Computer Integration in Instruction (10 hrs)

This module introduces student teachers to using computers for the enhancement of their instructional presentation techniques. Student teachers will learn various computer operating systems, utilise computer-graphics packages and presentation packages to prepare materials for classroom presentation.

Curriculum Studies

Course Objectives

The Curriculum Studies courses are designed to equip the student-teacher in the BA with Dip Ed/BSc with Dip Ed Programme to teach these subjects in the Singapore primary school curriculum. Modules in each Curriculum Studies course deal with the content, methods and techniques of teaching the respective subjects at the primary school level.

CA The Teaching of Art
CC The Teaching of Chinese Language
CE The Teaching of English Language
CM The Teaching of Mathematics
CI The Teaching of Music
CS The Teaching of Science
CL The Teaching of Social Studies
CW Perspectives on the Primary Curriculum
CU Use of English in Teaching

Curriculum Studies	YEAR 1			YEAR 2		
	July	Sept	Jan	July	Sept	Jan
The Teaching of Art **	CA101 10 hrs	CA102 20 hrs CA103 30 hrs	CA201 10 hrs		-	CA201 20 hrs
The Teaching of Chinese Language **	CC101 20 hrs CC102 10 hrs	CC102 10 hrs CC103 20 hrs	-	CC201 20 hrs	CC202 10 hrs	-
The Teaching of English Language	CE101 30 hrs	CE102 30 hrs	-	CE201 10 hrs	CE201 20 hrs	-
The Teaching of Mathematics	CM101 30 hrs	CM102 30 hrs	-	CM201 10 hrs	CM201 10 hrs CM202* CM203* CM204* 10 hrs	-
The Teaching of Music **	CI101 30 hrs	CI102 30 hrs	-	CI201 10 hrs	-	CI201 20 hrs
The Teaching of Science **	CS101/ 102 30 hrs	CS102/ 103 30 hrs		CS201 18 hrs	CS201 12 hrs	
The Teaching of Social Studies **	CL101 10 hrs CL102 20 hrs	CL103 20 hrs CL104 10 hrs	-	CL201 20 hrs	-	CL202 10 hrs
Perspectives on the Primary Curriculum	-	-	-	-	-	CW201 30 hrs
Use of English in Teaching	CU101 10 hrs	CU101 20 hrs	-	CU201 30 hrs	-	-

* Select one of the elective modules.
** Select one of the five options.

Description of Modules

The Teaching of Art

CA101 Art Education (10 hrs)

This module introduces students to historical and theoretical bases for art education. It covers major developments in art education research including DBAE and Project Zero. An introduction to Critical Studies and its theoretical framework will also be included.

CA102 The Syllabus for Art Education (20 hrs)

This module deals with the Singapore Syllabus for Art Education, its aims, objectives and content; and incorporates a critical survey of supporting CDIS and IML resources. It also covers the form and structure of art lessons, the organisation of units of work in sequence, and long-term planning considerations.

CA103 Basic Art Components (30 hrs)

This module introduces the main practical components in the syllabus through practice and experimentation. Students will deal with an aspect of 2D, 3D, Design and Appreciation as it relates to teaching in schools.

CA201 Art Syllabus Extension (30 hrs)

This module concentrates on developing an understanding of a selection of syllabus-related 2D and 3D art processes and techniques. It also deals with the purposes and forms of evaluation including grade-related criteria and profiling. It concludes with consideration of the role and purpose of art and art education in Singapore schools.

The Teaching of English Language

CE101 Foundations of Language Teaching: Reading Process and Instruction (30 hrs)

This module is an introduction to language learning in the primary classroom. It examines the natural conditions which facilitate language learning. Topics include learning language and learning to read, the teaching of reading and strategies for monitoring reading development.

CE102 Psychology and Pedagogy of Writing and Language Experience in the Primary Classroom (30 hrs)

This module explores the links between learning language and learning to write. It examines the writing process. Students are also taught designing and implementing strategies for the teaching and monitoring of children's writing development. Methods in creating authentic language experiences in the language classroom will also be considered.

CE201 Language and Literacy Across the Curriculum (10 hrs)

This module reviews the connections between reading and writing to learn across the curriculum. Course emphasis is on the analyzing and planning of integrated language units - content, objectives and evaluation.

CE202 Developing Creative and Critical Responses Through the Language Syllabus (20 hrs)

This module examines how drama and literature can be utilised to develop children's language and thinking abilities. Students are also taught strategies in planning and facilitating oral communication in the primary classroom.

The Teaching of Mathematics

CM101 Curriculum Perspectives and the Teaching of Number Concepts, Skills and Problem Solving (30 hrs)

This module gives an overview of the aims and framework of the mathematics curriculum from an international and local perspective. It also looks into psychological theories of learning and implications (hierarchical task analysis and identification of learning difficulties of children), and formation of mathematical concepts. Teaching of number readiness, numeration, whole number system, algorithms and elements of number theory will be considered from the perspective of the development of concepts, skills and problem solving ability (routine word problems and non-routine process problems). Course emphasis is on understanding, use of concrete materials, practical work and children's own strategies. Number patterns, mental computation and estimation will also be considered.

CM102 Pedagogical Perspectives and the Teaching of Measurement, Graphical Representation, Ratio and Proportion (30 hrs)

This module examines teaching approaches and strategies, preparation of scheme of work and lesson plans, preparation of table of specifications, construction and use of mathematics tests. Other topics include the teaching of measurement concepts (length, mass, volume, time, money, area and perimeter), common fractions, decimal fractions and percent, teaching of ratio and proportion using real world situations, collecting, organizing, representing and anaylzing data, and graphical representation including tables and charts. Course emphasis is on understanding, hands-on activities and children's own strategies as well as the development of concepts, skills and problem solving ability.

CM201 Teaching of Geometry and Algebra Concepts, Skills and Problem Solving (20 hrs)

This module gives an overview of the teaching of informal geometry, two dimensional and three dimensional figures (common properties and relationships), angles and lines, symmetry, visualization, tessellation and nets of common solids. The emphasis is on stages of development (for example, the van Hiele levels of geometric thought) and development of spatial visualization. In examining the teaching of algebra, topics include the use of a letter to represent an unknown number, algebraic expressions in one variable, substitution and evaluation of simple expressions. The emphasis is on understanding, use of real world situations and children's own strategies in the development of concepts, skills and problem solving ability in geometry and algebra.

CM202 Organization of Instruction for Individual Needs (10 hrs)

This module covers topics such as: accommodating individual differences (gifted and slow learners); group work; peer learning; mastery learning; individualization of learning; remedial instruction; classroom as a learning laboratory (use of calculators and computers). Students will undertake the preparation and utilization of relevant materials.

CM203 Mathematical Investigations and Projects (10 hrs)

Topics in this module include planning, organization and implementation of mathematical investigations and projects: getting started, administering and guiding students undertaking mathematical investigations; evaluation of pupil performance (cognitive and affective outcomes). Students will undertake the preparation and utilization of relevant materials.

CM204 Enrichment Activities in Mathematics Teaching (10 hrs)

The focus of this module is on enrichment activities such as: planning, organization and implementation of mathematics games, mathematics exhibitions, camps and mathematics trails: getting started, administering and guiding students undertaking activities; evaluation of pupil participation and outcomes. Students will undertake the preparation and utilization of relevant materials.

The Teaching of Music

CI101 Classroom Skills for Music Teaching (30 hrs)

This module is concerned with equipping the students with musical skills they need to be effective teachers in the primary music classroom in Singapore. It covers the Kodaly hand signs, rhythm names and basic recorder techniques. In addition, students are required to make a study of the aims, objectives and philosophies of music education both in Singapore and elsewhere.

CI102 The Active Approach to Music Making (30 hrs)

This module is concerned with exploring in depth the music syllabus that is currently being taught in Singapore primary schools. It covers a study of the rationale, background and philosophy of the course, together with practical experience of the musical materials used in the course. It also include lesson planning, presentation and evaluation.

CI201 Keyboard Skills (30 hrs)

This module is designed to equip the student teacher with functional keyboard skills to teach music effectively in the primary school. Technical and practical skills will be integrated to focus on materials taken from the Active Approach to Music Making Modules 1-6.

The Teaching of Science

CS101 Primary Science Curriculum Analysis (20 hrs)

This module deals with the nature of scientific inquiry and learning with its specific disciplines, concepts, language, symbols, skills, techniques and means of communication. The goals and objectives of the Primary Science Curriculum will be discussed with analyses of the syllabus, science textbooks, and other curricular materials.

CS102 Primary Science Teaching and Learning (20 hrs)

This module focuses on the principles and methods of teaching primary science. These include content-topics such as: concept-formation; the structure of knowledge and concept mapping; the development and use of science process skills; inquiry learning approach, expository teaching, problem-solving and investigative science activities; conditions necessary for the class, small group or individual methods of teaching; use of teaching aids and resources; organization and management of pupils in the use of the science activity corner, the science room or the science garden.

CS103 Primary Science Assessment and Evaluation (20 hrs)

This module addresses the non-formal and formal methods of assessment of pupil learning in Primary Science. This includes the construction and use of the different modes of class assessment, such as the underlying concepts and principles of assessment; table of specification; multiple-choice questions and item analysis; assessment of science process skills in both written and practical tests; analysis of test results for evaluative and diagnostic purposes leading to the decisions about the effectiveness of science learning.

CS201 Reflections on Primary Science Practices (30 hrs)

This module covers topics such as : eliciting children's ideas in selected science concepts; research findings related to the genesis of children's ideas; intervention strategies encouraging change towards a more scientific understanding of the concept; role of process skills and language in developing scientific ideas; instructional design and content pedagogy; published materials and the Primary Science Syllabus; criteria for evaluating published science materials; using and adapting published

materials; curriculum continuity and primary-secondary science liaison.

The Teaching of Social Studies

CL101 Social Studies Education in Singapore (10 hrs)

This short introductory module deals with the historical background to the development of a Social Studies syllabus for primary schools in Singapore. The nature of the disciplines of Geography, History and Economics and their contributions to the objectives of an integrated Social Studies curriculum will be examined. Developmental and psychological dimensions influencing the emphases and the selection of content in the Social Studies curriculum will also be discussed.

CL102 Classroom-Based Instructional Strategies in Social Studies (20 hrs)

This module covers several aspects of the teaching and learning of Social Studies. These aspects include planning for teaching; instructional strategies such as group discussion, role-play, simulation games, inquiry learning; the effective use of teaching resources like models, photographs and maps; and the evaluation of pupil learning.

CL103 Investigating the Local Environment (20 hrs)

This module attempts to update student teachers' knowledge of the history and geography of Singapore through interactions with local resource experts and field experiences. Discussions with resource experts from local governmental agencies and other private organizations attempt to provide student teachers with the necessary knowledge to undertake field investigations of the local environment. These field investigations will include fieldwork in areas of historical and geographical interest such as Little India, Singapore River and Jurong Industrial Estate.

CL104 An Interdisciplinary Approach to Social Studies (10 hrs)

The module focuses on integrating the teaching of Social Studies with other cognate areas in the primary curriculum like language, science, mathematics and moral education. The role of children's literature as a means of teaching Social Studies concepts and the teaching of values and attitudes through Social Studies will be emphasised in this module.

CL201 The Teaching of Social Studies Concepts and Skills (20 hrs)

This module attempts to relate theories of concept and skill development in children to pedagogical practice in the teaching of social studies concepts and skills. The Taba concept formation model provides the organizing framework in the teaching of social studies concepts such as interdependence, resources, growth and change. The teaching of skills related to the use of maps, globes, graphs and tables and the acquisition of information from texts and pictorial materials will also be emphasised.

CL202 The Teaching of Social Studies to Differentiated Groups (10 hrs)

This module provides an overview of the learning needs of gifted students and slow learners. Practical instructional strategies for teaching the gifted and slow learners will be emphasised. Model lessons of expert teachers teaching the gifted and slow learners will provide a basis for discussion and analysis.

Perspectives on the Primary Curriculum

CW201 Perspectives on the Primary Curriculum (30 hrs)

This module will provide students with an understanding of the aims and nature of the primary curriculum, with special reference to the teaching of Science, Social Studies, Art, Music and Physical Education. Part I which deals with the theoretical aspects of the curriculum will examine curriculum concepts, curriculum as related to the needs of the developing child and teaching and assessment issues. Part II will deal with the main features and teaching methodologies in the subjects listed above.

Use of English in Teaching

CU101 Professional Speech Skills for Teachers (Core Module 30 hrs)

This module will consist of three components:

i. **Voice Production** to train students in relaxation, stance, breathing and voice projection to help them use their voices effectively in the classroom. (10 hours)

ii. **Practical Phonetics and Pronunciation** to help students acquire accuracy in pronunciation and articulation, and to use a pronouncing dictionary for reference purposes. (10 hours)

iii. **Classroom Communication** to help students acquire effective communication skills, and to apply them in a classroom situation e.g. reading aloud and talking to children, explaining concepts, and giving instructions. (10 hours)

CU201 Remedial Speech (Prescribed Module 30 hrs)

This is a prescribed module for students who do not reach the required standard at the end of CU101. It will focus on individual competencies needed for classroom communication.

The Teaching of Chinese Language

CC101 Introduction to the Teaching of Chinese Language with Special Emphasis on the Teaching of Listening and Speaking Skills (20 hrs)

This module deals with:

a) the theories of language acquisition and learning;

b) the objectives and content of CL in the bilingual context of Singapore.

Students will be introduced to the objectives of teaching listening and speaking skills, the theoretical base of audiolingual and communicative teaching methods and the use of the language laboratory. Various approaches to the teaching of listening and speaking will be included.

CC102 The Teaching of Reading Skills (20 hrs)

This module will include the objectives and theoretical foundations in the teaching of reading, the development of reading skills and the various approaches to the teaching of reading.

CC103 Language Testing (20 hrs)

This module will deal with the objectives of Chinese Language testing and the construction of test items and item analysis. Validity, reliability and simple statistics, such as correlation and standard deviation will also be discussed.

CC201 Teaching of Composition Writing Skills (20 hrs)

This module will deal with the objectives and various methods and approaches to the teaching of writing skills.

CC202 Teaching of Vocabulary and Modern Chinese Grammar (10 hrs)

This module will deal with the various approaches to the teaching of vocabulary and Modern Chinese Grammar as well as the teaching of Chinese Syntax.

The Practicum

The practicum of teaching practice is an important component of the BA with Dip Ed/BSc with Dip Ed programme. Its principal function is to provide students with the opportunity to develop teaching competencies in a variety of instructional contexts, and at different levels under the guidance and supervision of co-operating teachers and NIE lecturers.

In the practicum, students will be able to use knowledge and skills introduced in the Education Studies, Curriculum Studies and Academic Studies modules and attempt an integration of theory and practice.

In preparation for the practicum, students will have the opportunity to do micro-teaching within the curriculum studies modules. There are four block placements for the practicum spread over the four years, shown as follows :

Year 1	Module	Title	Duration
Term 3	PR101	Practicum I	7 wks
Year 2			
Term 1 }	PR201	Practicum II	4 wks
Term 2 }	PR201	Practicum II	4 wks
Year 3			
Term 3	PR301	Practicum III	5 wks
Year 4			
Term 3	PR401	Practicum IV	5 wks

Description of Modules

PR101 Practicum I (7 wks)

The main objective is to provide students with an opportunity to link theory with practice and develop competence in classroom teaching. During the Practicum, the students will practise, among others, the skills of planning, instructing, managing, organizing and evaluating classroom instruction.

PR201 Practicum II (8 wks)

Having been initiated into the schools, students are expected to participate in a range of instructional activities to practise skills learned and to further develop their knowledge and competency in teaching. It is hoped that through continuous practice and interaction with pupils and fellow teachers, they will be able to build up their confidence in classroom teaching in this eight-week attachment spread over two terms.

PR301 Practicum III (5 wks)

In this phase of the Practicum the student will go through a school attachment for a structured school-based assignment. This will not only provide an opportunity for the student to consider wider pedagogical and professional issues, but will also require him/her to analyse and reflect upon teaching/learning experiences within the context of his/her academic studies specialisation. The student also continues to carry out some teaching, although there will be no supervised teaching in the conventional sense.

PR401 Practicum IV (5 wks)

In the fourth and final year, students will have developed enough competencies and confidence to manage more difficult and challenging classes to develop their repertoire of teaching skills. They will also have opportunities to engage in some school-based project/research study through gathering and analysing school-based data.

Language Communication Skills

LC102 Language Communication Skills (30 hrs)

The purpose of this module is to improve the written communication skills of students. It will involve a study of what constitutes clear, effective language expression and the syntactical and rhetorical of good written English.

LC202 Language Communication Skills (30 hrs)

This module provides further reinforcement for developing effective written communication skills. Students will develop a greater awareness of the features of good and poor English expression and will have further practice in expressing themselves more lucidly and accurately.

Bachelor of Arts/Science with Diploma in Education (Physical Education) Programmes

Aims of Programmes

The aim of these programmes is to train specialist physical education teachers for the primary schools, secondary schools and junior colleges. The programmes seek to provide student-teachers with an in-depth understanding of the scientific, psychological, sociological and philosophical principles and knowledge which forms the basis of physical education and is essential to the teaching process.

Duration of Programmes

The programmes extend over a period of four years and lead to the award of the degree of BA with Dip Ed (PE) or BSc with Dip Ed (PE). The degree of BA honours with Dip Ed (PE) or BSc honours with Dip Ed (PE) may be awarded on the basis of performance.

Structure of Programmes

1. The courses in the programmes are run on a **modular system** with each module lasting between 10 to 30 hours. The course modules in the 100 series are offered in the first year, course modules in the 200 series are offered in the second year, course modules in the 300 series are offered in the third year and course modules in the 400 series are offered in the fourth year. Thus the first digit represents the year of study and the second and third digits represent each individual course module of study.

   e.g. APh101 (Academic Subject Physical Education; 1st year module)
   CPh301 (Curriculum Studies Physical Education; 3rd year module)

2. The BA/BSc with Dip Ed (PE) programmes comprise four areas of study: (i) ACADEMIC SUBJECTS (ii) EDUCATION STUDIES (iii) CURRICULUM STUDIES (iv) PRACTICUM.

Academic Subjects

(a) Candidates studying for the BA/BSc with Diploma in Education (Physical Education) will study two academic subjects one of which will be Physical Education. The other academic subject will be selected from one of the following:

For BA students

English Language
English Literature
Geography
History

For BSc students

Biology
Chemistry
Mathematics
Physics

Students will continue to read their Arts/Science academic subject during each of the four years.

(b) During the first two years students will read Physical Education courses in the areas of Sports Science and Sports Studies and one other academic subject in Arts (in the case of BA with Dip Ed (PE) or Science (in case of BSc with Dip Ed (PE)).

(c) All candidates who have not passed or are not exempted from the Qualifying English Test at the time of their admission to the School of Physical Education must offer the Subject Language Communication Skills in the first year. They must continue to offer the subject in the second year if they are not exempted at the end of the first year.

(d) All BA with Dip Ed (PE) students, with the exception of those who have to offer Language Communication Skills, are required to take the compulsory module **Critical Reading and Writing I (AW101)** in the first year & **Critical Reading and Writing II (AW201)** in the second year.

(e) Those BA with Dip Ed (PE) students who have to offer Language Communication Skills must have successfully completed the course before proceeding with the subject Critical Reading and Writing.

(f) In Year 3, students will also read set courses in both Sports Science, Sports Studies and Related Studies and the Arts/Science Academic Subject offered in Year 2.

(g) In Year 4, students may elect from Sports Science Courses and/or from Sports Studies Courses. Depending on 4th year electives, Sports Science students must take Exercise Physiology and either Biomechanics and/or Psycho-motor Studies or one course from Sports Studies. Sports Studies students must take Socio-cultural Dimensions of Sport and either Sports Management and/or the Social Psychology series of courses or one course from Sports Science. In addition, students continue to read their Arts/Science Academic Subject offered in Year 3.

Education Studies

(a) In the first year, students are required to take the Education Studies modules in Foundations in Education and Instructional Technology.

(b) The two compulsory modules under Education Studies: PE, Health Education and Measurement and Evaluation, are to be taken during Year 2.

Curriculum Studies

Candidates will take the compulsory PE Curriculum Studies modules which cover the theoretical components of curriculum design, evaluation and teaching methods. The practical modules include Team and Dual Games; Movement Education; Dance and Gymnastics; Swimming; Track and Field; Outdoor Education and Fitness and Conditioning. In addition, they are to elect three modules from these areas for their specialisation during their second year.

Candidates will also take modules either in the Teaching of English or the Teaching of Mathematics.

Practicum

This is an integral component of the course. Students will spend 15 weeks in schools during the two-year programme teaching Physical Education and their second academic subject (PR101 and PR 201) and another 10 weeks of attachment in schools in Years 3 and 4 (PR 301 and PR 401).

The structures of BA/BSc with Dip Ed (PE) (Pri) Programmes are shown in Tables 3 and 4 below.

Candidates studying for the BA with Dip Ed (PE) (Pri) will follow the course selection as shown in Table 3.

Table 3: Structure of the Bachelor of Arts with Diploma in Education (Physical Education) (Primary) Programme

First Year	Second Year	Third Year	Fourth Year
Academic Subjects Modules			
APh 100 APh 105 APh 130 APh 150 APh 151	APh 200 APh 210 APh 220 APh 270 APh 280	APh 305 APh 310, 311 APh 320, 321 APh 330, 331 APh 340 APh 360 APh 365 APh 370 APh 375 APh 380 APh 390	EITHER APh 465, 466, 467 APh 470, 475, 476 APh 480, 481, 482 OR APh 480, 481, 482 *APh 470/475/476 465/466/467 *APh 410/411/412 420/421/422 430/431/432 APh 400 APh 405 * APh 441/442
Ab 100 Series	Ab 200 Series	Ab 300 Series	Ab 400 Series
AW 101 OR LCS	AW 201 OR AW 101 OR LCS (repeated)	AND (if applicable) AW 201 OR AW 101	AND (if applicable) AW 201
Education Studies Modules			
ED 101-104 EN 101-102	EP 295-296	-	-
Curriculum Studies Modules			
CPh 102 CPh 104 CPh 108 CPh 121 CPh 123 CPh 125 CPh 141 CPh 156 CPh 160 CPh 161 CPh 165 CPh 170 CPh 180 CPh 181 CE 101-102 OR CM 101-102 CU 101	CPh 200 CPh 205 CPh 209 CPh 227 CPh 229 CPh 231 CPh 233 CPh 266 AND THREE ELECTIVES CE 201- 202 OR CM 201 *CM 202/203/204 CU 201	-	-
Practicum Modules			
PR 101 (7 weeks)	PR 201 (8 weeks)	PR 301 (5 weeks)	PR 401 (5 weeks)

Note

* = Select one of the elective modules
APh = Academic Subjects in Physical Education
Ab = Academic Subject in Arts
AW = Critical Reading and Writing
LCS = Language Communication Skills
ED = Education Studies
EP = Education Studies : Physical Education
EN = Instructional Technology
CPh = Curriculum Studies : Physical Education
CE = The Teaching of English Language
CM = The Teaching of Mathematics
CU = Use of English in Teaching
PR = Practicum

Candidates studying for the BSc with Dip Ed (PE) (Pri) will follow the course selection as shown in Table 4.

Table 4: Structure of the Bachelor of Science with Diploma in Education (Physical Education) (Primary) Programme

First Year	Second Year	Third Year	Fourth Year
Academic Subjects Modules			
APh 100 APh 105 APh 130 APh 150 APh 151	APh 200 APh 210 APh 220 APh 270 APh 280	APh 305 APh 310, 311 APh 320, 321 APh 330, 331 APh 340 APh 360 APh 365 APh 370 APh 375 APh 380 APh 390	EITHER APh 410, 411, 412 APh 420, 421, 422 APh 430, 431, 432 OR APh 410, 411, 412 *APh 420/421/422/ 430/431/432 *APh 465/466/467/ 470/475/476/ 480/481/482 APh 400 APh 405 *APh 441/442
Ab 100 Series AND (if applicable) LCS	Ab 200 Series AND (repeated) LCS	Ab 300 Series	Ab 400 Series
Education Studies Modules			
ED 101-104 EN 101-102	EP 295-296	-	-
Curriculum Studies Modules			
CPh 102 CPh 104 CPh 108 CPh 121 CPh 123 CPh 125 CPh 141 CPh 156 CPh 160 CPh 161 CPh 165 CPh 170 CPh 180 CPh 181 CE 101-102 OR CM 101-102 CU 101	CPh 200 CPh 205 CPh 209 CPh 227 CPh 229 CPh 231 CPh 233 CPh 266 AND THREE ELECTIVES CE 201- 202 OR CM 201 *CM 202/203/204 CU 201	-	-
Practicum Modules			
PR 101 (7 weeks)	PR 201 (8 weeks)	PR 301 (5 weeks)	PR 401 (5 weeks)

Note

* = Select one of the elective modules
APh = Academic Subjects in Physical Education
Ab = Academic Subject in Science
LCS = Language Communication Skills
ED = Education Studies
EP = Education Studies : Physical Education
EN = Instructional Technology
CPh = Curriculum Studies: Physical Education
CE = The Teaching of English Language
CM = The Teaching of Mathematics
CU = Use of English in Teaching
PR = Practicum

The structures of BA/BSc with Dip Ed (PE) (Sec) Programmes are shown in Tables 5 and 6 below.

Candidates studying for the BA with Dip Ed (PE) (Sec) will follow the course selection as shown in Table 5.

Table 5: Structure of the Bachelor of Arts with Diploma in Education (Physical Education) (Secondary) Programme

First Year	Second Year	Third Year	Fourth Year
Academic Subjects Modules			
APh 100 APh 105 APh 130 APh 150 APh 151	APh 200 APh 210 APh 220 APh 270 APh 280	APh 305 APh 310, 311 APh 320, 321 APh 330, 331 APh 340 APh 360 APh 365 APh 370 APh 375 APh 380 APh 390	EITHER APh 465, 466, 467 APh 470, 475, 476 APh 480, 481, 482 OR APh 480, 481, 482 *APh 470/475/476 465/466/467 *APh 410/411/412 420/421/422 430/431/432 APh 400 APh 405 *APh 441/442
Ab 100 Series AW 101 OR LCS	Ab 200 Series AW 201 OR AW 101 OR LCS (repeated)	Ab 300 Series AND (if applicable) AW 201 OR AW 101	Ab 400 Series AND (if applicable) AW 201
Education Studies Modules			
ED 101-104 EN 101-102	EP 295-296	-	-
Curriculum Studies Modules			
CPh 102 CPh 106 CPh 108 CPh 121 CPh 123 CPh 125 CPh 141 CPh 156 CPh 160 CPh 161 CPh 165 CPh 170 CPh 180 CPh 181 CE 121-122 OR CM 121-122 CU 101	CPh 200 CPh 203 CPh 209 CPh 227 CPh 229 CPh 231 CPh 233 CPh 266 AND THREE ELECTIVES CE 221-222 OR CM 221-225 CU 201	-	-
Practicum Modules			
PR 101 (7 weeks)	PR 201 (8 weeks)	PR 301 (5 weeks)	PR 401 (5 weeks)

Note

* = Select one of the elective modules
APh = Academic Subjects in Physical Education
Ab = Academic Subject in Arts
AW = Critical Reading and Writing
LCS = Language Communication Skills
ED = Education Studies
EP = Education Studies: Physical Education
EN = Instructional Technology
CPh = Curriculum Studies: Physical Education
CE = The Teaching of English Language
CM = The Teaching of Mathematics
CU = Use of English in Teaching
PR = Practicum

Candidates studying for the BSc with Dip Ed (PE) (Sec) will follow the course selection as shown in Table 6.

Table 6: Structure of the Bachelor of Science with Diploma in Education (Physical Education) (Secondary) Programme

First Year	Second Year	Third Year	Fourth Year
Academic Subjects Modules			
APh 100 APh 105 APh 130 APh 150 APh 151	APh 200 APh 210 APh 220 APh 270 APh 280	APh 305 APh 310, 311 APh 320, 321 APh 330, 331 APh 340 APh 360 APh 365 APh 370 APh 375 APh 380 APh 390	EITHER APh 410, 411, 412 APh 420, 421, 422 APh 430, 431, 432 OR APh 410, 411, 412 *APh 420/421/422/ 430/431/432 *APh 465/466/467/ 470/475/476/ 480/481/482 APh 400 APh 405 *APh 441/442
Ab 100 Series AND (if applicable) LCS	Ab 200 Series AND (repeated) LCS	Ab 300 Series	Ab 400 Series
Education Studies Modules			
ED 101-104 EN 101	EP 295-296	-	-
Curriculum Studies Modules			
CPh 102 CPh 106 CPh 108 CPh 121 CPh 123 CPh 125 CPh 141 CPh 156 CPh 160 CPh 161 CPh 165 CPh 170 CPh 180 CPh 181	CPh 200 CPh 203 CPh 209 CPh 227 CPh 229 CPh 231 CPh 233 CPh 262 CPh 266 AND THREE ELECTIVES	-	-
CE 121-123 OR CM 121-122	CE 221- 222 OR CM 221-225		- -
CU 101	CU 201		
Practicum Modules			
PR 101 (7 weeks)	PR 201 (8 weeks)	PR 301 (5 weeks)	PR 401 (5 weeks)

Note

* = Select one of the elective modules
APh = Academic Subjects in Physical Education
Ab = Academic Subject in Science
LCS = Language Communication Skills
ED = Education Studies
EP = Education Studies : Physical Education
EN = Instructional Technology
CPh = Curriculum Studies: Physical Education
CE = The Teaching of English Language
CM = The Teaching of Mathematics
CU = Use of English in Teaching
PR = Practicum

CODES

Academic Subjects : Physical Education

APh = Academic Subjects : Physical Education Modules

Education Studies : Physical Education

EP = Education Studies : Physical Education Modules

Curriculum Studies : Physical Education

CPh = Curriculum Studies : Physical Education Modules

Curriculum Studies (Electives) : Physical Education

CPh = Curriculum Studies (Electives) : Physical Education Modules

Practicum

PR = Practicum

Academic Subject : Physical Education

Year	Module	Title	No. of Hrs
1	APh 100	Biological Bases 1	20 hrs
	APh 105	Growth and Development	20 hrs
	APh 130	Skill Acquisition	20 hrs
	APh 150	Introduction to Sports Studies	20 hrs
	APh 151	Sports in Singapore Society	20 hrs
2	APh 200	Biological Bases II	20 hrs
	APh 210	Exercise Physiology	20 hrs
	APh 220	Biomechanics	20 hrs
	APh 270	Social Psychology of Physical Activity I	20 hrs
	APh 280	Socio-Cultural Studies in Sports	20 hrs
3	APh 305	Sports Technology I	20 hrs
	APh 310	Exercise Physiology I	20 hrs
	APh 311	Exercise Physiology II	20 hrs
	APh 320	Biomechanics I	20 hrs
	APh 321	Biomechanics II	20 hrs
	APh 330	Psycho-Motor Studies I	20 hrs
	APh 331	Psycho-Motor Studies II	20 hrs
	APh 340	Research Methods	20 hrs
	APh 360	Sociological Studies in Sport and PE	20 hrs
	APh 365	Management Concepts for Sport and PE	20 hrs
	APh 370	Social Psychology of Physical Activity II	20 hrs
	APh 375	Introduction to Sport Psychology	20 hrs
	APh 380	Comparative Physical Education & Sport	20 hrs
	APh 390	Philosophical Issues in Sport and PE	20 hrs
	APh 400	Advance Curriculum Studies	20 hrs
	APh 405	Sports Technology II	20 hrs
	APh 410	Exercise Physiology I	20 hrs
	APh 411	Exercise Physiology II	20 hrs
	APh 412	Exercise Physiology III	20 hrs
	APh 420	Biomechanics I	20 hrs
	APh 421	Biomechanics II	20 hrs
	APh 422	Biomechanics III	20 hrs
	APh 430	Psycho-Motor Studies I	20 hrs
	APh 431	Psycho-Motor Studies II	20 hrs
	APh 432	Psycho-Motor Studies III	20 hrs
	APh 441	Research Methods (Quantitative/ Qualitative)	20 hrs
	APh 442	Research Methods (Qualitative)	20 hrs
	APh 465	Sports Management I	20 hrs
	APh 466	Sports Management II	20 hrs
	APh 467	Sports Management III	20 hrs
	APh 470	Social Psychology of Physical	20 hrs
	APh 475	Sport Psychology	20 hrs
	APh 476	Applied Project in Sport Psychology/ Social Psychology of Physical Activity	20 hrs
	APh 480	Socio-cultural Dimensions of Sport I	20 hrs
	APh 481	Socio-cultural Dimensions of Sport II	20 hrs
	APh 482	Socio-cultural Dimensions of Sport III	20 hrs

Description of modules

Academic Subjects

Description of Modules in Arts/Science Academic Subjects are available in pages 10 to 120.

Academic Subject : Physical Education

APh 100 Biological Bases I (20 hrs)

The objective of the module is to provide the necessary basic understanding of the structure and function of the muscular skeletal system, which will enable students to understand the mechanisms which govern human movement.

APh 105 Growth and Development (20 hrs)

This module is a study of physical growth and motor development from conception to maturity. Emphasis will be placed on age related changes and individual differences in development especially during puberty. Implications for the teaching of PE due to such developmental changes will be discussed.

APh 130 Skill Acquisition (20 hrs)

The module presents introductory studies on the relevance of selected areas to the processes of learning and performing motor skills. The individual is viewed as a complex information processing organism, which operates under varied environmental conditions. Particular reference is made to learning theories, motor control, practice conditions, transfer of learning, memory and retention.

APh 150 Introduction to Sports Studies (20 hrs)

This module provides an introductory overview of sports studies as a field of knowledge. In characterising the field as multi-disciplinary in nature, it shows how a variety of "sub-disciplines" such as anthropology, history, sociology, economics, management studies and philosophy have provided insights into the phenomenon of sport in society. Attention will be drawn to some key issues and problems in contemporary international sport and their significance to the Singapore situation.

APh 151 Sport in Singapore Society (20 hrs)

This module seeks to provide the student with a sound working knowledge of the role, structure and function of sport in his own society. It will address topics such as: the infrastructure and delivery system of local sport; Singapore's sporting traditions and heritage; the contribution of indigenous and non-competitive sports activities; mass participation and elite sport; professionalism and voluntarism.

APh 200 Biological Bases II (20 hrs)

This module is concerned with basic human physiology. The objective is to provide the necessary background and understanding of the major organs systems, their inter-relationships and importance in physical education and sport.

APh 210 Exercise Physiology (20 hrs)

This module will focus on aspects of exercise physiology that are most relevant to the physical education teacher in Singapore, namely thermoregulation in children and adolescents; children and physical performance; nutrition and dietary imbalances; cardiovascular diseases.

APh 220 Biomechanics (20 hrs)

This module deals with the fundamental mechanical concepts and principles which govern human movement. It also examines the effect of internal and external forces which act on the human body when moving on land, in water and in the air.

APh 270 Social Psychology of Physical Activity I (20 hrs)

This module introduces the student to the social psychology of physical activity with particular reference to the dynamics of group interaction in the sporting arena. Concepts such as motivation, arousal, personality, competition, and anxiety control will be introduced and implications discussed for human behaviour in social settings.

APh 280 Socio-cultural Studies in Sport (20 hrs)

This module seeks to broaden the student's knowledge base concerning sport in society by developing an understanding of the historical derivation of modern sport. It then goes on to examine some of the more significant ways in which sport and modern culture inter-relate. Examples are taken from an international perspective but are also referenced against the role of sport in education for modern Singapore.

APh 305 Sports Technology I (20 hrs)

The module involves an in-depth study of the skills and strategies of an activity selected from sports, dance, and outdoor education. The chosen activity will be studied through practical sessions and related seminars. The main emphasis will be on the effective development of technical proficiency. As a higher level of study is indicated, students will be expected to have already demonstrated a degree of competence, experience and knowledge within that field of activity.

APh 310 Exercise Physiology I (20 hrs)

This module is concerned with the integration of the cardiovascular responses to a variety of challenges; adaptations of the cardiovascular system to training; neuromuscular considerations and energy metabolism.

APh 311 Exercise Physiology II (20 hrs)

This module will deal with the following topics. Nutrition, obesity and weight control, the principles of training and physiological adaptations; women in sport; erogenic aids and doping in athletics.

APh 320 Biomechanics I (20 hrs)

This module is on the principles underlying fundamental movement skills. Principles of quantitative human movement analysis. Cinephotographic recording of human movement and its applications. Derivation processes of extracting data from film records. Models and measurement of the human body. Anthropometric basis of segmental analysis. Indirect determination of centre of gravity locations. Direct and indirect determination of moments of inertia. Alternative recording techniques - stroboscopy, chronocyclography and electrogoniometry.

APh 321 Biomechanics II (20 hrs)

This module focuses on the application of recent findings in biomechanics and is supplemented by laboratory work. Standardising biomechanical testing in sport. Substantive issues in running (efficiency/economy/external forces/muscle function/performance improvement/injuries). Swimming: forces on aquatic animals and humans (principles/aquatic animals/human swimming/quantifying resistive drag and propulsive forces/energy expenditure and efficiency). Tennis: muscle activity and movement patterns/kinematics and kinetics/mechanical characteristics/equipment design.
Mechanics of cycling: Kinematics/kinetics/work, energy and power/posture/modelling and simulation/biomechanical comparisons/injuries and rehabilitation. Laboratory one: gymnastics rotational analysis. Laboratory two: soccer kicking analysis.

APh 330 Psycho-Motor Studies I (20 hrs)

This module develops in greater depth the skill acquisition component from year 1. The nature of psychology and motor learning in the developing child and adult performer will be discussed from the behaviourist perspective. This will include topics such as conditioning, reinforcement and behaviour modification. Methods used to investigate behaviour will be reviewed including experimental and humanistic approaches.

APh 331 Psycho-Motor Studies II (20 hrs)

The module presents an in-depth study into the nature of skill in sport, in particular looking at the phases of learning. The human information processing model will be examined through an analysis of open and closed skills, simple reaction time, the perrectal and decision mechanisms, choice reaction time, the effector mechanism and an overview of task complexity.

APh 340 Research Methods (20 hrs)

This module is concerned with research philosophy; the elements of scientific investigation, scientific method, information retrieval and the selection, definition and evaluation of a research problem. It will look in more depth at survey methods, experimental research, hypothesis formulation and data analysis.

APh 360 Sociological Studies in Sport and Physical Education (20 hrs)

This module will examine sport and physical education from a sociological perspective. The central themes of socialisation into physical activity and socialisation by physical activity will underpin an examination of social systems at work in the conduct and practice of sport, play and games in society.

APh 365 Management Concepts for Sport and Physical Education (20 hrs)

This module provides an introduction to management studies in the context of sport and physical education. It adopts a view of sport/physical education as a commodity and examines the functions, roles and skills of management in regard to its production and delivery. Understandings derived from the theory of organisations are applied to schools, clubs and teams and particular attention is paid to the managerial skills of planning, organising and evaluating.

APh 370 Social Psychology of Physical Activity II (20 hrs)

This module will examine social and psychological factors which modify motor performance. Emphasis will be given to the 'individual in society'. Lewin's model [B=f(P,E)] of person-environment interaction will provide the theoretical framework. Topics addressed will include: motivation and performance; leadership and communication; aggression; social facilitation; team dynamics; personality; values and attitudes and competition and play.

APh 375 Introduction to Sport Psychology (20 hrs)

The aim of the module will be to introduce students to the concepts of Sport Psychology. Topics will include: the theoretical bases of psychic energy control; stress management; imagery skills; attentional skills; goal setting skills; principles of assessing individual needs; introduction to the psychology of officiating. Such skills are designed to assist in developing optimal human performance.

APh 380 Comparative Physical Education and Sport (20 hrs)

This module examines physical education and sport as a comparative study and identifies some major approaches to the organisation and implementation of physical education and sports programmes around the world. Attempts will be made to establish explanatory links between key features of the programmes discussed and relevant socio-cultural variables. Implications for the Singapore context will be drawn.

APh 390 Philosophical Issues in Sport and Physical Education (20 hrs)

This module examines sport, play and games within the frameworks provided by metaphysics, epistemology and axiology. It is aimed at providing students with basic techniques of philosophic enquiry to assist them in examining the meaning of physical activity, the value of games and sports, and the ethical issues raised by modern competitive sport and its practice. Emphasis will be placed on addressing the views of leading writers on these issues and then applying their arguments within a dialectic process.

APh 400 Advanced Curriculum Studies (20 hrs)

This module is designed to raise the professional and personal levels of skill in the teaching of physical education in a variety of areas chosen by the candidate. The choice will be limited to those areas which are available at the time.

APh 405 Sports Technology II (20 hrs)

This module is a development of the Sports Technology I course taken in the third year. It pays particular attention to the strategies of the selected activity, whether in the field of sports, dance or outdoor education. Both physical and psychological preparation for performance at an advanced level will be considered in detail.

APh 410 Exercise Physiology I (20 hrs)

This module is an in-depth study into the physiology of training and will cover the following areas: methods of training; factors influencing training; selected training programmes; physiological appraisal; children in sport; training the masters athlete; testing the elite athlete; conditioning for injury prevention and rehabilitation.

APh 411 Exercise Physiology II (20 hrs)

This module is an in-depth study of exercise and the environment, including thermoregulation in man; hot and cold climate physiology; effects of altitude on physical performance; underwater physiology.

APh 412 Exercise Physiology III (20 hrs)

This module is an in-depth study of cardiorespiratory physiology, including cardiorespiratory responses and adaptations to exercise; exercise and the asthmatic; physical activity and cardiovascular disease.

APh 420 Biomechanics I (20 hrs)

Two main areas of study in this course are force measurement and electromyography. Direct force measurements using the force platform. Interpretation of force trace data by a variety of procedures is undertaken. Experimental studies of running and jumping are followed by short group projects on the force analysis of a sports skill. Electromyography and muscle mechanics. Recording and processing of EMG data for isometric, eccentric and concentric muscular contractions are studied. This is supplemented by studies of internal body forces and a combined force and EMG project.

APh 421 Biomechanics II (20 hrs)

This module focuses on quantitative data collection procedures. Internal forces and muscle moments/non-invasive procedures for predicting joint reaction forces and net muscle moments in selected activities. Mechanical work, energy and power/laboratory examination of elastic energy/the measurement of human power. Frequency analysis/signal processing/data smoothing. EMG, fatigue and muscle fibre type. Three dimensional cinematography. Combining recording techniques for the analysis of human movement (emg/force platform/cinephotographic).
Interdisciplinary studies involving biomechanics.

APh 422 Biomechanics III (20 hrs)

This module is entirely research based and involves undertaking a combined quantitative analysis of a selected movement skill.

APh 430 Psycho-Motor Studies I (20 hrs)

Topics to be dealt with will include memory and information processing, feedback and knowledge of results, instruction and communication and how feedback affects learning. The performance arousal relationship will be covered plus the debate on the theories of motor control.

APh 431 Psycho-Motor Studies II (20 hrs)

This module focusses on the organisational processes within the nervous system which lead to well co-ordinated movements. It includes the study of the control of human movement from both a behavioural as well as a nerophysiological perspective.

APh 432 Psycho-Motor Studies III (20 hrs)

The remainder of the course work allocation in this year will be given over to project based work related to the previous courses in years 3 and 4, but individually chosen in consultation with the lecturer concerned.

APh 441 Research Methods (Quantitative) (20 hrs)

This module is on research design and strategies of experimental research using inferential statistics. Application of suitable instrumentation, measurement, statistical techniques and data analysis will be dealt with.

APh 442 Research Methods (Qualitative) (20 hrs)

This module provides students with an introductory experience in non-statistically based research techniques used within some of the leading sports studies sub-disciplines. The emphasis will be on the use of participant observation, interview techniques and the access and use of a range of primary data sources. Techniques for triangulation and the application of criteria for assessing the quality and scholarship of descriptive and interpretive study will be addressed.

APh 465 Sports Management I (20 hrs)

This module introduces the student to some basic concepts from the areas of strategic planning and quality management applied to the area of sport and physical education. Some introductory techniques for use in project management are also covered.

APh 466 Sports Management II (20 hrs)

This module provides the student with knowledge of principles for budget management and control. Marketing principles and strategies will also be addressed.

APh 467 Sports Management III (20 hrs)

This module studies the place of human resources in sports management and examines the means of utilising such resources effectively. An introduction to the use of information technology is also provided and some principles for its effective management are also proposed.

APh 470 Social Psychology of Physical Activity III (20 hrs)

This module develops the concept and principles presented in APh 370 and deals with issues and problems from a research and analysis standpoint.

APh 475 Sport Psychology (20 hrs)

This module develops the concepts and principles presented in APh 375 and deals with issues which arise from the application of performance enhancement techniques.

APh 476 Applied Project in Sports Psychology/Social Psychology of Physical Activity (20 hrs)

Students will opt to complete a project based on ideas presented in either APh 470 or APh 475 or from both components.

APh 480 Socio-cultural Dimensions of Sport I (20 hrs)

Sport as leisure. Sport as recreation. The growth of leisure. Work and leisure. Leisure and the family. Play, participation and the life-cycle. Supporting agencies and conflicting factors with relationship to leisure and lifestyle. The 'Health and Wellness' movement. Leisure and the future. Policies for leisure.

APh 481 Socio-cultural Dimensions of Sport II (20 hrs)

The development of athletic sport and the role of sports excellence in contemporary society. The growth of Olympism and the demise of amateurism. The influence of the mass-media. Sporting heroes and national identity. Provision and promotion of sport; free-market or government responsibility?

APh 482 Socio-cultural Dimensions of Sport III (20 hrs)

An in-depth analysis of an issue in sport, play, recreation or leisure with particular reference to the local context. Application of concepts examined in APh 480 and APh 481.

AW 101 & 201 Refer to page 42.

Education Studies : Physical Education

Year	Module	Title	No. of Hrs
2	EP 295	Health Education	20 hrs
	EP 296	Measurement and Evaluation	20 hrs

Description of Modules

Education Studies

ED 101-104 Refer to pages 131-134.

EN 101-102 Refer to page 141.

Education Studies: Physical Education

EP 295 Health Education (20 hrs)

The module covers healthy living, fitness, nutrition, stress management and the use of alcohol, smoking and drugs and their inherent problems. Family life and sexuality are also included as core components of the course.

EP 296 Measurement & Evaluation (20 hrs)

This is an introductory course of measurement and evaluation which presents the fundamental concepts and the reasoning that underlie the use of some of the most common descriptive statistical techniques in physical education.

Curriculum Studies : The Teaching of Physical Education

(For candidates doing the BA/BSc with Dip Ed (PE) (Pri) Programme)

Year	Module	Title	No. of Hrs
1		Principles and Methods	
	CPh 102	Fitness and Conditioning I	20 hrs
	CPh 104	Basic Games I	20 hrs
	CPh 108	Teaching Method I (not assessed)	20 hrs
		Individual Games/Activities	
	CPh 141	Badminton I	20 hrs
	CPh 156	Swimming I	20 hrs
	CPh 160	Gymnastics I	20 hrs
	CPh 161	Gymnastics II	20 hrs
	CPh 165	Dance I	20 hrs
	CPh 170	Track and Field I	20 hrs
	CPh 180	Outdoor Education	20 hrs
		Team Games/Activities	
	CPh 121	Basketball I	20 hrs
	CPh 123	Volleyball I	20 hrs
	CPh 125	Netball I	20 hrs
	CPh 181	Camp Experience	A 7-day Camp
2		Principles and Methods	
	CPh 200	Curriculum Design	20 hrs
	CPh 205	Basic Games II	20 hrs
	CPh 209	Teaching Method II (not assessed)	20 hrs
		Individual Games/Activities	
	CPh 266	Dance II	20 hrs
		Team Games/Activities	
	CPh 227	Soccer I	20 hrs
	CPh 229	Rugby I	20 hrs
	CPh 231	Hockey I	20 hrs
	CPh 233	Softball I	20 hrs

Description of Modules

Curriculum Studies

CU 101/201 Refer to page 150.

For candidates doing the BA/BSc with Dip Ed (PE) (Pri) Programme

CE 101-102 & 201-202 Refer to pages 143-144.

CM 101-102 & 201-204 Refer to pages 144-146.

The Teaching of Physical Education

CPh 102 Fitness and Conditioning (20 hrs)

The objective of this module is to prepare students to teach Fitness and Conditioning in primary schools. The course will emphasise the influence of the maturation process on the parameters of fitness. It will also introduce strategies to promote the development of fitness through an integrated physical education programme.

CPh 104 Basic Games I (20 hrs)

Locomotor and manipulative enabling skills suitable for P1 and P2 students. Introduction to striking/fielding games, the principles of play and the use of such activities for P3 and P4 students.

CPh 108 Teaching Method I (20 hrs)

This module prepares students for their first year Teaching Practice. The fundamentals of class management, lesson planning, safety and organisation are covered. The theoretical aspects are endorsed by video presentation, micro teaching and school experience.

CPh 121 Basketball I (20 hrs)

This module builds on the basic manipulative skills of a ball-handling game. Students are shown how to introduce primary classes to receiving and passing, and moving into space in this territorial invasion game.

CPh 123 Volleyball I (20 hrs)

This module emphasises the content and method necessary to teach volleyball in the primary school situation. It is an activity-based course in which students will have the opportunity to progress in a variety of skill learning games.

CPh 125 Netball I (20 hrs)

This module is designed to enable students to teach the game of netball at primary school level. The course will concentrate on basic skills like attacking and defending play, use of modified and conditioned games, use of modified equipment, organisation and basic rules of play.

CPh 141 Badminton I (20 hrs)

This module is concerned with the development of badminton skills in students and an understanding of the nature of the game: the court, strokes and basic tactics. It also aims to develop in students the awareness and skills to teach badminton at beginners' level.

CPh 156 Swimming I (20 hrs)

This course will cover water confidence activities, introduction to swimming, the techniques and progression for teaching front crawl, back crawl and breast stroke. Introduction to diving from the pool side and basic life-saving skills will also be included.

CPh 160 Gymnastics I (20 hrs)

Instruction of educational gymnastics based on movement themes. The course focuses primarily on problem solving and discovery techniques in order to allow individuals and small groups to develop themes appropriate for both apparatus and floor work.

CPh 161 Gymnastics II (20 hrs)

This module will develop the basic techniques already taught in the first course by exploring different themes on simple as well as complex apparatus designs. The course will also develop aspects of partner work and will introduce rhythmic apparatus.

CPh 165 Dance I (20 hrs)

This module is an introduction to the teaching of international folk dances and basic dance technique for children, with a focus on fundamental principles of safe, efficient and aesthetic movement.

CPh 170 Track and Field I (20 hrs)

This module exposes the student to the basic mechanics of running, jumping and throwing in relation to the teaching of track and field events in the primary school.

CPh 180 Outdoor Education (20 hrs)

This core module in outdoor education will cover basic orienteering, campcraft, trust and co-operation games, problem solving skills and the organisation of school camps.

CPh 181 Camp Experience (20 hrs)

This 7-day course is intended to be an extension of the outdoor education course in that it exposes students to environmental, residential learning; skill learning; expedition organisation and safety considerations. Furthermore, it seeks to encourage students to recognise the educational potential of Adventure Education.

CPh 200 Curriculum Design (20 hrs)

This module examines the basic concepts of rational curriculum planning and is aimed at providing students with the skills to design and write comprehensive work programmes in physical education for their schools.

CPh 205 Basic Games II (20 hrs)

Introduction to net/barrier and territorial/invasion games; the principles of play and the use of such activities for P3 and P4 students.

CPh 209 Teaching Method II (20 hrs)

Students are introduced to a wider range of teaching skills. The course is based on a spectrum of teaching styles leading to an emphasis on pupils' self-discipline. Students are particularly encouraged to focus on the idea of maximising participation in their classes.

CPh 227 Soccer I (20 hrs)

The foundation skills of soccer provide the basis for this course. Teaching through small-sided and conditioned games enables students to introduce soccer in primary schools in an efficient, enjoyable way.

CPh 229 Rugby I (20 hrs)

The objective of this module is to prepare students to teach rugby in primary schools. The course emphasises the fun aspect of playing a running, handling game and focuses on the development of individual skill through the medium of non-contact/limited-contact structured games.

CPh 231 Hockey I (20 hrs)

This module will enable students to introduce the game of hockey to primary school classes. It pays particular attention to safety and to presenting skills in a simple yet enjoyable manner.

CPh 233 Softball 1 (20 hrs)

This module covers basic techniques: overarm throwing, catching, pitching, bunting, hitting, and running bases. Application of rules of the game. Basic tactics such as advancing a runner, taking pitches, stealing. Learning experiences will involve in drills and simulated game situations in small groups and the full game.

CPh 266 Dance II (20 hrs)

This module is an introduction to movement concepts and principles for teaching children's dance. The emphasis is on dance as a creative medium of expression.

Curriculum Studies : The Teaching of Physical Education (Electives)

(For candidates doing the BA/BSc with Dip Ed (PE)(Pri) Programme)

Year	Module	Title	No. of Hrs
1	CPh 155	Beginners Swimming	20 hrs
2	CPh 222	Basketball II	20 hrs
	CPh 224	Volleyball II	20 hrs
	CPh 226	Netball II	20 hrs
	CPh 228	Soccer II	20 hrs
	CPh 230	Rugby II	20 hrs
	CPh 232	Hockey II	20 hrs
	CPh 234	Softball II	20 hrs
	CPh 235	Sepak Takraw	20 hrs
	CPh 242	Badminton II	20 hrs
	CPh 243	Tennis I	20 hrs
	CPh 244	Tennis II	20 hrs
	CPh 245	Short Tennis	20 hrs
	CPh 247	Table Tennis	20 hrs
	CPh 249	Squash I	20 hrs
	CPh 250	Squash II	20 hrs
	CPh 257	Swimming II	20 hrs
	CPh 262	Gymnastics III	20 hrs
	CPh 267	Dance III	20 hrs
	CPh 271	Track and Field II	20 hrs
	CPh 282	Canoeing I	20 hrs
	CPh 284	Rock Climbing	20 hrs
	CPh 286	Sailing I	20 hrs
	CPh 288	Boardsailing I	20 hrs
	CPh 289	Boardsailing II	20 hrs
	CPh 290	Orienteering	20 hrs
	CPh 291	Canoeing II	20 hrs
	CPh 294	Sailing II	20 hrs

The Teaching of Physical Education (Electives)

CPh 155 Beginners Swimming (20 hrs)

This module is specifically for those students whose swimming is extremely weak and who need remedial help. The course will teach them to be confident in the water and to swim at least one recognisable stroke.

CPh 222 Basketball II (20 hrs)

While students will have the opportunity to develop their personal and team skills, this course emphasizes the techniques of coaching and officiating. It will equip students with the groundwork of conducting basketball as a school ECA.

CPh 224 Volleyball II (20 hrs)

This module enables students to develop their proficiency in coaching and officiating skills. Attention will also be given to improving individual and team skills.

CPh 226 Netball II (20 hrs)

This module is designed for those students who are interested in coaching and refereeing netball at ECA and representative levels. Successful students will be eligible for the SSC and SWNA Netball Coaching Award - (Level 1, Technical).

CPh 228 Soccer II (20 hrs)

While seeking to improve skills at both the personal and the group level, this course presents students with an opportunity to develop their technique in coaching and their expertise in officiating. Offensive and defensive play will be dealt with in detail.

CPh 230 Rugby II (20 hrs)

The objective of this module is to further develop module I. The range of individual and unit skills will be extended. Graduated games experience will lead to increased contact and a full game of mini rugby.

CPh 232 Hockey II (20 hrs)

This module builds on the basic foundation of the first module. Skills and tactics are developed from a base of small-sided and conditioned games. Particular emphasis will be placed on the acquisition of coaching and officiating skills.

CPh 234 Softball II (20 hrs)

This module continues with the development of basic techniques and tactics. Increased emphasis on elements of hitting and pitching. Use of signs by coaches and players. Teaching and coaching techniques. Practices and preparing for ECA.

CPh 235 Sepak Takraw (20 hrs)

This introductory module prepares students to teach the basics of sepak takraw as a class activity in school. Students will also gain an understanding of the elementary tactics of this popular indigenous game.

CPh 242 Badminton II (20 hrs)

This module is concerned with rules of badminton, game strategies (single and doubles), analysis of play and stroke refinement.

CPh 243 Tennis I (20 hrs)

This elective module covers rules & regulations; grip (one hand or both hands); basic strokes; forehand; backhand; service; ground strokes; the volleys; the lob and overhead shots; elementary tactics; scoring in the singles game and the doubles game.

CPh 244 Tennis II (20 hrs)

This module elaborates on the basic techniques. Use of topspin; backspin; court mobility; running and passing shots; stop volleys; teaching and coaching progressive drills.

CPh 245 Short Tennis (20 hrs)

An introduction to a modified game of tennis which is specifically designed for the upper primary and lower secondary age range.

CPh 247 Table Tennis (20 hrs)

This basic module introduces the basic techniques and tactics. Sessions during the course will concentrate on grip; use of spin; service; rallying; mobility; rules and scoring.

CPh 249 Squash I (20 hrs)

This comprehensive module includes basic technical and tactical elements; grip; swing; basic mechanics; forehand backhand drive; drop; lob; boast; overhead; court movement; control of centre; moving your opponent; rules and marking; refereeing.

CPh 250 Squash II (20 hrs)

This module core advanced techniques and tactics; variety; disguise; delay; deception; anticipation; change of pace; pressurizing an opponent; use of control; change of tactics; training; preparing for competition; coaching techniques.

CPh 257 Swimming II (20 hrs)

This module is an extension and development of the basic swimming course. It will deal with competitive strokes including the butterfly strokes; competition diving and diving from the boards; survival swimming and life-saving skills.

CPh 262 Gymnastics III (20 hrs)

This module will be geared more towards personal performance and will focus on Olympic skills on floor and apparatus.

CPh 267 Dance III (20 hrs)

This module is a continuation of Dance I with 4 local ethnic dances and a sampling of square dances from North America being included in the folk section. More complex movement combinations and the study of sound, percussion and music to accompany dance are included in the development of children's dance technique.

CPh 271 Track & Field II (20 hrs)

This module will expose the student to coaching and officiating track and field events for use in the primary schools.

CPh 282 Canoeing I (20 hrs)

This is an introductory module which uses the swimming pool to teach basic skills: rolling rescues; support strokes; forward and backward paddling.

CPh 284 Rock Climbing (20 hrs)

This module will introduce students to basic ropework and to the safety techniques which are necessary for using top-roping methods of climbing in artificial situations.

CPh 286 Sailing I (20 hrs)

This is an introductory basic module in dinghy sailing. The course covers: terms and terminology in sailing, knots, parts of a dinghy, safety aspects, launching and recovery, the main points of sail and basic right of way rules. At the end of this course, students should be able to sail a prescribed course in light to moderate wind.

CPh 288 Boardsailing I (20 hrs)

This module is designed for students with little or no previous experience. Students will be taught to sail competently on all points of sail.

CPh 289 Boardsailing II (20 hrs)

This module will assume a working knowledge of basic skills and will develop and refine techniques for recreational use as well as racing on triangular, sausage and M courses.

CPh 290 Orienteering (20 hrs)

This module will cover a knowledge of the rules, procedures, strategies, tactics and precautions in orienteering. Students will be shown how to demonstrate skills through participation in both discrete and applied situations. Students will also have the opportunity to organise and take part in a group competition.

CPh 291 Canoeing II (20 hrs)

This module is designed for students who have completed Canoeing I. The development of basic skills on the sea will be taught. Expedition work will also be covered and training given will lead the student to SCF Sea Proficiency standard.

CPh 294 Sailing II (20 hrs)

This module is meant for students who have successfully completed Sailing I. This course prepares the student to sit for the Singapore Yachting Association "C" Helmsmanship Certificate. The syllabus for this Certificate is prescribed by the SYA and is found in the official handbook of the national authority.

Curriculum Studies : The Teaching of Physical Education

(For candidates doing the BA/BSc with Dip Ed (PE) (Sec) Programme)

Year	Module	Title	No. of Hrs
1		Principles and Methods	
	CPh 102	Fitness and Conditioning I	20 hrs
	CPh 106	Principles of Games	20 hrs
	CPh 108	Teaching Method I (not assessed)	20 hrs
		Individual Games/Activities	
	CPh 141	Badminton I	20 hrs
	CPh 156	Swimming I	20 hrs
	CPh 160	Gymnastics I	20 hrs
	CPh 161	Gymnastics II	20 hrs
	CPh 165	Dance I	20 hrs
	CPh 170	Track and Field I	20 hrs
	CPh 180	Outdoor Education	20 hrs
		Team Games/Activities	
	CPh 181	Camp Experience	20 hrs
	CPh 121	Basketball I	20 hrs
	CPh 123	Volleyball I	20 hrs
	CPh 125	Netball I	20 hrs
	CPh 181	Camp Experience	A 7-day camp
2		Principles and Methods	
	CPh 200	Curriculum Design	20 hrs
	CPh 203	Fitness and Conditioning II	20 hrs
	CPh 209	Teaching Method II (not assessed)	20 hrs
		Individual Games/Activities	
	CPh 262	Gymnastics III	20 hrs
	CPh 266	Dance II	20 hrs
		Team Games/Activities	
	CPh 227	Soccer I	20 hrs
	CPh 229	Rugby I	20 hrs
	CPh 231	Hockey I	20 hrs
	CPh 233	Softball I	20 hrs

For candidates doing the BA/BSc with Dip Ed (PE) (Sec) Programme

Curriculum Studies

The Teaching of English Language at the Lower Secondary Level

CE121 Introduction to Language Teaching (10 hrs)

This module gives an overview of language teaching at the lower secondary school level, and introduces students to theories of first and second language acquisition and learning. Students will be guided to view these theories against the backdrop of the changing language learning environment in Singapore so that they are better able to understand the philosophy that underlies new approaches to language teaching in Singapore schools.

CE122 Teaching Reading Skills (20 hrs)

This module introduces students to the psycholinguistic models of the reading process, and to innovative methods of teaching reading and comprehension in the lower secondary classroom.

CE123 Teaching Writing Skills (30 hrs)

Students will be introduced to the current understandings and approaches to writing and the teaching of writing. Emphasis will be placed on the reading-writing connection, and on ways to enliven composition writing. Students will also learn how to evaluate and respond to pupils' writing.

CE221 Teaching Oral and Listening Skills (10 hrs)

Students will be exposed to different communicative tasks for teaching oral and listening skills in the language classroom.

CE222 The Secondary School Language Classroom (20 hrs)

This module reviews the place of grammar and vocabulary teaching in the secondary school classroom, the promotion of young adult literature, and language assessment. An integrated approach to the teaching of language is advocated.

The Teaching of Mathematics at the Lower Secondary Level

CM121 Curriculum and Principles (30 hrs)

Nature of mathematics. Aims of mathematics education. Framework and objectives of the mathematics curriculum. Learning theories and their implication in the teaching and learning of mathematics. Teaching styles, approaches and strategies. Problem solving.

CM122 Curriculum and Practice (30 hrs)

Scheme of work. Lesson and unit planning. Monitoring and evaluation of learning. Class organisation for mathematics instruction. Teaching particular groups of pupils, e.g. the slow learners, the gifted, the unmotivated. Teaching of arithmetic, mensuration, graph, algebra, geometry, statistics and trigonometry.

CM221 Resources and Teaching Aids (10 hrs)

Type and function of apparatus and aids used in the teaching and learning of mathematics. Calculators and computers in teaching mathematics. Resource files, libraries and persons.

CM222 Mathematical Problem Solving (20 hrs)

Problem solving heuristics and strategies. Mathematical investigations. Mathematical modelling. Proof in mathematics.

CM223 Curriculum-Related Content (20 hrs)

The numeration system. Number systems. Operations, Algebraic structures. Euclidean and non-Euclidean geometries.

CM224 Mathematics and Other Subjects (20 hrs)

Mathematics and specific subjects such as sport, art, music, geography, etc. Mathematical modelling.

CM225 Miscellaneous Topics in Mathematics (20 hrs)

Mathematical recreation. Mathematics from the environment. Symbols in mathematics. History of mathematics.

The Teaching of Physical Education

CPh 102 Fitness and Conditioning I (20 hrs)

The objective of this module is to prepare students to teach Fitness and Conditioning in Secondary Schools and Junior Colleges. The course emphasises the principles of training and how to develop the various parameters that contribute to physical performance.

CPh 106 Principles of Games (20 hrs)

The objective of this module is to prepare students to teach a range of games in secondary schools and junior colleges. The course emphasises a cognitive approach to games teaching and the various strategies adopted to teach specific games.

CPh 108 Teaching Method I (20 hrs)

This module aims to provide the skills necessary to teach secondary school classes of up to 45 students. Planning and organising lessons; class management, and the importance of safety are some of the topics covered. The theoretical work is complemented by micro-teaching and school experience.

CPh 121 Basketball I (20 hrs)

Through an essentially practical approach, this course will allow students to introduce and develop basketball skills through game playing situations and basic drills.

CPh 123 Volleyball I (20 hrs)

This module enables students to introduce the game of volleyball in the secondary PE curriculum. It concentrates on method and activities which will allow for participation and progress in the school situation.

CPh 125 Netball I (20 hrs)

The module is designed to enable students to teach the game of netball at secondary school level. The course will concentrate on the development of basic skills, attacking and defending play, the use of conditioned games for maximum participation, organisation and the rules of the game.

CPh 141 Badminton I (20 hrs)

This module is concerned with the development of badminton skills in students and an understanding of the nature of the game: the court, strokes and basic tactics. It also aims to develop in students the awareness and skills to teach badminton at beginners' level.

CPh 156 Swimming I (20 hrs)

This module will cover water confidence activities, introduction to swimming, the techniques and progression for teaching front crawl, back crawl and breast stroke. Introduction to diving from the pool side and basic life saving skills.

CPh 160 Gymnastics I (20 hrs)

This module will introduce the underlying principles of movement, focusing on elementary skills and basic themes. The material is entirely floor based and is geared towards building gymnastic confidence.

CPh 161 Gymnastics II (20 hrs)

This module will focus on the acquisition of floor techniques and vaults.

CPh 165 Dance I (20 hrs)

Students learn a sampling of popular dances including the waltz, cha-cha, swing; in addition to approximately 12 dances from different cultures reflecting a variety of styles and techniques.

CPh 170 Track and Field I (20 hrs)

This module exposes the student to the basic mechanics of running, jumping and throwing in relation to the teaching of track and field events in the secondary school.

CPh 180 Outdoor Education (20 hrs)

This core module in outdoor education will cover basic orienteering, campcraft, trust and co-operation games, problem solving skills, and the organisation of school camps.

CPh 181 Camp Experience (20 hrs)

This 7-day course is intended to be an extension of the courses followed in the curriculum, in that it exposes students to environmental; residential learning; skill learning; expedition organisation; and safety considerations. Furthermore, it seeks to encourage students to recognise the educational potential of Adventure Education.

CPh 200 Curriculum Design (20 hrs)

This module examines the basic concepts of rational curriculum planning and is aimed at providing students with the skills to design and write comprehensive work programmes in physical education for their schools.

CPh 203 Fitness and Conditioning II (20 hrs)

The objective of this module is to further develop the content of module I. In this course, special attention will be given to the design of training programmes, the role of the teacher/coach and methods of testing the various parameters which contribute to physical performance.

CPh 209 Teaching Method II (20 hrs)

Students are introduced to a wider range of teaching skills. The course is based on a spectrum of teaching styles leading to an emphasis on self-discipline. Students are actively encouraged to focus on the idea of maximising participation.

CPh 227 Soccer I (20 hrs)

This module introduces fundamental individual and group skills related to soccer and aims to improve personal performance. Students will be provided with the necessary content and method to teach soccer at an introductory level.

CPh 229 Rugby I (20 hrs)

The objective of this module is to prepare students to teach rugby in schools and Junior Colleges. The course emphasises the development of individual skill through the medium of non-contact/limited contact structured games.

CPh 231 Hockey I (20 hrs)

This module is designed to prepare students to introduce and develop hockey in schools. Basic stickwork and controlling and passing the ball in small groups provides the framework for students to practise their skills and develop their basic tactical awareness.

CPh 233 Softball 1 (20 hrs)

This module covers the basic techniques and tactics of softball: overarm throw, catch, pitching, bunting, hitting, running bases. Application of rules of the game. Advancing a runner, taking pitches, stealing. Drills and simulated game situations used in small groups.

CPh 262 Gymnastics III (20 hrs)

This module will incorporate and develop the principles of the first course with the techniques of module 2 onto curricular apparatus such as benches, trampettes, boxes and frames.

CPh 266 Dance II (20 hrs)

The study of creative dance themes, improvisation, composition and the development of personal movement skills in modern dance technique combined with knowledge of movement and dance principles.

Curriculum Studies : The Teaching of Physical Education (Electives)

(For candidates doing the BA/BSc with Dip Ed (PE) (Sec) Programme)

Year	Module	Title	No. of Hrs
1	CPh 155	Beginners Swimming	20 hrs
2	CPh 222	Basketball II	20 hrs
	CPh 224	Volleyball II	20 hrs
	CPh 226	Netball II	20 hrs
	CPh 228	Soccer II	20 hrs
	CPh 230	Rugby II	20 hrs
	CPh 232	Hockey II	20 hrs
	CPh 234	Softball II	20 hrs
	CPh 235	Sepak Takraw	20 hrs
	CPh 242	Badminton II	20 hrs
	CPh 243	Tennis I	20 hrs
	CPh 244	Tennis II	20 hrs
	CPh 247	Table Tennis	20 hrs
	CPh 249	Squash I	20 hrs
	CPh 250	Squash II	20 hrs
	CPh 257	Swimming II	20 hrs
	CPh 263	Gymnastics IV	20 hrs
	CPh 267	Dance III	20 hrs
	CPh 271	Track and Field II	20 hrs
	CPh 282	Canoeing I	20 hrs
	CPh 283	Canoeing II	20 hrs
	CPh 284	Rock Climbing	20 hrs
	CPh 286	Sailing I	20 hrs
	CPh 287	Sailing II	20 hrs
	CPh 288	Boardsailing I	20 hrs
	CPh 289	Boardsailing II	20 hrs
	CPh 290	Orienteering	20 hrs

The Teaching of Physical Education (Electives)

CPh 155 Beginners Swimming (20 hrs)

This module is specifically for those students whose swimming is extremely weak and need remedial help. The course will teach them to be confident in the water and to swim at least one recognisable stroke.

CPh 222 Basketball II (20 hrs)

While students will have the opportunity to develop their personal and team skills, this course emphasizes the techniques of coaching and officiating. It will equip students with the groundwork of conducting basketball as a school ECA.

CPh 224 Volleyball II (20 hrs)

This module enables students to develop their proficiency in coaching and officiating skills. Attention will also be given to improving individual and group skills.

CPh 226 Netball II (20 hrs)

This module is designed for those students who are interested in coaching and refereeing netball at ECA and representative levels. Successful students will be eligible for the SSC and SWNA Netball Coaching Award - (Level 1, Technical).

CPh 228 Soccer II (20 hrs)

While seeking to improve skills at both personal and group level, this course presents students with the opportunity to develop their technique in coaching and their expertise in officiating. Offensive and defensive play will be dealt with in detail.

CPh 230 Rugby II (20 hrs)

The objective of this module is to expand the depth and breadth of skills taught in module I. Greater emphasis is placed on unit and team skills and the strategies adopted to teach the various formats of rugby, including mini, 7-a-side, 10-a-side and the full 15-a-side.

CPh 232 Hockey II (20 hrs)

This module builds on the basic foundation of the first component. Skills and tactics are developed from a base of small-sided and conditioned games. Particular emphasis will be placed on the acquisition of coaching and officiating skills.

CPh 234 Softball 2 (20 hrs)

This module continues with the development of basic techniques and tactics. There is increased emphasis on the elements of hitting and pitching. Use of signs by coaches and players. Teaching and coaching techniques. Practices and preparing for ECA.

CPh 235 Sepak Takraw (20 hrs)

This introductory module prepares students to teach the basics of Sepak Takraw as a class activity in school. Students will also gain an understanding of the elementary tactics of this popular indigenous game.

CPh 242 Badminton II (20 hrs)

This module is concerned with rules of badminton, game strategies (singles and doubles), analysis of play and stroke refinement.

CPh 243 Tennis I (20 hrs)

This module covers rules & regulations; one and two-handed grip; basic strokes; forehand; backhand; service; ground strokes; volleys, lob; overhead. Playing and scoring in the singles game and doubles game. There will be an emphasis on technique and tactics.

CPh 244 Tennis II (20 hrs)

This module elaborates on basic techniques. Use of topspin; backspin; court mobility; running; passing shots; stop volleys; teaching and coaching progressive drills for coaching purposes.

CPh 247 Table Tennis (20 hrs)

This basic module introduces basic techniques and tactics. Attention will be drawn to grip use of spin; service; rallying; mobility; rules; and scoring.

CPh 249 Squash I (20 hrs)

Basic technical and tactical elements, grip, swing, basic mechanics, forehand, backhand drive, drop, lob, boast, overhead, court movement, control of centre, moving your opponent, rules and marking, refereeing.

CPh 250 Squash II (20 hrs)

Advanced techniques and tactics, variety, disguise, delay, deception, anticipation, change of pace, pressurizing an opponent, use of control, change of tactics, training, preparing for competition, coaching techniques.

CPh 257 Swimming II (20 hrs)

This module is an extension and development of the basic swimming module. It will deal with competitive strokes including butterfly, competitive diving and diving from the boards. Survival and life saving skills are also included.

CPh 263 Gymnastics IV (20 hrs)

This module will be geared more towards personal performance and will focus on Olympic Skills on both floor and apparatus.

CPh 267 Dance III (20 hrs)

A continuation of Dance II with further exploration of creative dance themes and principles; a study of more complex movement combinations for modern dance.

CPh 271 Track & Field II (20 hrs)

This module will expose the student to coaching methods in track and field in the secondary school.

CPh 282 Canoeing I (20 hrs)

An introductory basic module which uses the swimming pool to introduce basic skills: rolling rescues, support strokes and forward and backward paddling.

CPh 283 Canoeing II (20 hrs)

For students who have completed Canoeing I: development of basic skills on the sea. Expedition work will be covered, and training given to lead the student to SCF Sea Proficiency standard.

CPh 284 Rock Climbing (20 hrs)

To introduce students to the basic ropework and safety techniques needed to use top-roping methods of climbing in artificial situations.

CPh 286 Sailing I (20 hrs)

This is an introductory basic module in dinghy sailing. The course covers: terms and terminology in sailing, knots, parts of a dinghy, safety aspects, launching and recovery, the main points of sail and basic right of way rules. At the end of this course, students should be able to sail a prescribed module in light to moderate wind.

CPh 287 Sailing II (20 hrs)

This module is meant for students who have successfully completed Sailing I. This course prepares the student to sit for the Singapore Yachting Association "C" Helmsmanship Certificate. The syllabus for this Certificate is prescribed by the SYA and is found in the official handbook of the national authority. This is the first level of competency for dinghy sailors in Singapore.

CPh 288 Boardsailing I (20 hrs)

This module is designed for students with little or no previous experience. Students will be taught to sail competently on all points of sail.

CPh 289 Boardsailing II (20 hrs)

This module will assume a working knowledge of basic skills and will develop and refine techniques for recreational use as well as racing on triangular, sausage and M courses.

CPh 290 Orienteering (20 hrs)

This module will cover a knowledge of rules, procedures, strategies, tactics and precautions in orienteering. Students will learn how to demonstrate skills and abilities through participation in both discrete and applied situations. They will also have the opportunity to take part in a group competition.

Practicum

The practicum is an integral component of the BA with Dip Ed (PE)/BSc with Dip Ed (PE) programmes. Its principal function is to provide students with the opportunity to develop teaching competencies in a variety of instructional contexts, and at different levels under the guidance and supervision of co-operating teachers and NIE lecturers.

In the practicum, students will be able to use knowledge and skills introduced in the Education Studies, Curriculum Studies and Academic Subjects modules and attempt an integration of theory and practice.

In preparation for the practicum, students will have the opportunity to do micro-teaching within the Curriculum Studies modules. Also there will be a brief school attachment of one week for orientation and to introduce them to teaching and learning in schools. This short attachment will be followed by four block placements spread over the four years as follows :

Year 1	**Code**	**Title**	**Duration**
Term 3	PR101	Practicum I	7 wks
Year 2			
Term 1 }	PR201	Practicum II	4 wks
Term 2 }	PR201	Practicum II	4 wks
Year 3			
Term 3	PR301	Practicum III	5 wks
Year 4			
Term 3	PR401	Practicum IV	5 wks

Description of Modules

PR101 Practicum I (7 wks)

The main objective is to provide students with an opportunity to link theory with practice and develop competence in classroom teaching. During the Practicum, the students will practise, among others, the skills of planning, managing, organizing and evaluating their lessons in physical education.

PR201 Practicum II (8 wks)

Having been initiated into the schools, students are expected to participate in a range of instructional activities to practise skills learned and to further develop their knowledge and competency in teaching. It is hoped that through continuous practice and interaction with pupils and fellow teachers, they will be able to build up their confidence in teaching physical education in this eight-week attachment spread over two terms. Additionally they will have the opportunity to develop their classroom teaching skills.

PR301 Practicum III (5 wks)

In this phase of the Practicum, the student will go through a school attachment for a structured school-based assignment. This will not only provide an opportunity for the student to consider wider pedagogical and professional issues, but will also require him/her to analyse and reflect upon teaching/learning experiences within the context of his/her academic studies specialisation. The student also continues to carry out some teaching, although there will be no supervised teaching (as in the initial training programme).

PR401 Practicum IV (5 wks)

In the fourth and final year, students will have developed enough competencies and confidence to manage more difficult and challenging classes, and to develop their repertoire of teaching skills. They will also have opportunities to engage in some school-based project/research study through gathering and analysing school-based data in physical activities.

Language Communication Skills

LC102 Language Communication Skills (30 hrs)

The purpose of this module is to improve the written communication skills of students. It will involve a study of what constitutes clear, effective language expression and the syntactical and rhetorical of good written English.

LC202 Language Communication Skills (30 hrs)

This module provides further reinforcement for developing effective written communication skills. Students will develop a greater awareness of the features of good and poor English expression and will have further practice in expressing themselves more lucidly and accurately.